Union Membership and Native-Immigrant Labor Market Gaps

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January 2025

Abstract

We assess the causal effect of union membership on labor market disparities between natives and immigrants. Our findings reveal that unions disproportionately benefit natives, widening labor market gaps and exacerbating between-group inequality. Evidence from large-scale field surveys suggests these effects stem from union practices rather than differences in how natives and immigrants engage with unions. The impact is most pronounced in concentrated labor markets, indicating that relying on unions to address monopsony-based market failures may unintentionally amplify group inequalities.

JEL Codes: J1, J5, J6
Keywords: Unions, Immigration, Inequality

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1 Introduction

Labor unions were established to balance the power dynamics between employers and employees in the labor market. By organizing workers and monopolizing the supply of labor, unions can leverage collective bargaining to secure more favorable wages and working conditions than individual workers might achieve on their own. They also play a crucial role in coordinating communication between workers and firms, aiming to channel worker voices into improved workplace conditions and productivity.

Unions' objective to counteract employer power suggests they may play a critical role in shaping immigrant integration and influencing the native-immigrant wage gap. The direction of this effect, however, remains unclear. On one hand, immigrants possess weaker individual bargaining power than natives and may therefore benefit disproportionately from the application of group-level bargaining, potentially narrowing the wage gap and facilitating immigrant integration.[1] On the other hand, unions might prioritize native workers or struggle to address immigrant-specific challenges, leading to unequal treatment and a potential widening of the gap. Moreover, differences in how natives and immigrants engage with unions could influence whether unions mitigate or intensify these inequalities.

In this paper, we provide a comprehensive assessment of the causal effect of union membership on labor market disparities between natives and immigrants. We first analyze the effect of individual union membership on earnings for both groups. We then investigate how union membership influences other career aspects of natives and immigrants – work hours, job security, work environment, and career ladder opportunities. Next, we examine how labor market power affects these outcomes, noting that the ability of unions to influence worker outcomes is limited in competitive labor markets due to the absence of abnormal profits. Finally, we conduct auxiliary analyses to rule out alternative explanations and provide suggestive evidence on the mechanisms behind our findings.

Our key finding is that union membership disproportionately benefits native workers, widening the labor market gap between natives and immigrants and increasing inequality between these groups. Using large-scale field surveys, we show that these effects are primarily driven by union behavior, rather than differences in how natives and immigrants engage with unions. The impact is more significant in concentrated labor markets, suggesting that relying on unions to address monopsony-based market failures may exacerbate inequality between these groups.

To conduct our analysis, we use detailed employer-employee matched data from Norway,

[1]Less familiarity with the regulatory framework of labor markets, greater language barriers, greater exposure to discriminatory and predatory hiring practices of firms, workplace segregation, and fewer outside options, are all factors that may affect immigrants more than natives in terms of their individual bargaining power (e.g., Algan et al. (2010); Chiswick (1978); Lehmer and Ludsteck (2011); Åslund and Skans (2010); Cutler et al. (2008); Hirsch and Jahn (2015)).

encompassing all firms and regions in the country. This dataset includes information on union membership, union dues, and workers' occupations. We supplement these data with information from population-wide administrative registers, such as the education register, the tax and income register, and the social benefit registers. Additionally, we conduct two large-scale field surveys to gather insights into workers' amenity preferences, beliefs, and preferences regarding unions, as well as their price sensitivity to changes in union membership dues. These surveys help elucidate the mechanisms behind the reduced-form effects we identify.

To address the selection issue inherent in research on unions, where unobserved factors may influence both union membership and outcomes, we rely on exogenous changes in the financial cost of becoming a union member for identification. Assuming union membership is a normal good, a decrease in the cost of union membership leads to an increase in quantity demanded. As a result, individuals who were not previously union members are more likely to join or maintain their membership following these price reductions, as the net cost of enrollment declines.

The exogenous changes in the financial cost of becoming a union member arise from a series of national reforms implemented by the central government, that provide direct tax deductions to individuals who choose to join labor unions without affecting other aspects of the tax and transfer system. These reforms led to significant shifts in the net price of union membership for workers at firms whose tax deductions were previously capped by maximum deduction limits. As these caps were gradually relaxed, the cost of joining a union decreased for these workers. This provides us with quasi-random variation in the incentive to join a union based on the firm at which the worker was employed prior to the reform.

We employ an instrumented difference-in-differences design to compare individuals working at firms with high versus low subsidy exposure over time, with treatment intensity determined by each firm's baseline union dues. This allows us to recover the causal effect of union membership for those who were induced to join the union by these price changes. By incorporating current firm fixed effects and analyzing the outcomes for both natives and immigrants, we isolate the within-firm changes in the native-immigrant wage gap attributable to individual union enrollment. Our estimates, therefore, capture the differential private returns to union membership across nativity status. These effects go beyond the potential public goods benefits of unionization, which impact all members collectively, providing a deeper understanding of how unions influence labor market disparities between natives and immigrants.

Versions of our instrument have been used in prior research and its validity for generating exogenous variation in union membership is well-established. We apply this method in order to address a novel question about the interaction between union membership and

immigration. This is a key question in recent policy debates amidst a period of increased migration, persistent native-immigrant wage gaps, and rapidly changing power dynamics in labor markets. However, empirical progress on this question has been hindered by the dual challenges of securing sufficiently detailed individual-level panel data linked to union status and obtaining exogenous variation in union membership. We are able to overcome both challenges and, to the best of our knowledge, are the first to examine the private returns to union membership across immigrants and natives.

The main takeaway from our paper — that union membership disproportionately benefits native workers, widening the native-immigrant wage gap and exacerbating inequalities between these groups — is supported by four key sets of results. First, and consistent with prior union research, we identify a significant wage premium associated with union membership (e.g., Farber et al. (2021); Sojourner et al. (2015); Card et al. (2004)). However, in contrast to prior work, we show that the union wage premium is unevenly distributed across workers depending on their migration background. While native workers enjoy a union earnings premium of approximately 0.10 log points, Western immigrants experience a much smaller earnings premium effect of 0.05 log points, and non-Western immigrants do not experience any short-term earnings premium from joining a union. This suggests that unions contribute to a widening of the native-immigrant wage gap among similar workers at the same firm and thereby exacerbate inequalities between the two groups.

Second, we show that the heterogeneous wage effect of unions on natives and immigrants extends to another core objective of unions: employment protection. Specifically, while unions provide increased layoff protection for both natives and immigrants, the protection afforded to natives is considerably larger than that provided to immigrants in general, and to non-Western immigrants in particular.

Third, the only career dimension for which we find that unions contribute to a narrowing of the native-immigrant labor market gap is the use of sick leave. Specifically, union take-up has a large negative effect on the amount of sick leave benefits taken, and this effect is considerably larger among non-Western immigrants. The interpretation we find most consistent with this result is that unions disproportionately help improve the work environment of non-Western immigrants, reducing their reliance on the sick leave insurance system. This effect may stem from the fact that non-Western immigrants experience greater workplace exploitation and have lower baseline individual bargaining power compared to natives and are, therefore, allocated to riskier or more unpleasant tasks. As a result, unions' ability to apply bargaining leverage and provide legal protection plays a more significant role in enhancing their work environment. By mitigating exploitation and creating a safer, more supportive workplace, non-Western immigrants are less inclined to utilize the sick leave system, thereby contributing to a narrowing of the labor market gap.

Fourth, by examining the differential impact of union membership on natives and immigrants across labor markets with different employer labor market power, we show that the career effects of union membership are considerably larger in concentrated markets. As a consequence, the inequality-enhancing effect of unions also is exacerbated in monopsonistic markets. Using unions as a means to overcome monopsony-based market failures, therefore, is likely to lead to a significant increase in between-group inequality. This finding feeds into a larger literature on the inequality effects of unions (e.g., Card et al. (2017); Farber et al. (2021)), in which this type of inter-group differential has not been explored.

A key question that emerges from our analysis is what drives the differential impact of union membership on natives and immigrants? Does it arise through the behavior of unions or through differences in how natives and immigrants utilize their unions? Our field surveys provide strong evidence that there are minimal differences in how natives and immigrants engage with unions. In fact, immigrants appear to be more likely to seek assistance from their unions, which suggests that the differential effects are not primarily due to differences in union usage. Instead, the evidence points toward the behavior of unions themselves playing a crucial role in shaping these outcomes.

To understand why unions may behave in a way that benefits natives over immigrants, we present evidence from auxiliary analyses that rule out one key pathway and provide support for another. First, we show that our results are not a consequence of unions being more successful at providing benefits to the majority group at the firm, and thus our results are not due to immigrants being a relatively small group at any one firm. Second, we show evidence consistent with the idea that unions are targeting natives because such targeting will maximize overall union revenues. Specifically, we show that more than 90 percent of the within-firm dues that unions collect come from natives. This is not only because natives are more likely to be union members, but also because natives, on average, earn higher wages and pay higher dues. Thus, focusing on natives would be consistent with a profit-maximizing union organization. However, alternative interpretations are possible and there are also additional mechanisms through which our effects could operate. We see this as an important direction for future work.

Our paper advances several important strands of research. First, there is a long-standing literature on the role of unions, the unions' ability to extract rent from employers, and how they affect aggregate measures of inequality and efficiency (e.g., DiNardo and Lee (2004); Lee and Mas (2012); Frandsen (2021); Sojourner et al. (2015); Card and De La Rica (2006); Bryson (2002); Fortin et al. (2023); Barth et al. (2020b); Dodini et al. (2022)). Of particular relevance is Barth et al. (2020b), who first used the union dues instrument in the Norwegian setting.[2]

[2]Barth et al. (2020b) examine the union wage and productivity effect in the private manufacturing sector

Our contribution to this literature lies in demonstrating that union membership can have distinctly different effects on workers based on their migration status, particularly in terms of both the size of the wage premium and the specific career dimensions they impact. Given the varying levels of individual bargaining power between natives and immigrants, this finding is crucial for understanding the nuanced role of unions in the labor market. It not only deepens our understanding of unions' influence on broader measures of inequality but also highlights how unions distribute benefits across different worker groups. To the best of our knowledge, no prior study has systematically examined how union membership directly affects or alleviates labor market disparities between natives and immigrants.

Second, there is a large and growing literature on the integration of immigrants into domestic labor markets (e.g., Rica et al. (2015); Chin and Cortes (2015); Martín et al. (2016); Becker and Ferrara (2019); Dorn and Zweimüller (2021); Brell et al. (2020)),[3] and the effectiveness of specific integration programs such as language training, social network facilitation, job search aid and mentoring, and internship and transitional job programs (e.g., Arendt and Bolvig (2020); Arendt et al. (2020); Lochmann et al. (2019); Battisti et al. (2022); Bratu et al. (2020); Butschek and Walter (2014); Ottosson (2022)). These papers have significantly advanced our understanding of migrant integration and the effectiveness of specific integration programs. They offer crucial insights for designing integration policies, enhancing the well-being of migrants, and ensuring their positive impact on the broader economy.[4]

Our contribution to this field lies in providing the first rigorous analysis of the causal impact of one of the most influential labor market institutions globally on the integration process of immigrants. While unions have the potential to counterbalance employer power, suggesting a significant role in shaping immigrant labor market integration and the native-immigrant wage gap, the direction of this effect remains theoretically uncertain. The findings from this study are essential not only for understanding how current market dynamics and institutions interact to influence inequality across social groups but also for guiding the design of future integration programs within existing labor market structures, particularly those in which these insider-outsider dynamics may be present.

Third, there is a rapidly growing literature that has directly measured labor market concentration and how concentration affects wages and employment (e.g., Schubert et al.

in Norway and addresses a question fundamentally different from what we examine in this paper.

[3]For the Nordic region, see Schultz-Nielsen (2017) for Denmark; Sarvimäki (2017) for Finland; Bratsberg et al. (2017) for Norway; and Åslund et al. (2017) for Sweden.

[4]Recent studies have also explored the role of firms in immigrant integration (e.g., de Matos and Parent (2016); Dostie et al. (2023); Arellano-Bover and San (2023)). Most of this literature finds substantial native-immigrant wage gaps across firms, but smaller gaps within firms. Our paper contributes to this discussion by demonstrating that within-firm wage gaps can be considerable and account for a significant portion of the overall native-immigrant wage gap, thereby adding another important dimension to the debate on firms' roles in immigrant integration.

(2020); Azar et al. (2020b); Qiu and Sojourner (2019); Rinz (2018); Prager and Schmitt (2021); Azar et al. (2020a); Benmelech et al. (2022); Marinescu et al. (2021); Hershbein et al. (2018); Bassanini et al. (2022); Dodini et al. (2024); Barth et al. (2020b)). On average, these studies show that labor market concentration reduces worker wages and has negative effects on workers' careers. A smaller set of studies has shown that unions may counteract the labor market power of employers and reduce the negative effects of imperfect competition in labor markets by equipping workers with additional bargaining power (e.g., Dodini et al. (2022); Azkarate-Askasua and Zerecero (2023). This provides an important policy solution to the increasing market power of firms over the past decades. Our core contribution to this literature is to demonstrate that the countervailing force of unions differs substantially across demographic groups. Specifically, we show that union membership can ameliorate the negative labor market effects of labor market concentration but does so only for natives. Relying on unions to solve the market failure of imperfect competition in the labor market is likely to generate a substantial increase in cross-group inequality.

Lastly, a nascent literature has focused on monopsony and immigration (e.g., Amior and Manning (2020); Amior and Stuhler (2024)), suggesting that unions may act as a counterweight to employer wage-setting power that is exacerbated by immigration. We show that unions do act as a counterweight to firm wage-setting power (which also is consistent with Dodini et al. (2022) and Dodini et al. (2023)), but that this counterweight is primarily benefiting natives and, to some extent, Western immigrants. This is an important finding, further emphasizing the potential limitations of using unions as a way to deal with market imperfections caused by asymmetric firm power and migration.

2 Background

2.1 Immigration in Norway

During the past 50 years, Norway has transitioned from a homogeneous to a heterogeneous society with a substantial immigrant base. Specifically, between 1970 and 2020, the immigrant population has risen from approximately 57,000 to 711,000 (15 percent of the total population).[5] Approximately half of the immigrant population has a Western background. Immigrants are spread across all of Norway's municipalities, and even though residential segregation is noticeable, it has declined across most of Norway during the past 15 years (Kornstad et al. (2018)). Figure A1 shows the share of immigrants in municipalities across Norway by immigration status and over time. In 2002, both Western and non-Western immigrants were concentrated in a handful of municipalities; by 2014, most municipalities had

[5]The ten most common immigrant countries are Poland (97,197), Lithuania (37,638), Sweden (36,315), Somalia (28,696), Germany (24,601), Iraq (22,493), Syria (20,823), Philippines (20,537), Pakistan (19,973) and Eritrea (19,957).

experienced a large increase in their immigrant share, especially of non-Western immigrants.

Similar to many other OECD countries, Norway has experienced changing immigration patterns over the last few decades, away from the in-migration of Europeans to the in-migration of individuals from other parts of the world. An implication of this shift is that immigrants have become more ethnically distinct from natives over time, something that facilitates discriminatory practices among employers and institutions (e.g., Chiswick and Miller (2005)). While there often are several layers of ethnic and racial segregation in a country, in Scandinavia it is commonly observed via gaps between non-Western immigrants and other groups (e.g., Böhlmark and Willén (2020); Aldén et al. (2015); Grand and Szulkin (2002)).

Figure 1 provides visual illustrations of the Norwegian immigrant population over time. The figure shows that the immigrant population in Norway has more than tripled in the past three decades, from below 5 percent to over 15 percent of the total population. This increase almost exclusively comes from non-Western immigrants, from less than 2 percent in the mid-1980s to over 12 percent in 2018. In Section 4.2, we provide a detailed descriptive analysis of natives and immigrants.

2.2 Unions in Norway

All workers in Norway have the legal right to join a union if they so wish, but this has to be on a voluntary basis (i.e., closed-shop union agreements are not allowed). Similar to other countries, the primary goal of unions is to improve members' rights and work conditions through collective bargaining. Not only do unions play a central role in wage negotiations, but they also are involved in decisions related to job protection, work environment, work time, and other non-monetary amenities. In addition, they offer mediation and legal help in the event of work disputes. While there is a range of different unions that workers can join, almost all workers select their union based on their occupation and industry.

Similar to findings in other OECD countries, Norwegian research has documented significant tensions between unions and immigrants (Silliman and Willén, 2024). Similar patterns have also been observed in the United States (Tabellini, 2020; Medici, 2023), highlighting that the relationship between union membership and immigrant integration is not confined to a specific institutional context but is evident across diverse countries. These tensions may result in immigrants engaging with unions differently from natives or being treated differently by unions, as we show both in our empirical analysis and in our surveys.[6]

[6]For example, in Ireland, descriptive survey evidence suggests that Irish nationals may benefit more from union membership than immigrants (Turner et al., 2014). In Canada, data from the Survey of Labour and Income Dynamics suggest that unionization may have a minimal impact on reducing wage gaps for racial minority immigrants (Reitz and Verma, 2004). In the United States, craft unions have historically engaged in exclusionary practices against minority groups, such as African Americans, thereby widening black-white wage gaps (Ashenfelter, 1972; Leigh, 1978). These dynamics align with longstanding "insider-outsider" theories of the labor market. For instance, Lindbeck and Snower (1989) explicitly describe union

Despite a general trend of declining union density across the OECD over the past 20 years, Norway has seen a much less significant drop in union membership. For example, between 2000 and 2020, unionization in Sweden declined from 81 to 67 percent, unionization in Denmark fell from 75 to 67 percent, and unionization in Finland shrunk from 74 to 59 percent.[7] In Norway, unionization over this period only declined by 4 percentage points (from 54 to 50), and existing research has attributed the slower decline in unionization in Norway to the government subsidy scheme. Specifically, Barth et al. (2020a) estimate that the union density in Norway would have been at least 5 percentage points lower had the government not introduced and raised the union dues subsidies. While approximately 50 percent of the Norwegian workforce are organized members, there is substantial variation both across sectors (79 percent in the public sector and 40 percent in the private sector) and industries (e.g., 70 percent in mining and 20 percent in the hotel and restaurant industry).

The unions' involvement in the employer-employee bargaining process has two layers. First, there are industry-wide national collective bargaining agreements that dictate wage floors for all occupations. Unions are heavily involved in this process, and if negotiations fail the parties are entitled to take industrial action (e.g., strikes and lockouts). These agreements are usually renegotiated every four years. Second, there are local negotiations in which unions bargain with individual employers. During these local negotiations, unions and employers discuss not only establishment-specific wage increases for union members but also individual-specific wage increases (e.g., which union members should receive the highest wage increase). In many instances, unions will explicitly rank their own members during these negotiations or communicate specific wage requests from individual members to the employers. These local negotiations occur every year.[8] Since the late 1990s, local negotiations have accounted for more than 70 percent of total negotiated wage increases in Norway (Mogstad et al., 2021). Non-union workers do not have a legal right to bargain or to be involved in the union-employer negotiations, and it is up to the employer to adjust their pay as they deem appropriate.

Employers are legally obligated to recognize and negotiate with local unions if they are present at the workplace, irrespective of the number of members it has. Hence, in contrast to the private sector in the US in which firm unionization requires a majority support through a union election, and in contrast to Germany in which a firm either is covered by a union agreement or not, unions can operate in Norwegian workplaces as long as there is a non-zero support for the union, and they do so on top of the national collective bargaining agreements

members as "insiders" and immigrants as "outsiders."

[7] See https://stats.oecd.org/Index.aspx?DataSetCode=TUD.

[8] While a small fraction of firms only are subject to the national industry-wide collective bargaining agreements, more than 80 percent of firms in the Norwegian economy are subject to local bargaining (see Table 4.2 in Dale-Olsen et al. (2018).

that have been established. This means that union membership within the firm is crucial for being able to fully benefit from the services of unions. In this regard, Norwegian unions are relatively similar to those in Sweden, Denmark, and the UK, in which both central and local negotiations occupy a large part of the process, and in which the private goods component of union membership is likely to be larger (e.g., Dodini et al. (2023)).

2.3 Union Tax Deductions

To be a member of a labor union in Norway, workers must make a monthly payment to the organization. These payments are frequently referred to as union dues and are common across all countries in which unions operate. The union dues are used to finance a large range of programs and activities offered by the unions, including the salaries and benefits of the union leadership, the legal representation offered by the union, lobbying activities, the strike fund, and potential campaign programs.

