

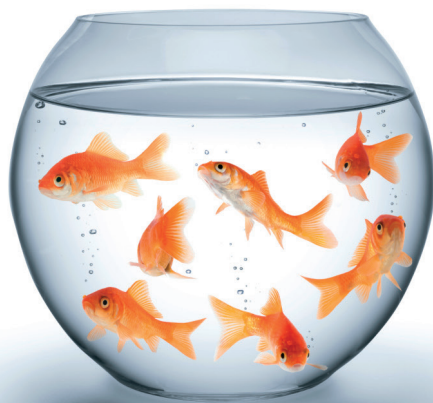
# Sociograph n°23

Sociological research studies

## Malleable Minds?

Teasing Out the Causal Effect(s) of Union Membership  
on Job Attitudes and Political Outcomes

Sinisa Hadziabdic





**MALLEABLE MINDS?  
TEASING OUT THE CAUSAL  
EFFECT(S) OF UNION  
MEMBERSHIP ON JOB  
ATTITUDES AND POLITICAL  
OUTCOMES**

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## ACRONYMS

**2SLS:** 2-Stage-Least-Squares

**Adj. R<sup>2</sup>:** Adjusted R<sup>2</sup>

**ATE:** Average Treatment Effect(s)

**CATI:** Computer Assisted Telephone Interview Technique

**CNG:** Christlichnationaler Gewerkschaftsbund der Schweiz

**CSC:** Confédération des syndicats chrétiens de Suisse

**CVP:** Christlichdemokratische Volkspartei der Schweiz

**FSE:** Fédération des sociétés suisses d'employés

**ILO:** International Labour Organization

**IV:** Instrumental Variable(s)

**LATE:** Local Average Treatment Effect(s)

**NACE:** Nomenclature statistique des activités économiques dans la Communauté européenne

**NOGA:** Nomenclature générale des activités économiques

**OECD:** Organisation for Economic Co-operation and Development

**OLS:** Ordinary Least Squares

**OVB:** Omitted Variable Bias

**P:** P-value

**PDC:** Parti démocrate-chrétien

**S.E.:** Standard error

**SGB:** Schweizerischer Gewerkschaftsbund

**SHP:** Swiss Household Panel

**SLFS:** Swiss Labour Force Survey

**UDC:** Union démocratique du centre

**USS:** Union syndicale suisse

**VSA:** Verband Schweizerischer Angestellten





## **EXTENDED ABSTRACT**

### **Research Question(s)**

A series of recent developments in the labor market threaten trade unions' bargaining role in the Western world. The Swiss system of industrial relations is no exception in this regard. As a response, since the '90s, Swiss unions show an increased involvement in the political and social sphere, stepping outside their function of economic regulators. This evolution serves as a way of preserving their economic role in the political arena and as a strategy to attract new union members through channels other than the professional domain.

The objective is to analyze unions' activity from a specific point of view, the one of union members. In fact, since they are the category of individuals towards which unions' actions are primarily directed and that gives unions their democratic legitimacy, an analysis of the way wage-earners are affected by union membership is a crucial aspect to consider in order to make sense of today's evolutions in the labor market. To what extent are unions capable of influencing the attitudes of their members? If any, is the impact restricted to the work domain or does it extend to political and social attitudes? Using the data of the Swiss Household Panel, the analysis considers the effect of union membership on various dimensions of job satisfaction, job security, individual political involvement, political orientation, political satisfaction and a set of "other-regarding" attitudes. The wage-earners in Switzerland between 1999 and 2011 compose the population of interest.

## **Descriptive Analysis**

A descriptive analysis confirms the declining trend of union membership in Switzerland. The decline of union density concerns primarily the traditional sectors (full-time workers, men,...), while some emerging categories (part-time workers, women,...) do not show a decreasing trend between 1999 and 2011.

Focusing on the reasons of the evolution, two regression models reveal that the decline is related to the decreasing capacity of Swiss unions to attract new members, while the mean duration of membership does not show significant variations over the period. Interestingly, controlling for the socio-demographic and structural evolutions of the labor market does not significantly modify these conclusions.

## **Methodological Elements**

The goal is to estimate the causal effect of union membership on a series of job and political attitudes. Three main issues need to be taken into account.

