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Abstract

Using data from the Current Population Survey (CPS) for 1994-2023, we show that the union wage mark-up for immigrants averages about 0.1 log points, 0.04 log-points less than that for natives. Therefore, unionization is less beneficial for immigrants than natives in the United States. The difference is most pronounced for males and low-skilled blue-collar workers. It cannot be observed for white-collar workers, individuals born in Mexico, and second-generation immigrants. An IV-approach indicates that the wage effects can be interpreted causally. Our results suggest that differences in the union wage mark-up may be due to disparities in bargaining power or result from discriminatory trade union objectives. Our findings point to the importance of labor market institutions in shaping the economic assimilation of immigrants.

Keywords: Immigrants, Union objectives, Union wage mark-up, United States

JEL-codes: J15, J 31, J61, J51, J70

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1. Introduction

One of the main benefits of unionization is a higher wage. In the United States, this union wage mark-up amounted to around 20% in the 1990s. Since then, it has declined considerably (Fang and Hartley 2022, Macpherson and Hirsch 2023). An important reason for the fall of the union wage mark-up is certainly the decline in unionization. Currently, slightly more than 7% of private sector workers belong to a trade union. Further changes accompanied the fall in the union wage mark-up such as, for example, changes in the composition of the workforce. While in 1990 the labor force participation rate of women was about 18 percentage points lower than that of males, this difference had declined to 10 percentage points in 2023 (Bureau of Labor Statistics 2024a). In addition to a change in the gender composition, the share of immigrants in the labor force has basically doubled from about 9.4% in 1990 to 18.6% in 2023 (Migration Policy Institute 2004, Bureau of Labor Statistics 2024b). If women and immigrants benefit from unionization in terms of wages differently than men and natives, these alterations in the structure of the labor force may have contributed to the fall in the union wage mark-up. While there is some knowledge about gender-specific wage gains from unionization (Gosling and Lemieux 2004; Card et al., 2020), there are hardly any insights for immigrants. In this paper, we aim to fill this gap and investigate the union wage mark-up of immigrants in the United States in comparison to that of natives, i.e. the relative union wage mark-up, over three decades specifically for the period 1994-2023.

A priori, it is not obvious whether the union wage mark-up of immigrants will fall short of the wage gain obtained by natives, be of equal magnitude or exceed it. Over time, the attitude of unions toward immigrants in the United States has reversed. It is well documented that trade unions have historically discriminated against members of certain racial ethnic groups (Rosenfeld and Kleykamp, 2012). Unions often viewed new immigrants as competitors for jobs and as threats to the wages and working conditions of native workers (Ness, 2005). For a long time many labor organizations, such as the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), supported immigration restrictions (Briggs, 2001). However, in recent decades, particularly since the late 1990s and early 2000s, most trade unions have changed their positions and emphasized the organization of immigrant workers. If the legacy of anti-immigration attitudes still persists, one would expect a lower union wage mark-up for immigrants than natives. If, however, trade unions bargain the same wages for comparable workers, the wage mark-up for immigrants will exceed that for natives, given that immigrants earn less than natives in non-unionized settings.

Studies on the union wage mark-up for the United States are manifold, but do not look at immigrants. As a rare and partial exception, Schmitt (2010) provides descriptive evidence, based

on Current Population Survey data for 2003 to 2009, that the union wage mark-up among immigrants amounts to slightly more than 17% and is somewhat higher for males and in low-wage occupations. Hersch (2024) considers the impact of skin color of immigrants on wages and includes a union dummy in one specification, estimating a union wage mark-up of almost 0.09 log points. Neither study provides information on the wage mark-up for a comparable sample of natives. A comparison with the numbers provided by, for example, Card et al. (2020) suggests that the union wage mark-up of immigrants may be less than that for natives and particularly for males.

Further studies investigating whether and how the union wage mark-up for immigrants differs from that of natives look at other countries. Turner et al. (2014) document a mark-up of 8% for Irish nationals and 6% for non-Irish, with substantial variations according to the country of origin. Two more recent investigations use Norwegian data. Dodini et al. (2024) leverage a rise in the tax deductibility of union membership fees as an exogenous source of variation in membership. They show that the total earnings of native union members exceed those of non-members by about 0.10 log points. Immigrants from western countries experience a rise in total earnings of about 0.05 log points, while non-western immigrants do not benefit from union membership. Drange et al. (2024) estimate correlations between log hourly wages and immigrant status, the share of union members at the workplace and union membership. They find that both measures of unionization are negatively correlated with wages. Furthermore, interaction terms for being a first-generation immigrant and both indicators of unionization are significantly positive, whereas this is no longer the case for second-generation immigrants. The findings by Drange et al. (2024) suggest, in contrast to those by Dodini et al. (2024), that workplace unionization reduces the wage gap between immigrants and natives and that this effect is particularly pronounced for union members.[1] In sum, little is known about the effects of unions on the wages of immigrants, relative to the impact for natives. Moreover, the existing findings are somewhat contradictory.

Using data from the Current Population Survey (CPS) for the period 1994-2023, we establish that the union wage mark-up for natives averages about 0.14 log points, while it amounts to 0.1 log-points for immigrants. Therefore, on average immigrants benefit less from unionization than natives. An aggregation based IV-approach employing the union share by industry together with the applicability of right-to-work (RTW) laws as instruments, suggests that the observed effects can be interpreted causally. The difference in the union wage mark-up between natives and immigrants is more pronounced for males. It cannot be observed for white-collar employees,

[1] Also using Norwegian register data, Svarstad (2024) shows that union density at the workplace reduces the probability of being low paid, particularly for immigrants. Svarstad (2024) conjectures that a stronger effect of union density may result because immigrants are paid less than natives and trade unions focus on wage increases for those who are paid least.

immigrants who arrived in the United States early in their life and second-generation immigrants, that is, natives with at least one parent born abroad. Moreover, the differential union wage mark-up declines with successive cohorts of immigrants, especially those arrived more recently. Lastly, immigrants of different nationalities benefit from unionization to a substantially different degree, with individuals from Mexico obtaining a comparable or even greater union wage mark-up than natives. Our results suggest that variations across different groups of employees may be due to differences in bargaining power between natives and immigrants and result from discriminatory trade union objectives. Our findings highlight the importance of accounting for labor market institutions, such as unions, in the process of economic assimilation and integration of immigrants.

The remainder of the paper is structured as follows: we describe the attitude of unions in the United States towards immigration in more detail in Section 2. In Section 3, we outline the reasons why the union wage mark-up for immigrants may differ from that for natives. Section 4 describes the data and our empirical approaches. Section 5 presents the results and Section 6 concludes. An appendix provides details of some of the arguments only sketched in the main text and documents additional empirical findings.

2. Immigrants and Unions in the United States

For a long time, unions in the United States had been antagonistic to immigrant workers, both legal and illegal, though their attitude towards legal immigrants has softened over time. Unions frequently considered immigrants as a threat to natives and as competitors for their native members. In addition, they were considered to lower the wages of native workers, and as being responsible for a worsening of labor market conditions. This resentment has been particularly evident towards recently arrived immigrants (Rosenfeld, 2014).

The American Federation of Labor (AFL), founded in 1886, has historically been hostile to immigrants (Ness, 2005), and has continuously supported restrictions on immigrants until very recently. From the 1960s through the 1980s, while the labor movement backed the ending of national origin quotas under the 1965 Immigration and Nationality Act, unions still sought some method to enforce immigration laws against employers. The AFL and the Congress of Industrial Organizations (CIO) lobbied for the 1986 Immigrant Reform Act that imposed sanctions on employers who hired immigrants, especially undocumented workers. The legislation had a minimal effect on illegal hiring practices of employers and just gave them the opportunity to oppose and fight organizations from immigrants, during the exact time employers were facing unions. Starting in the 1980s, several leading unions began to organize Latino immigrants

employed in low-wage sectors. This was partially a reflection of the new influx of Mexicans who had become the largest Latino subgroup and met the need of growing demand for low-skilled labor (Ness, 2005).

In the 1990s, AFL demonstrated once again the hostile attitude towards immigrants by backing the harshly restrictionist Immigration Act of 1924, which closed the door to European immigrants and affirmed closure of migration to Asians for the next four decades. During the same decades, unions experienced an erosion in their power to defend job standards, on the one hand (Ness, 2005), while on the other hand industry- and worker- specific unions thrived, especially those organizing workers with low-skilled jobs. That was the case for Mexican activist workers who founded the Mexican Workers Association in 1996 that, seeking to improve wages and working conditions, mobilized workers leading to several protests and strikes.

In the early 2000s, there was explosive growth in the number of immigrant workers employed in areas traditionally dominated by unions (Kreychman and Volik, 2006). At the same time, the number of workers who belonged to unions declined. In 2000, the executive council of the AFL-CIO reversed its policy towards immigrants, by first opposing the I-9 forms restriction on undocumented immigrants, particularly the deportation of undocumented workers,[2] and then by making the legal and human rights of immigrant workers a central part of the national programs. In addition, the council supported a path to citizenship. Ness (2005) explains that this change in attitudes was mainly due to two aspects: firstly, AFL-CIO had been unable to influence federal trade policy; secondly, AFL-CIO had been under pressure from workers and activists and recognized that labor did not stop immigrants, while immigrant workers were pushing for a new stance on government restrictions.

The change in the attitude of unions towards immigrants has also been motivated by the fact that the traditional unionized industries such as building, health care, delivery services, have seen an increasing number of immigrants (legal and illegal) especially in white-collar and low-skilled jobs, while in the past decades unionization has decreased. Therefore, reversing the attitude towards immigrants, by welcoming them and seeing them as potential members has been a strategic step in trying to reverse the trend of declining membership (Turner et al., 2014).

[2] The I-9 form, the employment eligibility verification, is a document used to verify the identity and employment authorization of individuals hired for employment in the United States. All employers are required to complete this form for each employee. For immigrants, this allows the verification of legal status and employment authorization. For details see https://www.uscis.gov/i9#:~:text=Use%20Form%20I%2D9%20to,employment%20in%20the%20United%20States.