Union dues are set at the annual meeting of the union, and the amount as well as the calculation of dues can vary significantly across different unions. For example, some unions collect a percentage of each worker's pay, while others allow this percentage to fluctuate on a sliding scale based on worker earnings, and some set dues at a fixed level. On average, dues typically range from 1-3.5 percent of a worker's monthly pre-tax income. It is particularly important to highlight that it is not necessarily the case that higher-income individuals on average pay higher dues. In fact, there is a weak correlation between the gross amount of dues charged by the union and workers' hourly wages (approximately 0.19 for individual dues paid and 0.03 for the imputed dues measure we use to construct our instrument). To provide some examples, in 2024, TEKNA, a professional association for scientists and technologists, charged NOK 4,980 in annual dues to the central union, along with NOK 144-300 in local branch dues. Similarly, NITO, a union for engineers and technologists, set annual dues at NOK 5,340. Other unions, such as Fellesforbundet, charge dues ranging from 1.5% to 2.2% of annual salary, with the exact percentage varying by local branch. Industri Energi, representing workers in petroleum, metals, pharmaceuticals, and chemicals, charges 1.47% of annual salary, with a cap of NOK 692 per month (NOK 8,602 per year), and local unions may impose additional dues. Due to these varying approaches, it is clear that workers in higher-paying occupations or industries do not always pay more dues, which explains the widespread identifying variation across occupations and lack correlation between dues levels and income. Notably in our dataset, native-born Norwegians and non-Western immigrants who are members of a union pay the same amount of their total pre-tax annual income in gross union dues at the median (1.34% versus 1.35%).

To promote worker organization, the Norwegian government offers a tax deduction for union dues. This deduction acts as a direct subsidy for union membership and is automati-

cally reflected on an individual's tax return, making it highly visible and salient to workers. Since the early 2000s, the Norwegian government has implemented several reforms that increased the maximum allowable tax deduction for union dues. These changes, which have left other aspects of the policy environment unchanged, have led to substantial increases in the deduction. Notably, the largest increases occurred during the first decade of the 21st century, with the maximum deduction rising by over 300 percent. The progression of these changes is illustrated in Figure A2. In our empirical analysis, we leverage the national government's subsidy adjustments between 2002 and 2010—-resulting in a reduction in the cost of union membership-—to construct an instrument for union membership. Given that union membership is considered a normal good, a decrease in its price typically leads to higher demand. Therefore, individuals who were previously not union members are more likely to join a union following these price reductions, as the actual cost of enrollment has declined.

Importantly, the changes in tax subsidies for union members in Norway led to significant changes in the net price of union membership for some workers but not for others (Barth et al., 2020b; Dodini et al., 2022). In particular, these changes only reduced the monetary cost of joining a union for workers whose union dues deduction was previously bounded by the deduction cap. As a result, workers at firms with higher union dues in 2001 experienced a more substantial increase in union dues subsidies compared to those at firms with lower union dues. This creates exogenous variation in predicted union membership status, allowing us to utilize an instrumented difference-in-differences design to examine its causal effect. By leveraging this variation, we can better isolate the impact of union membership on workers' outcomes.

2.4 Employment Protection Programs

All legal residents of Norway are automatically enrolled in the country's National Insurance Scheme. This scheme is financed through a national insurance contribution imposed on both employers and employees, and encompasses several welfare programs ranging from old age pension and health-related social insurance to transitional benefits for survivors and funeral grants. Two social security programs are of particular interest to this paper: Unemployment Insurance (UI) and Sick Leave Benefits (SL).

UI is available to individuals who have had their work hours reduced by at least 50 percent, are registered as job-seekers at the public employment office and submit an employment status form every 14 days, and had an income over a certain minimum amount ($16,500 in 2019) before becoming unemployed (Johnsen et al., 2022).[9] We use information on UI as a way to identify if individuals are laid off from work or not (workers who voluntarily exist a job do not qualify for UI), enabling us to better understand the job protection benefits of

[9]The replacement rate is 62 percent of the annual income the person received before becoming unemployed. The standard entitlement period is 104 weeks during our analysis period.

unions and to what extent they differ by nativity status.

SL provides compensation for income loss caused by a temporary illness or injury. The replacement rate is 100% from day one subject to a maximum amount ($62,000 in 2019). To be entitled to SL, an individual must have been in employment for the past four weeks. Long-term sick leave (beyond three days) requires a certificate from a doctor (or chiropractor if the injury is related to the muscular-skeletal system). We examine SL to understand how unions impact the work environment for natives and immigrants, though the direction of this effect is uncertain. On one hand, unions may improve work conditions, making employees less likely to use the sick leave system, either due to better health or greater job satisfaction. On the other hand, unions may provide workers with enough protection that they feel more comfortable taking sick leave without worrying about employer retaliation and job loss. Note that we only observe the overall reduced-form effect of union membership on sick leave. Therefore, while we cannot disentangle the relative size of these two possible (and opposing) effects, we can identify the overall combined effect of the two mechanisms.

3 Conceptual Framework

In this section, we conceptualize the relationship between union representation and the native-immigrant wage gap to provide context for our empirical models and results. As stated above, the bargaining process in Norway can be viewed as a two-step process. In the first step, there are industry-wide collective bargaining agreements that set wage floors. In the second step, local negotiations take place in which unions and employers discuss not only firm-specific wage increases for union members but also individual-specific wage increases. We abstract away from the first step by treating the industry-wide wage floors as given and focus on the local negotiations.

We begin by writing down a simple earnings equation for the within-firm market wage of individual i as a function of individual characteristics and union status (abstracting away from any match-specific component):

$$Log(w)_i = X_i\beta + U_i\gamma + \epsilon_i \ , \tag{1}$$

where X_i is a vector of individual characteristics, U_i is a union membership indicator, and ϵ_i is an idiosyncratic error term.

The $X_i\beta$ vector represents the individual-specific wage component and directly links the skills, qualities, and experiences of worker i to the wage compensation received at the firm. For simplicity, we assume these characteristics perfectly predict the worker's outside option value. Workers are assumed to understand and leverage this information, making it a proxy

measure of their individual bargaining power at the firm.[10]

The indicator $U_i\gamma$ denotes whether individual i is a union member and should be viewed as the additional bargaining power granted by leveraging a group-level bargaining component of the wage equation. This variable measures how much individual i benefits from the bargaining power that the union membership bestows upon the worker, above and beyond the level of compensation that the individual worker can secure through his/her individual bargaining power. For simplicity, we do not differentiate between individual union membership and firm-level union density, whose relative importance depends on the extent to which unions can be viewed as a public or a private good. Importantly, our stylized results would not change if we adjusted the expression above on this dimension.

The simple framework above provides a helpful starting point for considering how unions may impact the native-immigrant wage gap and offers a useful illustration of the theoretical ambiguity associated with this question. Specifically, existing studies demonstrate that immigrants tend to be among the more vulnerable workers in the labor market and therefore hold lower levels of individual bargaining power than natives. For example, prior work has suggested that immigrants may have less familiarity with the regulatory framework, face higher language barriers, experience greater discriminatory and predatory hiring practices of firms, and, therefore, have worse outside options.[11] If so, $\beta_{Immigrant} < \beta_{Native}$. Absent union representation at the firm, this difference in individual bargaining power would generate a native-immigrant wage gap at baseline.

Since the marginal benefit of collective bargaining decreases with individual bargaining power, group-level bargaining should more significantly benefit immigrants who possess weaker individual bargaining power. Specifically, union membership may not increase the wages of workers with a skill monopoly, as they already have strong individual bargaining power. However, it is likely to substantially boost the wages of workers with limited bargaining power who face significant wage markdowns. Thus, $\gamma_{Immigrant} > \gamma_{Native}$, and unions should help narrow the native-immigrant wage gap.

The above assertion is valid as long as (1) immigrants and natives use their union membership in similar ways, and (2) immigrants and natives are treated equally by the union in the bargaining process. However, this may not be the case. Immigrants may use unions differently. In addition, unions may prioritize the interests of native workers (if, for example, the majority of the union dues are collected from natives), they may be less able to combat

[10] Recent work suggests that workers may underestimate the value of their outside options (Jäger et al., 2022). Functionally, this may generate a discount on the relationship between outside options and bargaining power so long as outside options and perceptions of outside options do not become negatively correlated. Importantly, it is unlikely that immigrants have more accurate perceptions of their outside options, so our later assumption that individual bargaining power is stronger for natives holds.

[11] E.g., Dustmann and Glitz (2011); Algan et al. (2010); Dustmann et al. (2010); Chiswick (1978); Lehmer and Ludsteck (2011); Åslund and Skans (2010); Cutler et al. (2008); Hirsch and Jahn (2015).

workplace challenges specific to immigrant workers, they may struggle to reach and engage immigrant communities, and they may choose to allocate their resources and capacity towards other aspects of their operations. In such cases, $\gamma_{Immigrant} < \gamma_{Native}$, and unions would exacerbate inequalities between the two groups.[12]

The above discussion illustrates the theoretical ambiguity associated with the impact of unions on the native-immigrant wage gap. Specifically, if the groups use union representation in similar ways, and if unions are willing *and* able to provide the same benefits to natives and immigrants, then $\gamma_{Immigrant} > \gamma_{Native}$ and the presence of unions should contribute to a narrowing of the native-immigrant wage gap in the labor market. However, if unions either are unable *or* unwilling to provide the same benefits to natives and immigrants, then $\gamma_{Immigrant} < \gamma_{Native}$ and the presence of unions should contribute to a widening of the native-immigrant wage gap.[13]

4 Data and Descriptive Evidence

4.1 Data

We use population-wide administrative data from multiple registers managed by Statistics Norway. We begin by collecting data from the central population register, which gives us access to key demographic and socioeconomic characteristics of all individuals aged 16 through 74 in the years 2001 through 2015. These data include information on gender, age, education, marital status, country of origin, year of migration, and place of residence and work. We follow these workers across the different registers at Statistics Norway and collect additional data crucial to our analysis.

We use the matched employer-employee data to link workers to firms and establishments. These data provide us with information on each worker's employer, work characteristics, work location, establishment, industry, occupation, and contractual hours. We measure occupations at the three-digit level and we measure industry at the two-digit aggregate SIC level. To calculate contractual hours, we note that we do not have information on the exact number of work hours before 2015. Rather, we have categories of work hours. To convert these to actual hours, we use the midpoint of each category except for the highest category (30+ hours) which we assign 37 hours. This assignment is based on the observed distributions of hours from the data on detailed work hours we have access to beginning in 2015. This

[12]This discussion bears resemblance with that of which union model most accurately represents union behavior: the median voter theory (Booth (1995)) or the more hierarchical model with a separation between the interests of union functionaries and the rank-and-file membership (Pemberton (1988)). In some contexts, unions exacerbating discrimination may also be a mechanism (Ashenfelter, 1972).

[13]For simplicity, this section does not differentiate between Western and non-Western immigrants. However, it is straightforward to incorporate this differentiation into the framework discussed above. Specifically, the former have rights and institutional experiences more similar to natives, and their baseline bargaining power should therefore be considered to fall between that of natives and non-Western immigrants.

variable, therefore, contains a certain degree of noise.

We also use the matched employer-employee data to construct measures of promotions. We generate an indicator variable that takes the value of one if a worker shifts to an occupation located higher in the earnings distribution. Since we include firm fixed effects in our main empirical specification, this outcome examines the impact of union membership on within-firm vertical occupation moves. In addition, we construct a variable that takes the value of one if the worker shifts firms to one whose mean annual earnings are higher in the earnings distribution relative to the current firm. While the first promotion variable captures vertical moves within the firm, the second captures vertical moves across firms.

In addition to the matched employer-employee data, we use the tax and transfer registers to collect information on labor earnings, UI, and SL. Labor earnings are measured as pre-tax income (income from labor and self-employment), and UI as well as SL are calculated based on the cumulative amount of benefits received in the calendar year. Finally, we also use the tax and transfer registers to obtain detailed information on each individual's involvement with labor unions and how much they have paid to be a union member each year.[14]

We impose two sample restrictions. First, we restrict our sample to individuals who worked at least 20 hours per week on average. We impose this restriction to eliminate individuals with a weak labor market attachment and to ensure a more precise measure of the union earnings premium. Second, we limit the sample to those with annual earnings that would qualify them for the "1G" designation in the Norwegian benefit system, which is approximately 90,000 NOK (approximately 10,000 USD) based on 2015 values.[15] These restrictions ensure that our effects are not driven by workers without meaningful attachments to the labor market.

We divide workers into three groups: natives, Western immigrants, and non-Western immigrants. We adopt this categorization of immigrants as Western immigrants are not visible minorities in the country and tend to do as well as natives in the labor market, while this is not the case for non-Western immigrants. Following prior research on this topic in Scandinavia, we define Western immigrants as immigrants with background in Sweden, Denmark, Finland, Iceland, Belgium, France, Ireland, Luxembourg, the Netherlands, Great Britain and Northern Ireland, Germany, Austria, Switzerland, Israel, the United States, Canada or Oceania (Böhlmark and Willén (2020); Aldén et al. (2015); Korpi et al. (2023)). Non-Western immigrants, therefore, constitute all migrants coming from countries other than those listed above. In the robustness section, we will also show results using other groupings of immigrants.

[14]Since union dues are subsidized by the state through tax credits, information on membership status and individual union dues are readily available in the tax register.

[15]The "1G" designation (also called *Grunnbeløpet*), is used to calculate whether individuals qualify for certain government welfare payments and transfers, and how large those payments should be.

In addition to the administrative data, we conduct two surveys. The first survey is conducted by Norstat on a sample of approximately 5,000 workers in Norway designed to be nationally representative along baseline demographic characteristics using their online worker panel. The survey provider screens workers on union membership, age, and work history, ensuring that we obtain a sample of both union members as well as non-union workers. In the survey, we collect information on the workers' immigrant background, ranking of core career amenities (monetary compensation, job protection, promotion facilitation, and work environment), perception of unions' ability to influence these amenities, and beliefs about whether individual union membership matters above and beyond union presence at the firm (i.e., whether there are private-good components to the union-provided benefits). Finally, we collect information on workers' price sensitivity to union membership by asking whether workers would reconsider joining (leaving) the union if the net-of-subsidy union dues decreased (increased) by a specific amount. We randomize this amount in 500 NOK (50 USD) intervals across workers, from 500 to 2500 NOK (50-250 USD). We use these responses to validate our first-stage effect for the price sensitivity of union membership and demonstrate that workers consider union-provided benefits across all these amenities to contain substantial private-good components. The full survey is provided in the Appendix. The second survey is conducted on a smaller sample of only union members (approximately 1,000 workers screened on immigration status to secure a sufficient sample size across nativity status) and provides us with information on how workers use the unions, what information they receive from the unions, how satisfied they are with the services that unions provide, and whether they perceive unions to prioritize certain workers over others. This survey was implemented after the completion of the register-based data analysis and helps us understand whether the effects we identify are driven by differences in union usage across nativity groups or if they are driven by union effectiveness/willingness to advance the interest of the different groups.

4.2 Descriptive Evidence

Descriptive statistics on natives and immigrants are provided in Table 1.[16] On average, non-Western immigrants are slightly younger than natives and Western immigrants (38.6 compared to 43.6 and 42.4), are more likely to be male (56 percent compared to 51 and 55), and have fewer children (1.24 compared to 1.55 and 1.32).

In terms of educational attainment, approximately 37 percent of non-Western immigrants have a college degree, while that number is 39 percent for natives and 55 percent for Western immigrants. At the same time, almost 30 percent of non-Western immigrants have less than a

[16]While we present full population statistics in our descriptive analyses, when estimating our causal models, we take a 50% random subsample of the individuals in the data to lower the computational time arising from estimating multiple instrumental variables with tens of thousands of fixed effects on 24 million observations.

high school degree compared to 17 percent of natives and 13 percent of Western immigrants. Thus, while Western immigrants appear to be positively selected in terms of educational attainment relative to natives, that is not the case for non-Western immigrants.

The educational differences between natives and immigrants translate into sizable differences in labor market outcomes. While non-Western immigrants only earn about 80 percent of what natives earn, Western immigrants earn approximately 9 percent more than natives on average. Non-Western immigrants are much more likely to collect unemployment benefits, while all groups are approximately equally likely to receive sick leave benefits. In terms of the characteristics of the firms at which different groups work, natives tend to work in firms with higher union density, higher shares of native workers, and higher labor market power than immigrants, especially non-Western immigrants. Part of the wage differences across the demographic groups is likely driven by immigrants and natives sorting into different industries and occupations. We show this in Figure 2.

Finally, more than half of the native workforce are members of unions (Table 1). In contrast, only 34 percent of non-Western immigrants and 37 percent of Western immigrants are members of unions.

4.3 First Survey Results

Before analyzing the role of unions in shaping the labor market gaps between natives and immigrants, it is valuable to understand workers' perceptions of the impact unions have on their careers and how sensitive they are to the cost of union membership. To achieve this, this subsection presents a series of descriptive plots based on findings from the first survey introduced in Section 2. Overall, the survey reveals four key insights that enhance the interpretation of our analysis results.

First, we ask workers to rank the relative importance of specific work amenities by allocating 100 "points" across the different amenities: compensation, job security, work environment, and promotion possibilities. Figure 3 shows that the average worker considers monetary compensation to be the most important career component of their jobs, followed by job security, work environment, and lastly promotion possibilities. There is not a substantial difference in the rank order of preferences across nativity status. However, non-Western immigrants place less weight on their work environment and more weight on promotion opportunities.

Second, we ask workers to assess the union's ability to positively influence these amenities on a scale of 0-100. Figure 4 illustrates that the workers' perception of unions' ability to influence the four core career dimensions largely aligns with their individual ranking of these amenities. Specifically, the average worker believes that unions are best able to influence monetary compensation, followed by job security, work environment, and finally promotion

possibilities. There is little evidence of differences in workers' perceptions of the unions' ability to influence these four work dimensions across nativity status.

Third, we ask non-union workers their reasons for not being part of a union (Figure 5). Across nativity status, one of the biggest reasons for not joining a union is related to the cost of membership. This is encouraging for the purpose of our analysis, as it suggests an important role for union dues subsidies in shifting the union membership status of workers. Non-Western immigrants are more likely to attribute their non-union status to cost (nearly 25 percent) relative to natives (14 percent). In addition, non-Western immigrants are more likely to doubt a union's ability to influence the workplace relative to natives (22 versus 17 percent).

Finally, we ask if non-union workers would consider joining a union if the price was reduced by a hypothetical amount, and we ask if union members would consider leaving the union if the price was increased by a hypothetical amount. Figure 6 shows that workers are extremely price-sensitive to union membership. Specifically, more than 50 percent of the surveyed union members would consider leaving the union if the monthly net-of-tax union dues increased by as little as 500 NOK.[17] Similarly, approximately 40 percent of nonunion members would consider joining a union if the net-of-tax union dues decreased by as little as 500 NOK. Even if we interpret these survey results as an upper bound of the true price sensitivity to union membership, this implies that the price elasticity of union membership is substantial. Figure 6 also reveals that there is a large difference across nativity status. Specifically, Western immigrants are more price-sensitive to union membership than natives, and non-Western immigrants are considerably more so.

5 Method

5.1 Overview and Intuition

Identifying the causal effect of union membership is challenging due to the issue of selection. Specifically, the decision to join a union likely is not random and may be influenced by observed and unobserved factors that also have direct effects on the outcomes of interest. This selection issue is a special case of omitted variable bias, introducing spurious correlation between union membership and the outcomes that may be driven by completely different factors than union status, thereby biasing the results. This is a very common issue in union research and has made it particularly difficult to address union-related questions in economic research.

To address this selection problem, we leverage exogenous changes in the cost of union membership. Specifically, when the price of union membership decreases, we expect an

[17] When asking this question, we randomly assign an increase between 500 and 2,500 NOK, in 500 NOK increments.

increase in the demand for union membership. This is because a lower cost makes joining the union more accessible, leading non-members to become more likely to enroll. Importantly, these changes in the cost of union membership are exogenously introduced by the central government and are beyond the control of the individual worker, thereby orthogonal to any other individual characteristic that may shape union status and outcomes. Thus, using these price changes as an instrument allows us to isolate the causal effect of union membership on various labor market outcomes.

