

**Heterogeneity in the Effect of Union Membership on Support for  
Redistribution: Preliminary Analysis of Swedish Data**

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## Introduction

This paper forms part of a larger research project that explores the implications of union decline and the changing composition of unions for the politics of rising inequality and compensatory redistribution. Here we use Swedish survey data by the SOM Institute from 1986 to 2001 to explore the effects of union membership on support for redistribution. Building on the theoretical framework of Mosimann and Pontusson (2017), we are interested in how the membership composition of unions conditions the effect of union membership.

To anticipate, our main results are as follows. First, we show that the effect of union membership on support for redistribution rises with income. With survey respondents sorted (roughly) into income quartiles, individuals who are union members become increasingly different from individuals who are not union members, that is, more likely to support redistribution, as we move from lower to higher quartiles. This "solidarity effect" holds for blue-collar workers (*arbetare*) as well as white-collar employees (*tjänstemän*). Secondly, and most important for our purposes, we show that the effect of belonging to TCO-affiliated unions, which organize white-collar employees on an industrial basis, encompassing a wide range of the income distribution, is much bigger than the effect of belonging to SACO-affiliated unions, which primarily organize well-paid white-collar employees on an occupational basis. This effect of TCO relative to SACO holds for individuals below the median income ("enlightenment") as well as individuals above the median income ("solidarity") and private-sector employees as well as public-sector employees.

Against the background of Sweden's Ghent system of unemployment insurance, providing generous public subsidies to unemployment insurance funds run by the unions, the fact that SACO-affiliated unions were much better established in the public sector than in the private sector during the time period covered by our analysis allows us to address, however tentatively, the role of self-selection effects. In the time period covered by our analysis, well-paid public-sector employees could choose to join either a TCO-affiliated union or a SACO-affiliated union, but most private-sector employees were faced with the simple choice of whether or not to join a TCO-affiliated union. The logic of self-selection would lead us to expect that well-paid employees with no particular inclination in favor of egalitarianism would join TCO-affiliated unions in the private sector to secure full access to unemployment insurance, but only well-paid employees predisposed to favor redistribution would join TCO-affiliated unions in the public sector as SACO membership also ensured full access to unemployment insurance.<sup>1</sup> By implication, the effect of belonging to a TCO-affiliated union, relative to belonging to a SACO-affiliated union or not belonging to any union at all, should be significantly bigger for public-sector employees than private-sector employees. We find that this is not the case.

The paper proceeds as follows. First, we briefly summarize the theoretical framework and empirical findings presented by Mosimann and Pontusson (2017). Secondly, we provide background information about the structure and membership composition of Swedish unions. Thirdly, we introduce the setup of our analysis of preferences for redistribution. We then present and discuss two separate sets of results: one for blue-collar workers and the other for white-collar employees. We return to the question of self-selection in the context of our analysis of union effects among white-collar employees.

### **Our theoretical framework and previous analysis**

Setting self-selection effects aside for the time being, our previous article (Mosimann and Pontusson 2017) articulated two hypothetical effects of belonging to a trade union for individual preferences for redistributive policy: an enlightenment effect and a solidarity effect. The enlightenment hypothesis posits that union membership is a source of knowledge about the shape of the distribution of income and one's relative position in this distribution or, in other words, that union members are better able to calculate whether or not they stand to gain from redistribution than non-members. The Marxist version of the enlightenment hypothesis holds that union members are more "class conscious" than non-members while the rational-choice version holds that they are more "rational" in their pursuit of self-interest. By contrast, the solidarity hypothesis posits other-regarding motives for supporting redistributive government policies as well as wage-bargaining outcomes that favor low-wage workers relative to high-wage workers. Simply put, this hypothesis holds that high-wage workers who belong to a union that encompasses many low-wage workers will, to some extent, take the latter's interests into account when they form policy preferences.

Enlightenment and solidarity alike may be a result of direct social interactions among union members and, in particular, political discussions among union members in the workplace or at union meetings. But few, if any, contemporary unions represent "close-knit communities." In our view, it seems more realistic to suppose that information provided by unions and arguments that they advance, in public media as well as newsletters and meetings directly targeted to their members, shape preferences of union members by promoting self-interested rationality and/or egalitarian norms. Importantly, union rhetoric commonly holds that egalitarian

policies in the domain of wage bargaining serves the collective interests of all workers, that is, that such policies will benefit high-wage workers over the long run by strengthening the "worker collective." In this sense, the logic of union solidarity is different from "altruism."

To the extent that there is a solidarity effect of union membership, it presupposes that unions organize a reasonably large range of workers, with different skill levels and earnings. Suppose that there are ten unions and that each of these unions exclusively organizes workers in one income decile. In this scenario, we would not expect any solidarity effect associated with union membership. Assuming that unions consistently enlighten their members, and that the benefits (or costs) of redistribution are strictly a function of relative income, we would expect union members in low income deciles to be more supportive of redistribution than their non-union counterparts and union members in high income deciles to be less supportive of redistribution than their non-union counterparts.<sup>2</sup> In the middle of the income distribution, there should be no significant effect of union membership on support for redistribution.

In the real world, most unions are at least somewhat encompassing. By our reading, virtually all unions engage, to some extent, in solidaristic, that is, egalitarian, practices as well as rhetoric. However, the extent to which they do so varies a great deal, within and across countries (and over time). We believe that much of this variation can be explained by the distribution of union members across the income distribution – more specifically, the extent to which unions (as organizations) and elected union leaders (as "politicians") depend on the support of workers who stand to benefit from solidaristic wage policies and redistributive government. From this perspective, we can distinguish between three ideal types of unions: (1) unions that primarily

organize low-wage workers ("low-wage unionism"); (2) unions that primarily organize high-wage workers ("high-wage unionism"); and (3) unions whose membership is spread more evenly across the income distribution ("comprehensive unionism"). As briefly sketched above, our theoretical framework predicts that belonging to a low-wage union should have a strong enlightenment effect among individuals below the median income and a strong solidarity effect among individuals above the median income. These effects should also be observed for individuals belonging to encompassing unions (the third type), but they should be less pronounced. For high-wage unions, both effects – enlightenment among low-wage members and solidarity among high-wage members – should be absent or even reversed (with high-wage members being more rationally self-interested and low-wage members solidaristically aligning themselves with the interests of the majority).

Pooling European Social Survey (ESS) data from 21 countries over the period 2002-14, our previous analysis showed that union membership is positively associated with support for redistribution and that this association is stronger for survey respondents with higher incomes.<sup>3</sup> Union membership appears to have a solidarity effect as well as an enlightenment effect and the former effect appears to be stronger than the latter. We then proceeded to explore how time-varying variation in levels of unionization and the distribution of union members across income levels, measured at the country level, conditions the effects of union membership. To do so, we sorted country-years into three categories based on survey observations and data on overall union density, as illustrated by Figure 1. While the vertical axis in this figure records the overall level of unionization (as reported by Visser 2016), the horizontal axis records the ratio of unionization in the bottom half of the income distribution to unionization in the top

half of the income distribution (based on self-reported household income in the ESS). An inclusiveness score greater than one means that the majority of union members fall below the median income. By mathematical necessity, inclusiveness scores converge on 1 as union density approaches 100%, but we observe a lot of variation in union inclusiveness when overall union density is below 40%.