First, for all dependent variables, union membership presents a problem of time-invariant endogeneity. The issue can be partially addressed by estimating the impact through a pooled OLS model and by including a set of control variables that capture the correlation between union membership and the error term. However, this strategy is in general not sufficient to rule out the presence of a selection effect. In fact, since the outcome variables are represented by attitudes, it is very likely that they are correlated with some unobserved heterogeneity, especially in the form of “pre-existing predispositions”, between union members and non-members. By exploiting the panel structure of the data, it is possible to transform the original data through a differencing procedure and to get rid of all time-invariant heterogeneity. The comparison between the pooled OLS estimates and those obtained through OLS

on differenced data shows to what extent this kind of heterogeneity leads to a bias in the results.

A second problem is related to the potential time-varying endogeneity of the union membership variable. The job satisfaction dimensions, in particular, are affected by an issue of time-varying reverse causality, a decrease in job satisfaction representing one of the main reasons motivating the union membership choice. The problem is solved by instrumenting the union membership variable and applying a 2SLS estimation on differenced data.

A third aspect to consider is the likely heterogeneous effect of union membership on the attitudes included in the analysis. There are good reasons to believe that the attitudinal effect of becoming a union member may vary according to the profile of the union member and, by thinking about the fragmentation of the Swiss union landscape, also according to the sector of activity. Hence, besides an analysis of the main effect on the overall population of union members, the impact is re-estimated on various segments of the population. By taking advantage of the longitudinal nature of the data, it is also possible to examine the impact by episode and by duration of union membership. Aside from being informative on the particular effect in different sub-populations, this analysis reveals itself very useful to shed light on the causal mechanisms linking union membership and the attitudes under examination.

## **Main Effects**

The comparison between pooled OLS and OLS on differenced data estimates shows that, for almost all dependent variables, the selection effect related to the presence of time-invariant unobserved heterogeneity represents a serious source of bias. Partialling out the effect of this kind of heterogeneity in the OLS estimation on differenced data reveals that the estimates either become insignificant or decrease in magnitude. Instrumenting leads to signifi-

cant changes only in job satisfaction dimensions. In these dimensions, becoming a union member leads to a positive impact on the satisfaction with working conditions and income, reduces the self-evaluated risk of unemployment, while it does not modify the satisfaction with the work atmosphere. Furthermore, union membership significantly increases the level of interest in politics and the feeling of political influence. This attitudinal effect is however not transposed into a behavioral one: the voting choice and the political position are not significantly influenced. While there is no effect on the overall satisfaction with democracy, becoming a union member leads to a significant decrease in the trust in the Federal Government. Finally, among the other-regarding attitudes, only a small and barely significant effect towards a positive opinion on the increase of social expenses is observed.

### **Effects across Different Segments of Union Members**

The analysis by episode and duration of membership shows that the timing of the effects cited above is characterized by some important differences across attitudes: while the impact is immediate for working conditions, the decrease in the trust in the Federal Government develops significantly only since the second year of union membership and the other effects show up only for longer durations or for episodes of union membership after the first one.

It also appears that the impact of union membership is almost always more pronounced on individuals declaring themselves as active members, part-time workers and women. Moreover, the results delineate a clear dichotomy between public and private sector workers, the effect of union membership being significantly more marked on the former. The analysis by economic activity reveals striking differences across sectors. The absence of differences across some sub-populations is also interpreted as informative. For example, the effect does not vary significantly across age or firm size.

## Implications

The main effects show that unions still represent an important reference group as far as the work domain goes, especially when an issue related to objective working conditions, income or job security arises. Unions do what they are supposed to in the professional domain by increasing the well-being of their members. On the political and social level, the fact that union membership leads to an attitudinal change, but not to a behavioral one can be interpreted either as a lack of attachment of the affiliates or as the result of a high selection effect not leaving margin for an additional impact on newcomers that already share unions' perspectives.

The variations observed across different sub-populations show that the same categories of individuals (active members, part-time wage-earners, women and public sector workers) are those experiencing the highest effect in all dimensions. Supposing that the benefits generated by union membership in the professional sphere are those conducing to the attitudinal effect in other domains leads to reaffirm the priority unions should accord to organizational achievements over institutional influence in order to attempt to redress their declining importance as bargaining partners.