The price changes we exploit come from the national government-mandated subsidies for union dues discussed in Section 2. The maximum tax deduction for union dues increased by more than 300 percent between 2002 and 2010 and significantly altered the net price of union membership. A particularly interesting feature of this subsidy policy is that it only reduced the membership price for workers whose union dues were high enough that their deductions were previously bounded by the tax deduction cap, while it had no impact on workers whose union dues were below the deduction cap. As such, individuals at firms subject to higher union dues before 2003 could expect a substantial increase in these subsidies compared to individuals at firms with lower union dues. This enables us to implement an instrumented difference-in-differences design in which we compare individuals at high and low subsidy firms over time as a function of the subsidy bite and the resulting union membership take-up.

Figure A3 demonstrates the relationship between base (pre-deduction) dues and net dues after the subsidy. Increases in the maximum deduction cap may affect workers differently depending on their prior dues in three ways. First, workers whose dues were below the old cap ($D < c_0$) experience no change, as demonstrated by those whose base dues were below 900 NOK in 2002. Workers whose dues were above the old cap but below the new cap ($c_0 < D < c_1$) experience a decrease in their net-of-subsidy union dues of $\tau(D - c_0)$, which represents the sloped gap opening between base and net dues. Workers whose dues were above the new cap ($D > c_1$) face a fixed decrease in their net-of-subsidy union dues of $\tau(c_1 - c_0)$, represented by the constant gap between base and net dues. Over time, the vertical gap between base and net dues grew and affected workers with higher base dues more intensely than those with lower base dues. This is the variation we use in our empirical models below.

Note that we are not the first to use this instrument, and the novelty of our paper lies not in the estimation approach we use but rather in using a well-established empirical strategy to address a novel and important question – in particular amidst a period of increased migration, persistent native-immigrant wage gaps, and rapidly changing power dynamics in labor markets – that prior research has been unable to address (e.g., Barth et al. (2020b); Dodini et al. (2022; 2023)).

The thought experiment underlying our research design involves two non-unionized work-

ers (Worker A and Worker B) of the same age, working in the same industry-occupation in the same year, but at different firms. Worker A is employed at a firm where union dues subsidies are bounded by the existing deduction cap, while Worker B is at a firm where these subsidies are not capped. As the maximum allowable tax deduction increased over time, the resulting subsidies reduced the cost of joining a union for Worker A but not for Worker B. Consequently, assuming union membership is a normal good, Worker A will become disproportionately more likely to join a union compared to Worker B due to the policy change. We use this differential policy-induced shift in unionization costs to identify the effect of union membership. By comparing the change in union membership for a native worker at Firm A relative to Firm B to the change for an immigrant worker at Firm A relative to Firm B within this framework, we effectively isolate the within-firm change in the native-immigrant gap due to union enrollment.

5.2 Empirical Implementation

To implement our empirical approach and model the union membership choice as a function of membership costs, we begin by calculating the hypothetical cost of joining a union for workers who are currently not members. This step is necessary because the union membership database only includes information on dues for those who are members; non-members, by definition, pay nothing to the union.

We calculate the hypothetical cost of union membership for non-union workers by taking the mean union dues paid by workers in each occupation-industry cell each year and applying this to all non-members. This approach is designed to capture the average cost of union membership within local unions, as unions are often defined by occupation and industry, reflecting the diversity of dues structures across different sectors. Using the mean membership cost within these cells provides an accurate representation of what a non-member would have to pay, on average, in order to join the union, and thereby captures the variation in union dues costs across local unions.

It is important to highlight that we rely exclusively on mean dues within these cells when calculating the counterfactual cost to ensure the exogeneity and integrity of the instrument. If we instead augment the prediction model by incorporating individual characteristics, such as wages, we risk introducing potential endogeneity into the counterfactual dues calculation. Including such variables may break the validity of the instrument, as they could be correlated with unobserved factors affecting both union membership and outcomes. Thus, this approach provides a straightforward and unbiased basis for estimating the causal effect of union membership, ensuring a clean and valid instrument.

To ensure that all workers are treated equally and to abstract from any information on individual union dues or wages that may be endogenously determined by individual or firm

characteristics, we apply this imputation approach to union members as well.[18] We then define the union dues of the firm as the average imputed union dues across all workers at the firm.

When constructing our measure, we fix each worker's imputed union dues, $\overline{D^0_{f_b}}$, at the first firm in which they appear in their first year in the data (which is 2001 for the vast majority of workers in our sample). The reason for doing this is that firms and unions may endogenously respond to the subsidy legislation by altering the occupations they decide to employ or by changing the union dues directly. Individual union membership may also change the likelihood that workers switch firms. By fixing each worker's imputed union dues at their first year in the data, we remove the risk of these potential biases breaking the exogeneity of our instrument. We adjust the imputed union dues forward to nominal NOK, yielding $\overline{D^0_{f_bt}}$. This represents the nominal cost of joining a union for a worker in base firm f_b in year t if that firm's imputed dues grew at the same rate as overall price levels.

Once we have constructed the hypothetical union dues, we calculate the union dues subsidy. The subsidy is equal to the lesser of the legislated maximum deduction ($MaxDeduction_t$) and the worker's imputed union dues ($\overline{D^0_{f_bt}}$) multiplied by the applicable tax rate:[19]

$$Subsidy_{f_bt} = T_t \times (min\{\overline{D^0_{f_bt}}, MaxDeduction_t\}) \ , \tag{2}$$

where T_t is the base tax rate in year t.

The identifying variation in our subsidy measure comes from differences in the occupation-industry mix of the firm in each worker's base year (which generates differential exposure to the raising of the cap due to differences in the level of the pre-increase union dues) combined with changes in the legislated maximum deduction over time (which more than quadrupled over 12 years and generated several sequential increases).

It is important to note that high union dues may not be randomly assigned across firms. Rather, differences in baseline union dues may reflect other factors that are also correlated with our outcomes of interest. However, even though we show that there is very little correlation between baseline firm characteristics and the intensity of later exposure to the subsidies (Appendix Table A1), we also emphasize that a relationship between these factors and potential outcomes does not compromise identification. Our empirical design is akin to an instrumented difference-in-differences design in which we compare individuals at high and low subsidy firms over time as a function of the subsidy bite. We, therefore, do not need these firms to be identical in the base year – we only need them to trend similarly to each

[18] Encouragingly, the correlation between the imputed and non-imputed union dues for workers who are members is close to 1.

[19] To isolate changes in the guaranteed *statutory* subsidy from changes in the *realized* subsidy that may depend on marginal tax rates, we multiply the subsidy value by the country's base tax rate (28 percent from 2001 to 2013 and 27 percent from 2014 onward)

other absent the policy shift. We show strong supportive evidence of this assumption in the next subsection.

Having obtained our subsidy measure, we calculate the net-of-subsidy union dues by subtracting the value of the subsidy from the gross imputed baseline union dues ($ND_{f_bt} = \overline{D^0_{f_bt}} - Subsidy_{f_bt}$). This changes within a worker's base firm over time only through the legislated subsidy channel and represents our instrument. Using this instrument, we estimate the following equations:

$$\begin{aligned} y_{iocf,t+1} = \alpha + \beta_1 \hat{U}_{iocft} + \beta_2[\hat{U}_{iocft} \times WI_i] + \beta_3[\hat{U}_{iocft} \times NWI_i] + \beta_4 WI_i + \beta_5 NWI_i \\ + \gamma_t + \zeta_{a_b} + \eta_a + \iota_{oc_b} + \kappa_{oc} + \lambda_{f_b} + \phi_f + \delta_{i\bar{U}} + \epsilon_{iocft}, \end{aligned} \tag{3}$$

$$\begin{aligned} U_{iocft} = \tau + \pi_1 ND_{f_bt} + \pi_2[ND_{f_bt} \times WI_i] + \pi_3[ND_{f_bt} \times NWI_i] + \pi_4 WI_i + \pi_5 NWI_i \\ + \gamma_t + \zeta_{a_b} + \eta_a + \iota_{oc_b} + \kappa_{oc} + \lambda_{f_b} + \phi_f + \delta_{i\bar{U}} + \mu_{iocft}, \end{aligned} \tag{4}$$

where Equation 4 represents the first-stage and Equation 3 represents the second-stage.

In Equation 4, U_{iocft} is the union membership status of individual worker i in occupation-industry cell oc and firm f in year t. The instrument, ND_{f_bt} is assigned to individuals as described above. We interact the instrument with dummies for whether the individual is a Western immigrant (WI_i) or non-Western immigrant (NWI_i) to examine the differential effects of the instrument on individual's union status depending on immigration background.[20]

We include fixed effects for both current as well as baseline characteristics. Specifically, t represents year fixed effects, a (a_b) denotes age (baseline age) fixed effects, oc (oc_b) signifies occupation-industry (at baseline) fixed effects, and f (f_b) indicates firm (at baseline) fixed effects. We do not incorporate education fixed effects since the occupation-industry fixed effects capture skill differences across individuals on a more granular level than education fixed effects. In Appendix Table A3, we illustrate this point directly, demonstrating that our results are unaffected by adding the education control at the individual level. We also do not control for municipality fixed effects since location is subsumed by the firm fixed effects that we include.

The $\delta_{i\bar{U}}$ coefficient is an indicator for whether the worker was an "always-taker" (i.e., a union member throughout our sample period). We account for always-taker status for two reasons. First, always-takers are employed in the same firms, occupations-industry cells, and years as marginal union members and contribute to variation in the fixed effects for all of these cells. Second, while always-takers contribute to variation in the fixed effects, they

[20] In practice, following Wooldridge (2010), the interactions between each nativity group (i.e. Western and Non-Western immigrants) and the net dues (ND_{f_bt}) serve as instruments for the interaction between nativity group and union membership, resulting in three combined instruments for three endogenous treatments.

contribute nothing to identification because there is no variation in union membership among this group. Not accounting for always-takers means that the estimated first-stage coefficient of the instrument will be smaller because there is no variation in the union membership choice of always-takers, leading to larger and less precise second-stage estimates.

In Equation 3, $y_{iocf,t+1}$ represents an outcome of interest for individual i at time $t+1$ and β_1 measures the average effect of union membership for all workers on that outcome using the net union dues ND_{f_bt} as an instrument. β_2 and β_3 are the estimates of interest and measure the differential effect of union membership depending on worker i's immigration status within the same firm, industry-occupation, and age cells. We measure outcomes in $t+1$ to capture the effect of the union with a full year of membership, as individuals could choose to join a union partway through the year. All fixed effects included in Equation 3 are also included in Equation 4. We cluster the standard errors at the individual worker level since this is the level of treatment assignment.[21]

5.3 Assumptions and Threats to Identification

Our estimation strategy is akin to an instrumented difference-in-differences design. Therefore, four assumptions need to hold. First, we require that workers in low-exposure base firms can be used as a credible counterfactual to workers in high-exposure base firms in the absence of the subsidy changes (common trends). In other words, exposure to the instrument cannot predict the potential outcomes of workers associated with these firms. Second, workers must respond to changes in union membership price (relevance). Third, the union dues subsidies can only affect individual career outcomes through their effect on membership probability (exclusion). Finally, there can be no defiers (monotonicity).

With respect to the relevance assumption, we show directly in the next section that workers are highly responsive to changes in union membership price (something that we also externally verify through hypothetical scenario analysis in the first survey). In terms of the exclusion restriction, this cannot be tested directly. However, given the fact that these subsidy schemes were imposed across the entire country by the national government, and because identifying variation comes from pre-implementation differences across firms, we can think of no other pathway through which the union dues subsidy may impact workers' outcomes. With respect to the monotonicity assumption, this cannot be tested directly in the data either. However, the only way for this assumption to be violated would be if union membership is a Giffen good at certain prices, something we find unlikely.

Lastly, in terms of the common trends assumption, Figure 7 shows how union membership (first-stage) and earnings (second-stage) evolved over time for native versus immigrant

[21] The correct level at which to cluster may be debatable given the fact that treatment take-up is individual, while instrument exposure is at the base firm level. When we (more conservatively) cluster at the level of base firms, the relative differences between immigrant groups continue to be statistically and economically significant (Table A8).

workers whose base firm had larger reductions in their net union dues between 2002 and 2010 (the top quartile) relative to smaller reductions in net dues (the bottom quartile). Panels A and B, respectively, show these when controlling only for base firm fixed effects, which determines exposure. Panels C and D further control for each worker's base firm, occupation-by-industry cell, age group, and always union status to more closely match Equations 4 and 3. These panels show parallel trends within and across immigrant groups as a function of exposure to the subsidy regardless of the controls we use. Workers whose base firms experienced a higher exposure are not on a different path than those in lower-exposure base firms both within nativity categories or across categories. This provides strong suggestive support for the common trends assumption.

When examining this figure, two things are worth noting. First, not all variables in our set of combined registers are available prior to 2001 (e.g. occupation), so we cannot estimate a full event study model with contemporaneous controls. The fact that parallel trends hold despite the addition of a considerable number of controls is encouraging and supports our identification strategy. These results also rule out strong differential sorting by immigrant groups into high-exposure status based on occupations, industries, age, or firms. One of the reasons why we observe such clear parallel trends, even without including our rich set of fixed effects from our main model, is that these firms are very similar to each other at baseline and that there is little correlation between baseline characteristics and later treatment intensity (see Appendix Table A1). Second, our main interest lies in understanding the differential effect of union enrollment among natives and immigrants. Thus, the common trends assumption discussed above is actually a stricter assumption than what is required (due to the level of saturation of our estimating model), as any bias from non-parallel trends (which we find no support for) also would have to differentially affect natives and immigrants in order to threaten the causal interpretation of our results.

Examining Figure 7, we also see preliminary suggestive raw evidence of a first-stage effect of the subsidy increases on union membership, as well as a second-stage effect on worker wages. Specifically, the union membership gap between high- and low-subsidy workers increased substantially for natives and immigrants over the analysis period, but the increase in union membership was larger for immigrants. We also show that the earnings gap between high- and low-subsidy firms increases over the analysis period as well. The earnings gap between high- and low-subsidy workers increases the most for natives relative to their change in union membership. The growth in the earnings gap is smaller for immigrants relative to their change in union membership rates. This implies that union membership may exacerbate wage inequality between these groups. The gaps between high- and low-subsidy workers generally stabilized around 2010 when the subsidies stopped increasing dramatically.

Before turning to our core findings, it is important to emphasize that our estimates

represent the local average treatment effect (LATE) among the "compliers," i.e. those who joined a union as a result of the subsidy-induced reduction in the costs of joining a union based on where people were working at the beginning of their time in the sample. It is, therefore, informative to examine compliance rates among different nativity classifications as well as subgroups within these classifications.

In our estimation models, the instrument is continuous, which requires some adaptation from the typical binary instrument case. We follow Dahl et al. (2014) and estimate a first-stage regression of union membership on the change in net dues from the prior year after accounting for our various fixed effects. We then compare predicted treatment take-up (being a union member) at the 1st percentile of residualized changes in net dues compared to the 99th percentile. Put differently, we examine the set of workers that would have switched their union status at the top and the bottom of the instrument exposure distribution, which helps us scale take-up by the entire range of the instrument. We then repeat this same exercise for different subgroups within each immigrant group, including across income quartile. We report the results of this exercise in Table A2. The goal of the additional income-based compliance rate in Panel B is to document that immigrants and natives are not systematically coming from different places in the income distribution by any meaningful margin. The 1-year compliance rate is higher for natives than immigrants, for women than men, for public sector workers than private sector workers, and for high-education workers than low-education workers. The characteristics of immigrant and native workers that comply with the instrument are similar. Overall, there is a significant overlap in compliance rates among the three nativity groups, meaning that the compliers are likely to be comparable within and across groups across observed characteristics including income.

6 Results

6.1 First-stage

Table 2 shows the effect of our instrument on the probability that workers enroll in unions, using the empirical specification outlined in Equation 4 on the sample with non-missing log total earnings in time $t+1$. The first row of Table 2 demonstrates that a 1,000 NOK increase in tax deductions generates an increase in the probability that a native worker enrolls in a union by 11 percentage points. This suggests that there is a sizeable price elasticity of union membership for marginal union members in Norway. It is a similar degree of responsiveness to that estimated in Barth et al. (2020b); Dodini et al. (2021), and is in the same range as results from the survey of Norwegian workers' self-reported responsiveness to union dues.[22]

Rows 2 and 3 show that the price elasticity of union membership for marginal Western

[22]Specifically, the survey shows that 35% of the non-unionized native workforce would consider joining a union if the dues fell by 500-2,500 NOK per month.

immigrants is the same as that of natives, while that for marginal non-Western immigrants is slightly higher. This result is consistent with our survey evidence on the price sensitivity to union membership (Figure 6).[23] That the price elasticity of union membership for marginal union members is relatively similar across immigrants and natives is interesting in light of the large differences in baseline union enrollment shown above, but helps reinforce the idea that the subsidy change had a large effect on workers propensity to unionize irrespective of migration background. The last row shows the Kleibergen-Paap F-statistic. With a value that exceeds 150, this provides support for the relevance criterion required for causal inference in our setting.

6.2 Compensation

In terms of monetary compensation and work hours, Columns (1) and (2) of Table 3 show the effect of union membership on total labor earnings and hours worked for natives, Western immigrants, and non-Western immigrants. These results are based on Equations 4 and 3 introduced in Section 5. Looking across the columns, several things are worth noting. First, and consistent with existing work on the union wage premium, we identify a significant wage premium associated with union membership among natives of approximately 0.1 log points (row 1 of Column (1)).

Second, we find that the union wage premium is unevenly distributed across workers depending on their migration background. Specifically, while native workers enjoy a union wage premium of approximately 0.1 log points, Western immigrants experience a much smaller wage premium effect of 0.04 log points, and non-Western immigrants do not experience any short-term wage benefit from joining a union. This result suggests that unions contribute to a widening of the native-immigrant wage gap and thereby exacerbate inequalities between the groups.

Third, the differential wage effects of union membership across natives and immigrants do not appear to exclusively operate through an impact on the total number of hours worked. Specifically, while row 1 of Column (2) shows a four-hour increase in work time among natives as a consequence of union membership, rows 2 and 3 show that Western and non-Western immigrants benefit almost as much. Thus, the differential compensation effect identified in Column (1) is not due to unions causing a reshuffling of work hours across natives and immigrants.[24]

[23] Our survey shows that about 42% of non-unionized Western immigrant workers would consider joining a union if the dues fell by 500-2,500 NOK per month, slightly higher than the responses from native workers, whereas about 60% of the non-unionized non-Western immigrant workers say they would consider joining a union if the dues are reduced by 500-2,500 NOK per month.

[24] If we look directly at hourly wages, we obtain a premium of approximately 0.06 for natives and 0.00 for non-Western immigrants. However, as noted in the data section, the hours variable is imputed from a categorical variable and represents contractual hours rather than actual hours, so we encourage some caution when interpreting the results relying on hours.

6.3 Worker Protection

In terms of worker protection, Columns (3) of Table 3 shows the effect of union membership on the amount of unemployment benefits received. We use information on UI as a way to identify if individuals are laid off from work or not (workers who voluntarily exist a job do not qualify for UI), enabling us to better understand the job protection benefits of unions and to what extent they differ by nativity status.

Row 1 of Column (3) shows that natives experience a reduction in UI benefits of approximately 14,000 NOK (USD 1,400) as a consequence of joining a union. Row 2 of Column (3) shows that Western immigrants enjoy a smaller employment protection effect from union membership, with a reduction in total UI benefits of around 12,500 NOK. Thus, similar to our findings for the compensation effects of unions, Western immigrants appear to benefit less from union take-up than natives.

Turning to non-Western immigrants, row 3 of Column (3) shows that union membership has a much smaller effect on the total amount of UI benefits that they receive (approximately 7,800 NOK). This result either suggests that unions prioritize the compensation and protection of natives over immigrants in the negotiation process with firms, or that the unions are unable to offer the same benefits to immigrants due to other reasons (e.g., less leverage over firms with respect to these workers).

6.4 Work Environment

Column (4) of Table 3 provides estimates of the union membership effect on the work environment of employees, which we proxy with sick leave usage of individuals. Row 1 shows that the amount of SL benefits taken by natives is unaffected by union enrollment (negative but not statistically significantly different from zero). Interpreting sick leave take-up as a proxy for work environment quality, these results suggest that the work environment is relatively unaffected (for natives) as a consequence of union representation.[25]

The point estimate in row 2 of Column (4) suggests that unions affect the sick leave usage of Western immigrants to an even lesser extent than natives, with a point estimate of only about 400 NOK (combining the $Union$ and $Union * WesterImmigrant$ coefficients). However, neither the effect on natives nor Western immigrants is statistically significantly different from zero. We interpret this to suggest that unions have a similarly small and negligible impact on the work environment – as proxied by sick leave usage – on natives and Western immigrants.