3. Immigrants and the Union Wage Mark-up: Theoretical Considerations

There are various reasons why the union wage mark-up for immigrants may differ from that for native employees. We categorize these arguments into four groups:

Bargaining Objective

The objective trade unions pursue when negotiating wages can have a decisive impact. There are at least three feasible approaches, with divergent consequences for the magnitude of the relative union wage mark-up.

First, suppose that trade unions do not differentiate in their objectives between natives and immigrants and, therefore, attempt to negotiate identical wages for all unionized workers. As immigrants are paid less than natives with similar observable characteristics (Dostie et al., 2023), we can expect a larger union wage mark-up for immigrants than natives (see, also, Dodini et al., 2024). As this outcome results automatically if trade unions do not distinguish their members according to the country of birth, we will refer to such an equalizing impact of unionization as the mechanical effect of an encompassing wage policy.

Second, it is often claimed that trade unions aim to reduce wage inequality, that is, aspire to raise the wages of low-income individuals by more than those of higher income employees (see, for example, Card et al., 2020; and Farber et al., 2021). Because immigrants tend to be less qualified than natives and to work in lower paid jobs, they will benefit disproportionally from an egalitarian union objective. Therefore, the egalitarian bargaining perspective suggests that the union wage mark-up for immigrants is higher than for natives, especially for immigrants with lower skills and to a lesser extent or not at all for high-skilled immigrants.

Third, as outlined in the previous section, trade unions in the United States have for a long time opposed immigration and have rarely placed the fate of immigrants at the top of their agenda (Briggs, 2001; Ness, 2005; McGovern, 2007; Boräng et al., 2020). Therefore, the payoffs of immigrants may have a lower weight in union objectives than the payoffs of natives. If trade unions can differentiate wages according to workers' origins, the above line of argument suggests that the union wage mark-up for immigrants will be lower than that for natives.[3] We refer to this line of reasoning as the discriminatory bargaining objective.

[3] This kind of wage differentiation does not have to be explicit but could also occur implicitly. This would be the case if, for example, natives and immigrants work in different firms, regions or sectors and trade unions focus on firms, regions and sectors in which primarily natives work. A greater union wage mark-up for natives can also be expected if trade unions aim to maximise wage-related membership dues or there is no trade union objective as such and the median member determines union preferences, given that the majority of members are natives (Dodini et al., 2024).

Bargaining Power

There is substantial evidence that immigrants are less likely to belong to a trade union than natives. This is also true for the United States, as we document below. It has even been claimed that "immigrants reduce unionization" (Nowrasteh et al., 2022), though this may have been different in the early 20th century (Medici, 2024). Therefore, a union's bargaining power when representing a workforce with a larger share of immigrants is likely to be smaller than if the employees it bargains for are predominantly natives. Since a lower bargaining power plausibly translates into a smaller wage increases, the bargaining power argument suggests that the union wage mark-up is lower for immigrants than for natives.

Wages Reflecting Union Organizing

If immigrants are, ceteris paribus, more difficult to organize than natives (Burgoon et al., 2010; McGovern, 2007), firms with a larger share of immigrants in their workforce are less likely to be unionized than otherwise identical firms with a higher fraction of natives. If firms with a high immigrant share are nonetheless unionized, the expected gains from unionization, that is, the anticipated wage increase, must have been larger than in firms with a lower immigrant share. Therefore, the selection argument implies that the union wage mark-up for immigrants is larger than for natives.

Productivity Effects

Finally, a difference in the union wage mark-up for natives and immigrants can arise if the negotiated wage reflects the workers' productivity. Such a relationship is likely to exist, for example, if unions have greater chances to establish collective bargaining for high productivity firms or jobs. It can then be shown that the implications for the union wage mark-up are ambiguous. If immigrants are less productive, while the likelihood of unionization across the productivity distribution is the same for natives and immigrants, the immigrants' union wage mark-up will be smaller than of more productive natives. If, however, productivities are the same and an immigrant is less likely to be a union member than a native, the average immigrant productivity will be higher. Accordingly, the wage mark-up of immigrants will exceed that of natives (see Appendix 8.1 for a simple example establishing both effects on the relative union wage mark-up).

Summary

A greater union wage mark-up for immigrants than natives is consistent with the mechanical effect, an egalitarian bargaining objective and the selection perspective. A smaller union wage mark-up for immigrants than natives could be explained by a discriminatory bargaining objective and a lower unionization rate of immigrants via the bargaining power

perspective. The productivity-based explanation for a union wage mark-up yields ambiguous predictions. While the above explanations may partially overlap, the analytical distinction can subsequently help us to interpret empirical findings and rule out some explanations.

4. Data and Methodology

4.1 Data

Our main data is drawn from the Current Population Survey (CPS) from 1994 to 2023, available through the Integrated Public Use Microdata Series (IPUMS) (Flood et al. 2024). It represents the best large-scale, nationally representative data set for the United States (Antman et al., 2023), which enables analyzing how labor market outcomes vary between natives and immigrants, as well as by the immigrants' country of birth and time of arrival, along with other individual dimensions.

Specifically, we use outgoing rotation group microdata. The CPS is a monthly household survey conducted jointly by the United States Census Bureau and the Bureau of Labor Statistics. It covers standard questions about labor force participation and employment outcomes, along with important demographic information. We follow the literature (Antman et al., 2023) and use data from the fourth month that a household appears in the CPS sample corresponding to the first time a household emerges in the outgoing rotation group sample. In doing so we avoid duplications of individuals. The CPS provides information on the hourly wage, our main outcome variable, only for those paid by the hour (57% of the current sample). For individuals reporting not to be paid by the hour, we derive the hourly wage by dividing usual weekly earnings (including overtime pay) by usual weekly hours worked. We deflate wages into constant dollars at 1994 using CPI-U.

Workers can be defined as unionized if they report being a member of a union or as being represented by a union in the workplace. In the current sample, the vast majority of workers represented by a union are also members (e.g. 89% in 1994 and 90% in 2023). Therefore, we classify an individual as unionized if the worker reports being a member of or represented by a union.

The CPS collects information on the country of birth of individuals since 1994. Moreover, it includes information on the parents' country of birth. We define first-generation immigrants as those individuals who report being born outside the United States. While we focus on the first-generation, we can also identify second-generation immigrants as United States-born individuals having at least one foreign-born parent. The CPS provides information on the year a first-generation immigrant respondent moved to the United States in broad bands, but not on the exact

year. Moreover, from the late 1990s onwards some years appear in more than one band: for this reason a small number of observations reporting the same year of arrival appear in two different categories. We create seven categories to describe the year of arrival: arrived in the 1950s-1960s; 1970s; 1980s; 1990s-2000s; 2000s-early 2010s; 2010s, 2020s.[4] Despite the lack of accuracy in identifying the exact date of arrival to the United States, the categories still allow us to broadly evaluate of the role of the time of arrival.

Turning to other covariates, potential labor market experience is constructed as age minus years of completed education (adjusted for school starting age). Following the existing literature (Lemieux, 2006), we derive years of completed education and create three educational categories, low, intermediate and higher education. In addition, we distinguish between high-skilled and low-skilled, as well as blue-collar and white-collar workers.[5]

We limit the sample to part-time and full-time employees aged 21-64. In addition, we focus on the private sector because the unionization rate differs dramatically between the private and the public sector and is much higher in the latter. Besides, most immigrants are employed in the private sector (90% in 2023). Furthermore, we exclude observations whose real hourly wage falls in the 1st percentile or exceeds the value defining the 90th percentile to account for outliers, as well as observations for which wages have been top-coded.[6] Our final sample consists of 1,635,558 observations, of which 241,412 are immigrants, representing 17.5% of all workers. All descriptive statistics and estimations use the sample/earning weights.

4.2 Methodology

We begin our analysis by estimating standard Mincer wage equations separately for natives and immigrants and jointly for all workers, using a pooled ordinary least squares estimator (POLS):

$$(1) \qquad w_{it} = \beta_1 U_{it} + \beta_2 X_{it} + \beta_3 0_{it} + \sigma_k + \varphi_s + \gamma_t + \varepsilon_{it}$$

In equation (1), w_{it} is the log hourly wage of individual *i* in year *t,* U_{it} is the dummy variable which indicates that the worker is unionized in a specific year, and X_{it} includes a set of control variables detailed in the previous subsection. 0_{it} is a dummy variable indicating the two-digit

[4] For example, the category 'Arrived in the 2020s' includes a small number of observations from the band 'arrived between 2018-2020'.

[5] We provide details for the educational and occupational classifications in Appendix 8.2.

[6] Restricting the analysis to address top-coding is common in these type of study (Nicolau et al., 2023; Jensen and Shore, 2015). The highest earnings values for usual weekly earnings are currently top-coded to a set value of $2,884.61. Average hourly earnings are top-coded such that an individual's average hourly earnings multiplied by the usual hours worked does not exceed $2,884.61. Top-coding has important implications for a wage analysis, by lowering the mean and the variance of the wage data relative to the true mean and variance (Schmitt, 2008). Additionally, it can be problematic if it implies an unusually high value of the density (Firpo et al., 2018).

occupation of the individual. Finally, σ_k, φ_s and γ_t are fixed effects for industry, state and year, respectively.

We then move to the interaction between union and immigration status. In this way we can directly estimate the difference in the union wage mark-up between natives and immigrants. Specifically, we estimate the following equation:

$$(2) \qquad w_{it} = \beta_1 U_{it} + \beta_2 I_i + \beta_3 U_{it} I_i + \beta_2 X_{it} + \beta_5 0_{it} + \sigma_k + \varphi_s + \gamma_t + \varepsilon_{it},$$

where the dummy variable I_i indicates the immigrant status of an individual, and the main coefficient of interest is β_3, that is, the coefficient on the interaction between union status and immigration status, $U_{it} I_i$.

4.3 Endogeneity and Instrumental-variable Strategy

Making causal inferences of the effects of unions on wages can be a challenge (Blanchflower and Bryson, 2003), most of the time due to the absence of exogenous variation in unionization. Unionized and non-unionized workers are likely to have different unobserved characteristics which can lead to a selection bias. The non-random selection may vary depending on the distribution of wages, sector of employment, and region of the country, among other factors. While it is not possible to fully eliminate any bias by employing an instrumental variable (IV) approach, we can at least provide insights on the likely direction of any such bias and the ways in which it could affect the results. It is important to underline that the main aim of our study is to explore the extent to which unions contribute to a reduction (or an increase) of the wage gap between natives and immigrants. Hence, the IV approach is an attempt to address endogeneity and should be regarded as exploratory.