## 1. INTRODUCTION

Thinking is a puzzling process. At first sight, the beliefs of an individual may seem something deep, the product of the sedimentation of all past experiences. Personal convictions usually appear to be stable and solid elements, shaped through the time and resistant to change. On the other hand, one point of view is just one point of view. If the observation point changes, the view may change as well. One single event, an important variation in the objective living conditions or the inclusion in a new social network may challenge this apparent stability. The current experience or the most recent one may outweigh all past experiences. In other words, an individual's outlook on what surrounds him may be much more malleable than it may seem at first sight.

Three main perspectives can be cited to account for an individual's way of perceiving and interpreting the world around him (Zerubavel 1999).

### 1.1 THINKING AS AN INDIVIDUAL

A man is the sum of his experiences. The conception of the individual thinker dates back to the Romantic era. Each individual is a unique human being, an atomized entity whose thoughts and actions can be understood only by considering the personal path that characterizes each existence. Originally, the mind is a blank page, an empty and formless container that is shaped day after day by the inimitable trajectory each solitary thinker follows. This empiricist vision of the thinking process highlights the idiosyncratic outlook on the world an individual forms through the continuous experiences he is inevitably exposed to.

The residuals of this conception are still obvious in today's individualist ideology. Although useful to account for the important diversity that characterizes the personal vision each individual develops to interpret the surrounding environment, the solitary thinker perspective is not capable of explaining the undeniable similar attitudes and behaviors different human beings show when confronted with the same situations.

## **1.2 THINKING AS A HUMAN BEING**

In order to make sense of these aspects, it is possible to take a universalistic perspective of the thinking process. Each individual is linked to the others by the fact of sharing a common set of traits that naturally characterize each human being. The attitudinal and behavioral regularity that apparently disconnected individual entities show is a direct consequence of the same cognitive developmental path they followed. Although marked by some personal variations in the way they are accomplished, each human being follows the same pre-programmed formative stages. The final result of the process, an adult human being, can be analyzed through a set of universal principles that predate the actual experiences. Rationality, in particular, is the main scheme through which each human being apprehends and acts on the surrounding world.

A universalistic conception of thinking redresses the main limitation of the solitary thinker vision. By focusing on the natural common elements between human beings rather than on the idiosyncratic character of each individual, it is possible to make sense of the regular patterns the human thinking and behavior present. However, the sole focus on what different individuals share reveals itself inadequate when trying to understand the variability we observe between human beings. In particular, it is not possible to make sense of the differences between groups of individuals that clearly distinguish themselves from other ones in a society. The only way the cognitive-psychological conception of thinking is ca-



pable of explaining the variation between human beings is by relating it to developmental or biological dysfunctions among those that deviate from the logical path implied by the human nature.

### **1.3 THINKING AS A MEMBER OF A GROUP**

The objective of the analyses of the following chapters is to examine why and how, when exposed to certain objective changes and social dynamics, some individuals show a certain attitudinal malleability, while others do not. In order to be able to make sense of both inertia and change in the way an individual thinks, we need a perspective that combines the strengths of the two previous visions without cumulating their weaknesses. In order to fill the gap between an experience-based and a universalistic approach of thinking, we adopt a social perspective of the way an individual interprets the world around him. An individual cannot be seen as an atomized entity that forges his identity independently from other individuals. The unique experiences that characterize each individual path are embedded into those of a group of individuals that share similar trajectories. At the same time, the shared ground between human beings cannot be reduced to common biological processes. Individuals show similar ways of thinking not only because of the existence of a natural, pre-established mind structure, but also because they belong to the same conventional social order. An individual thinks and behaves a certain way because he is embedded in a group of individuals that think and behave the same way.

In order to see the emergence of an interpersonal social order, the presence of interactions among individuals belonging to the same group is indispensable. In particular, language represents the fundamental means through which a socialization process takes place. Language pre-exists an individual's sensorial experiences, but at the same time it constitutes a conventional feature of a group of individuals that does not depend on an inevitable natural order. The process of socialization leads to the gradual internalization of the same thinking principles between individuals. The

shared set of principles leads to the formation of a frame of reference common to the “thought community” that influences the way the surrounding world is apprehended. Having been accustomed and socialized to the same frame of reference, the members of the community think and act the same way because the social lenses through which they observe the world around them are the same ones. Such a perspective allows making sense of the thinking and behavior patterns across different groups of individuals in a society without having to trace them back to pre-existing biological differences.