For non-Western immigrants, row 3 of Column (4) shows that the amount of sick leave benefits non-Western immigrants use declines substantially following union enrollment. The

[25]We note that Dodini et al. (2023) document significant heterogeneity in sick leave effects of unions across worker age. This is beyond the scope of the current paper.

interpretation we find most consistent with this result is that unions help improve the work environment of non-Western immigrants such that they are less inclined to utilize the sick leave system. That this effect loads on non-Western immigrants rather than natives could be due to this group having a lower degree of individual bargaining power and being more likely to be exposed to exploitation practices from employers (e.g., by being assigned riskier tasks or being assigned to a riskier environment). The application of group-level bargaining and union protection may therefore have a larger positive marginal effect on their work environment. However, we emphasize that this explanation is speculative and not one that we can fully disentangle in the data. We, therefore, encourage some caution with respect to this result.

6.5 Career Progression

Concerning career progression, row 1 in Columns (5) and (6) show that unions have a positive effect on the probability that a native worker gets promoted to a higher-paying position but a negative effect on the probability that a native worker switches to a higher-paying firm. This promotion and lock-in effect is not economically meaningfully different among Western and non-Western immigrants. This suggests that the differential compensation effect union membership generates for natives and immigrants is not driven by unions successfully helping natives to disproportionately advance their careers, but rather by unions being able to secure different wage benefits for immigrants and natives despite them being equally likely to enjoy vertical moves within the company.

7 Extensions

7.1 Interaction with Labor Market Power

A union's ability to extract rent from firms and reallocate those rents to members depends fundamentally on two factors: (1) the existence of abnormal profits at the firm and (2) the bargaining power of the union. Both of these factors are strongly related to the labor market power – or monopsony power – that the employer possesses. The potential for differential effects across labor market concentration also suggests that the union effect on the native-immigrant labor market gap may differ considerably as a function of the labor market concentration of the market within which they operate. Given the ongoing trend towards greater market concentration across most of the OECD over the past several years, understanding the dynamic effects of unions across market concentration is of great independent interest.

Table 4 provides results from estimating our baseline regression in which we interact the treatment variable with a dummy variable that indicates high labor market concentration (above median HHI). To ease interpretation, we show the overall marginal effect of union

membership by labor market concentration (the raw coefficients are provided in Table A5).[26] Several results are worth highlighting.

First, the results demonstrate that the union membership benefits are considerably larger in concentrated markets and that there are no statistically significant earnings benefits from individual union enrollment in perfectly competitive markets. This is consistent with the idea that the available rents that unions can extract from firms are considerably larger in concentrated markets (Dodini et al., 2022). Second, the results show that the differential effects of unions on natives and immigrants grow as concentration increases because union membership disproportionately rewards natives (and to a lesser extent, Western immigrants) in concentrated labor markets over non-Western immigrants. This implies that unions act as a countervailing force to employer power in imperfect markets and can ameliorate the negative labor market effects of labor market concentration, but only for natives. Relying on unions to solve the market failure of imperfect competition in the labor market may, therefore, generate substantial wage inequality between groups. This result highlights another important dimension of the labor market concentration debate that has been overlooked in the literature.[27]

7.2 Expanded Immigrant Categorizations

In our baseline analysis, we divided the working population into three groups: natives, Western immigrants, and non-Western immigrants. We pursued this categorization of immigrants as Western immigrants are not visible minorities in the country and tend to do as well as natives in the labor market, while this is not the case for non-Western immigrants. It is also consistent with recent work on this topic in Scandinavia (e.g., Böhlmark and Willén (2020); Aldén et al. (2015); Korpi et al. (2023)).

If geographic proximity to and similarity with the host country are driving the differential effects across immigrants and natives, it is of course possible to impose even finer levels of immigrant categorization. For example, we can divide Western immigrants into those who originate from Scandinavia and those who originate from outside of Scandinavia. Scandinavian migrants are similar to Norwegians not only in their cultures and institutions but also in their languages.

[26] HHI is the sum of squared employment shares across firms in each occupation and labor market, and ranges from 0 to 1. A value of 1 implies a perfectly concentrated market with only one employer, and a value of 0 implies a perfectly competitive market. We fix each firm's HHI at the first year in which the firm appears in the data. In our analysis sample, the median HHI across all local labor markets in Norway is approximately 0.05.

[27] One concern with our specification is that there could plausibly be immigration group-specific time-varying shocks that bias our estimates. To examine this, we perform a supplemental analysis in which we include immigration status by year fixed effects to all analyses. The results for the baseline model with additional fixed effects are shown in Table A4. Overall, the results do not significantly change from the baseline specification quantitatively or qualitatively. Similarly, the results for the marginal effect of union membership by labor market concentration with additional fixed effects are shown in Table A7, and they do not differ meaningfully from the baseline model.

The results from this exercise are shown in Table 5. Looking across the columns and rows of Table 5, it becomes apparent that similarity to the host country appears to play an important role in the ability of immigrants to reap the benefits of union representation. Specifically, across all outcomes, immigrants from Scandinavia benefit just slightly less than natives from union take-up, non-Scandinavian Western immigrants benefit slightly less still, and non-Western immigrants benefit the least. This result suggests that unions contribute to a widening of the native-immigrant wage gap and thereby exacerbate inequalities between societal groups, with the historically least disadvantaged immigrant groups (Scandinavians) experiencing the smallest increase in the native-immigrant gap and the historically most disadvantaged immigrant groups (non-Western immigrants) experiencing the largest.

7.3 Mechanisms

A key question that emerges from our analysis is what are the mechanisms underlying the union's differential impact on natives and immigrants? There are two dimensions to this question. The first is whether the differential union impact on natives and immigrants is coming from unions being less effective and/or willing to help immigrants in the bargaining process, or whether it is coming from immigrants and natives using their local unions in different ways and at different intensities. The second dimension relates to which mechanisms drive either the differential union utilization behavior of immigrant and native workers or the differential effectiveness/willingness of unions to advance the interests of immigrants and natives.

In this section, we first present results from our mechanism survey, which interviewed 950 union members about their local union experiences. The survey strongly indicates that the differential impact of unions by nativity status is driven by union behavior rather than worker behavior. Next, we address the second dimension of the mechanism question and examine the channels underlying the union's differential treatment or effectiveness at supporting natives and immigrants. We present evidence from auxiliary analyses that rule out one key pathway and provide support for another.

7.3.1 Results from Mechanism Survey

The first question we ask is how much information natives and immigrants received from the union upon joining the organization related to salary, job security, promotions, and work environment. The result is shown in Appendix Figure A4 and demonstrates that there is little variation in the information that workers receive from unions across nativity status. This implies that native-immigrant gaps in information provision from unions are unlikely to explain our core results in the administrative data.

The second question we ask is whether unionized workers have contacted their local union

in the past year with respect to each of the four career amenity categories. The result is shown in Appendix Figure A5, and illustrates that non-Western immigrants are considerably more likely to contact their local unions for help than are natives and Western immigrants, particularly on matters related to their work environment, where non-Western immigrants have mean contacts more than three times that of natives. This strongly suggests that the differential labor market effects of unions across nativity status are unlikely to come from non-Western immigrants utilizing their local unions less than natives.

The third set of questions we ask is whether union workers think that (1) the union is effective in advancing their interests along the four career amenity dimensions, and (2) conditional on having asked the union for help, if they felt that the union made a positive difference for their labor market outcomes. These results are shown in Appendix Figures A6 and A7. Interestingly, while natives and immigrants think that unions - on average - are effective in advancing the worker's interests (Appendix Figure A6), non-Western immigrants are considerably less satisfied with the help they have received from the union conditional on having asked for help (Appendix Figure A7). The only exception to this pattern relates to the work environment question, in which non-Western immigrants appear more satisfied than natives. This pattern of results closely mirrors our main findings - showing that the only dimension in which unions appear to benefit non-Western immigrants more than natives concerns the work environment.

The fourth set of questions we ask union workers is if they believe that the local union is prioritizing certain workers over others, and if so, which groups they believe that the union focuses more attention on (open-ended question). These results are shown in Appendix Figure A8. In Panel A, both natives and immigrants believe that unions treat workers unequally, but the share of non-Western immigrants that hold this belief (nearly 30 percent) is considerably larger than the share of natives that hold this belief (approximately 18 percent). In Panel B, we show that both natives and immigrants believe that workers with better networks and greater access to the local union leadership (for example friends with the union representatives, local workers, workers with local roots, and workers with direct linkages to the local unions, etc.) matter the most. 35 percent of natives and approximately 25 percent of non-Western immigrants responded this way. As the second and third most prioritized groups, non-Western immigrants list natives (15 percent) and skilled workers that are located higher up in the earnings distribution (11 percent), while natives list skilled workers that are located higher up in the earnings distribution (25 percent) and workers who shout the loudest (15 percent). These results provide two key insights: (1) a large share of union members are under the impression that unions engage in preferential treatment of members across specific worker dimensions, and (2) a large share of non-Western immigrants strongly believe that natives are being prioritized over immigrants. With respect to (2), it is also

worth noting that our result likely is an underestimate of the true perception of deferential treatment since both local workers with strong networks as well as workers with specialized skills higher up in the earnings distribution – the other two groups that immigrants believe are being prioritized – also are more likely to be natives.

Finally, we ask whether the worker is happier at work as a consequence of joining a union (Appendix Figure A9). Both native and non-Western immigrants are likely to respond positively to this question, but there is a greater share of dissatisfied non-Western union members than for native union members.

Taken together, the results from our mechanism survey suggest that natives and immigrants receive the same amount of information from unions and that immigrants are more likely to ask unions for help. However, non-Western immigrants are generally less satisfied with the help they receive, and there is a widespread perception of unions prioritizing certain workers over others. For the non-Western immigrants, the second most common answer in terms of which group is being prioritized – according to them – is native workers. These findings provide strong suggestive evidence that the differential labor market effects of unions across nativity status likely operate through the behavior of unions rather than through differences in how natives and immigrants utilize their unions. The results also provide strong suggestive evidence of perceived union inequality across workers with different nativity statuses, and these results mirror our core findings relatively well.

7.3.2 Results from Administrative Data Mechanism Analysis

Having shown that the immigrant gap in union effects likely comes from the unions themselves, we turn to examine the mechanisms underlying the union's differential treatment/effectiveness in supporting natives versus immigrants. While we are restricted in the number of mechanisms we can examine in this section, we will present evidence from auxiliary analyses that rule out one key pathway and provide support for another.

First, we show that our results are not a consequence of unions being more successful at providing benefits to the majority group at the firm, and thus that our results are not due to immigrants being a relatively small group at any one firm. We obtain these results by estimating our baseline model in which we directly examine interactions between the union membership status and whether the firm has an above-median (as measured across all firms in our sample in the base year) share of native workers at their workplace (89 percent). The results are shown in Table A6. For ease of interpretation, the marginal effects for each subgroup are shown in Table 6. Overall, there is no evidence to suggest that non-Western immigrants benefit more from working at firms with a higher share of immigrant workers,

especially in terms of total earnings, hours, and unemployment benefits.[28]

Second, we show evidence consistent with the idea that unions are targeting natives as such targeting will maximize overall union profits. Specifically, we show that more than 90 percent of the within-firm dues that unions collect come from natives (Figure A10). This is not only because natives are more likely to be union members, but also because natives on average earn higher wages and pay higher dues. Thus, if we assume that the objective of unions is to maximize profit by collecting as much in dues as possible, a focus on satisfying the needs and desires of natives would be rational. This finding is also consistent with the union members' own perceptions of which group of workers unions prioritize, with high-skilled workers in more important jobs and those further up in the hierarchy being ranked as the second and third most prioritized groups according to natives and non-Western immigrants, respectively. It is also consistent with non-Western immigrants' perceptions that natives are the second most prioritized group (Appendix Figure A8). However, we emphasize that this is our interpretation of the findings and that alternative interpretations are possible. Specifically, we are not able to say with certainty the likelihood of this mechanism driving our results; there are also additional mechanisms through which our effects could operate that we are unable to explore. We see it as a crucial area for future research to disentangle the mechanism behind the effects we find.

7.4 Unions and Earnings Inequality

To estimate the overall impact of unions on earnings inequality across groups, we perform a simple back-of-the-envelope calculation. Our estimates hold fixed the distribution of employment across occupations, industries, and firms. Thus, we can highlight how much of the native-immigrant earnings gaps are attributable to differences after holding these characteristics fixed. First, from Table 1, we calculate the average actual earnings gap between natives and non-Western immigrants ($467,859.1 - 377,230.4 = 90,628.7$). Second, we take the union earnings premium estimated from the baseline model (point estimate of Union from Table 3) and calculate natives' average earnings had they not been union members ($467,859.1/1.104 = 423,785.4$). We do the same for non-Western immigrants ($377,230.4/0.998 = 377,986.4$). Third, we calculate the simulated average earnings of natives as the weighted average of earnings from non-union workers and from union members had they not been in the union ($0.44 * 467,859.1 + 0.56 * 423,785.4 = 443,177.8$). We do the same for non-Western immigrants ($0.66 * 377,230.4 + 0.34 * 377,986.4 = 377,487.4$). Then,

[28] In fact, the opposite is true: non-Western immigrants benefit when they constitute a smaller share of their firm's workers. One explanation for this finding could be that discriminatory firms hire non-Western immigrants to a much smaller extent and that marginal non-Western immigrants are highly capable but undervalued, such that union membership helps them more. However, this is not a hypothesis we can explore with the data we have. It is also worth noting that only about 3 percent of all non-Western person-year observations are at firms with more than 89 percent natives, constituting an exceptionally small share of the total sample.

we can calculate the simulated average earnings gap between natives and non-Western immigrants ($443,177.8 - 377,487.4 = 65,690.4$). Finally, we can calculate the percentage of the earnings gap between natives and non-Western immigrants that unions contribute to ($90,628.7 - 65,690.4/90,628.7 = 0.275$). In other words, as much as 27.5 percent of the native and non-Western immigrant earnings gap can be explained by differential rates and returns to union membership within firms and industry-occupation cells.[29]

8 Discussion and Conclusion

This paper provides the first comprehensive assessment of the causal effect of union membership on labor market disparities between natives and immigrants. To perform our analysis, we rely on exogenous price changes in the cost for workers to join labor unions in an instrumented difference-in-differences framework.

The main takeaway from our paper is that unions disproportionately benefit natives, thereby augmenting native-immigrant labor market gaps and exacerbating inequality between these groups. Using large-scale field surveys, we show that these effects likely stem from union behavior rather than differences in how natives and immigrants utilize unions. Effects are more severe in concentrated labor markets, suggesting that relying on unions to combat monopsony-based market failures comes at the cost of increased inequality across these groups.

The core contribution of this paper is to combine two key features of modern labor markets – immigrant workers and labor unions – to examine the role of core labor market institutions in either mitigating or exacerbating economic disparities across different demographic groups, even within the same firms, occupations, and industries. Amidst a period of increased migration, persistent native-immigrant wage gaps, and rapidly changing power dynamics in labor markets, understanding the role of unions in amplifying existing labor market disparities between immigrants and natives is crucial for informing policy discussions and promoting more inclusive labor markets and immigrant integration.

A key question that arises from our research is: what mechanisms explain the union's differing ability or willingness to support native workers versus immigrants? One argument in favor of unions prioritizing the interests of native workers is that most of the within-firm dues collected by unions come from natives. This is not only because natives are more likely to be union members, but also because they tend to earn higher wages on average. However, we recognize that other mechanisms also may be driving these effects. We view it as a crucial

[29] Alternatively, we estimate the predicted values of total earnings from regressions 4 and 3 for each group, holding individual characteristics constant. We then assign union membership to all workers and no workers, respectively, and calculate the predicted total earnings for each group. The same patterns emerge – the earnings gap between natives and immigrants is smaller if no one is a union member and larger if everyone is a union member. In terms of magnitudes, this alternative approach delivers similar numbers. Thus, union membership widens the earnings gap between natives and immigrants.

area for future research to further disentangle the mechanism behind the differential union membership effects across demographic groups.

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Tables

Table 1: Summary Statistics by Immigration Status

	Natives	Western Immigrants	Non-Western Immigrants
Age	43.55	42.35	38.58
Gender (1=male, 2=female)	1.49	1.45	1.44
Number of children	1.55	1.32	1.24
Years since arrival	-	19.57	12.14
Education (%)			
Less than high school	0.17	0.13	0.30
High school	0.45	0.33	0.33
College	0.39	0.55	0.37
Earnings	467,859.10	506,224.50	377,230.40
Hours	33.36	33.61	32.26
Union	0.56	0.37	0.34
Always union	0.34	0.19	0.12
Firm union density	0.53	0.47	0.41
Share of native workers at firm	0.897	0.798	0.721
Firm labor market power (HHI)	0.09	0.08	0.06
Unemployment benefit	2,694.01	3,917.02	7,265.04
Conditional unemployment benefit	54,304.26	62,039.57	65,407.83
Sick leave	12,040.22	11,796.49	11,661.74
Conditional sick leave	50,240.86	51,967.67	50,968.28
N	24,077,182	1,104,143	2,109,938

Source: Authors' calculations of Norwegian registry data from 2001 to 2015. Education statistics of immigrants are self-reported. Earnings are measured as pre-tax income from labor and self-employment. Firm labor market power (HHI) is the sum of squared employment shares across firms in each occupation and labor market, and ranges from 0 to 1. A value of 1 implies a perfectly monopolistic market, and a value of 0 implies a perfectly competitive market. We fix each firm's HHI at the first year in which the firm appears in the data. Unemployment benefit and sick leave benefit are calculated based on the cumulative amount of benefits received in a given year. Conditional unemployment and sick leave benefits are calculated from those who receive positive amounts.

Table 2: First-Stage Results

	(1) Union Membership
Net Dues (1,000 NOK)	-0.1140***
	(0.0053)
Net Dues×Western immigrant	-0.0015
	(0.0024)
Net Dues×Non-Western immigrant	-0.0138***
	(0.0020)
Observations	11,641,139
Kleibergen-Paap F	158.17

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the specification in Equation 4 with Log total earnings as the regression outcome. Standard errors are clustered at the individual level. The model includes fixed effects for year, immigrant status, base and current occupation-by-industry cell, base and current firm, and always union status.

Table 3: Effect of Union Membership on Career Outcomes
Baseline Specification

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Union	0.104**	4.339***	-14,906***	-6,801	0.124***	-0.123***
	(0.0438)	(0.844)	(1,875)	(5,284)	(0.0248)	(0.0255)
Union×Western Immigrant	-0.0644***	-0.456**	2,247***	6,420***	0.00449	0.0230***
	(0.0172)	(0.229)	(563.0)	(1,471)	(0.00637)	(0.00674)
Union×Non-Western Immigrant	-0.102***	-0.338	7,121***	-14,553***	-0.0163	-0.0114
	(0.0250)	(0.384)	(1,045)	(2,528)	(0.0107)	(0.0115)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	158.17	122.33	164.94	165.27	164.53	164.53

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the two-stage least squares specification in Equations 3 and 4. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for year, immigrant status, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

Table 4: Marginal Effect of Union Membership on Career Outcomes by Labor Market Concentration

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Natives in Low HHI Firms	0.0575	3.509***	-10,689***	-6,376	0.173***	-0.112***
	(0.0416)	(0.796)	(1,898)	(4,964)	(0.0234)	(0.0242)
Western Imm in Low HHI Firms	-0.0456	2.850***	-6,344***	4,167	0.178***	-0.0760***
	(0.0495)	(0.857)	(2,104)	(5,473)	(0.0259)	(0.0265)
Non-Western Imm in Low HHI Firms	-0.0592	4.255***	3,496	-19,513***	0.139***	-0.0719**
	(0.0557)	(0.976)	(2,593)	(6,357)	(0.0295)	(0.0308)
Natives in High HHI Firms	0.3072***	7.218***	-30,818***	-6,957	0.00847	-0.136***
	(0.0586)	(1.152)	(2,682)	(6,899)	(0.0329)	(0.0340)
Western Imm in High HHI Firms	0.222***	6.945***	-31,293***	3,492	-0.0658	-0.107**
	(0.0865)	(1.466)	(3,897)	(8,970)	(0.0425)	(0.0439)
Non-Western Imm in High HHI Firms	-0.232	2.938	-30,816***	-44,288***	-0.256***	-0.512***
	(0.152)	(2.043)	(6,793)	(15,438)	(0.0742)	(0.0907)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	62.41	50.16	65.04	65.53	65.51	65.51

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.