[Figure 1]

Re-estimating our model of support for redistribution for the three samples identified in Figure 1 yielded the union effects reported in Table 1. With "union effect" defined here as the difference in predicted probabilities of support for redistribution between respondents who belong to a union and those who do not belong to a union. The results in Table 1 suggest that the national union characteristics do indeed condition union effects on support for redistribution. Consistent with our expectations, we find the biggest solidarity effect in the context of low-wage unionism (the lower-left cell cluster in Figure 1) and the smallest enlightenment effect under high-wage unionism (the lower-right cluster in Figure 1). Contrary to expectations, however, the enlightenment effect is smaller under low-wage unionism than under encompassing unionism (the upper cluster in Figure 1) and there is a sizeable solidarity effect under high-wage unionism.<sup>4</sup>

[Table 1]

The limitations of our previous analysis are quite obvious. To begin with, the analysis shows that the main effects of union membership hold for countries with Ghent systems of unemployment insurance providing selective incentives for individuals to join unions as well as other countries but concerns about self-selection, that is, endogeneity, remain. In particular, it seems plausible to suppose that high-wage workers who join unions dominated by low-wage workers are predisposed in favor of redistribution and, conversely, that low-wage workers who join unions dominated by high-wage workers are predisposed against redistribution. In addition, our previous analysis does not take variation across union members into account, that is, in how long they have been members and whether or not they are actively involved in their union. While failing to take self-selection into account means that we are probably overestimating union effects, taking the duration and degree of union involvement into account would presumably work in the opposite direction, as the effects would be stronger for individuals who have been active members over a long period of time.<sup>5</sup>

Most importantly for our present purposes, the country-level measures of union characteristics that we employed in our previous analysis are, at best, very rough proxies of what the "average union" in a particular country (and year) looks like. As we noted in our article, our theoretical expectations ought to be tested by exploring the effects of belonging to different kinds of unions within the same country. In what follows, we begin to tackle this challenge by analyzing Swedish survey data. The data do not allow us to identify specific unions to which respondents belong, but they do allow us to identify to which of three confederations the union they belong to is affiliated and, as we shall see, there is a lot of variation in membership composition across the three confederations.<sup>6</sup>



### Swedish unions

Along with Denmark, Sweden has long stood at the top of the OECD unionization league. It is commonplace in the comparative literature to treat Sweden as a case of an exceptionally strong, unified, and coordinated/centralized labor movement. This characterization captures something important about the Swedish case, but it is also quite misleading.

The truth of the conventional characterization of the Swedish case has to do with the scope and unity of the unions affiliated with the LO (*Landsorganisationen*). What is missing from many quantitative comparative studies, is the recognition that the unions affiliated with the LO organize blue-collar workers (*arbetare*). Other unions organize white-collar employees (*tjänstemän*). As the Swedish labor force has become more white-collar and white-collar employees have become more unionized, the importance of white-collar unions has grown over time (see Arndt and Rennwald 2016). In addition, there are two distinct types of white-collar unions in Sweden, with separate confederations. One set of white-collar unions organize primarily on an industrial (or sectoral) basis, much like the unions affiliated with LO.<sup>7</sup> These white-collar unions belong to *Tjänstemännens Centralorganisation* (Swedish Association of Professional Employees) or TCO for short. The other set of white-collar unions organize primarily on an occupational basis and belong to a confederation with a name that literally translates as "the confederation of Swedish academics" (*Sveriges akademikers centralorganisation*), commonly known as SACO.<sup>8</sup> Historically, membership in SACO-affiliated unions has been restricted to individuals with university degrees and, by and large, this remains the case today (see Kjellberg 2013). Until quite recently, SACO's presence was almost entirely confined to the public sector and its membership was dominated by highly educated and highly paid civil servants. Importantly for

our purposes, SACO unions compete with TCO unions for members in some occupational categories, but not in others.

Rather than being a case of "organized labor" being a unified actor, as the conventional wisdom would have it, Sweden is actually a case of remarkable heterogeneity among unions (arguably, this contributes to the high overall rate of unionization). As such, it presents an opportunity to explore how the membership composition of unions conditions the union effect on attitudes and behavior.

Over the period 1986-2011, annual surveys by the SOM Institute asked respondents whether or not they were union members and, for union members, whether they belonged to a union affiliated with LO, TCO or SACO. Based on these surveys, Figure 2 shows unionization rates by confederation and the percentage of non-members in the economically active population over the period 1986-2011. The most striking feature of this figure is the steady decline in the percentage of the labor force belonging to LO-affiliated unions. This decline partly reflects the "white-collarization" of the Swedish labor force, but the trend is also apparent – indeed, quite pronounced – if we restrict the sample to blue-collar workers only (see Figure A1 in the appendix). For the entire sample, we also observe a fairly steady increase in the percentage of the labor force who are not union members and the percentage who belongs to SACO-affiliated unions that rises from about 8% in the mid-1980s to about 16% in 2010-11. By contrast, the percentage of the labor force belonging to TCO-affiliated unions held more or less constant over the period 1986-2011.

[Figure 2]

Figures 3-6 provide a more disaggregated picture, showing unionization by confederation for public- and private-sector employees below and above the median household income.<sup>9</sup> Among labor force participants with above median income, figures 3 and 4 reveal clear differences in unionization patterns in the public sector and the private sector: Between 1986 and 2011, the share of the labor force belonging to TCO-affiliated unions decreased consistently in the public sector but remained more or less stable in the private sector. Conversely, SACO-affiliated unions steadily increased the share of the labor force they organized and they did so to a higher degree in the public sector than the private sector. In the public sector, the share of the labor force organized by LO-affiliated unions and the percentage of non-membership were rather low across the whole period. In the private sector, LO-affiliated unions lost membership shares while non-membership shares rose.

Important for our analysis of union membership effects on preferences for redistribution over the period 1986-2001 that we will present below, is the observation of differences in density gaps between TCO and SACO across time and sectors. In 1986, SACO-affiliated unions organized only 16% of the labor force with above median income in the public sector while TCO-affiliated unions organized 60% of them. By 2001, the former figure had risen to 30%, the latter had decreased to 47%. Between 1986 and 2001, the density gap between TCO and SACO in the public sector thus shrank from 44% to 17%. This decline in the density gap was even more pronounced among public-sector white-collar employees with above median income. Among those, the density gap between TCO and SACO diminished from 37% in 1986

to 5% in 2001 (see Figure A2 in the appendix). In the private sector, TCO membership shrank from around 41% to 34% over the period 1986-2001 whereas SACO membership started at 6% and had risen to 12% by 2001. As in the public sector, the density gap thus decreased in the private sector, but it remained with about 22% higher in the private sector than the public sector in 2001. While SACO membership has become a more viable option for many high-income private-sector employees by 2001, it has become quite widespread among high-income public-sector employees since the early 1990s.

[Figures 3-4]

Figures 5 and 6 present unionization patterns among labor force participants with below median income in the public and private sector respectively. In both sectors, the decline in the percentage of the labor force belonging to LO-affiliated unions is the dominant trend. While the percentage of non-membership increased in the public sector from 6% to 20% and in the private sector from 20% to 36%, the share of the labor force organized by SACO- and TCO-affiliated unions was more or less stable between 1986 and 2011.