On the other hand, a social perspective of thinking does not exclude the possibility of changes through time or variations across individuals of the same “thought community”. Since the social order on which a frame of reference is based is conventional, it can be challenged and modified by the interactions with other individuals or by objective changes in the environment. Moreover, individuals usually belong to a multiplicity of “thought communities” and the possible idiosyncratic combinations of such communities make the inter-individual variability possible.

Recapitulating, a social perspective offers the advantage of making sense of both the inertial and dynamic elements of the thinking process. By situating itself between the individual and the universal level, it allows observing to what extent the intimate convictions of an individual can be seen as embedded in a social order that pre-exists the individual, but that at the same time, because of its conventional nature, is subject to continuous modifications and re-interpretations.

## 1.4 WHAT DO UNIONS “REALLY” DO?

In order to analyze to what extent the mind of an individual can be influenced by new social interactions and objective experiences, in this Master's Thesis<sup>1</sup>, we focus on the role of a pivotal actor in the economic sphere. Trade unions represent one of the main regulatory forces in the professional domain. Recent developments in the labor market contributed to challenge their regulatory function in the Western world. As a response, since the '90s, unions show an increased involvement in the political and social sphere, stepping outside their function of economic regulators. This evolution serves as a way of preserving their economic role in the political arena and as a strategy to attract new union members through channels other than the professional domain.

The goal of the following pages is to examine unions' activity from a specific point of view, the one of union members. In fact, since they are the category of individuals towards which unions' actions are primarily directed and that gives unions their democratic legitimacy, an analysis of the way wage-earners are affected by union membership is a crucial aspect to consider in order to make sense of today's evolutions in the labor market. To what extent are unions capable of influencing the attitudes of their members? If any, is the impact restricted to the work domain or does it extend to political and social attitudes? Following the discussion of the previous section, we can expect that unions may influence the way their affiliates observe the surrounding world by involving them in new social dynamics and by modifying some of the objective aspects that characterize the professional, political and social sphere. Besides being informative on the degree of malleability of wage-earners' attitudes, the analysis reveals itself very useful to understand the logics governing union dynamics. More-

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<sup>1</sup> The Master's Thesis this work is based on was defended by the author within the Master's program in Sociology of the University of Geneva during the spring semester 2015. The jury was composed of Professor Lucio Baccaro (supervisor) and of Doctor Ruya Gokhan Kocer (discussant).

over, understanding the way union members are influenced by union activities will be shown to be a very important aspect to take into account when evaluating the possible strategies unions may follow in order to oppose themselves to their decline.

Our analyses are restricted to the case of Swiss unions between 1999 and 2011. Using the data of the Swiss Household Panel (SHP)<sup>2</sup>, we consider the effect of union membership on various dimensions of job satisfaction, job security, individual political involvement, political orientation, political satisfaction and a set of “other-regarding” attitudes. The wage-earners in Switzerland between 1999 and 2011 compose the population of interest.

The remaining of the thesis is structured as follows. In the second chapter, we introduce the reader to the fundamental contextual elements of the Swiss union landscape and point out the similarities and distinguishing traits in comparison with other countries. The contextualization is followed by a descriptive account of the declining trend of union membership in the overall population of wage-earners and on specific segments of them. The descriptive elements are completed by an investigation of the importance of two competing causes of the decline of union density. The third chapter gives a detailed account of the concept of “causal effect” by underlying the main problems to be aware of when estimating a causal relationship through observational data. In particular, the advantages offered by the longitudinal perspective adopted in this work are highlighted. The last section describes in detail the actual methodological approach adopted in the following chapters to estimate the causal effect of union membership on the attitudes under examination. In the fourth chapter, we focus on the impact of union membership on a set of job attitudes. The first section offers a descriptive analysis of the attitudinal differences observed

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<sup>2</sup> This study has been realized using the data collected by the Swiss Household Panel (SHP), which is based at the Swiss Centre of Expertise in the Social Sciences FORS. The project is financed by the Swiss National Science Foundation.

between union members and non-members, while the second section reviews the main explanations the existing literature has provided on the subject. A description of some methodological elements specific to the chapter precedes the presentation and the discussion of the results of the regression models estimating the causal effect of union membership on job attitudes. The fifth and the sixth chapter follow the same structure of the fourth one by focusing on political and other-regarding attitudes and behaviors. Finally, the last chapter is the occasion to recapitulate the results of the thesis by providing a general understanding of the influence unions exert on their members in Switzerland. After having sketched the strengths and weaknesses of the methodological approach adopted in the thesis and the future research horizons it opens, we conclude by pointing out how, on the basis of the attitudinal effect their affiliates show, it is possible to give some insights into the strategies Swiss unions should follow to oppose themselves to their decline.