Notes: Estimates represent the marginal effects from the two-stage least squares specification in Equations 3 and 4, and are interpreted independently. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for year, immigrant status, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues. High HHI is an indicator for the worker's firm being above the sample median in local labor market concentration, which we measure at the occupation-local labor market level. In our analysis sample, the median HHI is approximately 0.05.

Table 5: Effect of Union Membership on Career Outcomes
Alternative Immigration Categorization

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Union	0.104**	4.337***	-14,903***	-6,824	0.124***	-0.123***
	(0.0438)	(0.844)	(1,876)	(5,286)	(0.0248)	(0.0255)
Union×Scandinavian Imm	-0.0540**	-0.530*	2,014***	6,969***	0.0180**	0.0217**
	(0.0225)	(0.293)	(758.7)	(2,050)	(0.00863)	(0.00903)
Union×Western Imm	-0.0744***	-0.384	2,469***	5,900***	-0.00876	0.0241**
	(0.0253)	(0.341)	(821.7)	(2,047)	(0.00910)	(0.00975)
Union×Non-Western Imm	-0.103***	-0.338	7,124***	-14,562***	-0.0164	-0.0113
	(0.0250)	(0.384)	(1,044)	(2,528)	(0.0107)	(0.0115)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	118.56	91.65	123.63	123.88	123.35	123.35

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the two-stage least squares specification in Equations 3 and 4. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for year, immigrant status, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

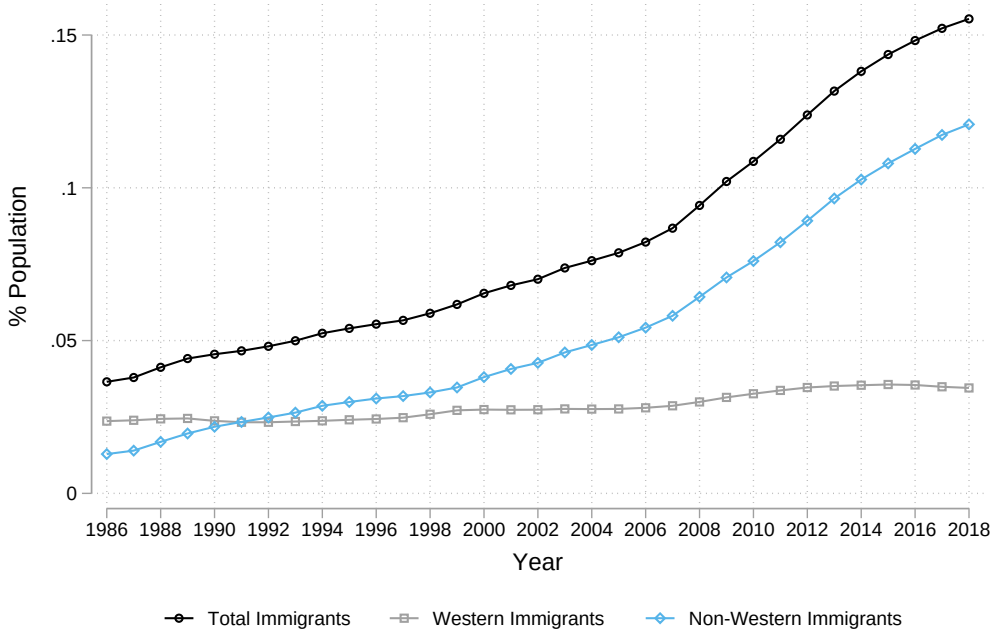
Table 6: Marginal Effect of Union Membership on Career Outcomes by Firms' Immigrant Worker Share

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Natives in Low ImmShare Firms	0.106**	4.770***	-16,869***	-5,881	0.136***	-0.113***
	(0.0442)	(0.862)	(1,914)	(5,318)	(0.0251)	(0.0258)
Western Imm in Low ImmShare Firms	0.0488	4.530***	-16,331***	-1,114	0.120***	-0.114***
	(0.0514)	(0.948)	(2,142)	(5,968)	(0.0281)	(0.0289)
Non-Western Imm in Low ImmShare Firms	0.119*	4.004***	-18,339***	-12,445*	0.121***	-0.193***
	(0.0626)	(1.147)	(2,757)	(7,307)	(0.0342)	(0.0355)
Natives in High ImmShare Firms	0.117***	4.013***	-12,748***	-6,149	0.122***	-0.157***
	(0.0430)	(0.832)	(1,856)	(5,195)	(0.0244)	(0.0252)
Western Imm in High ImmShare Firms	0.0300	3.664***	-8,938***	2,340	0.136***	-0.110***
	(0.0496)	(0.887)	(2,062)	(5,612)	(0.0263)	(0.0274)
Non-Western Imm in High ImmShare Firms	-0.0654	4.598***	844.1	-28,964***	0.0818**	-0.154***
	(0.0607)	(1.086)	(2,631)	(7,014)	(0.0321)	(0.0335)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	79.52	60.57	83.03	83.2	82.92	82.92

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates represent the marginal effects from the two-stage least squares specification in Equations 3 and 4, and are interpreted independently. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for year, immigrant status, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

Figures

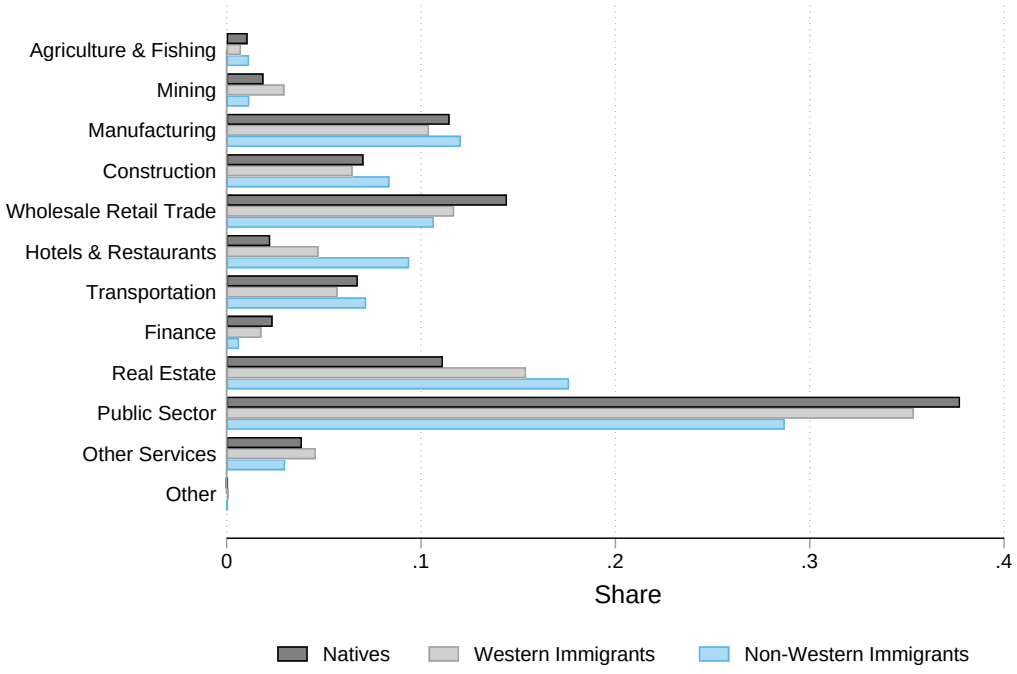
Figure 1: Trends in Immigration in Norway



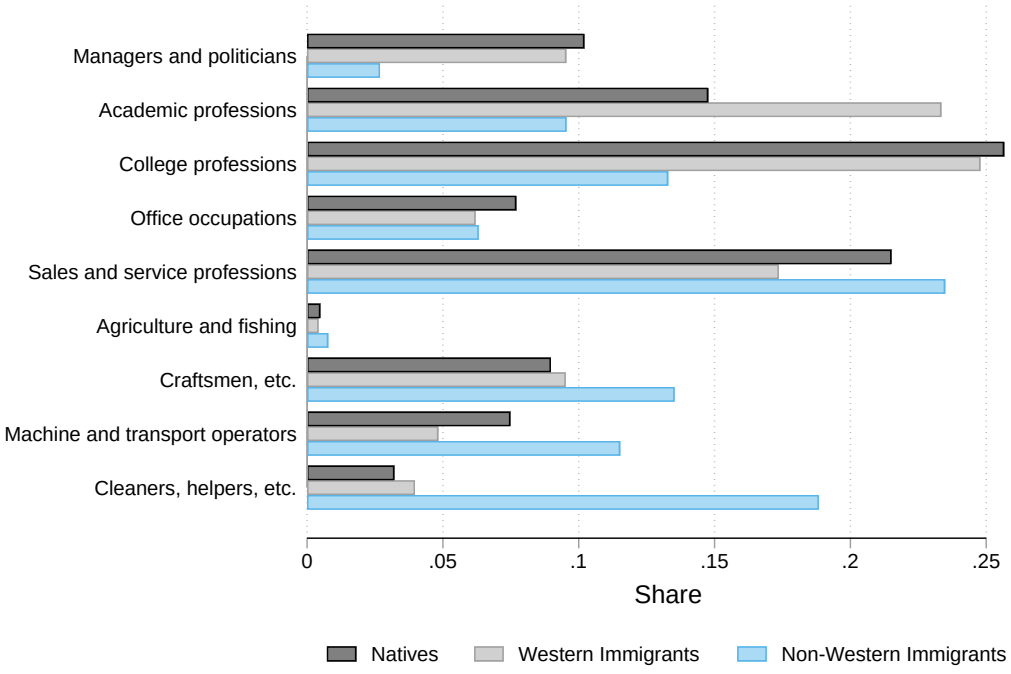
Source: Authors' calculations of Norwegian registry data.

Figure 2: Worker Industry and Occupation Share by Immigration Status

Panel A: Industry

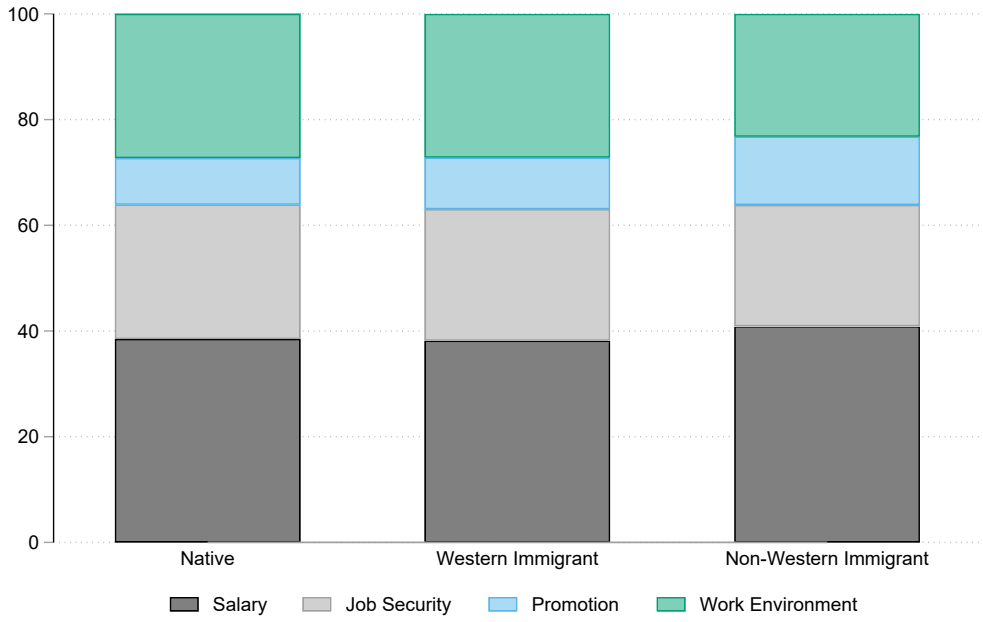


Panel B: Occupation



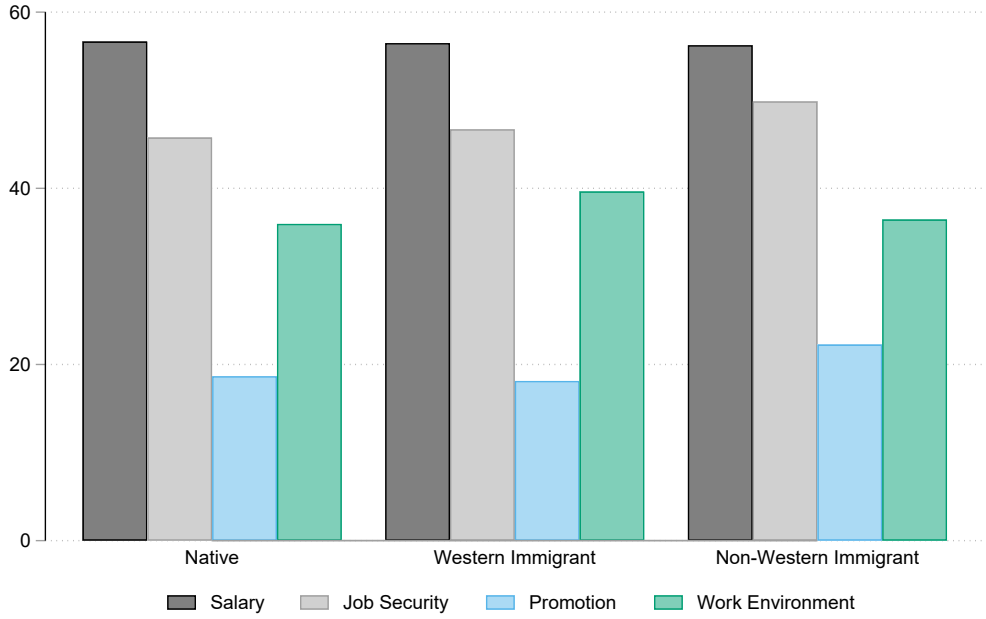
Source: Authors' calculations of Norwegian registry data from 2001 to 2015.

Figure 3: Worker Valuation of Career Amenities by Immigration Status (Survey One)



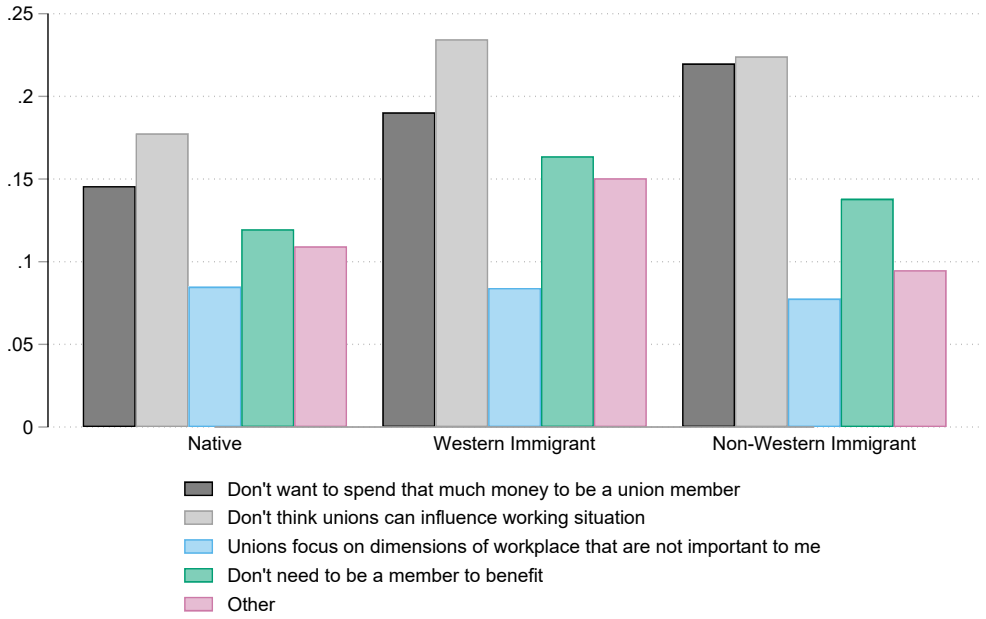
Source: Authors' calculations based on survey data collected by NORSTAT on behalf of the authors.
Notes: The question on the survey asked, "Rank the following job characteristics based on importance to your future career and well-being: Salary, Job Safety, Promotion Potential and Work Environment Quality. Here we ask you to award 100 points across the four categories. You can assign anything between 0 and 100 to any of the categories, as long as the total amount of points for all four categories is 100."

Figure 4: Union Member Perception of Union Influence Over Career Outcomes by Immigration Status (Survey One)



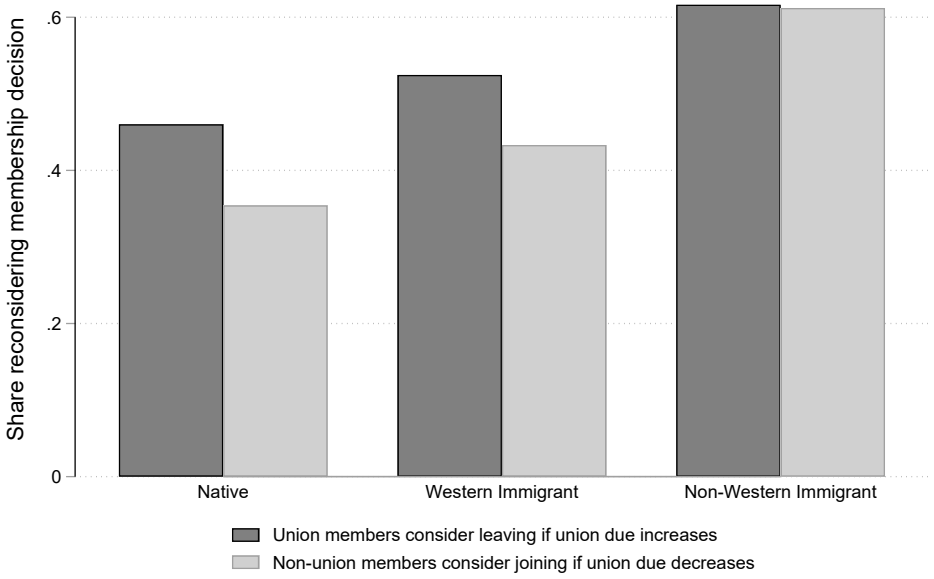
Source: Authors' calculations based on survey data collected by NORSTAT on behalf of the authors.
Notes: The question on the survey asked, "How important do you think the union is to improving your pay, job security, promotion potential and work environment quality? 0 means 'not at all' and 100 means 'completely.' The total for all four need NOT be 100."

Figure 5: Nonunionized Workers Reason For Not Unionizing by Immigration Status (Survey One)



Source: Authors' calculations based on survey data collected by NORSTAT on behalf of the authors. Notes: The question on the survey asked, "The purpose of this question is to understand the reason why you do not join a union. Check all the boxes that apply."