[Figures 5-6]

Most importantly for our present purposes, Table 2 presents SOM-based estimates of the distribution of union members by income quartile for LO, TCO, and SACO unions, distinguishing between the public-sector and private-sector unions affiliated with each confederation. These estimates are based on SOM data for 1986-2001 only, which is the time period

covered by the analysis of union effects on preferences for redistribution that we will present below. Applying the typology of unions proposed above, LO unions in both sectors can be characterized as low-wage unions, with individuals below the median income representing 67-68% of all union members. At the opposite end of the spectrum, private-sector SACO unions are the most high-income-dominated unions, with 45% of members falling into the fourth quartile of the income distribution and 67% of members having incomes above the median. In the public sector and the private sector alike, TCO unions are more encompassing than either LO or SACO unions in the sense that their membership is more evenly spread across the income distribution and middle-income members appear to be pivotal to coalition formation within these unions. High income-earners constitute a larger share of the membership of public-sector SACO unions than TCO unions, but public-sector SACO unions are less high-wage-dominated than private-sector SACO unions and members in the two middle quartiles could form a majority coalition against members in the fourth quartile.

[Table 2]

### **Setup of the empirical analysis**

Our analysis of union membership effects on preferences for redistribution relies on individual-level data from the SOM Institute Cumulative Data Set for 1986, 1988, 1998, 1999, and 2001.<sup>10</sup> The SOM Institute started its annually and nationally representative surveys in 1986 to identify how the evolution of society affects Swede's attitudes and behavior in three main areas – society, opinions, and mass media.<sup>11</sup> Our full sample includes surveys from five years and 3,804 survey respondents after having restricted our analysis to survey respondents of working

age who are either currently employed or looking for a job and after having removed cases with missing values on the covariates from the sample. Further descriptive statistics can be found in Table A1 in the appendix.

### Dependent variable

We base our dependent variable on two questions pertaining to respondents' redistribution preferences that we pool to identify supporters and opponents of redistribution. In the surveys from 1986 and 1988, respondents are asked to react to the following question: "Below is a number of proposals that have appeared in the political debate. What is your opinion on the proposal to reduce income differences in society?" In the surveys from 1998, 1999, and 2001, respondents react to a slightly different question: "Here are a number of proposals from the public debate in Sweden. What is your opinion on the proposal to increase wage differences?" For each question, respondents are presented with five response categories, ranging from "very good proposal" to "very bad proposal." To facilitate and simplify the interpretation of our results, we treat individuals who think of the proposal to reduce income differences as "very good" or "rather good" and individuals who judge the proposal to increase wage differences as "very bad" or "rather bad" as supporters of redistribution, coded as 1. Respondents who think of the reduction in income differences as "neither good nor bad proposal," "rather bad proposal" or "very bad proposal" and respondents who perceive the increase in wage differences as "neither good nor bad proposal," "rather good proposal" or "very good proposal" are treated as opponents of redistribution, coded as 0.

### Explanatory variables

We are primarily interested in how membership in a union affiliated with a specific trade union confederation and income affect redistribution support. Information on the former is based on a question that asks respondents, "Are you a union member?" The response categories "yes, a union within the LO," "yes, a union within the TCO," "yes, a union within the SACO," and "no" allow us to distinguish between membership in the three main trade union confederations in Sweden as well as non-membership. Based on self-reported gross household income, our income variable differentiates between four levels of income that roughly correspond to income quartiles.<sup>12</sup>

In addition, our models include those control variables used in Mosimann and Pontusson (2017) that are also available in the SOM data, namely educational attainment, age, sex, and public-sector employment. Education is measured as a three-point scale differentiating between "low," "medium," and "high" levels of educational attainment.<sup>13</sup> Age is a linear variable ranging from 15 to 65, and sex separates men, coded as 0, from women, coded as 1. Finally, public-sector employment codes respondents in private-sector employment as 0 and those in public-sector employment as 1.<sup>14</sup>

Because of Sweden's Ghent system of unemployment insurance, we are not excluding currently unemployed labor force participants from our sample as in our previous article and thus also control for respondents' labor market situation with unemployment coded as 1 and gainful employment coded as 0.<sup>15</sup> Since the unions affiliated with the three trade union confederations that we are interested in either mainly organize blue-collar workers or white-collar employees,

we additionally control for respondents' current or previous occupational group. White-collar employees are coded as 1 and are composed of "white-collar workers," "white-collar workers with supervisory status," and "white-collar workers in senior leadership position." Blue-collar workers are coded as 0 and are made up by "blue-collar workers," "blue-collar workers with supervisory status," and "self-employed blue-collar workers."<sup>16</sup>

### **Method**

We estimate logistic regression models with robust standard errors and time fixed-effects in the form of year dummies to account for our dichotomous dependent variable and the nested data structure of the SOM. To make our results easily accessible, we present average predicted probabilities and differences in these probabilities in the next section while reporting our full results in the appendix.

### **Empirical results**

To assess how low-wage unionism affects redistribution preferences, we begin our empirical analysis by restricting the sample to blue-collar workers and estimating the effects of belonging to a LO-affiliated union while dropping blue-collar workers belonging to TCO- and SACO-affiliated unions from the sample. Based on a model that interacts union membership with income, panel (a) in Table 3 presents the average predicted probabilities of redistribution support among members of a LO-affiliated union and non-union members in each income quartile. Estimating a model that interacts union membership with income and sector of employment allows us to present the predicted probabilities of redistribution support for the same



groups among public-sector workers (panel b) and private-sector workers (panel c) separately.<sup>17</sup>

[Table 3]

Panel (a) reveals a solidarity effect of LO membership relative to non-membership. Unionized blue-collar workers in the 4<sup>th</sup> quartile of the income distribution are, for instance, almost 16% more likely to support redistribution than their non-unionized counterparts and this effect clears the 95% significance threshold. This solidarity effect of LO membership in the 4<sup>th</sup> income quartile is even bigger in the private sector (19%,  $p=.015$ ). It is, however, absent in the public sector.

In line with our expectations, we find enlightenment effects of LO membership of about 10% in the 2<sup>nd</sup> income quartile in panel (a) and panel (c) that reach the 99% significance level. Yet, these enlightenment effects are not only substantially but also significantly smaller than the solidarity effects discussed above. In panel (a), the solidarity effect of LO membership in the 4<sup>th</sup> income quartile is almost 10% ( $p=.002$ ) bigger than its enlightenment effect in the 1<sup>st</sup> income quartile, and in panel (c), the former effect is 14% ( $p=.001$ ) bigger than the latter. As it was the case with regard to solidarity effects, we find no enlightenment effect of LO membership among public-sector blue-collar workers. In addition, the absence of any enlightenment effect in the 1<sup>st</sup> income quartile is puzzling and contradicts our expectations. It could well be due to a ceiling effect. Replicating the analysis with only those individuals who think of the proposal to reduce income differences as "very good" and the proposal to increase wage

differences as "very bad" coded as redistribution supporters, fails, however, to bring an enlightenment effect in the 1<sup>st</sup> income quartile about.<sup>18</sup>

We now turn to the effects of membership in TCO- and SACO-affiliated unions to assess how comprehensive unionism and high-wage unionism affect redistribution support. In doing so, we restrict the sample to white-collar employees and drop white-collar employees belonging to LO-affiliated unions. We again interact union membership with income and sector of employment to estimate average predicted probabilities of redistribution support for different groups of white-collar employees as shown in Table 4.<sup>19</sup> The left panel in Table 4 presents predicted probabilities for each of the income quartiles for members of TCO-affiliated unions, members of SACO-affiliated unions, and non-union members in the public sector. The right panel in Table 4 displays predicted probabilities for the same twelve groups in the private sector.

[Table 4]

As expected, the probability to support redistribution is generally higher among members of encompassing TCO-unions than members of high-wage SACO-unions. On average, members of TCO-affiliated unions are about 15% more likely to support redistribution than members of SACO-affiliated unions and TCO-SACO-differences in predicted probabilities clear the 95% significance threshold in each income quartile in both sectors except in the 1<sup>st</sup> income quartile in the public sector and the 4<sup>th</sup> income quartile in the private sector.