Our IV strategy relies on an aggregation approach (see, for examples, Bilanakos et al., 2018; Cornelissen et al., 2011; Fisman and Svensson 2007; Lai and Ng 2014; Wößmann and West 2006). More specifically, we follow Machin and Wadhwani (1991) who first introduced such an approach in the union setting deriving an aggregation variable by industry as instrument for individual union membership.

Further, we derive the union share not only by 2-digit industry, but also by the states that passed (or did not pass) right-to-work- (RTW) laws. In so doing, the IV takes into account the increased (decreased) bargaining power of the union as union density rises (decreases), specifically varying across sector in states with RTW in place, and those without RTW.

Under the 1935 National Labor Relations Act, workers covered by collective bargaining agreements receive the same benefits from unionization, including the same compensation,

irrespective of their union membership status. In 1947, following the Taft-Hartley Act passage, U.S. States were able to introduce "right-to-work" laws that make it no longer compulsory for workers covered under a collective bargaining agreement to pay union fees (Fortin et al., 2023). Such law has been passed in 27 states in the United States. Nine such RTW-laws have been introduced since 2001 (for details see Table A1 in Appendix 8.3). In an RTW-state, workers can join a unionized establishment without paying fees, and free-ride on the benefits of union activities.

Based on the idea that the density of unions across sectors varies between states that have passed the RTW-laws and those that have not (Fortin et al., 2023), we derive the share of unionized workers by 2-digit industry, year and RTW-states. In so doing we are able to account for industries characterized by higher (lower) density of unions. Figure A1 (in Appendix 8.4), based on a 1-digit industry classification, demonstrates that the density of unions varies between RTW- and non-RTW-states and that sectors within the RTW-states are consistently characterized by a lower union density compared to the same sectors in non-RTW states.

When calculating the share of unionized workers for an employee's industry, we exclude that employee. The share of union employees in a particular industry (and RTW-states) reflects the propensity to be unionized within a narrowly defined industry. Deriving the share of unionized workers by industry, accounting for RTW-laws, induces exogenous variation in union density across industries, states and time.

The validity of the instrument requires that the share of unionized workers in the detailed industry has no direct influence on the worker's personal wage or, if anything, only indirectly through the likelihood of being unionized within the industry. Following Angrist and Pischke's (2009) considerations on instruments, we include the broadly defined one-digit industry dummies and, hence, account for broad industry fixed effects.

The introduction of an RTW-law has been interpreted as a negative shock to the bargaining power of workers and while the use of the RTW variation across states has recently been adopted to estimate the causal effect of union on labor market outcomes (Chava et al., 2020; Fortin et al., 2023; Gihleb et al., 2024), to the best of our knowledge this is the first study to implement such a methodology comparing the union wage mark-up for immigrants and natives.

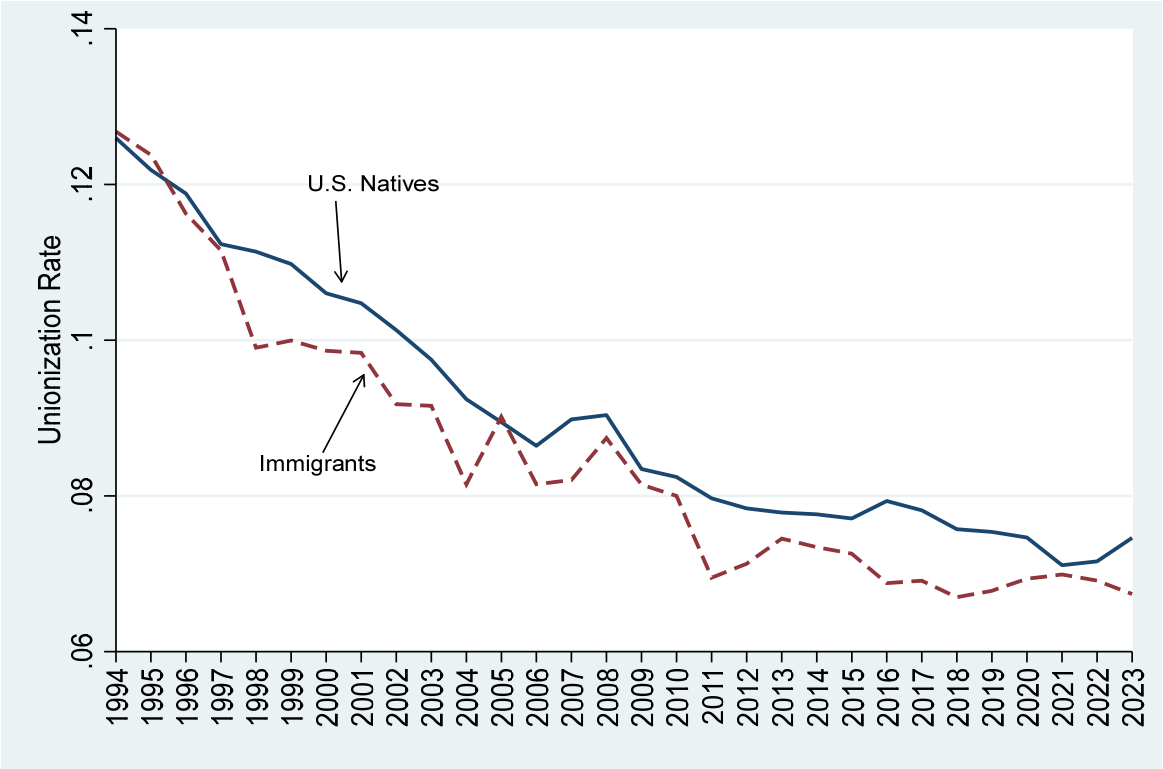
5. Results

5.1 Descriptive Evidence

Figure 1 plots the unionization rate for natives and immigrants in the private sector for the period 1994 to 2023. The unionization rate among natives has declined from 12.6% to 7.5%, that

is, by about 40%, while the fall among immigrants from 12.8% to 6.7% has been slightly more pronounced. It is noteworthy, that the average unionization rate in the private sector of 8.5% among immigrants is lower than the rate of 9.2% among natives. This difference is relatively small and almost non-existent in some years.[7] The fraction of immigrants in the unionized and non-unionized labor force has risen at almost the same pace over the last three decades (see Figure A2 in Appendix 8.4 for details). Accordingly, the share of unionized workers who are immigrants has gone up.

Figure 1: Unionization rate in the private sector by place of birth, 1994-2023

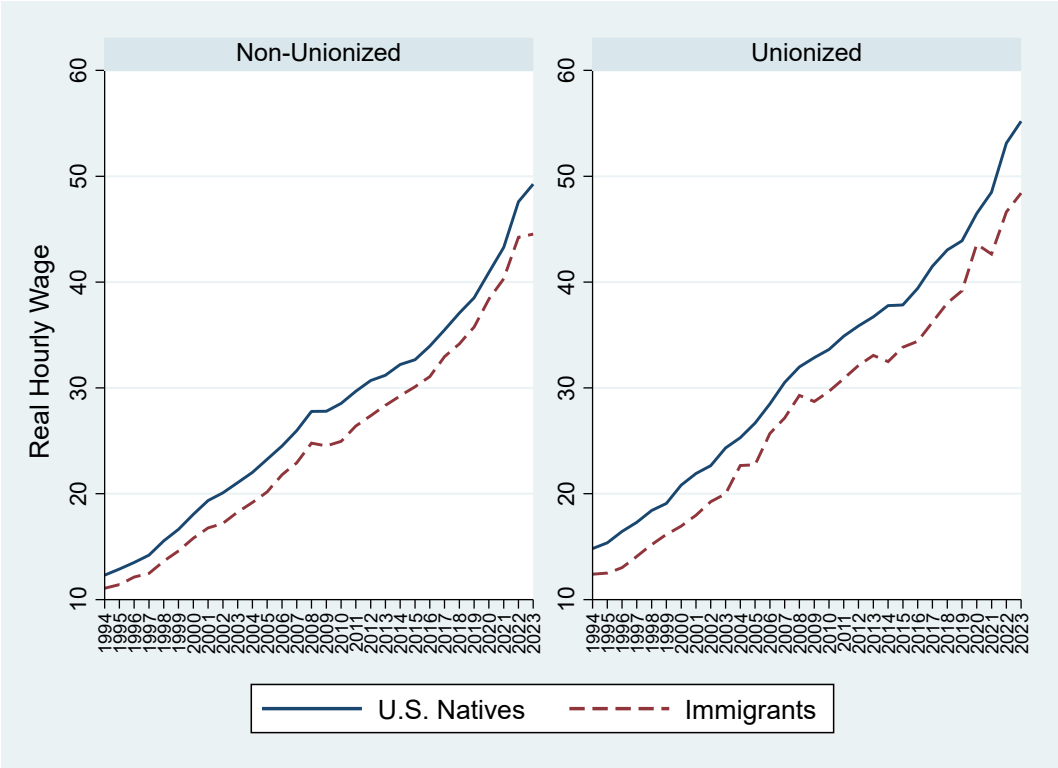


Notes: Based on 1994–2023 Current Population Survey outgoing rotation group microdata from IPUMS-USA.

Figure 2 plots real hourly wages in the private sector for natives and immigrants, distinguishing between unionized and non-unionized workers.

[7] The picture is slightly different when including the public sector. The unionization rate for the entire economy for natives has decreased from 18.6% in 1994 to 12.6% in 2023, while for immigrants the rate declined from 16.2% to 9.4% over the same period.

Figure 2: Real hourly wage in the private sector by place of birth and union status, 1994-2023



Notes: Based on 1994–2023 Current Population Survey outgoing rotation group microdata from IPUMS-USA.