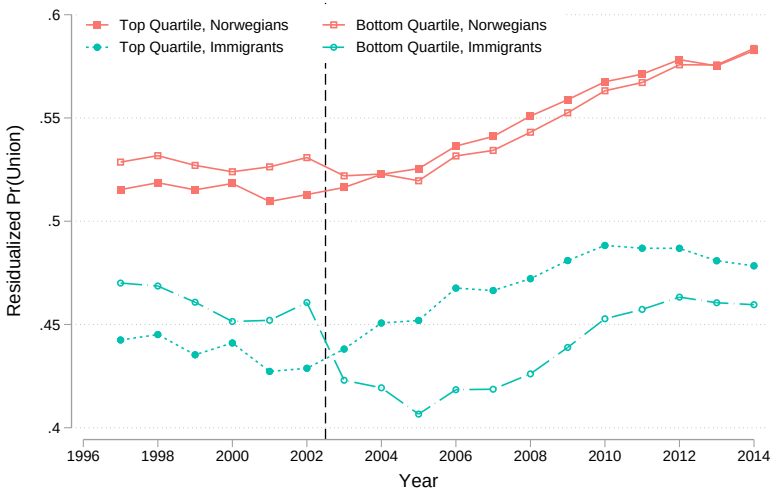
Figure 6: Price Sensitivity to Union Membership by Immigration Status (Survey One)



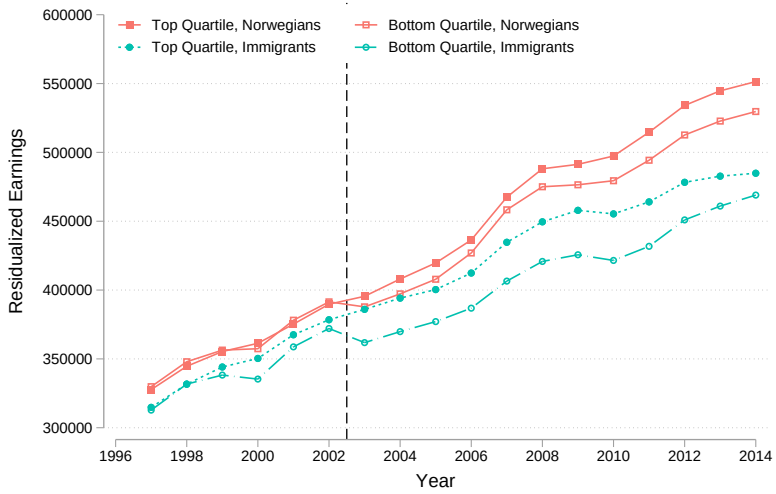
Source: Authors' calculations based on survey data collected by NORSTAT on behalf of the authors. Notes: The question on the survey asked, "If your after-tax dues for union membership were reduced [increased] by [XYZ] NOK, would you reconsider your decision to join a union?"

Figure 7: Trends in Union Membership Rates and Earnings by Instrument Intensity and Immigrant Status

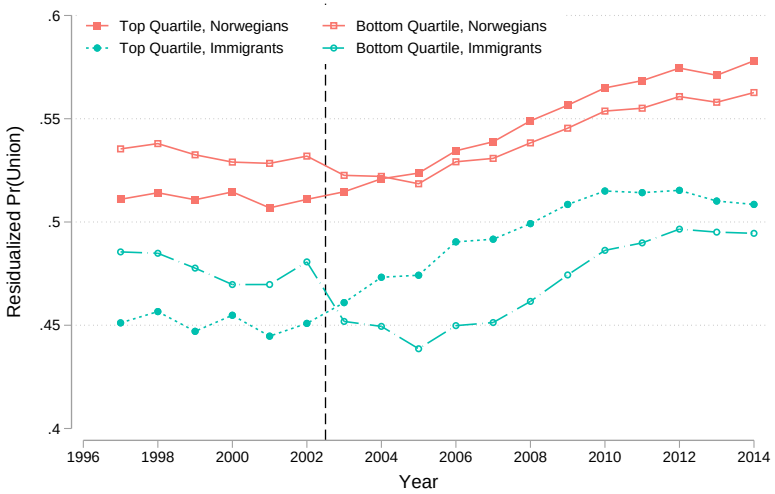
Panel A: Union Membership | Base Firm



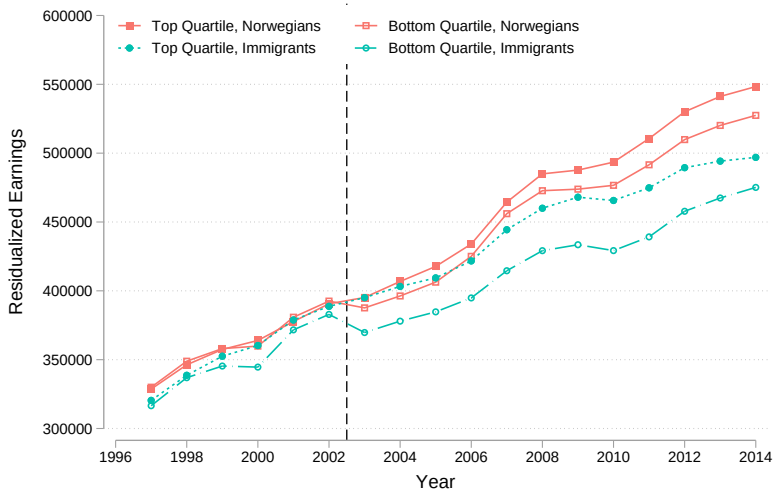
Panel B: Earnings | Base Firm



Panel C: Union Membership | Other Controls



Panel D: Earnings | Other Controls



Source: Authors' calculations of Norwegian registry data from 1997 to 2014.
Notes: The "Top" group denotes workers whose base firm was in the top quartile for reductions in net union dues from 2002-2010, while "Bottom" denotes workers whose base firm was in the bottom quartile of net dues reductions over the same period. Panels A and B account for fixed effects for a worker's base firm. Panels C and D account for dummies for values for each worker's base firm, occupation-by-industry cell, age group, and always union status to most closely match the estimating Equations 4 and 3.

A Tables Appendix

Table A1: Instrument Intensity and Baseline Characteristics, Correlations

	(1) Raw Correlation with Reduction in Net Dues	(2) Conditional Correlation with Reduction in Net Dues
Log Real Earnings	-0.109	-0.00305
Native Norwegian	-0.0340	-0.0145
Western Immigrant	0.00851	0.00453
Non-Western Immigrant	0.0379	0.0153
Female	0.189	0.00987
Age	0.00475	-0.0000284
Less than High School	0.0224	0.0104
High School Diploma	-0.0738	-0.0159
Bachelors Degree +	0.0580	0.00804
Observations	3,241,832	3,241,832

Source: Authors' calculations of Norwegian registry data from 2002 to 2010.
Notes: Correlations are between the reduction in net dues within a worker's base firm in the data between 2002 and 2010 and a set of baseline characteristics for each worker in the base firm. Conditional correlations are for the reduction in net dues after residualizing on controls for occupation by industry cell, age group, and "always union" status.

Table A2: Compliers Analysis

Panel A: Demographic Characteristics

	(1) Native Norwegians	(2) Western Immigrants	(3) Non-Western Immigrants
Overall	0.071	0.056	0.053
Female	0.102	0.078	0.094
Less than High School	0.066	0.049	0.066
High School Diploma	0.062	0.046	0.038
Bachelors Degree +	0.083	0.066	0.074
White Collar	0.087	0.068	0.092
Manufacturing	0.050	0.019	0.042
Public Sector	0.126	0.116	0.159
Collective Agreement	0.047	0.042	0.037

Panel B: Income Quartile

	(1) Native Norwegians	(2) Western Immigrants	(3) Non-Western Immigrants
Earnings Q1	0.098	0.083	0.057
Earnings Q2	0.067	0.055	0.065
Earnings Q3	0.067	0.070	0.058
Earnings Q4	0.051	0.045	0.080

Source: Authors' calculations of Norwegian registry data from 2001 to 2014.
Notes: Compliance is calculated in three steps. First, we residualize the one-year change in net dues on each of our fixed effects (except always union status). Second, we estimate our first-stage regression of union membership status on this measure of instrument exposure for each subgroup. Third, we use the parameters of the model to estimate predicted union membership at the 1st and 99th percentile of the instrument and characterize the share of workers changing status as compliers.

Table A3: Effect of Union Membership on Career Outcomes
Baseline Specification with Education Control

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Union	0.0888**	4.523***	-14,776***	-6,544	0.114***	-0.119***
	(0.0438)	(0.848)	(1,875)	(5,284)	(0.0247)	(0.0255)
Union*Western Immigrant	-0.0624***	-0.390*	2,103***	6,239***	-0.00535	0.0124*
	(0.0174)	(0.236)	(570.1)	(1,484)	(0.00641)	(0.00683)
Union*Non-Western Immigrant	-0.0927***	-0.227	7,098***	-10,426***	-0.0352***	-0.0216**
	(0.0236)	(0.370)	(988.6)	(2,338)	(0.00995)	(0.0109)
Observations	11,553,853	10,676,793	12,434,709	12,449,701	12,481,381	12,481,381
Kleiberage-Paap F stat	157.56	121.87	164.76	165.15	164.52	164.52

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the two-stage least squares specification in Equations 3 and 4 with additional education control. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for immigrant status by year, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

Table A4: Effect of Union Membership on Career Outcomes
Baseline Specification with Immigrant Group by Year FE

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Union	0.128***	4.191***	-15,254***	-4,486	0.129***	-0.112***
	(0.0440)	(0.850)	(1,895)	(5,312)	(0.0251)	(0.0256)
Union×Western Immigrant	-0.0633***	-0.446*	1,832***	5,900***	0.0120*	0.0291***
	(0.0169)	(0.229)	(555.4)	(1,433)	(0.00624)	(0.00647)
Union×Non-Western Immigrant	-0.0706***	-0.257	4,100***	-10,880***	0.0226**	0.0168
	(0.0240)	(0.382)	(999.7)	(2,364)	(0.0103)	(0.0107)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	157.44	120.22	163.15	163.44	162.71	162.71

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the two-stage least squares specification in Equations 3 and 4 with additional interactions for immigrant group by year dummies. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for immigrant status by year, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

Table A5: Effect of Union Membership on Career Outcomes
Interacting with Labor Market Concentration

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Union	0.0575	3.509***	-10,689***	-6,376	0.173***	-0.112***
	(0.0416)	(0.796)	(1,898)	(4,964)	(0.0234)	(0.0242)
Union×HighHHI	0.250***	3.709***	-20,129***	-580.9	-0.164***	-0.0245
	(0.0293)	(0.546)	(1,387)	(3,152)	(0.0155)	(0.0165)
Union×Western Imm	-0.103***	-0.660*	4,346***	10,543***	0.00550	0.0358***
	(0.0280)	(0.338)	(968.2)	(2,496)	(0.0117)	(0.0115)
Union×Non-Western Imm	-0.117***	0.745	14,186***	-13,136***	-0.0335**	0.0399**
	(0.0327)	(0.461)	(1,590)	(3,354)	(0.0147)	(0.0160)
Union×Western Imm×HighHHI	0.0179	0.386	-4,820	-93.38	-0.0798***	-0.00641
	(0.0680)	(1.003)	(2,949)	(5,972)	(0.0278)	(0.0284)
Union×Non-Western Imm×HighHHI	-0.423***	-5.026***	-14,184**	-24,195*	-0.231***	-0.415***
	(0.138)	(1.594)	(6,310)	(13,415)	(0.0650)	(0.0847)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	62.41	50.16	65.04	65.53	65.51	65.51

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the two-stage least squares specification in Equations 3 and 4. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for year, immigrant status, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

Table A6: Effect of Union Membership on Career Outcomes
Interacting with Immigrant Worker Share

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Union	0.106**	4.770***	-16,869***	-5,881	0.136***	-0.113***
	(0.0442)	(0.862)	(1,914)	(5,318)	(0.0251)	(0.0258)
Union×High ImmWorker	0.0105	-0.757***	4,121***	-267.9	-0.0140***	-0.0438***
	(0.00876)	(0.151)	(386.5)	(1,017)	(0.00504)	(0.00539)
Union×Western Imm	-0.0573**	-0.240	537.5	4,767**	-0.0151*	-0.00111
	(0.0232)	(0.312)	(734.5)	(2,078)	(0.00919)	(0.00955)
Union×Non-Western Imm	0.0134	-0.766	-1,470	-6,564*	-0.0142	-0.0800***
	(0.0350)	(0.555)	(1,566)	(3,689)	(0.0167)	(0.0178)
Union×Western Imm×High ImmWorker	-0.0292	-0.109	3,272***	3,722	0.0297**	0.0479***
	(0.0316)	(0.455)	(1,179)	(3,074)	(0.0141)	(0.0154)
Union×Non-Western Imm×High ImmWorker	-0.195***	1.351*	15,061***	-16,251***	-0.0255	0.0830***
	(0.0451)	(0.709)	(2,218)	(4,864)	(0.0216)	(0.0238)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	79.52	60.57	83.03	83.2	82.92	82.92

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the two-stage least squares specification in Equations 3 and 4. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for year, immigrant status, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

Table A7: Marginal Effect of Union Membership on Career Outcomes
by Labor Market Concentration with Immigrant by Year FE

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Natives in Low HHI Firms	0.0809*	3.377***	-10,996***	-4,279	0.176***	-0.103***
	(0.0419)	(0.802)	(1,927)	(4,992)	(0.0236)	(0.0242)
Western Imm in Low HHI Firms	-0.0236	2.733***	-6,934***	5,396	0.190***	-0.0615**
	(0.0493)	(0.863)	(2,111)	(5,442)	(0.0259)	(0.0262)
Non-Western Imm in Low HHI Firms	-0.00649	4.227***	113.3	-14,248**	0.180***	-0.0363
	(0.0548)	(0.974)	(2,565)	(6,238)	(0.0291)	(0.0301)
Natives in High HHI Firms	0.336***	7.013***	-30,893***	-4,340	0.00935	-0.127***
	(0.0591)	(1.160)	(2,723)	(6,948)	(0.0332)	(0.0341)
Western Imm in High HHI Firms	0.252***	6.754***	-32,309***	4,422	-0.0386	-0.0802*
	(0.0848)	(1.472)	(3,859)	(8,771)	(0.0413)	(0.0426)
Non-Western Imm in High HHI Firms	-0.0823	2.899	-40,248***	-30,065**	-0.137**	-0.416***
	(0.140)	(2.045)	(7,228)	(14,337)	(0.0656)	(0.0803)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	63.11	49.17	64.73	65.12	64.99	64.99

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates represent the marginal effects from the two-stage least squares specification in Equations 3 and 4, and are interpreted independently. Standard errors are clustered at the individual level. Outcomes are measured in year *t+1*. The model includes fixed effects for immigrant status by year, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

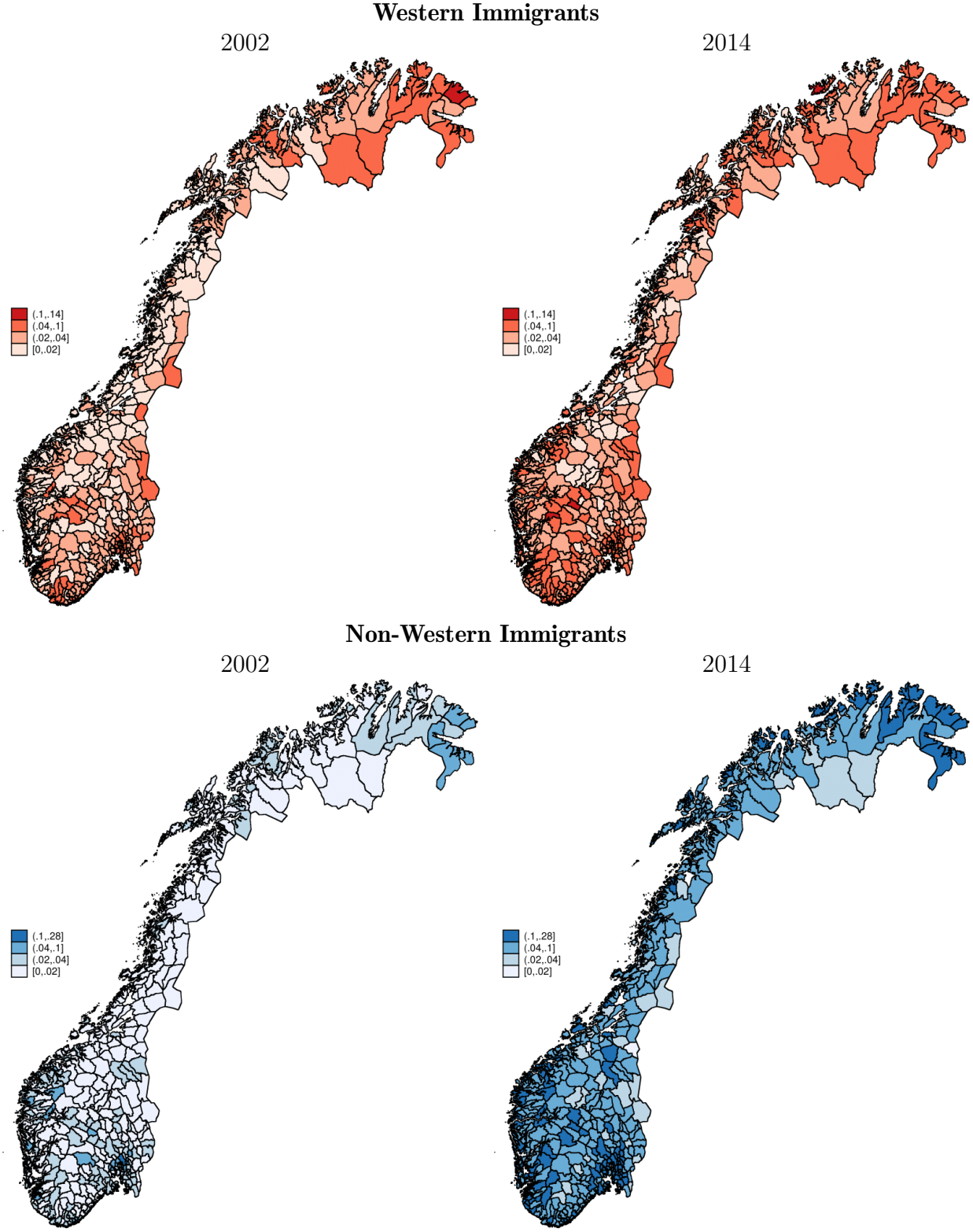
Table A8: Effect of Union Membership on Career Outcomes
Baseline Specification with Alternative SE Clustering

	(1) Log total earnings	(2) Hours	(3) Unemployment benefits	(4) Sick leave benefits	(5) Promotion	(6) Firm upgrade
Union	0.104	4.339**	-14,906***	-6,801	0.124*	-0.123
	(0.0987)	(2.194)	(3,431)	(6,622)	(0.0742)	(0.131)
Union×Western Immigrant	-0.0644***	-0.456*	2,247***	6,420***	0.00449	0.0230***
	(0.0187)	(0.253)	(626.6)	(1,457)	(0.00733)	(0.00831)
Union×Non-Western Immigrant	-0.102**	-0.338	7,121***	-14,553***	-0.0163	-0.0114
	(0.0455)	(0.662)	(1,526)	(3,682)	(0.0189)	(0.0520)
Observations	11,641,139	10,748,291	12,536,194	12,552,783	12,593,963	12,593,963
Kleibergen-Paap F stat	29.81	23.29	30.15	30.15	29.8	29.8

Source: Authors' calculations of Norwegian registry data from 2001 to 2015.
Notes: Estimates come from the two-stage least squares specification in Equations 3 and 4. Standard errors are clustered at the firm level. Outcomes are measured in year *t+1*. The model includes fixed effects for immigrant status by year, base and current occupation-by-industry cell, base and current firm, and always union status. Current union status is instrumented by the base firm's net union dues.