## **2. CONTEXTUALIZATION, DATA AND DESCRIPTIVE ANALYSIS**

Five sections compose the second chapter. The first one provides a brief overview of the characteristics of the Swiss system of industrial relations. Besides giving the reader the basic knowledge of the subject, these contextual elements will be useful to interpret the analyses of the rest of the chapter and of the following ones. In the second section, we introduce the data of the Swiss Household Panel (SHP) our analyses are based on. In the third one, in a purely cross-sectional setting, we study the evolution of union density in Switzerland and characterize the average profile of the Swiss union member. In the fourth section, by exploiting the longitudinal nature of our data, we show to what extent the decline of union density can be attributed either to a decreasing capacity of unions to attract new members or to a contraction of the mean duration of membership. Finally, the implications of these evolutions are discussed in light of the trends characterizing the Swiss labor market in the last decades.

### **2.1 THE SWISS UNION LANDSCAPE**

Unions are durable organizations whose main goal is to defend and/or to improve the working conditions of their members (Degen 2011). In Switzerland, as elsewhere, this function is accomplished on three levels (Degen 2011; Trampusch 2008). First, they are directly implicated in negotiations with employers in order to reach agreements that are collectively advantageous for their members. On a second level, even though the Welfare State has gradually overtaken the responsibility in this dimension, unions

are actively engaged in guaranteeing a set of social insurance packages (unemployment insurance, injury insurance, pension contributions,...) to their affiliates. Third, unions act on the political sphere by influencing the legislative and governmental process in many ways (consulting function in early parliamentary stages, lobbying, influence on members' voting choice,...). These regulatory functions are made possible by their affiliates. Since unions act on behalf of them, members are the element that first of all confers democratic legitimacy to their activities (Degen 2011; Oesch 2011). Furthermore, in Switzerland, membership fees are the main financial resource unions rely on (Oesch 2011). Finally, the effectiveness of unions' activity is also based on the capacity to mobilize the members (strikes, manifestations,...) in defense of their bargaining objectives (Degen 2011).

In this section, we analyze the strategies Swiss unions adopted and adopt to accomplish the three functions cited in the previous paragraph. We highlight in particular how the importance unions give to each dimension is highly dependent on the internal and external pressures they are exposed to. In order to understand their functioning between 1999 and 2011, i.e. the period our analyses are based on, we start by briefly describing the system of industrial relations in Switzerland until the end of the '80s. We then focus on the challenges unions face from the '90s on and the reactions they adopted in order to protect their position. Finally, we summarize the structural features of Swiss unionism and situate them on the international level.

### **2.1.1 THE CONTEXT BEFORE THE 90'S**

In Switzerland, unions have always represented a fragmented reality (Ebbinghaus 2000; Oesch 2006). The presence of a large number of unions, each one representing only a limited portion of workers, is a distinctive trait of the Swiss union movement. The fragmentation is a direct consequence of the numerous cleavages that can be found in the small country. The most prominent ones



are the divisions by language (German-, French-, Italian- and Romansh-speaking regions), by citizenship (historically, a large number of foreigners work on the Swiss soil with a varying level of integration in the industrial relations system), by class (blue and white collars), by rural (conservative) or urban (modernist) territories and most importantly by political and confessional differences (the division between Catholics and Protestant Liberals has still a high importance to understand today's union dynamics). A tradition of political autonomy accorded to local entities exacerbates the divisions and contributes to the perpetuation of a pluralistic system of union representation. The fragmentation has always been a key factor reducing unions' capacity to develop actions that are not geographically restricted and representing only a specific fraction of the working class. In such a context, distinct unions often find themselves to compete for the representation of the same categories of wage-earners.