Figure 2 documents a union wage mark-up for immigrants and natives. Moreover, it clarifies that the wage gap between natives and immigrants is larger for unionized than non-unionized workers. The respective gaps appear to be relatively stable over time. For example, in 1994 the real hourly wages of non-unionized and unionized natives were $11.80 and $14.70, respectively. For immigrants, the respective numbers were $10.20 and $12.00. These numbers result in a union wage mark-up of 24.6% for natives and 17.6% for immigrants. In 2023, for natives the real hourly was $56.00 and $61.30 for non-unionized and unionized workers, respectively, while immigrants were paid $51.40 and $54.40 on average. Thus, the union wage mark-up has declined to 9.5% for natives and 5.8% for immigrants. The decline over time is more pronounced for immigrants. Therefore, the descriptive evidence suggests that immigrants benefit less from unionization than natives and that this disadvantage has decreased over the last thirty years.

Because immigrants differ in various socio-demographic characteristics from natives (see Tables A2a in Appendix 8.3), we next turn to regression analyses to accommodate such differences.

5.2. Main Correlation Results

In this section we present the results from pooled ordinary least squares (POLS) specifications. The results depicted in Table 1 are based on equation 1 for natives (Column 1) and immigrants (Column 2), and on equation 2 for the interaction model (Column 3). For ease of presentation, we only display the main variables of interest.[8]

Table 1. POLS estimates of unions on wages

	(1)	(2)	(3)
VARIABLES	Natives	Immigrants	All workers
Union	0.141***	0.118***	0.148***
	(0.004)	(0.012)	(0.005)
Immigrant			-0.021***
			(0.007)
Union X Immigrant			-0.040***
			(0.010)
Constant	1.685***	2.068***	1.727***
	(0.282)	(0.060)	(0.278)
Observations	1,394,146	241,412	1,635,558
R-squared	0.632	0.651	0.633

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, for immigrants, controls also include decades of arrival. For the full results, see Table A3 in Appendix 8.3. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

The wage mark-up equals 0.14 log points for natives and 0.12 log points for immigrants. This magnitude is in line with the existing literature (see, for example, Artz et al. (2022); Card et al. (2020); Macpherson and Hirsch (2023); Blanchflower and Bryson (2025), and Fang and Hartley (2022) for a recent survey). The interaction model suggests that unionized immigrants earn on average 0.04 log points less than unionized natives. Figure A3 (in Appendix 8.4) plots the main coefficients of Table 1 over time, and shows that the union-wage gap between natives and immigrants remains persistent, although it has slightly decreased since 1994. Figure A4 in Appendix 8.4 plots the native-immigrant union wage gap coefficients.

We obtain identical results to those depicted in Table 1 if we additionally include a control variable measuring the share of immigrants among all employees in a federal state in a given year or of unionized immigrants among all employees.[9] Accordingly, the union wage mark-up for

[8] As a robustness check we use union membership instead of representation as the main independent variable, and we also include public sector employees. Results do not qualitatively change (see Tables A4 and A5 in Appendix 8.3).
[9] Results are not reported but available upon request.

immigrants relative to that of natives does not vary with the importance of immigrants in the local labor market or their local union representation.

The estimation results confirm the impression obtained from the descriptive analysis that natives benefit more from unionization than immigrants in terms of wages. The findings are consistent neither with the mechanical effect resulting from an encompassing bargaining objective outlined in Section 3, nor a positive selection of immigrants, nor an egalitarian union objective. Instead, the correlation analysis suggests that immigrants have a lower bargaining power or suffer from discriminatory trade union bargaining objectives. We will subsequently pay special attention to the latter two potential explanations.

5.3 IV-Results

Table 2 reports the findings from the IV-approach. First stage results document that our instrumental variable is significantly associated with unionization (see Panel A). The association is slightly weaker when analyzing immigrants only, but still highly statistically significant. As shown by the Anderson Rubin test and the Wald test, the hypothesis of a weak instrument is rejected. Moving to the second stage results depicted in Panel B, estimates confirm that immigrants benefit less from being unionized than natives, while suggesting a downward bias of the OLS estimates.

The magnitudes of the results are comparable to those by Fortin et al. (2023) for the period 2003 to 2019, who find that the IV-approach yields an estimate of 0.354 compared to an OLS estimate of 0.161, using a similar approach as we do. Additionally, Card (1995) points out that larger IV estimates can suggest that these results are explained by the existence of heterogeneity in individual mark-ups. Following Ichino and Winter-Ebmer (1999), we moreover speculate that the IV can be used to approximate the range of variations of union mark-ups. Taking endogeneity of unions into account, the estimated coefficients from the IV estimates confirm the main pattern of the OLS estimates, namely that immigrants benefit less from unionization than their native counterparts.

Table 2: IV results

	(1)	(2)	(3)
VARIABLES	Natives	Immigrants	All workers
Panel A: First Stage			
Union share by industry, year and RTW-states	0.836***	0.636***	0.856***
	(0.031)	(0.022)	(0.033)
Union share X Immigrant			-0.294***
			(0.042)
Anderson Rubin test (p-value)	20.19	11.43	19.24
	(0.0000)	(0.0007)	(0.0001)
Wald test (p-value)	146.04	50.42	214.51
	(0.000)	(0.000)	(0.0001)
Panel B: Second Stage			
Union	0.322***	0.249***	0.354***
	(0.027)	(0.035)	(0.026)
Immigrant			0.002
			(0.006)
Union X Immigrant			-0.243***
			(0.041)
Constant	1.961***	1.934***	2.087***
	(0.026)	(0.036)	(0.065)
Observations	1,394,132	241,408	1,635,540
R-squared	0.623	0.645	0.624

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, for immigrants controls also include decades of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.4 Worker Heterogeneity

Having established the relative union wage mark-up for the entirety of private sector workers, we next analyze whether the mark-up varies across different groups of individuals. We consider characteristics that have been found relevant as determinants of wages and the economic assimilation of immigrants. In particular, we explore heterogeneity by gender, occupation (blue- and white-collar workers differentiated by skill-level) and education (lower, intermediate, and higher).

Gender

Research looking into the gender variation of the union wage mark-up has provided important insights. Blanchflower and Bryson (2010) estimate trends in the union wage mark-up by gender in the public and private sectors for the periods 1993–1999 and 2000–2006 for the

United States and find that the mark-up for females is larger than that for males in both sectors in both periods. Card et al. (2020) estimate that, unlike male workers, unions have little impact—or even a small dis-equalizing effect—on female wage inequality. Additionally, while most of the immigration research has focused on males, the limited research accounting for female immigrants has shown that male and female immigrants differ in their economic assimilation, with gender differences often more pronounced among immigrants than natives (Zaiceva and Zimmermann 2014), and with female immigrants from non-English speaking countries experiencing a double disadvantage (Le and Miller 2010).

To account for the possibility that the difference in the union wage mark-up between natives and immigrants varies between males and females, we first estimate equation (1) for natives and immigrants and add an interaction term of the dummy variables for being unionized and being female. Second, we estimate equation (2) separately for males and females.

Table 3: POLS estimates of unions on wages by gender

	(1)	(2)	(3)	(4)
VARIABLES	Natives	Immigrants	Males	Females
Union	0.161***	0.139***	0.164***	0.104***
	(0.004)	(0.010)	(0.004)	(0.006)
Female	-0.119***	-0.106***		
	(0.004)	(0.006)		
Union X Female	-0.059***	-0.054***		
	(0.006)	(0.008)		
Immigrant			-0.032***	-0.007
			(0.007)	(0.010)
Union X Immigrant			-0.038***	-0.022*
			(0.008)	(0.012)
Constant	1.685***	2.067***	1.663***	1.808***
	(0.282)	(0.059)	(0.264)	(0.038)
Observations	1,394,146	241,412	844,624	790,934
R-squared	0.632	0.651	0.613	0.652

Notes: Models estimated using 1994-2023 CPS data. Controls include years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, for immigrants controls also include decades of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Columns 1 and 2 of Table 3, which contains the estimation results for the main variables of interest, indicate that the union wage mark-up among males amounts to 0.16 log points for natives and to 0.14 log points for immigrants. Among females, the mark-up is 0.05 to 0.06 log points lower. Furthermore, Table 3 indicates a gender wage gap among non-unionized workers of about 0.12

log points for natives and slightly less than 0.11 log points for immigrants (Columns 1 and 2), while the gender wage gap among unionized workers is substantially larger and amounts to about 0.18 log points for natives and 0.16 log points for immigrants. Accordingly, unionization can be argued to aggravate the gender wage gap (see Rosenfeld 2014), both for natives and for immigrants. Our findings clarify that the smaller wage gain from unionization for females does not depend on whether an individual was born in the United States or abroad. A similar picture emerges from the estimation of equation (2), as depicted in Columns 3 and 4 of Table 3.

The findings concerning gender effects are consistent with the bargaining power argument, if the unionization rate indicates a group's bargaining strength. Between 1994 and 2023 about 12% of male, native workers in the private sector were unionized, while the percentage among male immigrants was about 3 percentage points lower. Among females, the unionization rate was 6% for natives and 8% for immigrants. Moreover, our results are compatible with a discriminatory union objective particularly for males.

Occupation

We next examine the mark-up across occupational categories by distinguishing between low- and high-skilled blue-collar and low- and high-skilled white-collar workers. As pointed out by Card et al. (2020), union jobs were historically concentrated among low-skilled workers in private sector industries. Therefore, such disaggregation is particularly relevant in this context. Comparing workers across different occupational dimensions is particularly important when focusing on immigrants. It has been shown that occupational wages can affect immigrants and their offspring in the United States through multiple channels and can then strongly affect their economic assimilation (Zhan, 2022). Immigrants and natives specialize in occupations requiring different skills, and even within the same level of education, natives and immigrants will focus on occupations requiring tasks in which they have a comparative advantage (Peri and Sparber 2011).

The findings from estimating equations (1) and (2) separately for high- and low-skilled white-collar employees are depicted in Panel A of Table 4, while Panel B contains the results for blue-collar workers. The union wage mark-up of blue-collar workers is substantially higher than for white-collar employees, both for natives and immigrants. Furthermore, Table 4 clarifies that the lower union wage mark-up for immigrants than natives is primarily an effect that occurs for blue-collar workers of lower skills.