When looking for enlightenment and solidarity effects, we find that members of TCO-affiliated unions in the 2<sup>nd</sup> income quartile and above are significantly more likely to support redistribution than non-members in the same quartile in the public and private sector alike. The effect of TCO membership, however, clearly fails to clear the 95% significance threshold among public-sector white-collar employees in the 1<sup>st</sup> income quartile and just about fails to do so among private-sector white collar-employees in the 1<sup>st</sup> income quartile. In both the public sector and the private sector, the solidarity effect of TCO membership in the 4<sup>th</sup> income quartile is bigger than its enlightenment effect in the 2<sup>nd</sup> quartile. While this difference across quartiles is about twice as big in the private sector (6.6%) as in the public sector (3.4%), both differences-in-differences clear the 95% significance threshold.

Enlightenment and solidarity effects of SACO membership (relative to non-membership) are between 10% and 25% smaller than those of TCO membership (relative to non-membership), and most of these differences-in-differences clear the 95% significance threshold.<sup>20</sup> Moreover, any enlightenment effect of SACO membership is absent, and its solidarity effects are restricted to the 4<sup>th</sup> income quartile in the private sector (13.7%,  $p=.027$ ) and the 3<sup>rd</sup> income quartile in the public sector (15.8%,  $p=.040$ ).

Let us now return to the question of self-selection. Most obviously, high-income white-collar employees who choose to join encompassing TCO unions may well be predisposed in favor of redistribution and low-income white-collar employees who choose to join high-wage SACO unions are likely to be predisposed against redistribution. It should again be noted that Sweden's Ghent system of unemployment insurance provides selective incentives for individuals

to join unions and that high levels of unionization probably imply that many Swedes join unions to conform to some form of social pressure.

The fact that some but not all white-collar employees can join either a TCO-affiliated union or a SACO-affiliated union provides an opportunity to investigate the role of self-selection. Self-selection implies that the effect of TCO membership should be greater when SACO membership represents a viable alternative to secure full access to unemployment benefits and other advantages related to union membership. In this situation, prior dispositions in favor of redistribution should matter most to the decision to join an encompassing TCO union. An alternative interpretation of the effect of competition between SACO and TCO unions would run as follows: Faced with competition, TCO unions start to worry about losing high-wage members and respond to this threat by retreating from solidaristic wage policies and toning down their egalitarian rhetoric. As a result, the solidarity effect of belonging to a TCO-affiliated union should decline when SACO membership is a viable alternative.

Whether or not membership in SACO-affiliated unions represents a viable alternative depends on whether or not an individual has an occupation that SACO organizes. SOM does not provide the occupational information that we would need to tackle self-selection on a fine-grained level and identify the individuals for which SACO membership provides a viable alternative. But income quartile might to some extent be considered a proxy for occupation. Table 5 thus cross-tabulates the effect of belonging to a TCO-affiliated union (relative to someone who is not a union member) in the 3<sup>rd</sup> and 4<sup>th</sup> quartile in the public and private sector with the unionization gap between TCO and SACO in the respective sector and income bracket. The logic

of self-selection implies that the TCO effect should be larger in quartiles where the density gap is small, that is, where SACO unions are more competitive. The evidence is consistent with this logic in the sense that moving from a unionization gap of 49% to a 10-point gap increases the TCO effect from .240 to .295. However, none of these differences-in-differences clear the 95% threshold of statistical significance.

[Table 5]

Following a similar logic, Table 6 reports the results of estimating separate models with SOM data for 1986-88 and 1998-2001 that pool white-collar employees in the public and private sector to have a sufficient number of observations. As shown above, SACO membership became a more viable option in the private sector as well as the public sector by the end of the 1990s. Contrary to the self-selection hypothesis and consistent with the alternative hypothesis suggested above, the effect of belonging to a TCO-affiliated union, relative to belonging to SACO union as well as being a non-member, seems to have declined over the period 1986-2001. Moreover, effects of TCO membership compared to non-membership (.097,  $p=.131$ ) and SACO membership (.100,  $p=.170$ ) do not significantly change over time.

[Table 6]

## Conclusion

As our previous work in Mosimann and Pontusson (2017), this article was motivated by the idea that enlightenment and solidarity effects of union membership might affect individual preferences for redistribution and that these effects might vary across different types of unions. While we had to rely on country-level measures to capture differences in unionism in our previous work, the Swedish survey data for the period from 1986 to 2001 used in this article allowed us to match union members with three trade union confederations that represent forms of low-wage unionism, comprehensive unionism, or high-wage unionism.

The preceding analysis of belonging to different kinds of union confederations within the same country suggests that union membership effects on individual preferences for redistribution rise with income and that solidarity and enlightenment effects of encompassing unionism are bigger than solidarity and enlightenment effects of high-wage unionism. As in our previous article, some of our results contradict our expectations: First, we find no enlightenment effects of any type of unionism in the 1<sup>st</sup> income quartile. Second, we observe that enlightenment effects in the 2<sup>nd</sup> income quartile are substantially smaller among blue-collar workers under low-wage unionism than among white-collar employees under encompassing unionism. Finally, we find some sizeable solidarity effects under high-wage unionism.

Most important, matching survey respondents with specific trade union confederations allowed us to tackle the issue of self-selection more directly than in our previous work. Leveraging differences in the availability of membership in high-wage unions across sectors, income

levels, and time, our results implicate that effects of comprehensive unionism on redistribution support are not affected by how viable membership in a high-wage union is.

To finish, let us briefly mention how we plan to continue addressing the limitations in Mosimann and Pontusson (2017) and advance our exploration of the effects of union decline and the changing composition of unions on the politics of rising inequality and compensatory redistribution. First, we intend to incorporate variance across union members, that is, in the duration and intensity of union membership, into our analysis of union membership effects on individual preferences for redistribution. Different surveys, namely the SOM data used in this article as well as the Political Change in Britain surveys of 1964-74 and the Norwegian Election Studies of 1997-2013 would allow us to do so. We also plan to match unionized survey respondents with specific unions by making use of the large-scale surveys that have asked respondents to identify the union to which they belong – to our knowledge the Political Change in Britain surveys of 1964-74, the Danish Election Studies of 1987-2011, and the Norwegian Election Studies of 1997-2013. Finally, we think about following union members in certain occupations that have been hit by union mergers over time to analyze how being incorporated into a more encompassing union – such as the German *ver.di* that has been founded in 2001 by five unions, some of them previously organizing on an occupational basis – affects redistribution preferences.