Moreover, union membership in Switzerland is associated with a high degree of voluntarism (Ebbinghaus 2000). The freedom of association in defense of workers' and employers' rights is granted constitutionally, but no article formally recognizes the role accomplished by unions, although their regulatory function is commonly acknowledged. Hence, unions do not benefit from any State subsidy and are almost entirely dependent on the resources collected from their members (Oesch 2011). Closed shops are forbidden by the constitution since 1925 (Ebbinghaus 2000). Anti-strike measures taken by employers were common events in the past, ranging from legislative initiatives to military actions in extreme cases. Such events were possible since, contrary to the union movement, Swiss employers' associations are historically characterized by a high level of cohesion (Oesch 2007).

The weakness of workers' associations, combined with the strength of employers' organizations, is responsible for the formation of an asymmetric industrial relations system (Oesch 2011). Since labor never had the power to oppose itself aggressively against capital as a unitary group, unions have learned over the decades to reach agreements that accommodate the interests of

employers and of their fragmented members. Compromises leading to peaceful arrangements become the rule after the Second World War. The “Peace of Work” agreement of 1937, which promotes the collaboration over conflictual actions (such as strikes) between labor and capital in the machine and metal work industry, is the most important symbol of this Swiss trademark.

In a period of political stability and economic growth, this system of industrial relations leads unions to flourish after the Second World War (Oesch 2006). Unions develop their activities as subordinate partners in a decentralized and consensual industrial relations system. An expanding workforce contributes to a continuous increase of the number of union members until the end of the ‘70s. During these decades, three main union confederations establish themselves, bearing the most important cleavages of the past (Oesch 2006). The biggest one is the Swiss Federation of Trade Unions (Schweizerischer Gewerkschaftsbund (SGB) in German or Union Syndicale Suisse (USS) in French). Entertaining a close relationship with the Swiss Socialist Party, it represents the Protestant Liberal faction of the Swiss union movement. The Catholic and Conservative side is represented by the Swiss Christian Federation of Trade Unions (Christlichnationaler Gewerkschaftsbund der Schweiz (CNG) in German or Confédération des syndicats chrétiens de Suisse (CSC)) and it entertains close relationships with traditionally catholic parties, in particular the Swiss Christian Democratic Party (Christlichdemokratische Volkspartei der Schweiz (CVP) in German or Parti démocrate-chrétien (PDC) in French). The two confederations assemble a variety of unions, but most of them are active only in specific sectors: manufacturing, construction and public sector workers. Unions belonging to these two peak associations are much less implanted in the rest of the private sector and in white-collar employment. The union representation of white collars led to the creation of a politically neutral confederation, the Swiss Federation of Employees (Verband Schweizerischer Angestellten (VSA) in German or Fédération des sociétés suisses d’employés (FSE) in

French). Besides the unions affiliated to the three main confederations, a varying number of independent unions are also present in the Swiss union landscape (Ebbinghaus 2000).

The role of confederations is essentially a political one (Mach and Oesch 2003). Pre-parliamentary consultations and lobbying constitute the main scope of their activities. As we will see in subsection 2.1.3, the presence of a channel of direct democracy gives them the opportunity to occupy an important position of veto players. The union fragmentation described above, the relative weakness of the Federal State leaving a large autonomy to cantons and the fact that, contrary to what happened in other countries, the labor-friendly social-democratic political forces have never exceeded a voters' share of 30%, are all factors that explain why these confederations never attempted to institutionalize a centralized and unified bargaining system (Ebbinghaus 2000). Instead, their political claims have primarily been directed towards an equilibrated policy between the protectionist needs of local industries (artisans, farmers,...) and other export-oriented sectors (multinationals, machines' production, banking, pharmaceutical and chemical industry) requiring more flexible legislative boundaries.

Since confederations are mainly implicated in the political process and considering that the main financial resources are managed by individual unions, the latter enjoy a large autonomy regarding the other two levels of unions' activity, i.e. the bargaining role and the securing of social insurance packages (Ebbinghaus 2000). In the domain of social insurance packages, the development of the Welfare State has largely substituted the role of unions. However, as we will see, unions' influence becomes again apparent when reforms leading to a retrenchment of the social benefits are implemented. Unions tend to be organized by sector and, to a less extent, by professional categories (Oesch 2006). However, because of the aforementioned fragmentation, the negotiations with employers take necessarily place on a decentralized level, usually leading to industry level rather than sector level agreements (Mach and Oesch 2003).