Table 4: POLS estimates of unions on wages by occupation and skill

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*High-skilled*			*Low-skilled*		
Panel A: White-collar workers	*Natives*	*Immigrants*	*All*	*Natives*	*Immigrants*	*All*
Union	0.067***	0.056***	0.067***	0.105***	0.091***	0.108***
	(0.005)	(0.018)	(0.005)	(0.004)	(0.009)	(0.005)
Immigrant			-0.016			-0.014*
			(0.010)			(0.008)
Union X Immigrant			-0.015			-0.018
			(0.011)			(0.012)
Constant	1.777***	1.494***	1.664***	1.539***	1.645***	1.600***
	(0.302)	(0.203)	(0.293)	(0.040)	(0.142)	(0.026)
Observations	517,303	67,198	584,501	510,731	89,987	600,718
R-squared	0.598	0.581	0.595	0.587	0.57	0.582
Panel B: Blue-collar workers						
	Natives	*Immigrants*	*All*	*Natives*	*Immigrants*	*All*
Union	0.199***	0.197***	0.204***	0.182***	0.131***	0.187***
	(0.006)	(0.011)	(0.007)	(0.000	(0.016)	(0.007)
Immigrant			-0.033***			-0.022*
			(0.010)			(0.013)
Union X Immigrant			-0.009			-0.056***
			(0.011)			(0.015)
Constant	1.876***	2.110***	1.979***	2.175***	2.479***	2.231***
	(0.069)	(0.195)	(0.056)	(0.068)	(0.128)	(0.048)
Observations	189,233	44,212	233,445	176,879	40,015	216,894
R-squared	0.594	0.613	0.6	0.6	0.622	0.604

Note: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation dummy, state dummy, sector-years dummies, for immigrants controls also include decades of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The unionization rate of blue-collar workers (17.8%) is much higher than for white-collar workers (5.7%), with only small differences according to the skill level within each group. Moreover, the unionization rate of immigrants among white-collar employees exceeds the rate among white-collar natives by about 30% (7.9% and 5.5%, respectively), while for blue-collar workers the unionization rate among natives is twice as high as among immigrants (19.8% and 10.8%, respectively) (see Table A2b in Appendix 8.3). The findings for white-collar employees and low-skilled blue-collar workers are therefore consistent with the bargaining power perspective.

The results for high-skilled blue-collar workers do not support this line of argument as their lower unionization rate results in less bargaining power which, in turn, suggests a lower union wage mark-up that we do not observe. The findings for blue-collar workers shed additional light on the hypothesis of discriminatory union objectives. If such objectives exist, they appear to be restricted to trade unions representing low-skilled blue-collar workers. Such results are consistent with the position that unions had in the past towards immigrants.

Education

Lastly, we analyze the union mark-up by the level of education. As the main factor determining human capital, education remains crucial in any analysis of the native-immigrant wage gap and is considered a key determinant for an economic assimilation of immigrants.

When we estimate equations (1) and (2) separately for workers with lower, intermediate and higher education, we observe that the union wage mark-up declines with the level of education both for natives and immigrants. Moreover, for all educational groups the union wage mark-up is about 0.02 to 0.03 log points lower for immigrants than for natives (see Table A6 in Appendix 8.3). Therefore, the level of education does not seem to contribute to the explanation of the difference in the union wage mark-up for native Americans and immigrants.

The unionization rate of immigrants with lower education level falls short of that of natives with comparable education. For workers with intermediate and higher education levels, unionization among immigrants is higher than natives (see Table A2b in Appendix 8.3). Given these features, our findings do not support the bargaining power perspective. Instead, they are compatible with discriminatory trade union objectives. This is also captured by the interaction effect between union and immigrants, showing that across different levels of education, the union-wage penalty of immigrants ranges between -0.035 and -0.041 (see Table A6, Columns 6 and 9, in Appendix 8.3), which is very similar to the initial estimation (see Table 1, Column 3).

If the unionization rate is a good approximation of the bargaining strength of a subgroup of workers, the evidence presented in this sub-section provides limited support for the hypothesis that differential union wage mark-ups for natives and immigrants are the consequence of diverging levels of bargaining strength. There are many subgroups for which a lower union wage mark-up and a higher unionization rate of immigrants co-exist. Interestingly, the lower union wage mark-up can neither be observed for white-collar employees nor high-skilled blue-collar workers and is discernible to a much smaller extent for females than males. Therefore, our findings are compatible with discriminatory union objectives for some groups of employees, but certainly not for all.

5.5 Immigrant Heterogeneity

We next look at heterogeneity among immigrants. The analyses are motivated by the following features: Immigrants differ, for example, with regard to the degree of integration into the American labor market, experience with the education system, the period when they started working in the United States and their country of origin. It is conceivable that the effect of unions on the wages of immigrants may differ across these dimensions. More specifically, we look at second-generation immigrants who have so far been included in the group of natives. We also differentiate (first-generation) immigrants according to their year and age at arrival. Finally, we look at the country of birth.

Second-generation Immigrants

First and second-generation immigrants are likely to differ with regard to various aspects. It has often been found that wage differentials persist in successive generations (Borjas, 2015, Abramitzky et al., 2014). Moreover, first-generation immigrants are likely to be employed in different occupations and might be less productive than the native population as they lack domestic human capital and are, therefore, paid less (Chiswick, 1978; Fortin et al., 2016). It also has been pointed out that the human capital of first- and second-generation immigrants may differ in quality (Ochmann, 2024). Lastly, it is possible that first-generation immigrants face discriminatory barriers into occupations (Collins and Moody, 2017). Given these considerations, we would expect that the differential union wage mark-ups between natives and immigrants are primarily due to lower pay for first-generation immigrants, whereas second-generation immigrants are more similar to individuals born in the United States.

Table 5 reports our findings for which we categorize second-generation migrants as migrants instead of as natives, as we did in the previous analyses. Consequently, the group of natives is defined more narrowly 5. Table 5 indicates that first-generation immigrants are paid less than second-generation immigrants and natives (narrowly defined). The union wage mark-up for first-generation immigrants is about 0.04 log points less than that of natives. The union wage mark-up of second-generation immigrants does not differ significantly from the union wage mark-up of natives. Accordingly, the lower union wage mark-up for immigrants persists for at most one generation.

Table 5: POLS estimates of unions on wages of immigrants by generation

VARIABLES	
Union	0.148***
	(0.005)
First-generation immigrant	-0.026***
	(0.009)
Second-generation immigrant	-0.008
	(0.007)
Union X First-generation immigrant	-0.039***
	(0.010)
Union X Second-generation immigrant	0.001
	(0.005)
Constant	1.720***
	(0.279)
Observations	1,635,558
R-squared	0.633

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, for immigrants also decades of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The unionization rate of second-generation immigrants in the private sector (9.1%) is about the same as that of natives (9.2%) and slightly higher than that of (first-generation) immigrants (8.5%). Therefore, the findings depicted in Table 5 are consistent with a bargaining power explanation. Moreover, if the lower union wage mark-up for immigrants is due to discriminatory union bargaining objectives, the absence of a second-generation immigrant difference in the union wage mark-up suggests that such discrimination does not persist over generations.

Age of Arrival

The findings reported in Table 5 indicate that the children of immigrants face no wage penalty because of their ancestry, irrespective of whether they are unionized or not. Such catching up to natives may, however, be feasible in less than one generation. To scrutinize this conjecture, we differentiate first-generation immigrants further. Age of arrival can affect economic (and social) assimilation because immigrants arriving at a younger age will find it easier to adapt to the receiving country's culture and will have spent more time in the same educational system as natives. In consequence, the younger an individual is at the time of arrival, the more likely that the assimilation effect observed for second-generation immigrants is also discernible for first-generation immigrants. Accordingly, we next consider the union wage mark-up of immigrants by

age of arrival. More specifically, we distinguish between those who arrived at a younger age (age 19 or younger) and those who came to the United States aged 20 or older.

Table 6: POLS estimates of unions on wages of immigrants by age of arrival

VARIABLES	
Union	0.147***
	(0.005)
Immigrant arrived at age 19 or younger	-0.005
	(0.007)
Immigrant arrived at age 20 or older	-0.045***
	(0.008)
Union X Immigrant arrived at age 19 or younger	-0.014
	(0.011)
Union X Immigrant arrived at age 20 or older	-0.050***
	(0.009)
Constant	0.147***
	(0.005)
Observations	1,635,558
R-squared	0.633

Notes: Models estimated using 1994-2023 CPS data. Controls include: gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, decade of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The estimates reported in Table 6 show that the union wage mark-up of those immigrants who arrived in their teens is about the same as that of natives. In contrast, the mark-up of immigrants who arrived in the United States at age 20 or older is 0.05 log points lower than that of natives. These results indicate that immigrants become comparable to natives if they arrive early enough in their life.

As the unionization rate of immigrants who arrived at the age of 19 or when younger is not consistently different from the rate among older arrivals (see Table A2c in Appendix 8.3), the findings depicted in Table 6 do not provide support for the bargaining power perspective.

Cohort Differences

A further heterogeneity among immigrants we consider is inspired by the findings that the cohort of arrival is a key determinant of the widening wage gaps across immigrants (Albert et al., 2021). Borjas (2015), for example, documents that depending on the cohort of arrival, the earnings assimilation of immigrants varies. More recently, Albert et al. (2021) show that an important part of the wage differential across cohorts of immigrants can be explained by increasing cohort size.

The same authors also point out that since the 1960s the level of formal education of newly arriving immigrants has improved (Albert et al., 2021).

To analyze the conjecture that the union wage mark-up for immigrants varies across the cohort of arrival, we consider six groups of immigrants. Table 7 displays the results. The estimates indicate that the mark-up has been monotonically decreasing with the cohort of arrival.[10] It equals 0.14 log points for those who arrived during the 1950s and 1960s and decreases to about 0.05 to 0.07 log points for those who arrived since 2010. While this may partially capture the decreasing bargaining power of unions, it may also reflect the changing quality of cohorts of immigrants.