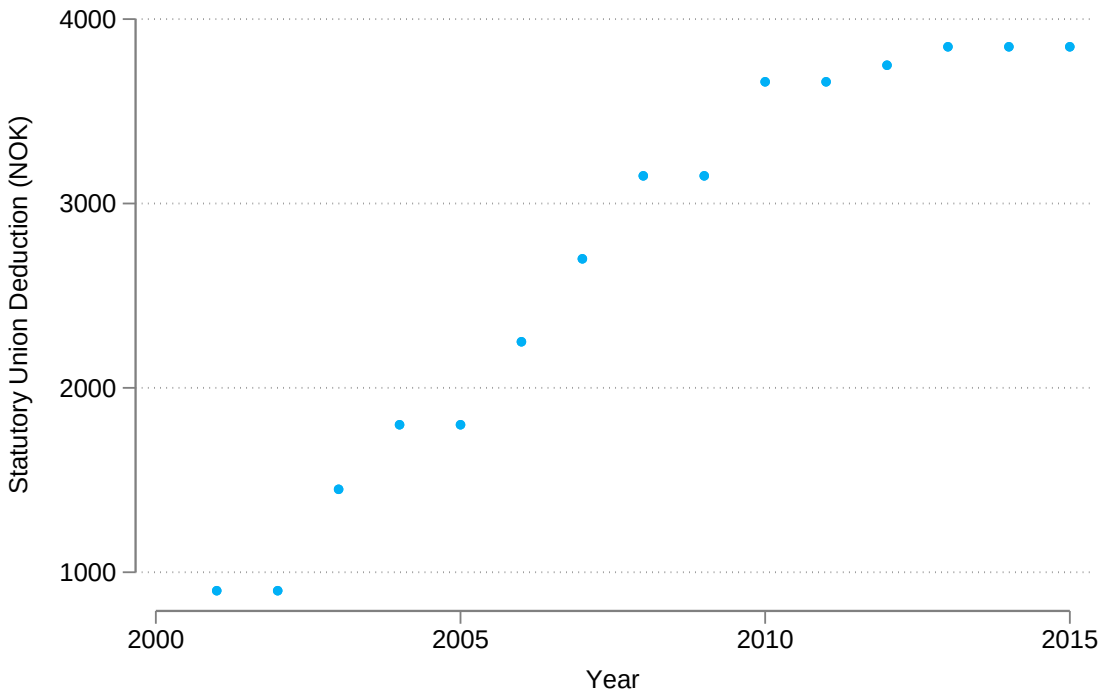
Figures Appendix

Figure A1: Share of Immigrants in Municipalities by Immigration Status



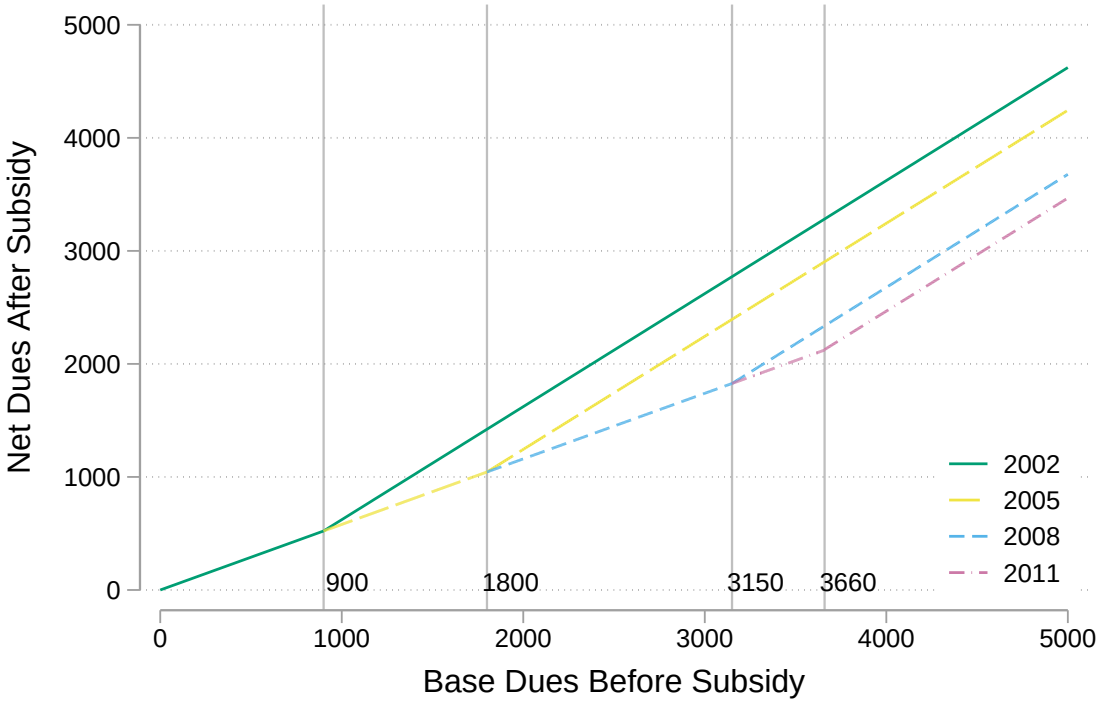
Source: Authors' calculations of Norwegian registry data.

Figure A2: Changes in Union Deduction, 2001-2015



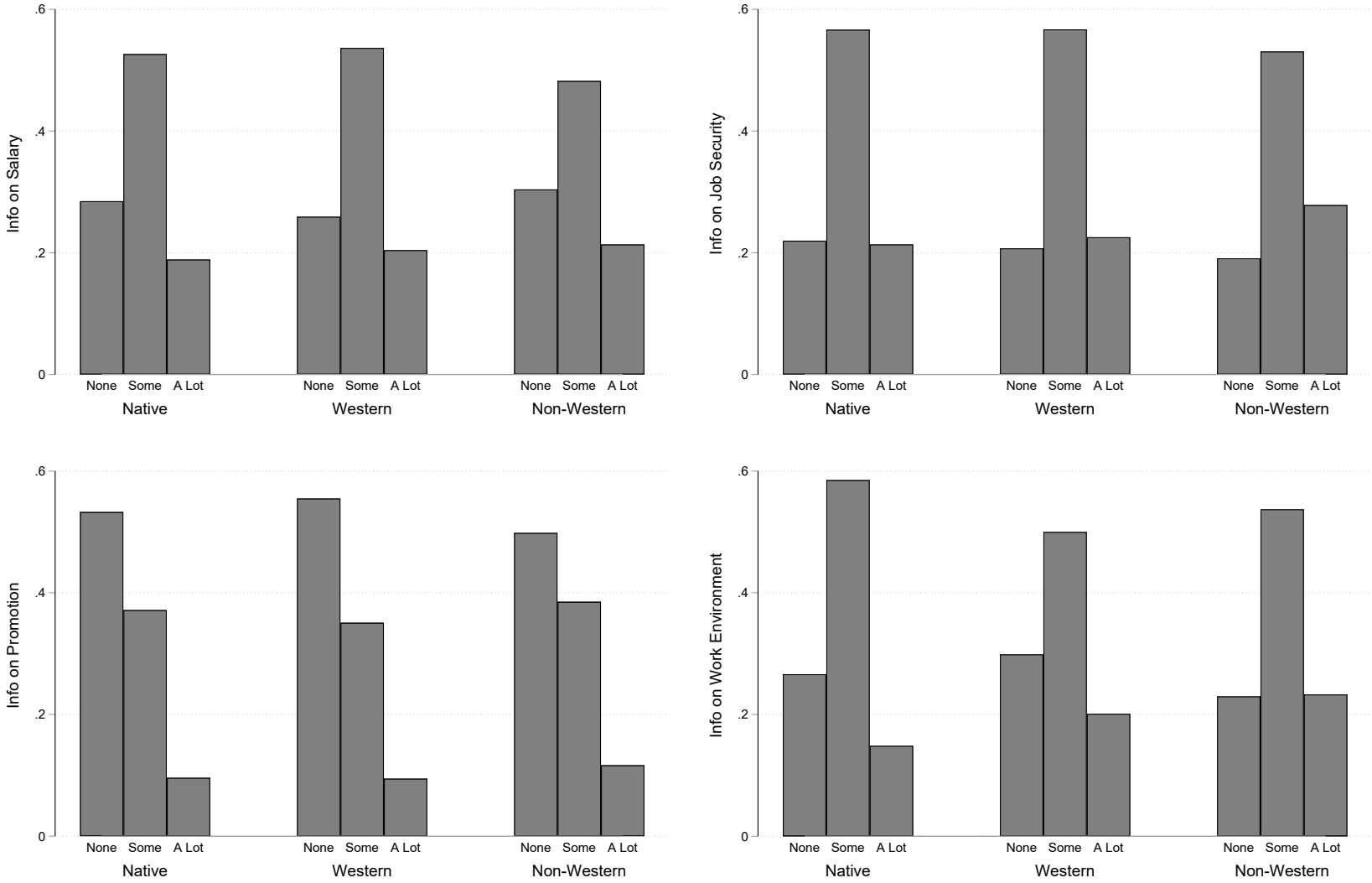
Source: Authors' illustration of the legislated maximum union dues deductions in Norway over time.

Figure A3: Base vs Net Dues, Illustrative Example



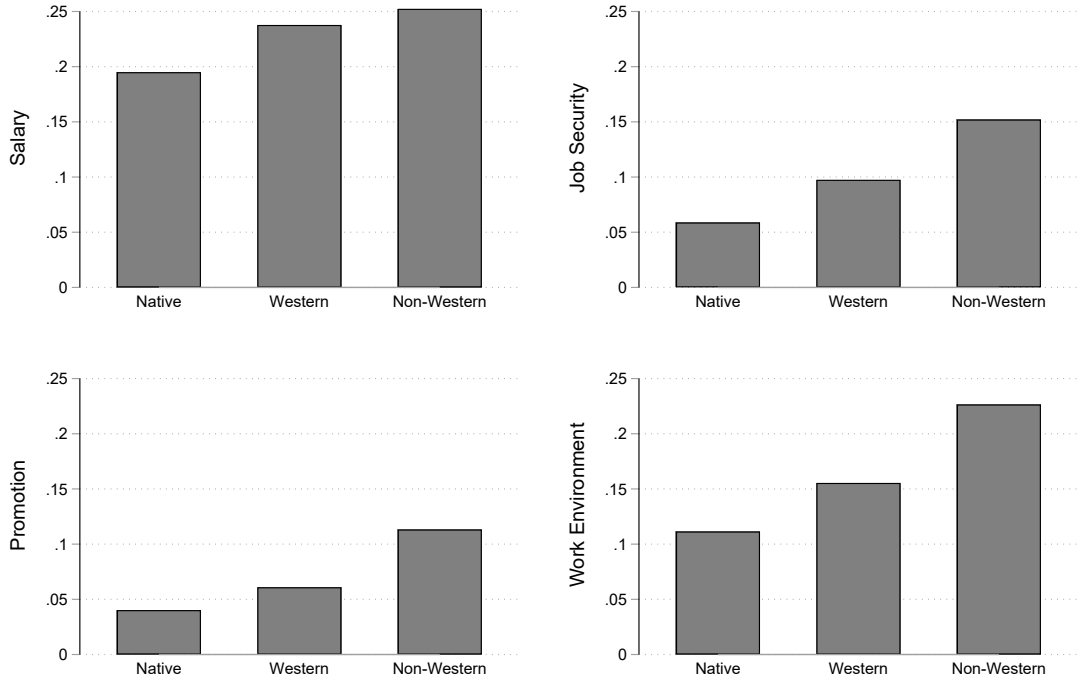
Source: Authors' illustration of the relationship between base dues and net dues after the tax subsidy assuming a 42% tax rate.

Figure A4: Information Provided to Union Members (Survey Two)

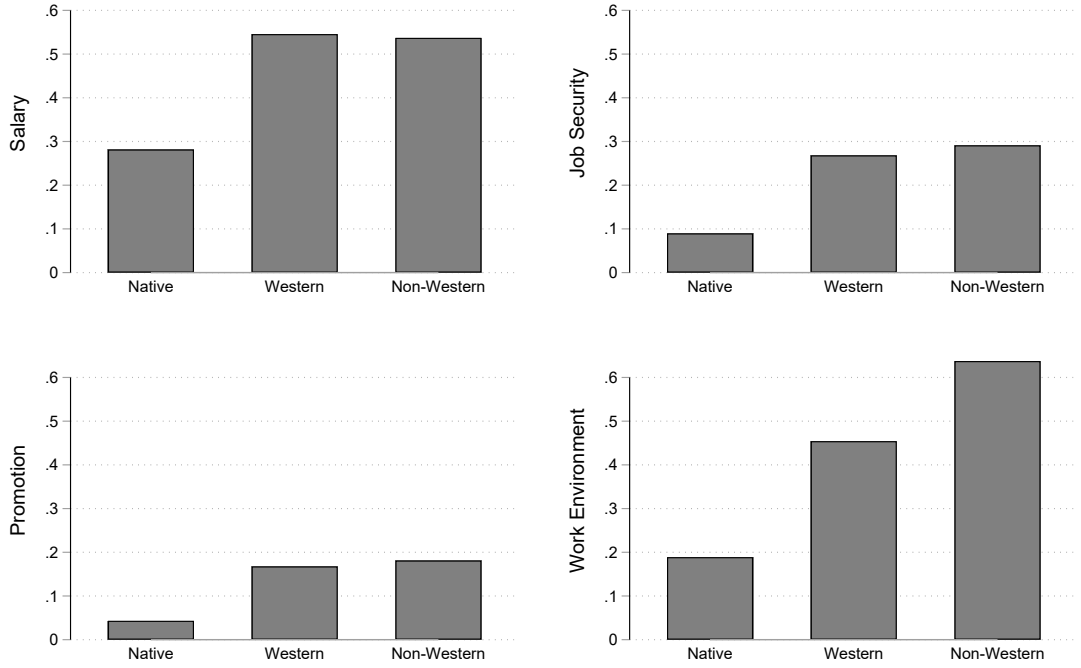


Source: Authors' calculations based on survey data collected by IPSOS on behalf of the authors.
Notes: The question on the survey asked, "After you joined the union, how much information did your local union provide on the following aspects in which the union might be able to help: Monetary Compensation, Job Security, Promotion Potential and Work Environment Quality."

Figure A5: Rates of Contacting Union Representatives (Survey Two)
Panel A: Share of Members Making Any Contact

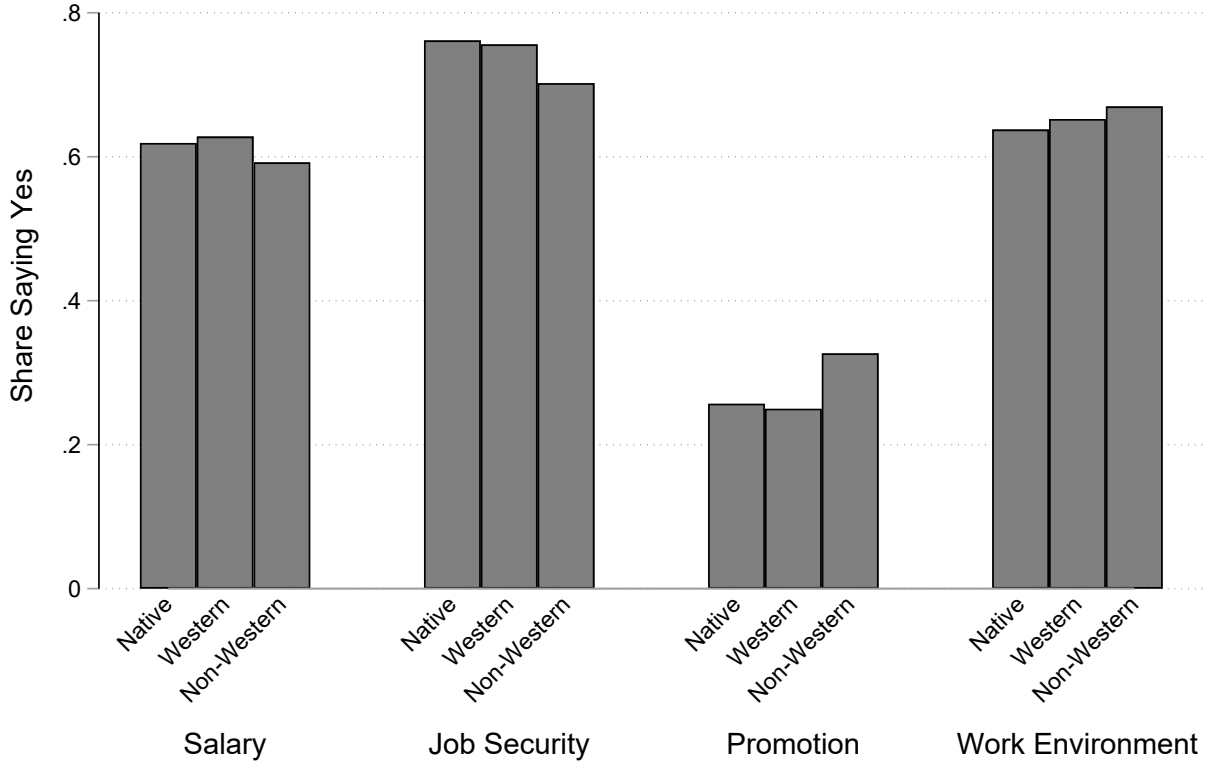


Panel B: Mean Number of Contacts



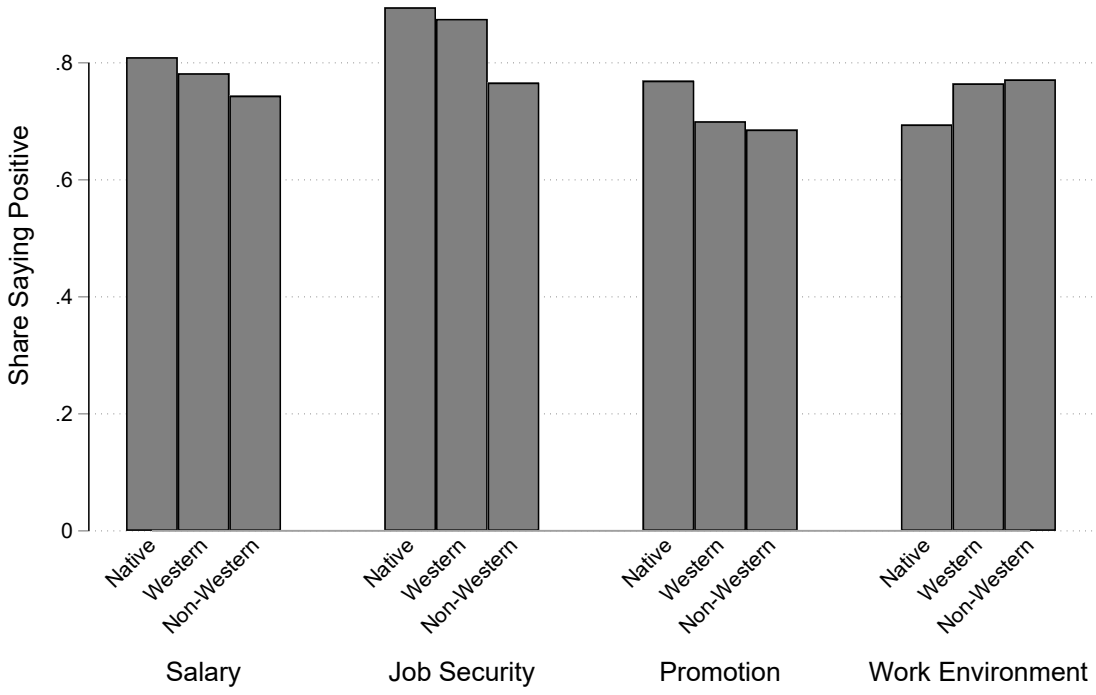
Source: Authors' calculations based on survey data collected by IPSOS on behalf of the authors.
Notes: The question on the survey asked, "In the past 12 months, how many times have you contacted your local union about the following aspects of your job? Monetary Compensation, Job Security, Promotion Potential and Work Environment Quality."

Figure A6: Share of Members Stating the Union Would be Effective in Helping (Survey Two)



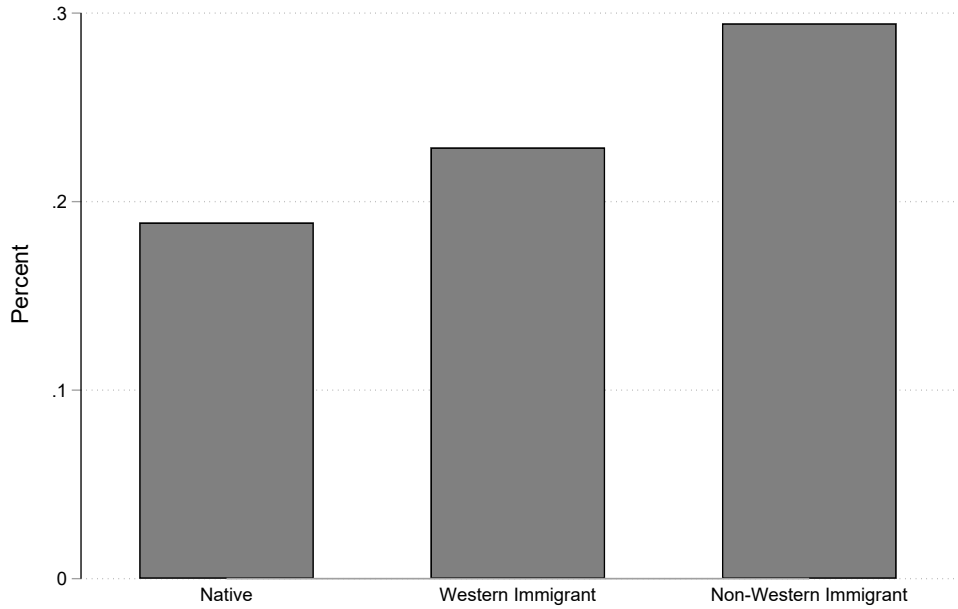
Source: Authors' calculations based on survey data collected by IPSOS on behalf of the authors.
Notes: The question on the survey asked, "If you were to contact your local union regarding any of the following matters, do you think they would be effective at helping you individually?"