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## Notes

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- <sup>1</sup> An extensive literature demonstrates that union density is higher in countries with Ghent systems of unemployment insurance than in countries with state-run systems and attributes this association to selective membership incentives (see, e.g., Rasmussen and Pontusson 2017, Clasen and Viebrock 2008, Ebbinghaus and Visser 1999, Western 1993, Rothstein 1992). It should be noted that in Sweden (and other Ghent countries as well) individuals can join union-administered unemployment funds without joining unions, but survey evidence suggests that many individuals are not fully aware of this option. Also, it seems reasonable to suppose that some individuals view union membership as an extra insurance, that is, as a means to ensure that they will have access to full unemployment benefits (eligibility being determined by people employed by unions). Note finally that the unemployment insurance reform of 2006-07 significantly reduced state subsidization of unemployment insurance.
- <sup>2</sup> Introducing insurance motives for supporting redistribution adds some complexity. To keep things simple, we assume that income and risk are closely correlated (see Rehm 2016).
- <sup>3</sup> Support for redistribution is measured with an ESS question that asks survey respondents whether they "strongly agree," "agree," "neither agree nor disagree," "disagree" or "strongly disagree" with the statement that "the government should take measures to reduce differences in income levels." Individuals who respond with "strongly agree" or "agree" are treated as supporters of redistribution.
- <sup>4</sup> Mosimann and Pontusson (2017) also report the results of estimating a four-way interaction between union membership, relative income, overall unionization, and union inclusiveness. The results are similar to those reported in Table 1. Note also that results reported in Table 1 are based on models that control for Left-Right self-placement of individuals. Without controlling for ideology, union effects are bigger and statistically more significant, but the pattern of variation across types of unionism is the same.
- <sup>5</sup> Mosimann and Pontusson (2017) observe that the union effect rises with the age of the respondent. Assuming that older respondents have, on average, been union members for a longer period of time, we interpret this finding as support for the idea that duration of union membership matters. The SOM asks respondents directly whether or not they actively take part in the work of the trade union. We plan to make use of this additional information provided by the SOM in the (near) future.
- <sup>6</sup> To our knowledge, the only large-scale surveys that have asked respondents to identify the union to which they belong are the Political Change in Britain surveys of 1964-74, the Danish Election Studies of 1987-2011, and the Norwegian Election Studies of 1997-2013. We plan to analyze (some of) these surveys in the (near) future.

- <sup>7</sup> The 14 unions that currently make up the LO include three small unions organized on a craft basis (electricians, painters, and musicians); all 14 TCO-affiliated unions are sectoral (Kjellberg 2013, [http://www.lo.se/english/this\\_is\\_lo](http://www.lo.se/english/this_is_lo) [last accessed, March 30, 2018], <https://www.tco.se/om-tco/This-is-TCO/> [last accessed, March 30, 2018]).
- <sup>8</sup> The official English name is the Swedish Confederation of Professional Associations. Currently there are 23 associations affiliated with SACO (<https://www.saco.se/en/> [last accessed, March 30, 2018]).
- <sup>9</sup> In each survey year, the SOM Institute asked respondents to sort themselves into one of eight to twelve income categories with categories changing every two to eight years. Between 1986 and 2001, the SOM Institute used four different categorizations when asking respondents to "mark the box which corresponds to the estimated total annual income in your household before tax." Nine specific income categories were used between 1986 and 1989, nine different ones were used between 1990 and 1992, ten categories were used between 1993 and 1998, and eight categories were used between 1999 and 2001. To make respondents' gross household income comparable across time, the SOM Institute created a 5-point scale that separates very low incomes from low, medium, high, and very high incomes. Collapsing the first two of these categories, that is, very low and low income, yields four income-groups that roughly correspond to quartiles with 16% of respondents falling into the 1<sup>st</sup> quartile, 27% falling into the 2<sup>nd</sup> quartile, 30% falling into the 3<sup>rd</sup> quartile, and 27% falling into the 4<sup>th</sup> quartile.
- <sup>10</sup> A question that allows us to code respondents' membership in different trade union confederations is only available from 1986 to 2011, questions on respondents' redistribution preferences are only available in 1986, 1987, 1988, 1998, 1999, 2001, 2011, 2012, 2013, and 2015, and we have no information on respondents' educational attainment in 1987. That leaves us with 1986, 1988, 1998, 1999, 2001, and 2011. Because differences in unionization patterns across confederations and sectors are more pronounced and stable between 1986 and 2001 than 2002 and 2011 as shown in figures 3 to 6, we drop 2011 from our sample.
- <sup>11</sup> More information on <https://som.gu.se/> [last accessed, April 2, 2018].
- <sup>12</sup> See endnote 9 for more information.
- <sup>13</sup> A "low level of education" pertains to the comprehensive school grades 1-9 or less, a "medium level of education" refers to above comprehensive school grades but not university, and a "high level of education" entails that a respondent studies at or has a degree from a university or university college. The SOM recodes six different types of coding across different survey waves into this three-point

scale. The question asks: "What is your education? If you haven't completed your education, please state the education you are currently pursuing."

- <sup>14</sup> The original SOM question differentiates between "state," "local/regional government," and "private" employment. We code the first two response categories as public-sector employment, the last one as private-sector employment.
- <sup>15</sup> Excluded are old age pensioners/early retirement contractual pensioners, disability pensioners/early retirement pensioners for medical reasons, students, and other/homeworkers. Among respondents not currently in gainful employment, the SOM Institute further differentiates between those currently unemployed and those currently in labor market training. We collapse these latter two categories to only separate between respondents who are currently gainfully employed and those who are not currently gainfully employed. Note that our results are the same if we keep the SOM Institute's categorization, note also that only 2.5% of respondents in our sample are in labor market training, and only 4.3% of them are unemployed.
- <sup>16</sup> Not included in the sample are farmers (with or without employees) and other self-employed respondents.
- <sup>17</sup> Full results in Table A3 in the appendix. In panel (a), redistribution support becomes less likely among members of LO-affiliated unions and non-union members alike as income rises. This pattern holds among blue-collar workers in the public sector in panel (b) but not among blue-collar workers in the private sector in panel (c). Among the latter, only non-union members but not members of LO-affiliated unions become less likely to support redistribution as income increases. None of these differences across income levels clear, however, the 95% significance threshold.
- <sup>18</sup> See Table A4 in the appendix. Moreover, a statistically significant enlightenment effect of LO membership in the 1<sup>st</sup> income quartile is absent among active *and* passive union members. However, the enlightenment effect in the 1<sup>st</sup> income quartile is substantially bigger among LO members who have attended a union meeting in the last 12 months (.113,  $p=.131$ ) or some type of union assignment (.092,  $p=.254$ ) than LO members who have not attended a union meeting in the last 12 months and no assignment within their union (.040,  $p=.542$ ).
- <sup>19</sup> Full results in Table A5 in the appendix. Across all sectors and membership states, redistribution support is less likely among white-collar employees in the 4<sup>th</sup> income quartile than those in the 1<sup>st</sup> income quartile. All but two of these drops in the probability to support redistribution between the 1<sup>st</sup> and the 4<sup>th</sup> income quartile clear the 95% significance threshold. The exceptions being the drops

among non-members in the public sector (33.8%,  $p=.056$ ) and members of SACO-affiliated unions in the private sector (7.7%,  $p=.558$ ).

<sup>20</sup> The exceptions are differences-in-differences in the 1<sup>st</sup> quartile in the public sector ( $p=.195$ ) and the 4<sup>th</sup> quartile in the private sector ( $p=.061$ ).

## Tables

**Table 1.** Differences in predicted probabilities of support for redistribution between union members and non-members by type of unionism

	Income deciles	
	2 <sup>nd</sup>	9 <sup>th</sup>
Comprehensive unionism	.060***	.068***
Low-wage unionism	.028***	.097***
High-wage unionism	.023***	.059***

From Mosimann and Pontusson 2017, Table 4 - \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10%; t test of equality hypothesis for differences. Based on two-level linear probability models estimated with separate samples for each type of unionism and time-varying macro control variables.

**Table 2.** Distribution of white-collar employees and blue-collar workers across trade union confederations by income and sector in %, 1986 - 2001

	Income quartiles				<i>Total</i>
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	
LO-public	32.4	34.6	25.1	7.9	100
LO-private	29.0	39.3	24.5	7.2	100
TCO-public	18.5	26.3	31.5	23.7	100
TCO-private	12.4	26.7	32.8	28.1	100
SACO-public	12.8	25.0	26.6	35.6	100
SACO-private	11.2	21.4	22.1	45.3	100

Data: SOM 1986-2001. Distribution among white-collar employees and blue-collar workers separately in the appendix.