This decentralized system of liberal corporatism prospered until the end of the '70s. The presence of an important proportion of seasonal foreigner workforce allowed Switzerland to react in a more flexible way to the economic shocks of the '70s. However, with the beginning of the '80s, the Swiss labor market enters a phase of structural change. In particular, the growth of the secondary sector is replaced by an increase of the workforce in the service sector. During these years, since the workforce employed in the traditional sectors does not diminish, the number of affiliates remains stable and unions do not feel the need to launch important reforms in their functioning (Oesch 2006).

### **2.1.2 NEW CHALLENGES: DISORGANIZATION, DEREGULATION AND DECENTRALIZATION**

The lack of structural reforms within Swiss unions during the '80s becomes apparent when Switzerland, with a delay of some years in comparison with other countries, is struck by a long recession at the beginning of the '90s. The economic crisis leads to six consecutive years of GDP growth lower than 1% (Oesch 2011). The unemployment level rises from 1 to over 5%. Highly unionized sectors such as manufacturing and construction are primarily touched by the crisis. The growing tertiary sector, on the contrary, is much less affected by the negative trend. Retrenchment measures lead to an important rationalization process in the public sector, where unions are solidly implanted. Combined, these evolutions cause an important loss of affiliates in most unions.

On the other side, employers too are put under pressure by the recession (Oesch 2007). The legitimacy of collective agreements concluded in a period of economic prosperity is increasingly questioned. The threats of delocalization in some sectors become more credible with the globalization process. In fact, Switzerland undergoes a delicate transition related to the integration process within the European Union. A vote in 1992 leads to the rejection of Switzerland's membership to the European Economic Area. The rejection creates an atmosphere of political uncertainty around the

small country. Switzerland is at the center of the European Union, but at the same time outside of it (Ziltener 2000). During this period, the dependence of the export-oriented sectors on the European market influences the negotiations between unions and employers. These become highly dominated by considerations regarding the relationship to keep with the European Union that lead to neglect important domestic issues (Afonso 2010).

The internal and external pressures lead the Swiss corporatist system to follow a “flexibilization trajectory” common to other Western countries. The process is responsible for a change in the industrial relations on three levels (Crouch and Traxler 1995).

First, we observe a “disorganization” process related to the weakening of the social partners representing both labor and capital. Regarding unions, we have seen that recession triggers an important loss of members, which in turn influences the legitimacy of union actions as representative of an increasingly smaller proportion of the workforce. Also, the financial means unions rely on to develop their activities decrease dramatically. On the other hand, the cohesion of employers’ associations is also importantly undermined by at least four evolutions (Oesch 2007). The international process leads more and more export-oriented sectors to demand to their associations a higher political power and less bureaucratic obstacles. The process is amplified by the fact that an increasing number of small and medium companies expand themselves towards foreign markets. Third, a growing number of managers and CEOs have a multinational background and are not accustomed to negotiate with employee associations. Finally, as in the case of unions, the increase of the service sector diminishes the strength of employers’ associations since enterprises implicated in the tertiary sector are less frequently organized than those in the secondary one. Altogether, the disorganization process on the labor and capital side fosters the proliferation of micro-level actors whose actions are not coordinated collectively.

On a second level, a “deregulation” trend leads to question the legitimacy of collective agreements (Mach and Oesch 2003). The

disorganization process and the pressures employers face during a recession phase influence the validity of agreements negotiated in more prosperous times. Furthermore, in an economically difficult period where State interventions are mainly directed towards re-trenchment measures, it is more difficult to conclude non-democratic corporatist agreements. More generally, an increasing number of legal aspects are seen as constraints that limit the economic dynamism of individual actors.

On a third level, as a consequence of the first two trends, we observe a “decentralization” process that leads collective-level agreements to be negotiated on an increasingly decentralized level (Mach 2000; Mach and Oesch 2003). The decentralization is mainly promoted by employers, willing to obtain more flexible arrangements. As we described, the collective negotiations in Switzerland are already pretty decentralized before the ‘90s, taking place rarely at the sector level and mostly at the industry level. These pressures are responsible for a further decentralization bringing the negotiations at the company or, in some cases, even at the plant level. Corporatist agreements seem to be substituted by an increasing number of micro-level agreements.