Table 7: POLS estimates of unions on wages of immigrants by cohort of arrival

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	50s-60s	70s	80s	90s- 2000s	2000s-early 2010	2010-23
Union	0.141***	0.135***	0.115***	0.114***	0.095***	0.065***
	(0.016)	(0.023)	(0.013)	(0.012)	(0.011)	(0.020)
Constant	1.815***	1.946***	2.071***	2.223***	2.997***	2.833***
	(0.186)	(0.066)	(0.080)	(0.064)	(0.127)	(0.101)
Observations	14,655	28,237	56,262	72,962	50,712	18,026
R-squared	0.633	0.667	0.673	0.669	0.605	0.541

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

Interestingly, the unionization rate among immigrants declines monotonically with the cohort of arrival, being around 15% for the first cohort and about a third of that value for the most recent cohort of immigrants (see Table A2c in Appendix 8.3). Therefore, the findings depicted in Table 7 are compatible with a bargaining power explanation. They can also indicate that discriminatory union bargaining objectives have become less prevalent over time, given the feature that observations from early cohorts predominantly stem from the first half of our observation period, while the latest cohort can only have contributed to the second half.

Country of Birth

Over the 30 years we analyze, the composition of the countries of birth of immigrants has changed substantially. In the 1960s, most of the immigrants originated from western countries and only relatively few from Mexico. This pattern has clearly reversed in the recent decades (Albert et

[10] For ease of exposition we present findings for a specification based on equation (1) for immigrants for different cohorts. We obtain almost identical results when estimating equation (2) for all workers, adding dummies for the cohorts of arrival and for interaction terms of the cohort and unionization dummies.

al., 2021). These compositional changes in the country of birth can affect both the wage level and the union wage mark-up. Given that the country of origin is the most important predictor of immigrant earnings (Fortin et al., 2016), it is crucial to consider the union wage mark-up for the main source countries of immigrants. In our analysis we look separately at immigrants from Mexico who make up almost 30% of all observations. Otherwise, we consider subsamples according to the continent the immigrants come from.

Table 8 shows that immigrants from Mexico obtain the highest union wage mark-up. Its value of 0.16 log points is comparable to that of native males. The mark-up of immigrants from other countries amounts to around 0.1 log points or slightly less, except for immigrants from Africa for whom the value is about half as large. This uneven distribution of union wage mark-ups across workers of different geographic background is in line with results for Norway (Dodini et al., 2024).

Table 8: POLS estimates of unions on wages of immigrants by country of birth

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Mexico	South America	Europe	Asia	Africa	Oceania-Other
Union	0.164***	0.100***	0.107***	0.084***	0.052***	0.104***
	(0.011)	(0.012)	(0.007)	(0.014)	(0.016)	(0.024)
Constant	2.105***	2.217***	1.779***	2.039***	2.193***	2.423***
	(0.088)	(0.128)	(0.182)	(0.244)	(0.319)	(0.226)
Observations	69,869	69,597	24,763	61,873	9,729	5,513
R-squared	0.651	0.620	0.635	0.648	0.632	0.707

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, decade of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Among the groups of immigrants looked at, Mexican-born immigrants have the lowest unionization rate (see Table A2c in Appendix 8.3). Therefore, the main results depicted in Table 8 are not compatible with the bargaining power perspective. Moreover, they indicate that if trade unions have discriminatory bargaining objectives, they do not apply to Mexican-born immigrants.

6. Summary

Immigrant workers by now constitute almost a fifth of the civilian labor force in the United States. On average they are paid less than observationally comparable natives. We show that unionization raises the wages of immigrants but to a lesser extent than of natives. Accordingly, immigrants benefit less from unionization in the United States than natives. The difference in the union wage mark-up varies across groups of employees and immigrants and cannot be observed for all

subgroups. More specifically, there exists a sizeable difference in the union wage mark-up between natives and immigrants for males and low-skilled blue-collar workers. The education level does not affect the relative union wage mark-up. Finally, we do not observe differential wage mark-ups for white-collar workers, second-generation immigrants and those who came to the United States early in life.

Our analysis suggests that the bargaining strength of workers, as measured by the unionization rate, is often, though not consistently related to the union wage mark-up. In many cases, the difference between the union wage mark-up for natives and immigrants is larger if the unionization rate differs, whereas it becomes smaller or non-existent if unionization rates are similar. Moreover, our finding of large differences in the union wage mark-up between immigrants and natives for some groups of employees is compatible with discriminatory union objectives.

For all the subgroups of immigrants we consider, we observe a positive union wage mark-up. Therefore, our results indicate that immigrants benefit from unionization. However, the union wage mark-up for immigrants is not higher than for natives for any of the subgroups, with the possible exception of immigrants from Mexico. This implies that unionization generally either does not affect the immigrant-native wage gap or aggravates it. As a consequence, unionization does not help to make the earnings of immigrants and natives more equal, a finding reminiscent of the result by Card et al. (2020) that unionization does not reduce female wage inequality.

Furthermore, it is noteworthy that a differential union wage mark-up for immigrants and natives cannot be observed for individuals who came to the United States early in their life and for second-generation immigrants, that is, natives with at least one foreign parent. Accordingly, within less than a generation immigrants catch up with natives in terms of the wage gains from unionization.

The findings for the United States differ from those for Norway. Dodini et al. (2024) document a union earnings mark-up for natives of about 0.10 log points, of around 0.05 log points for immigrants from western countries, and none for immigrants from elsewhere. This is in clear contrast to our findings for the United States, which indicate that all immigrants partake of in union wage gains. Obviously, the role and influence of trade unions in the United States and Norway differ substantially. Nonetheless, the diverging findings raise the question of how unionization or union membership affects the native-immigrant wage gap in other industrial relations settings.

Trade unions not only affect compensation but have also been shown to increase fringe benefits, such as health insurance coverage and pension plans, and to raise sick leave or vacation entitlements (Freeman 1981, Green and Potepan 1988, Budd 2004, 2005, Goerke et al, 2015, Fakih 2018, Bryson and Forth 2019, and Knepper 2020). Clearly, the results of the present paper imply

a question for future research, namely whether these gains from unionization also differ between natives and immigrants, particularly in the United States.

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8. Appendix

8.1. Productivity and the Relative Union Wage Mark-up

Assume that immigrants have on average a lower productivity than natives and that bargained wages are proportional to productivity. Given these two assumptions, wages reflecting productivity give rise to a lower union-wage mark-up for immigrants. To illustrate the idea, let productivity be distributed uniformly on some interval (a; b), $0 < a < b$, for natives and on (0.5a; b) for immigrants. Therefore, average productivity of immigrants is less than of natives because the former exhibit a lower limit of the productivity distribution. Let, furthermore, the 50% most productive workers be unionized, such that the relationship of productivities between union and non-union natives is given by

$$\Delta P^{N} = \frac{0.5(b + 0.5(b - a) + a)}{0.5(0.5(b - a) + 2a)} = \frac{3b + a}{3a + b}$$

If the top 50% of immigrants are also organized, the productivity differential between union and non-union immigrants is:

$$\Delta P^{I} = \frac{0.5(b + 0.5(b - 0.5a) + 0.5a)}{0.5(0.5(b - 0.5a) + a)} = \frac{3b + 0.5a}{b + 1.5a}$$

Simple calculations show that $\Delta P^{N} < \Delta P^{I}$ holds. If productivity differences are reflected in wage differences, the union wage mark-up for immigrants would be higher than for natives.

To gauge the robustness of the above productivity argument, we replace the assumption that there are productivity differences between natives and immigrants. In particular, we assume a lower unionization probability among immigrants in that only the 25% most productive immigrant workers become union members. The productivity of immigrants is distributed uniformly on the interval (a; b), as is the case for natives. The respective productivity ratio for immigrants then is:

$$\Delta \widetilde{P}^{I} = \frac{0.5(b + 0.75(b - a) + a)}{0.5(0.75(b - a) + 2a)} = \frac{7b + a}{3b + 5a}$$

In this case, $\Delta P^{N} > \Delta \widetilde{P}^{I}$ and the union wage mark-up is higher for natives.

8.2. Education and occupation definition

In the CPS education is reported as the highest educational attainment and presents 16 categories, from none or preschool to doctorate degree. Specifically, the variable of interest reports the following categories: none or preschool; grade 1, 2, 3 or 4; grade 5 or 6; grade 7 or 8; grade 9; grade 10; grade 11; 12th grade, no diploma; high school diploma or equivalent; some college but no degree; associate degree's occupational/vocational; associate's degree, academic; bachelor's

degree; master's degree; professional school degree; doctoral degree. We derive years of completed education and create three educational categories.

By following Antman et al. (2023) we assign years of completed education as follow: 0 for none or preschool; 2.5 for grades 1,2,3, or 4; 5.5 for grades 5 or 6; 7.5 for grades 7 or 8; 9 for grade 9; 10 for grade 10; 11 for grade 11; 12 for 12^{th} grade (no diploma) or high school diploma or equivalent; 13 for some college but no degree; 14 for associate's degree, occupational/vocational or associate's degree, academic program; 16 for bachelor's degree; 18 for master's degree, professional school degree or doctorate degree.

The three educational categories have been derived as follows:

- lower education group (includes workers who have completed compulsory level of education and up to high school diploma, included);
- intermediate education group (includes workers with qualifications some college but no degree or associate's degree, occupational/vocational);
- higher education group (includes individuals with a graduate or postgraduate degree).

We define blue- and white-collar following the classification of the International Standard Classification of Occupations, ISCO-88.[11] In addition, white- and blue-collar workers have been classified as high or low-skilled, hence four categories of employees are distinguished:

- High-skilled white-collar (includes legislators, senior officials and managers, professionals and technicians and associate professionals);
- Low-skilled white-collar (includes clerks and service workers and shop and market sales workers);
- High-skilled blue-collar (includes skilled agricultural and fishery workers and craft and related trades workers);
- Low-skilled blue-collar (includes plant and machine operators and assemblers and elementary occupations).