**Table 3.** Average predicted probabilities of redistribution support among blue-collar workers conditional on membership in LO-affiliated unions, sector of employment, and income

Membership	a. All			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
None	.702	.664	.623	.581
LO	.762	.756	.748	.740
<i>Difference</i>	.060 (.166)	.092** (.004)	.125** (.005)	.159* (.026)
Membership	b. Public sector			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
None	.725	.712	.698	.684
LO	.783	.762	.739	.715
<i>Difference</i>	.058 (.429)	.050 (.424)	.041 (.667)	.031 (.836)
Membership	c. Private sector			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
None	.692	.649	.604	.558
LO	.750	.752	.754	.756
<i>Difference</i>	.058 (.292)	.103** (.006)	.150** (.002)	.198* (.015)

P-values in parentheses; \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10%; t-test of equality hypothesis for differences. Based on models 2 and 3 reported in Table A3 in the appendix.



**Table 4.** Average predicted probabilities of redistribution support among white-collar employees, conditional on membership in TCO or SACO unions, sector of employment, and income

	a. Public				b. Private			
	Income quartile				Income quartile			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
<i>Probabilities</i>								
None	.564	.411	.325	.226	.505	.378	.265	.176
TCO	.738	.672	.599	.521	.639	.573	.505	.437
SACO	.634	.560	.483	.408	.390	.363	.338	.313
<i>Differences</i>								
<i>None vs TCO</i>	.174 (.197)	.261** (.008)	.274*** (.000)	.295** (.002)	.134† (.096)	.195*** (.000)	.240*** (.000)	.261*** (.000)
<i>None vs SACO</i>	.070 (.635)	.149 (.212)	.158* (.040)	.182† (.063)	.115 (.351)	.015 (.850)	.073 (.146)	.137* (.027)
<i>TCO vs SACO</i>	.104 (.195)	.112* (.040)	.116** (.004)	.113* (.046)	.249* (.032)	.210** (.005)	.167*** (.001)	.124† (.061)

P-values in parentheses; \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10%; † t-test of equality hypothesis for differences. Based on model 5 reported in Table A5 in the appendix

**Table 5.** Effects of TCO membership in relation to the availability of SACO membership

	Unionization gap between SACO and TCO	TCO effect
Public sector		
3 <sup>rd</sup> income quartile	33%	.274***
4 <sup>th</sup> income quartile	10%	.295***
Public sector		
3 <sup>rd</sup> income quartile	49%	.240***
4 <sup>th</sup> income quartile	29%	.261***

TCO effect as reported in Table 4; \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10%. TCO effect refers to differences in average predicted probabilities of redistribution support between non-members and members in TCO unions. Data: SOM 1986-2001.

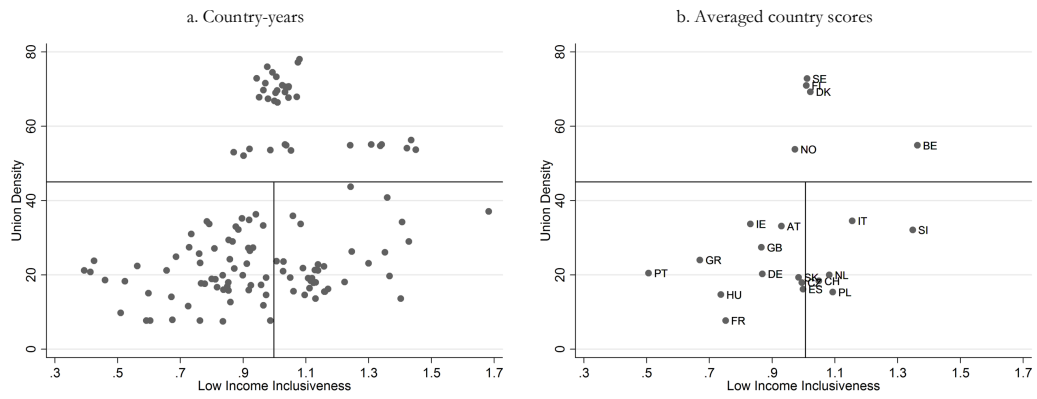
**Table 6.** Average predicted probabilities of redistribution support among white-collar workers with above median income conditional on union membership and time

	Early period	Late period
<i>Probabilities</i>		
None	.172	.270
TCO	.484	.485
SACO	.346	.447
<i>Differences</i>		
<i>None vs TCO</i>	.312*** (.000)	.215*** (.000)
<i>None vs SACO</i>	.174** (.007)	.177*** (.000)
<i>TCO vs SACO</i>	.138* (.020)	.038 (.436)

P-values in parentheses; \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10%; t-test of equality hypothesis for differences. Earlier period refers to 1986 and 1988; later period refers to 1998, 1999, and 2001. Based on model 6 in Table A5 reported in the appendix.

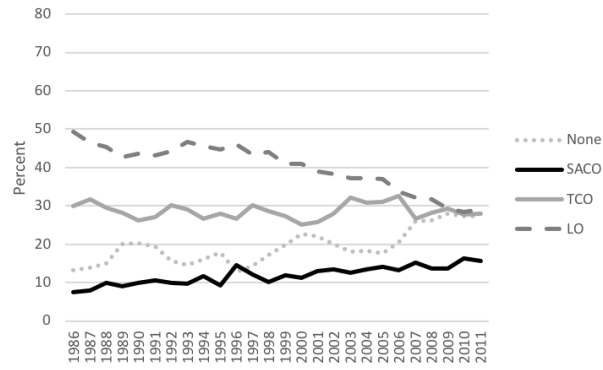
Figures

Figure 1. Unions' encompassment and inclusiveness



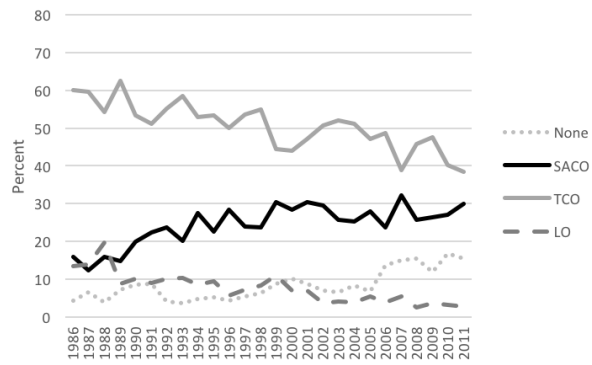
From Mosimann and Pontusson 2017, Figure 1. Data sources: ESS 2002-14, Visser 2016.

**Figure 2.** Unionization patterns among white-collar employees and blue-collar workers, 1986 - 2011



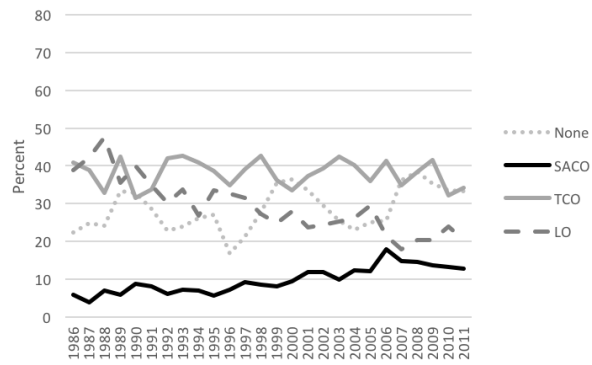
Data SOM 1986 – 2011. Patterns for white-collar employees and blue-collar workers separately in the appendix.