Figure A7: Share of Members Rating Their Experience After Contact Their Union as Positive (Survey Two)

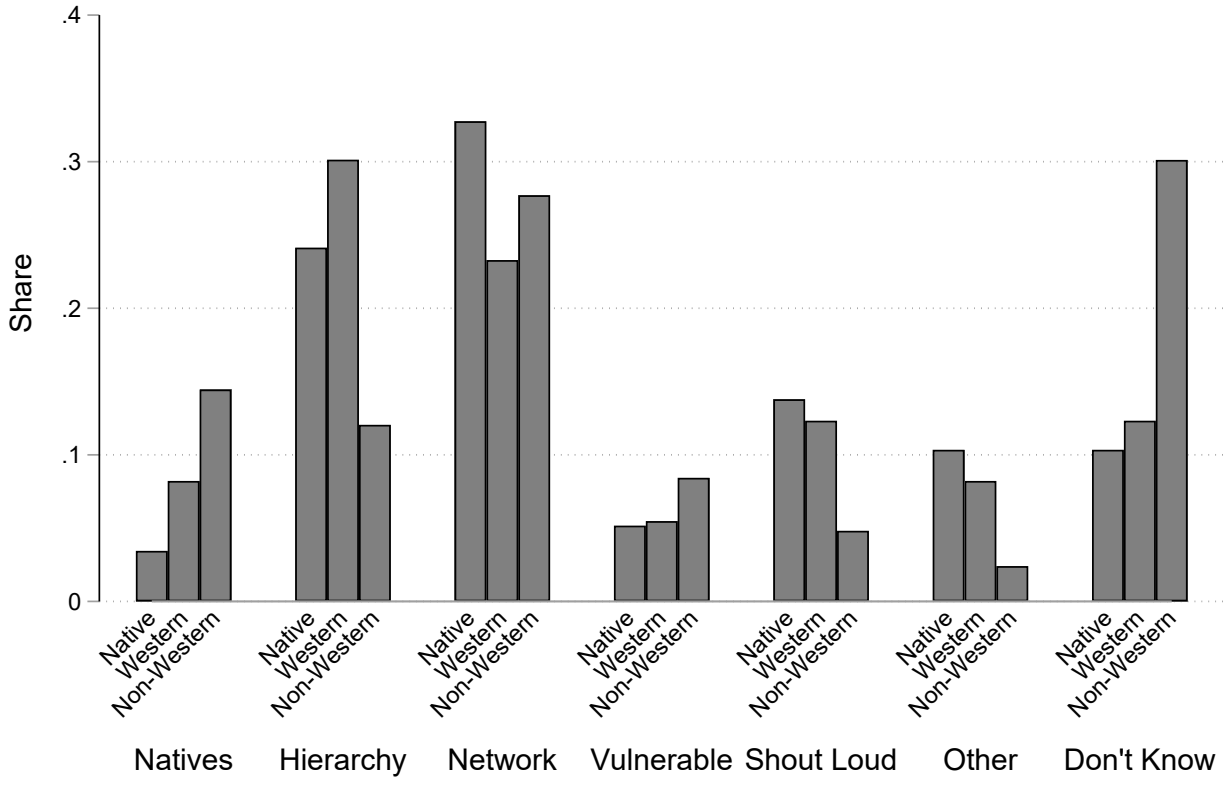


Source: Authors' calculations based on survey data collected by IPSOS on behalf of the authors.
Notes: The question on the survey asked, "Please rate your experiences with your local union."

Figure A8: Perceptions that Unions Do Not Prioritize All Members Equally (Survey Two)
Panel A: Share Responding That Unions Prioritize Certain Members Over Others

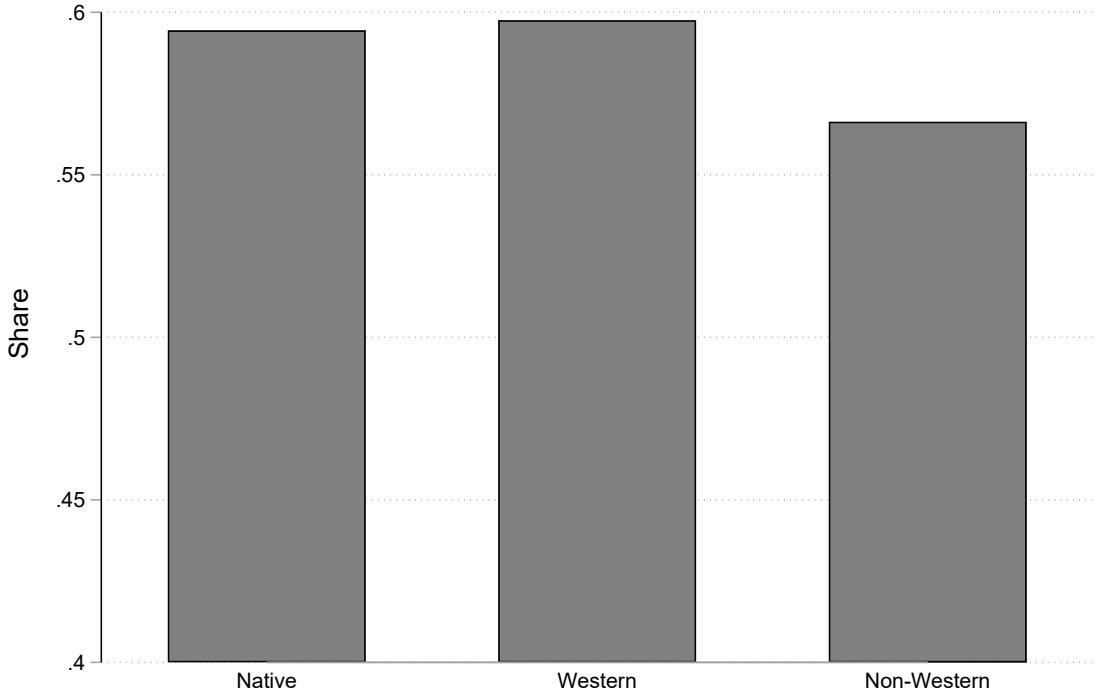


Panel B: Categories of Write-In Responses: Who is Prioritized?



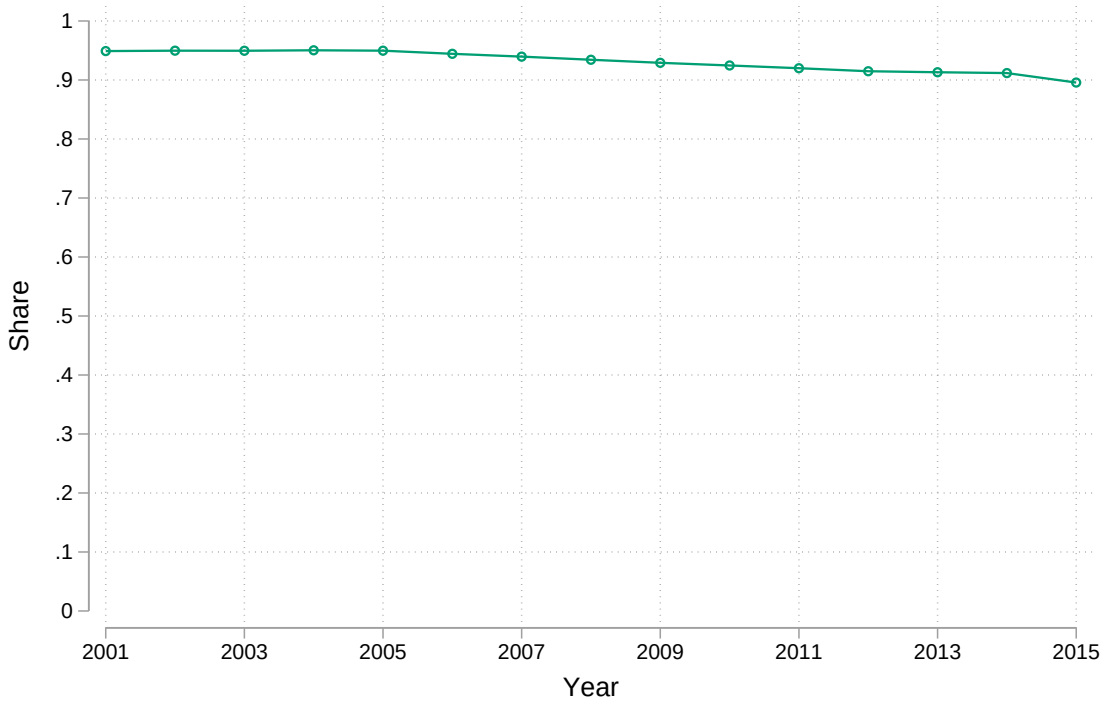
Source: Authors' calculations based on survey data collected by IPSOS on behalf of the authors.
Notes: The question on the survey asked, "How do you think union members are treated at your workplace by the local union?" Response options were, "I think all union members are treated equally by the local union" and "I think some members are prioritized over other members by the local union." If they responded that some members are prioritized over others, the open response question was, "Who do you think is being prioritized by your local union?"

Figure A9: Share of Members Agreeing that Union Membership Has Made Them Happier (Survey Two)



Source: Authors' calculations based on survey data collected by IPSOS on behalf of the authors.
Notes: The question on the survey asked, "To what extent do you agree with the following statement? Being a union member has led to me feeling happier/more satisfied at work."

Figure A10: Share of Union Dues Paid by Natives, 2001-2015



Source: Authors' calculations of the average share of union dues paid by natives at the firm level in Norway over time using Norwegian register data.

First Survey Instrument

[INTRO1] This is a survey that Norstat conducts on behalf of the Norwegian School of Economics and Business Administration. The results will be used in a research project.

All information collected through the survey is anonymized and will not be disclosed to any third party. As part of scientific publishing, anonymised data may be shared in open scientific repositories.

If you want more information about the project, you can choose the option below. If you want to start the survey, you choose it.

[R1] I want more information
[R2] I want to start the survey

[R1] Information and declaration of consent

Purpose of the project

We want to understand how individuals in Norway value their work environment and how they view unions. The results of the study will increase our understanding of workplace preferences and their relative importance.

Who is responsible for the project?

The Norwegian School of Economics (NHH) is the responsible institution for the project. Alexander Willen, professor at NHH, is the project manager. The other project members are Kjell G. Salvanes, professor at NHH, Samuel Dodini, postdoctoral fellow vid NHH, and Julia Zhu, postdoctoral fellow at NHH. If you have any questions about the project, you can contact NHH via Alexander Willen (alexander.willen@nhh.no).

What does participation mean for you?

If you choose to participate in the project, you will be asked to answer a survey by completing an online questionnaire. It takes about 7 minutes. The survey includes questions about your work situation, union status, and your job preferences. In addition, we will ask some basic demographic questions about, for example, age and gender. Participation in the survey is voluntary and you can withdraw your consent at any time without giving any reason. All information collected through the survey is anonymized and will not be disclosed to any third party. As part of scientific publishing, anonymised data may be shared in open scientific repositories. There will be no negative consequences if you choose not to participate or decide to withdraw at a later date.

Declaration of consent

I have received and understood information about the survey and hereby consent:

• to participate in the online survey.
• to enable researchers to process my anonymised data and use them for publications in scientific journals and other scientific dissemination.

[R2] Survey

[Age] What is your age?
[Gender] Are you male or female?
[Zip code] What is your zip code?
[Fylke] Which county do you live in?

What is your highest completed education?
[R1] Primary school/primary school
[R2] Upper secondary school (incl. former vocational school)
[R3] Vocational school, trade certificate/journeyman's certificate and other 1-2 year education after upper secondary school
[R4] University/college up to 3 years (Bachelor's degree)
[R5] University/college 4 years or more (Master's degree and higher)
[R98] Other

Where were you born?
[R1] Norway
[R2] Outside Norway
[R3] Don't want to answer

Can you state which country you were born in?

At what age did you move to Norway?

How many years of full-time work experience do you have?

Are you currently in part-time or full-time work?
[R1] Part-time (less than 30 hours per week)
[R2] Full-time (at least 30 hours per week)
[R3] Not working

What industry is your main job in?

Do you work in the public or private sector?
[R1] Public sector
[R2] Private sector

How many people work at your workplace?
Row:
[R1] 1-5
[R2] 6-10
[R3] 11-50
[R4] 51-100
[R5] More than 100
[R6] Don't want to answer

Rank the following job characteristics based on importance to your future career and well-being: Salary, Job Safety, Promotion Potential and Work Environment Quality.
Here we ask you to award 100 points across the four categories. You can assign anything between 0 and 100 to any of the categories, as long as the total amount of points for all four categories is 100.
Row:
[R1] Salary: Everything associated with the financial payment of your work (base salary, bonuses, overtime pay, generosity with retirement plans, etc.)
[R2] Job security: Protection and support (legal and otherwise) against being laid off and fired, both in the event of mass closures and individual layoffs (wrongful or not)
[R3] Promotion potential: Potential to move up the career ladder in the company
[R4] Work environment quality: The day-to-day quality of your work environment, including physical environment (e.g. equipment and facilities), company culture (e.g. support, feedback, collaboration, potential to influence) and working conditions (e.g. workplace safety, conditions employment, work-life balance)

Are you a member of a trade union?
[R1] Yes
[R2] No
[R3] Don't want to answer

For how many years have you been a member?

Have you been a member continuously during that time, or have you changed in and out of membership over the years?
[R1] Continuous
[R2] Not continuously

How important do you think the union is to improving your pay, job security, promotion potential and work environment quality?
0 means "not at all" and 100 means "entirely". The total for all four need NOT be 100.
[R1] Monetary compensation
[R2] Job security
[R3] Promotion potential
[R4] Working environment quality

Compared to members, the extent to which do you think nonmembers in your workplace can benefit from the presence of unions along these four dimensions
0 means "not at all" and 100 means "complete". The total for all four need NOT be 100.
[R1] Monetary compensation
[R2] Job security
[R3] Promotion potential
[R4] Working environment quality

Have you found a union membership useful for receiving non-work benefits such as lower mortgage rates, access to cheaper/better insurance, etc.?

How important has this been for your decision to join a union?

If your after-tax dues for union membership increased by [XYZ] dollars, would you reconsider the decision to join a union?
Row:
[R1] Yes
[R2] No

The purpose of this question is to understand the reason why you do not join a union. Check all the boxes that apply.
Row:
[R1] I don't want to spend so much money being a union member
[R2] I don't think unions can affect my work situation
[R3] I find that unions focus on dimensions of the workplace that are not important to me.
[R4] I don't think I need to be a member of a union to take advantage of the influence unions have on my work situation and well-being
[R5] Other reason, note:

If your after-tax dues for union membership were reduced by [XYZ] NOK, would you reconsider your decision to join a union?
Row:
[R1] Yes
[R2] No

Second Survey Instrument

[INTRO1] This is a survey that IPSOS conducts on behalf of the Norwegian School of Economics and Business Administration. The results will be used in a research project.

All information collected through the survey is anonymized and will not be disclosed to any third party. As part of scientific publishing, anonymized data may be shared in open scientific repositories.

If you want more information about the project, you can choose the option below. If you want to start the survey, you choose it.

[R1] I want more information
[R2] I want to start the survey

[R1] Information and declaration of consent

Purpose of the project

We want to understand how individuals in Norway value their work environment and how they view unions. The results of the study will increase our understanding of workplace preferences and their relative importance.

Who is responsible for the project?

The Norwegian School of Economics (NHH) is the responsible institution for the project. Alexander Willen, professor at NHH, is the project manager. The other project members are Samuel Dodini, postdoctoral fellow at NHH, and Julia Zhu, postdoctoral fellow at NHH. If you have any questions about the project, you can contact NHH via Alexander Willen (alexander.willen@nhh.no).

What does participation mean for you?

If you choose to participate in the project, you will be asked to answer a survey by completing an online questionnaire. It takes about 4 minutes. The survey includes questions about your experiences with your local union. In addition, we will ask some basic demographic questions about, for example, age and gender. Participation in the survey is voluntary and you can withdraw your consent at any time without giving any reason. All information collected through the survey is anonymized. As part of scientific publishing, anonymized data may be shared in open scientific repositories. There will be no negative consequences if you choose not to participate or decide to withdraw at a later date.

Declaration of consent

I have received and understood information about the survey and hereby consent:

- to participate in the online survey.
- to allow researchers to process my anonymized data and use them for publications in scientific journals and other scientific dissemination.

[R2] Survey

[Proceed only for union members]

[Age] What is your age?
[Gender] Are you male or female?
[Zip code] What is your zip code?
[Fylke] Which county do you live in?

What is your highest completed education?
[R1] Primary school/primary school
[R2] Upper secondary school (incl. former vocational school)
[R3] Vocational school, trade certificate/journeyman's certificate and other 1-2 year education after upper secondary school
[R4] University/college up to 3 years (Bachelor's degree)
[R5] University/college 4 years or more (Master's degree and higher)
[R98] Other

Where were you born?
[R1] Norway
[R2] Outside Norway
[R3] Don't want to answer

Can you state which country you were born in?

At what age did you move to Norway?

How many years of full-time work experience do you have?

Are you currently in part-time or full-time work?
[R1] Part-time (less than 30 hours per week)
[R2] Full-time (at least 30 hours per week)
[R3] Not working

What industry is your main job in?

How many people work at your workplace?
Row:
[R1] 1-5
[R2] 6-10
[R3] 11-50
[R4] 51-100
[R5] More than 100
[R6] Don't want to answer

After you joined the union, how much information did your local union provide on the following aspects in which the union might be able to help: Monetary Compensation, Job Security, Promotion Potential and Work Environment Quality.
For each row, we give respondents the choices of "None," "Some information," "A lot of information."
Row:
[R1] Monetary compensation: Everything associated with the financial payment of your work (base salary, bonuses, overtime pay, generosity with retirement plans, etc.)
[R2] Job security: Protection and support (legal and otherwise) against being laid off and fired, both in the event of mass closures and individual layoffs (wrongful or not)
[R3] Promotion potential: Potential to move up the career ladder in the company
[R4] Work environment quality: The day-to-day quality of your work environment, including physical environment (e.g. equipment and facilities), company culture (e.g. support, feedback, collaboration, potential to influence) and working conditions (e.g. workplace safety, conditions employment, work-life balance)

How familiar are you with the ways you can contact your local union representative?
Row:
[R1] Very unfamiliar
[R2] Somewhat unfamiliar
[R3] Somewhat familiar
[R4] Very familiar

If you were to contact your local union regarding any of the following matters, do you think they would be effective at helping you individually?
For each row, we give respondents three options: No, Yes, I don't know
Row:
[R1] Monetary compensation
[R2] Job security
[R3] Promotion potential
[R4] Working environment quality

In the past 12 months, how many times have you contacted your local union about the following aspects of your job?
For each row, we give respondents an empty text box to type in a number.

Row:
[R1] Monetary compensation
[R2] Job security
[R3] Promotion potential
[R4] Working environment quality

[Triggered by nonzero response to previous question]
Please rate your experiences with your local union
Row:
[R1] Very negative
[R2] Somewhat negative
[R3] Somewhat positive
[R4] Very positive
[R5] They never responded

How do you think union members are treated at your workplace by the local union?
Row:
[R1] I think all union members are treated equally by the local union
[R2] I think some members are prioritized over other members by the local union

---

[If answer R2 in last question] Who do you think are being prioritized by your local union?

To what extent do you agree with the following statement?
Unions have improved the work environment at my workplace ***in general****.*

Row:

[R1] Strongly disagree
[R2] Somewhat disagree
[R3] Somewhat agree
[R4] Strongly agree

[SAME PAGE]

To what extent do you agree with the following statement?
Unions have improved the work environment at my workplace ***for union members****.*

Row:

[R1] Strongly disagree
[R2] Somewhat disagree
[R3] Somewhat agree
[R4] Strongly agree

[SAME PAGE]

To what extent do you agree with the following statement?
Unions have improved the work environment at my workplace ***for me individually****.*

Row:

[R1] Strongly disagree
[R2] Somewhat disagree
[R3] Somewhat agree
[R4] Strongly agree

To what extent do you agree with the following statement?
Being a union member has led to me feeling happier/more satisfied at work.
Row:
[R1] Strongly disagree
[R2] Somewhat disagree
[R3] Somewhat agree
[R4] Strongly agree