[11] For details see: https://www.eurofound.europa.eu/en/coding-and-classification-standards-0

8.3 Additional Tables

Table A1: List of the Right-to-Work law states and year passed

States	Year RTW	States	Year RTW
Alaska	1953	Montana	
Arizona	1947	Nebraska	1947
Arkansas	1947	Nevada	1952
California		New Hampshire	
Colorado		New Jersey	
Connecticut		New Mexico	
Delaware		New York	
District of Columbia		North Carolina	1947
Florida	1943	North Dakota	1948
Georgia	1947	Ohio	
Hawaii		Oklahoma	2001
Idaho	1986	Oregon	
Illinois		Pennsylvania	
Indiana	2012	Rhode Ssland	
Iowa	1947	South Carolina	1954
Kansas	1958	South Dakota	1947
Kentucky	2017	Tennessee	1947
Louisiana	1976	Texas	1947
Maine		Utah	1955
Maryland		Vermont	
Massachusetts		Virginia	1947
Michigan	2013	Washington	
Minnesota		West Virginia	2016
Mississippi	1960	Wisconsin	2015
Missouri		Wyoming	1963

Table A2a: Summary Statistics by Immigration Status

	Natives	Immigrants	All
Immigrant	-	-	17.5
Log Real Hourly Wage	3.12	3.04	3.10
Real Hourly Wage	27.56	25.98	27.29
Nominal Wage	18.74	17.18	18.47
Union	9.20	8.47	9.09
Female	0.48	0.42	0.47
Marital status			
Married	54.7	64.4	56.4
Divorced/Separated	14.0	10.3	13.3
Widowed	1.4	1.3	1.4
Never married/single	29.9	24.0	28.9
Age	39.68	40.07	39.75
Labor market experience	21.06	22.86	21.38
Years of education	13.62	12.28	13.38
Working part-time	0.85	0.86	0.85
Ethnicity			
White	84.04	64.55	80.63
Black	12.14	10.36	11.83
American Indian	0.82	0.98	0.85
Asian or pacific islander	1.58	22.09	5.17
Hawaiian/pacific islander only	0.17	0.73	0.27
Mixed	1.22	1.03	1.18
Other	0.03	0.27	0.07
Total	100	100	100
Decade			
Arrived between the 50' and 60s	-	5.17	-
Arrived in the 70s	-	10.84	-
Arrived in the 80s	-	22.63	-
Arrived in the 90s - 2000	-	30.06	-
Arrived in the 2000s-early 2010	-	24.58	-
Arrived in the 2010s	-	5.56	-
Arrived in the 2020s	-	1.11	-
Total	100	100	100
Observations	1,394,148	241,412	1,635,560

Notes: Based on 1994–2023 Current Population Survey outgoing rotation group microdata from IPUMS-USA.

Table A2b: Unionization rate by occupation and education, 1994-2023

	All	Natives	Immigrants
Panel A: Occupation			
High-skilled white-collar employee	5.9%	5.7%	7.3%
Low-skilled white-collar employee	5.3%	5.0%	6.5%
High-skilled blue-collar worker	17.1%	19.4%	9.6%
Low-skilled blue-collar worker	18.3%	20.1%	11.9%
Panel B: Education			
Lower	10.7%	11.3%	8.7%
Intermediate	9.7%	9.6%	10.1%
Higher	6.6%	6.5%	7.5%

Table A2c: Unionization rate by age of arrival, decade of arrival and country of birth, 1994-2023

	Percentage
Panel A: Age of arrival	
19 or less	8.4%
20 or more	8.0%
Panel B: Decade of arrival	
Arrived between the 50' and 60s	15.1%
Arrived in the 70s	12.3%
Arrived in the 80s	9.8%
Arrived in the 90s - 2000	7.3%
Arrived in the 2000s-early 2010	5.6%
Arrived in the 2010s	5.4%
Arrived in the 2020s	4.5%
Panel C: Country of origin	
Mexico	6.7%
South America	10.2%
Europe	10.3%
Asia	7.5%
Africa	10.3%
Oceania-Other	9.8%

Table A3: POLS estimates of unions on wages: full results

	(1)	(2)	(3)
VARIABLES	Natives	Immigrants	All workers
Union	0.141***	0.118***	0.148***
	(0.004)	(0.012)	(0.005)
Immigrant			-0.021***
			(0.007)
Union X Immigrant			-0.040***
			(0.010)
Female	-0.123***	-0.110***	-0.122***
	(0.004)	(0.005)	(0.004)
Experience	0.036***	0.027***	0.035***
	(0.001)	(0.001)	(0.001)
Year of education (omitted: none)			
Years of education = 3	0.009	0.014	0.014
	(0.018)	(0.010)	(0.010)
Years of education = 6	0.012	0.023***	0.026***
	(0.022)	(0.008)	(0.009)
Years of education = 8	0.071***	0.052***	0.066***
	(0.025)	(0.007)	(0.011)
Years of education = 9	0.076***	0.055***	0.069***
	(0.024)	(0.005)	(0.009)
Years of education = 10	0.100***	0.064***	0.089***
	(0.025)	(0.009)	(0.012)
Years of education = 11	0.118***	0.086***	0.109***
	(0.023)	(0.009)	(0.011)
Years of education = 12	0.254***	0.188***	0.238***
	(0.026)	(0.009)	(0.013)
Years of education = 13	0.307***	0.232***	0.290***
	(0.027)	(0.014)	(0.015)
Years of education = 14	0.334***	0.254***	0.316***
	(0.028)	(0.013)	(0.015)
Years of education = 16	0.514***	0.379***	0.487***
	(0.029)	(0.017)	(0.016)
Years of education = 18	0.612***	0.475***	0.587***
	(0.028)	(0.019)	(0.016)
Working part-time	0.158***	0.108***	0.149***
	(0.002)	(0.005)	(0.003)
Decade of arrival (omitted: Natives)			
Arrived between the 50' and 60s		0.139***	0.016**
		(0.040)	(0.006)
Arrived in the 70s		0.087**	-0.020**
		(0.035)	(0.008)
Arrived in the 80s		0.047	-0.047***
		(0.035)	(0.009)
Arrived in the 90s - 2000		0.011	-0.064***

		(0.035)	(0.006)
Arrived in the 2000s- early 2010		-0.031	-0.081***
		(0.035)	(0.006)
Arrived in the 2010s		-0.050	-0.075***
		(0.035)	(0.008)
Arrived in the 2020s		-0.059*	-0.074***
		(0.034)	(0.013)
Ethnicity (Omitted: white)			
Black	-0.077***	-0.027***	-0.069***
	(0.005)	(0.007)	(0.005)
American Indian	-0.048***	0.003	-0.037***
	(0.005)	(0.014)	(0.004)
Asian or pacific islander	-0.004	0.033***	0.018***
	(0.004)	(0.008)	(0.005)
Hawaiian/pacific islander only	-0.016	0.034*	0.012
	(0.013)	(0.019)	(0.015)
Mixed	-0.016**	0.006	-0.012
	(0.007)	(0.009)	(0.007)
Other	-0.045**	-0.008	-0.039***
	(0.021)	(0.008)	(0.010)
Marital status (Omitted: married)			
Separated/Divorced	-0.040***	-0.021***	-0.035***
	(0.001)	(0.003)	(0.002)
widowed	-0.049***	-0.033***	-0.046***
	(0.003)	(0.006)	(0.003)
never married/single	-0.056***	-0.039***	-0.054***
	(0.002)	(0.003)	(0.002)
Constant	1.685***	2.068***	1.727***
	(0.282)	(0.060)	(0.278)
Observations	1,394,146	241,412	1,635,558
R-squared	0.632	0.651	0.633

Notes: Models estimated using 1994-2023 CPS data. Additional controls included but not reported are: quadratic and cube experience, occupation, state dummy, sector-year dummies. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4: POLS estimates of union membership on wages

	(1)	(2)	(3)
VARIABLES	Natives	Immigrants	All workers
Union	0.150***	0.128***	0.158***
	(0.004)	(0.014)	(0.005)
Immigrant			-0.021***
			(0.007)
Union X Immigrant			-0.041***
			(0.010)
Female	-0.123***	-0.110***	-0.122***
	(0.004)	(0.005)	(0.004)
Constant	1.686***	2.068***	1.728***
	(0.282)	(0.060)	(0.278)
Observations	1,394,146	241,412	1,635,558
R-squared	0.632	0.651	0.634

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, for immigrants controls also include decades of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A5: POLS estimates of unions on wages including the public sector.

	(1)	(2)	(3)
VARIABLES	Natives	Immigrants	All workers
Union	0.134***	0.121***	0.139***
	(0.003)	(0.011)	(0.004)
Immigrant			-0.019***
			(0.007)
Union X Immigrant			-0.019**
			(0.009)
Female	-0.120***	-0.110***	-0.119***
	(0.004)	(0.005)	(0.004)
Employed in Private sector	0.016***	0.006*	0.016***
	(0.004)	(0.003)	(0.003)
Constant	1.823***	2.149***	1.860***
	(0.039)	(0.057)	(0.042)
Observations	1,599,259	258,771	1,858,030
R-squared	0.631	0.650	0.633

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, years of education, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, for immigrants controls also include decades of arrival. Robust standard errors clustered at the state level in parentheses.
Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

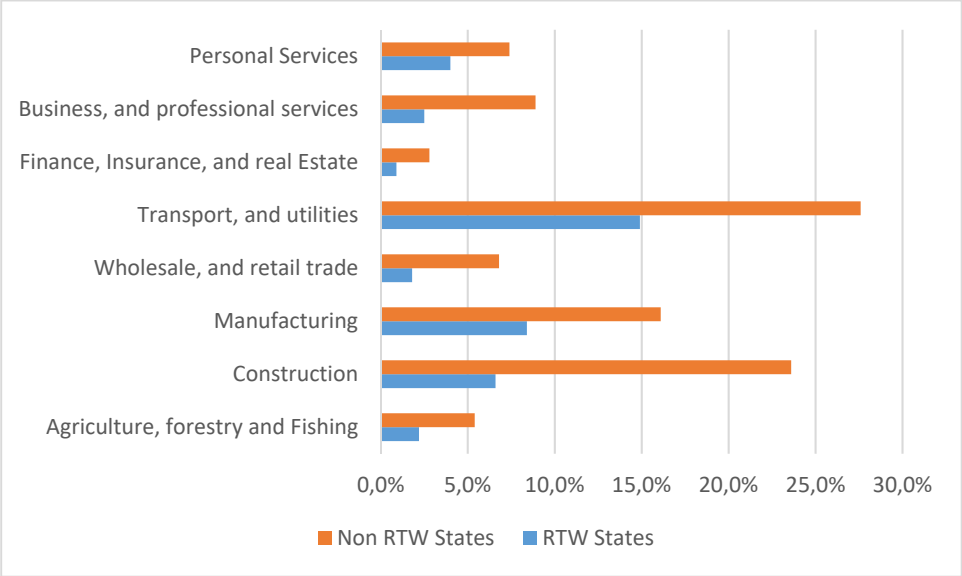
Table A6: POLS estimates of unions on wages by education