**Figure 3.** Unionization patterns among white-collar employees and blue-collar workers with above median income in the public sector, 1986 - 2011



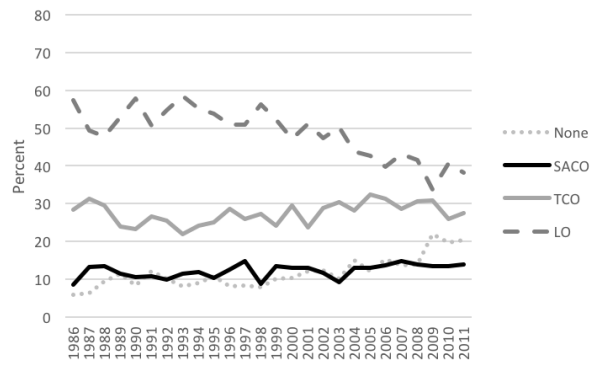
Data SOM 1986 – 2011. Separate patterns for white-collar employees and blue-collar workers in the appendix.

**Figure 4.** Unionization patterns among white-collar employees and blue-collar workers with above median income in the private sector, 1986 - 2011



Data SOM 1986 – 2011. Separate patterns for white-collar employees and blue-collar workers in the appendix.

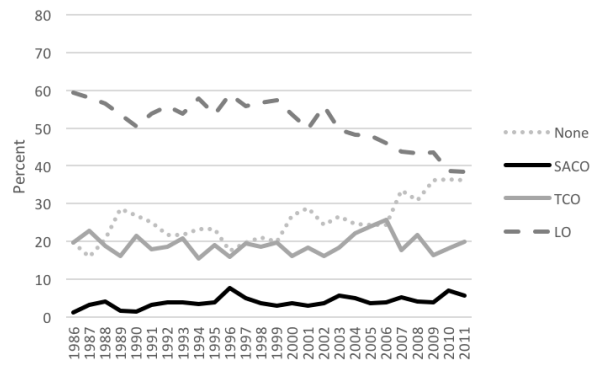
**Figure 5.** Unionization patterns among white-collar employees and blue-collar workers with below median income in the public sector, 1986 - 2011



Data SOM 1986 – 2011. Separate patterns for white-collar employees and blue-collar workers in the appendix.



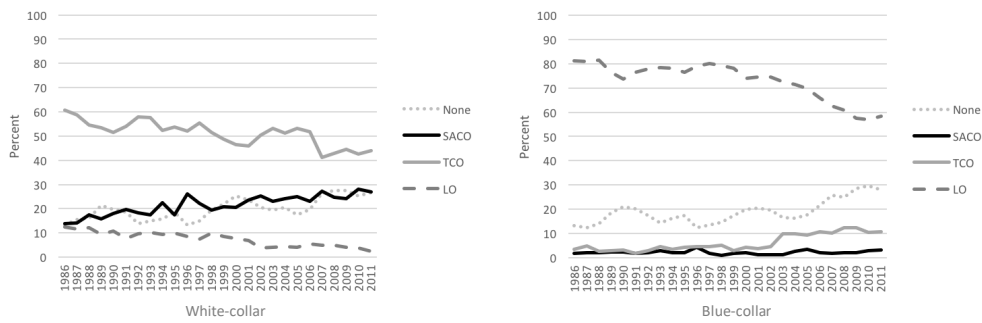
**Figure 6.** Unionization patterns among white-collar employees and blue-collar workers with below median income in the private sector, 1986 - 2011



Data SOM 1986 – 2011. Separate patterns for white-collar employees and blue-collar workers in the appendix.

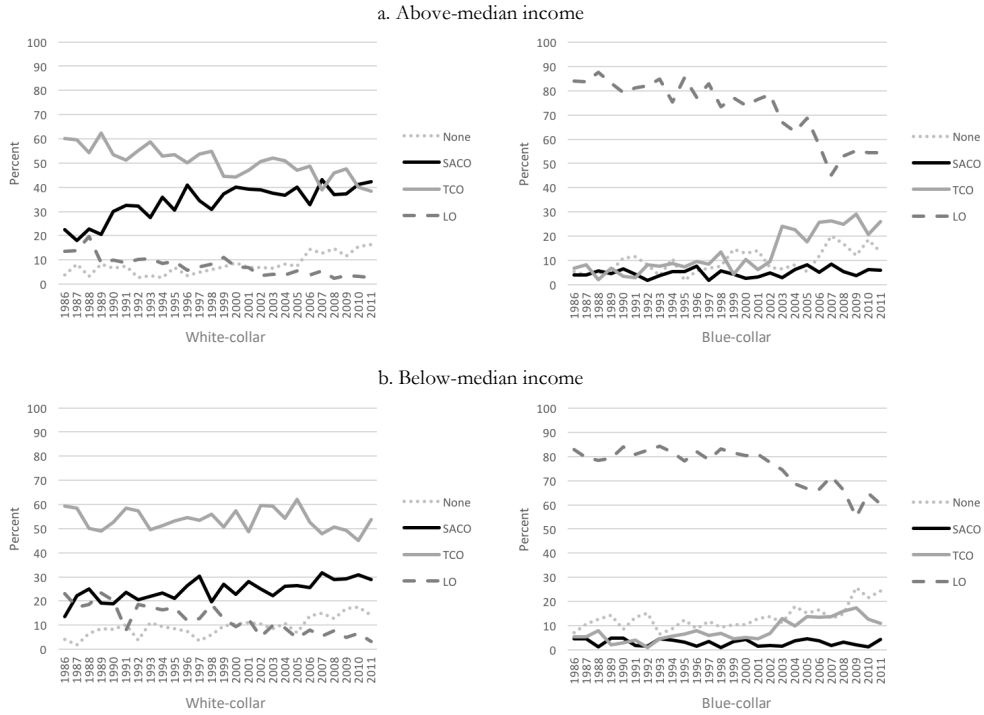
Appendix

**Figure A1.** Overall unionization patterns among white-collar employees and blue-collar workers separately, 1986 - 2011



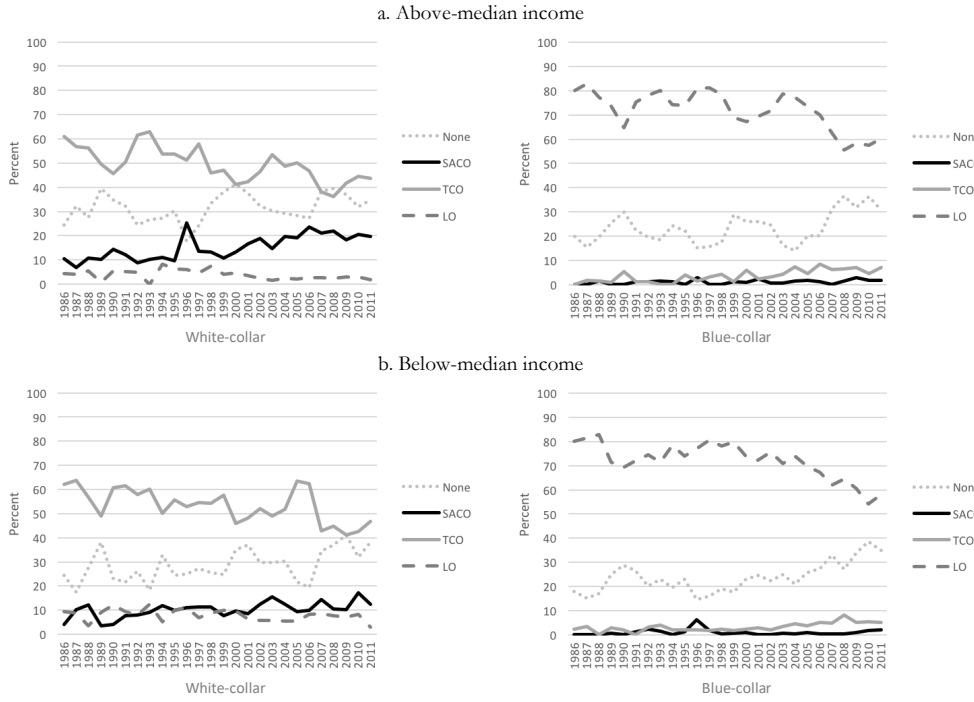
Data SOM 1986 – 2011.

**Figure A2.** Unionization patterns in the public sector among white-collar employees and blue-collar workers separately, 1986 - 2011



Data SOM 1986 – 2011.

**Figure A3.** Unionization patterns in the private sector among white-collar employees and blue-collar workers separately, 1986 - 2011



Data SOM 1986 – 2011.

**Table A1.** Descriptive statistics

Variable	N	MEAN	S.D.	MODUS	MEDIAN
Year	3,804	-	-	1988	-
Union membership	3,804	-	-	LO membership	-
Income	3,804	3	1	2 <sup>nd</sup> quartile	3 <sup>rd</sup> quartile
Occupational group	3,804	-	-	White collar	-
Sector of employment	3,804	-	-	Private	-
Age	3,804	41	12	39	42
Sex	3,804	-	-	Male	-
Education	3,804	-	-	Above comprehensive	Above comprehensive

**Table A2.** Distribution of white-collar employees and blue-collar workers across trade union confederations by income and sector in percent, 1986 - 2001

	a. White-collar				b. Blue-collar			
	Income quartile				Income quartile			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
LO-public	24.8	30.5	30.0	14.7	33.8	35.5	24.1	6.6
LO-private	20.9	31.5	29.5	18.1	29.6	39.8	24.1	6.5
TCO-public	17.2	26.2	31.9	24.7	33.5	26.7	26.7	13.1
TCO-private	11.5	26.1	33.3	29.1	31.5	38.9	22.2	7.4
SACO-public	11.0	24.7	26.4	37.9	30.4	28.7	28.7	12.2
SACO-private	8.0	20.6	22.7	48.7	42.6	29.8	17.0	10.6

Data: SOM 1986-2001.

**Table A3.** Union membership and other variables as determinants of redistribution support among blue-collar workers, logistic regression models with time dummies

Variables	Model 1	Model 2	Model 3
Constant	2.359*** (.577)	2.945** (1.014)	2.901** (1.142)
LO membership	1.602*** (.238)	1.197 (.407)	1.093 (.457)
Income	.928 (.058)	.837 (.107)	1.227 (.212)
Sector of employment (ref. private)	1.077 (.134)	1.070 (.133)	1.032 (.675)
Labor market situation (ref. employed)	.952 (.183)	.949 (.182)	.928 (.180)
Age	1.014** (.005)	1.014** (.005)	1.014** (.005)
Sex (ref. male)	1.074 (.127)	1.078 (.127)	1.094 (.130)
Education (ref. low)			
Medium	.925 (.126)	.923 (.126)	.926 (.127)
High	.764 (.216)	.748 (.212)	.745 (.212)
<i>Interactions</i>			
Income * LO membership		1.147 (.165)	1.227 (.212)
Public sector * LO membership			1.329 (.969)
Income * Public sector			1.137 (.345)
Income * Public sector * LO membership			.770 (.257)
Time dummies	Yes	Yes	Yes
Log pseudolikelihood	-959	-958	-958
Wald chi <sup>2</sup>	34***	35***	36**
Pseudo R <sup>2</sup>	.018	.018	.019
N	1,699	1,699	1,699

Odds ratios based on logistic regression with robust standard errors, standard errors in brackets - \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10% - continuous variables centered at their sample mean and cases with missing values removed from sample. Data from SOM 1986-2001.

**Table A4.** Average predicted probabilities of strong redistribution support among blue-collar workers conditional on membership in LO-affiliated unions, sector of employment, and income

Membership	a. All			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
None	.443	.366	.296	.233
LO	.472	.467	.462	.457
<i>Difference</i>	.029 (.563)	.101** (.003)	.166*** (.000)	.224*** (.000)
Membership	b. Public sector			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
None	.461	.447	.432	.417
LO	.483	.462	.440	.419
<i>Difference</i>	.022 (.800)	.015 (.832)	.008 (.938)	.002 (.990)
Membership	c. Private sector			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
None	.439	.349	.269	.202
LO	.465	.470	.476	.481
<i>Difference</i>	.026 (.668)	.121** (.002)	.207*** (.000)	.279*** (.000)

P-values in parentheses; \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10%; t-test of equality hypothesis for differences. Based on models identical to models 2 and 3 in Table A3 in the appendix with those individuals who think of the proposal to reduce income differences as "very good" and the proposal to increase wage differences as "very bad" coded as redistribution supporters.



**Table A5.** Union membership and other variables as determinants of redistribution support among white-collar employees, logistic regression models with time dummies

Variables	Model 4	Model 5	Model 6
Constant	1.106 (.277)	1.194 (.310)	.376* (.153)
Membership state (ref. none)			
TCO	2.864*** (.404)	2.633*** (.459)	4.619*** (1.473)
SACO	1.645** (.288)	1.161 (.320)	2.407* (.936)
Income	.708*** (.038)	.577*** (.075)	.511*** (.069)
Sector of employment (ref. private)	1.565*** (.185)	1.337 (.458)	1.388* (.209)
Labor market situation (ref. employed)	2.469* (.939)	2.411* (.905)	10.011* (10.403)
Age	.993 (.005)	.992 (.005)	.998 (.007)
Sex (ref. male)	1.692*** (.178)	1.697*** (.179)	2.058*** (.280)
Education (ref. low)			
Medium	.543** (.119)	.543** (.118)	.534* (.163)
High	.345*** (.079)	.353*** (.081)	.362** (.116)
Period (ref. earlier period) <sup>1</sup>			1.925† (.672)
<i>Interactions</i>			
Income * Membership state (ref. none)			
TCO		1.296 (.210)	
SACO		1.537† (.365)	
Public sector * Membership state (ref. none)			
TCO		1.143 (.422)	
SACO		1.577 (.697)	
Income * Public sector		1.026 (.325)	
Income * Public sector * Membership state (ref. none)			
TCO		.933 (.322)	
SACO		.793 (.318)	
Later period * Membership state (ref. none)			
TCO			.539 (.207)
SACO			.884 (.401)
Time dummies	Yes	Yes	No
Log pseudolikelihood	-1,130	-1,118	-717
Wald chi <sup>2</sup>	230***	235***	149***
Pseudo R <sup>2</sup>	.112	.114	.110
N	1,821	1,821	1,185

Odds ratios based on logistic regression with robust standard errors, standard errors in brackets - \*\*\* significant at .01%, \*\* significant at 1%, \* significant at 5%, † significant at 10% - continuous variables centered at their sample mean and cases with missing values removed from sample.  
<sup>1</sup> Earlier period refers to 1986 and 1988, later period refers to 1998, 1999, and 2001. Data from SOM 1986-2001.