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lower			Intermediate			Higher		
	Natives	Immigrants	All	Natives	Immigrants	All	Natives	Immigrants	All
Union	0.166***	0.144***	0.175***	0.149***	0.119***	0.153***	0.080***	0.059***	0.084***
	(0.005)	(0.009)	(0.006)	(0.004)	(0.020)	(0.004)	(0.004)	(0.014)	(0.004)
Immigrant			-0.018***			-0.021**			-0.013
			(0.007)			(0.009)			(0.009)
Union X Immigrant			-0.039***			-0.041***			-0.035***
			(0.008)			(0.015)			(0.012)
Constant	1.752***	2.026***	1.789***	2.218***	2.033***	2.216***	2.234***	2.116***	2.263***
	(0.282)	(0.087)	(0.277)	(0.037)	(0.219)	(0.037)	(0.034)	(0.212)	(0.040)
Observations	545,837	132,264	678,101	371,622	35,145	406,767	476,687	74,003	550,690
R-squared	0.614	0.609	0.610	0.593	0.583	0.589	0.549	0.558	0.547

Notes: Models estimated using 1994-2023 CPS data. Controls include gender, experience, marital status, race, part-time status, occupation, state dummy, sector-year dummies, for immigrants controls also include decades of arrival. Robust standard errors clustered at the state level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

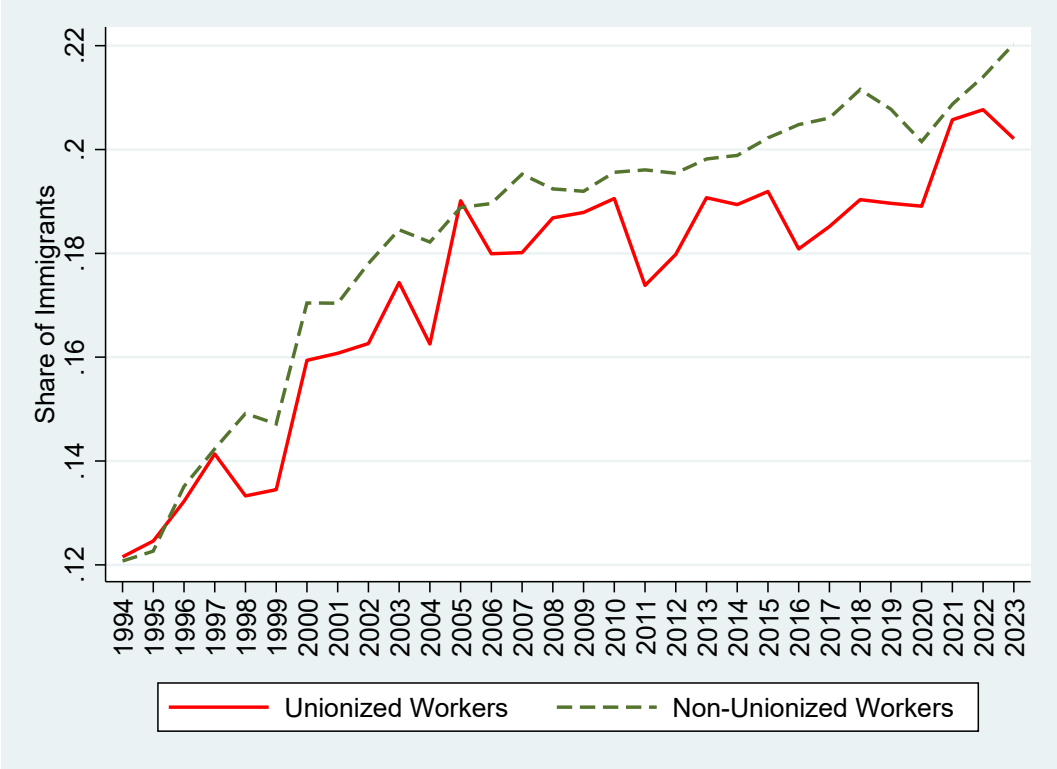
8.4 Figures

Figure A1. Union density by sectors and RTW-states, average over the years 1994-2023



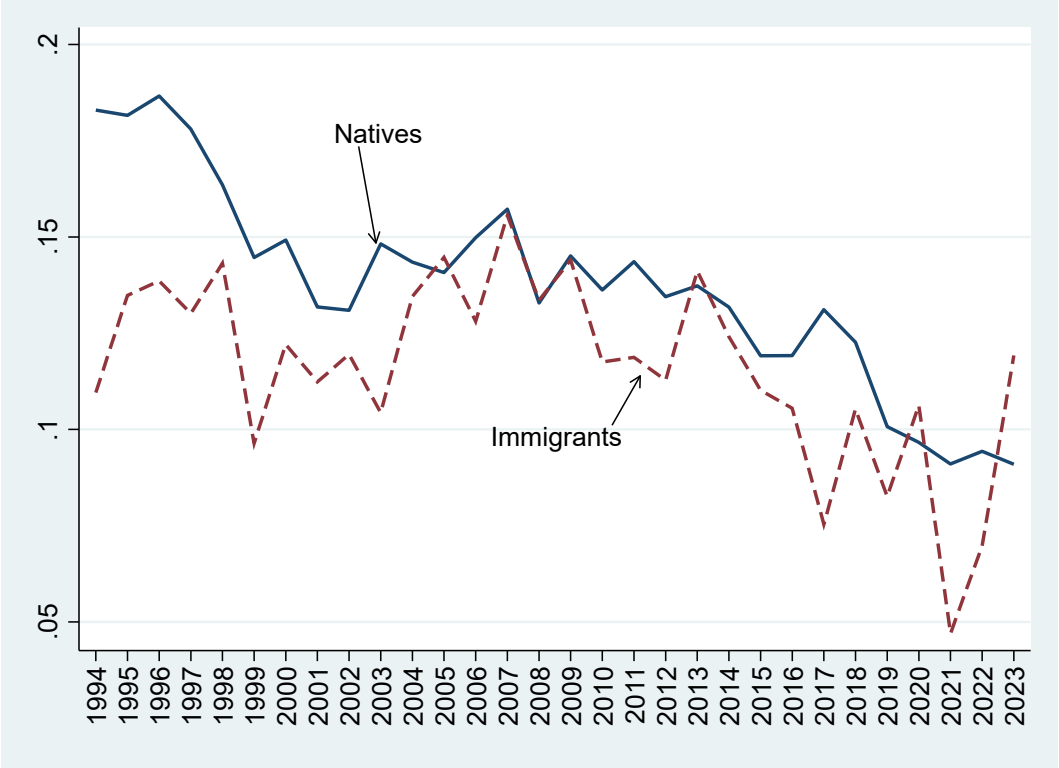
Notes: Based on 1994–2023 Current Population Survey outgoing rotation group microdata from IPUMS-USA

Figure A2: Share of immigrants among unionized and non-unionized workers



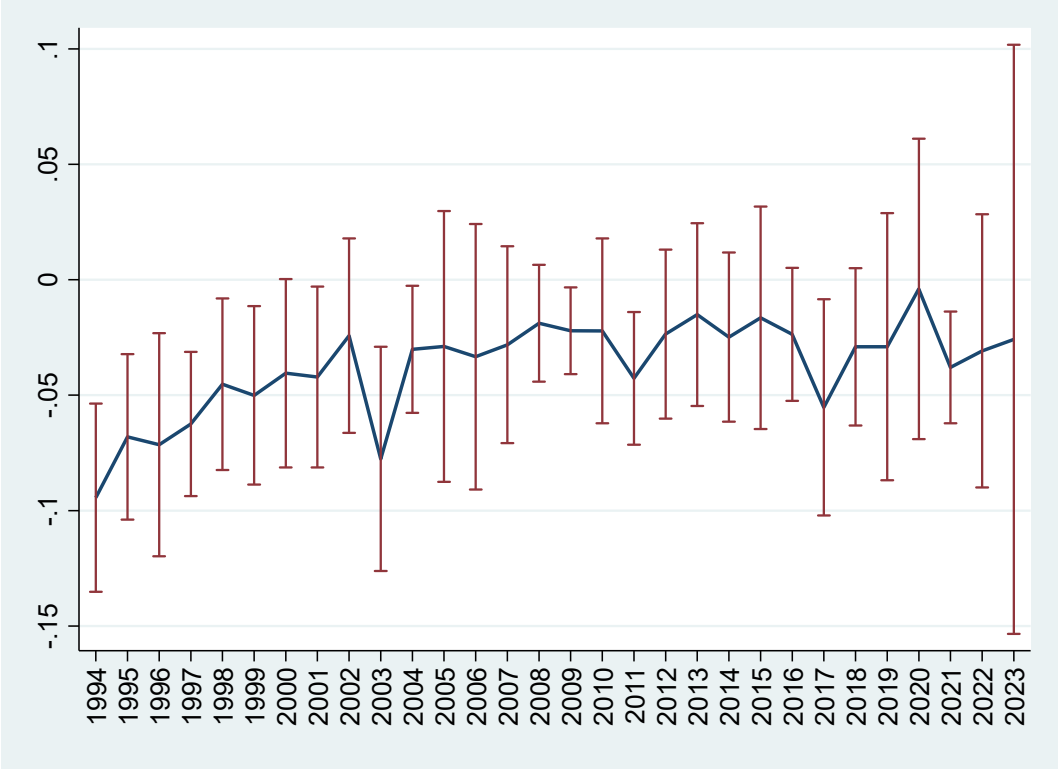
Notes: Based on 1994–2023 Current Population Survey outgoing rotation group microdata from IPUMS-USA.

Figure A3: Natives and immigrants' union wage mark-up over time, estimated coefficients



Notes: Models estimated using 1994-2023 CPS data based on equation 1.

Figure A4: Natives-immigrants union wage gap over time



Notes: Models estimated using 1994-2023 CPS data based on equation 1.

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