How much do these trends affect the Swiss system of industrial relations? As Mach and Oesch point out (2003), the three dimensions of flexibilization exposed above do not concern all sectors of the Swiss economy the same way. In particular, they provide a typology that explains the strength of the impact of these changes according to two structural characteristics of the sectors within the Swiss economy: the level of dependence on international markets (exposed or sheltered sectors) and the level of workers’ skill requirement (low or high skilled workers). The two dimensions capture the level of pressure exerted on the sector by the recent challenges and the degree of power of the actors, labor and capital, implicated in the negotiations. Crossing these two dimensions leads to four possible “flexibilization trajectories” (cf. table 2.1, next page) (Mach and Oesch 2003:174):

**Table 2.1: Typology representing the severity of the “flexibilization” trajectory in different sectors of the Swiss economic system**

	Exposed sectors	Sheltered sectors
<b>High skilled workers</b>	<b><u>I: Strategic sectors</u></b> <i>Engineering, chemical industry, watch-making, banking</i> (1) Flexibility, peaceful and stable industrial relations (2) Negotiation power of workers: +++ (3) Decentralization and flexibilization, maintenance of labour peace	<b><u>II: Privileged sectors</u></b> <i>Public services, construction, various crafts (Gewerbe)</i> (1) Solid sectoral regulations (2) Negotiation power of workers: ++++ (3) Maintenance of strong sectoral regulations
<b>Low skilled workers</b>	<b><u>IV: Declining sectors</u></b> <i>Textiles, clothing, shoe-making, food-processing industry</i> (1) Costs reduction as a priority (2) Negotiation power of workers: + (3) Important deregulation and decentralization	<b><u>III: Precarious sectors</u></b> <i>Hotel and catering, retail distribution, personal services (cleaning etc.)</i> (1) Minimal sectoral regulations (2) Negotiation power of workers: ++ (3) Partial deregulation

- (1) employers' preferences;  
 (2) negotiation power of workers;  
 (3) expected evolution of collective bargaining.

*Source: Mach and Oesch (2003, p. 174) [All rights reserved]*

In order to obtain a finer prediction capacity of the classification, in some cases, the authors point out the necessity to take into account as a complementary dimension the organizational characteristics of the actors involved in the negotiation (union density, organization capacity, strategies followed in the past,...). We will refer ourselves to this classification when formulating hypotheses about the differences we observe in the attitudinal effect of union membership between certain sectors. In particular, we will suppose that, in sectors where the decentralization and the deregulation process are more intense, the politicization process we describe in the following sub-section should be more pronounced. Another important element to retain from this table is that public sector unions, belonging to the “Privileged sectors”, have, on average, a much higher bargaining power than most of those active in the private sector.

Besides the differences existing across sectors, in the next section we will see how the democratic functioning in Switzerland presents some constraints that limit any brutal changes in the flexibilization trajectory.

### **2.1.3 UNIONS' REACTIONS: POLITICAL INVOLVEMENT, RECRUITMENT AND MERGERS**

How did Swiss unions react to the evolutions described in the previous sub-section? Unions reacted on three levels (Oesch 2011): an increased political involvement, new recruitment strategies focused on lowly unionized categories of wage-earners and mergers between small unions.

The primary objective of unions' increased political engagement is represented by the defense of their bargaining position. With a lower proportion of unionized workers, the legitimacy of unions' claims is called into question. Unions try to compensate their decreased negotiation strength by developing more aggressive and visible actions in the political and social sphere. A paradoxical effect of this strategy is that the political involvement draws resources from unions' organizational activities (Baccaro, Hamann, and Turner 2003). The lack of members is the very reason of the increased political involvement, but in order to be more influential in the political domain, unions are constrained to subtract some of their resources from the efforts aimed at the retention of old members and at the recruitment of new ones. The tension between the two objectives is obvious since a long-term influence can be achieved only if the organizational dimension is not neglected.

How did the increased political involvement start? It was first of all initiated through a change in the profile of unions' elite (Widmer 2007). While before the '90s union leaders, usually having an artisanal background, were essentially recruited from the union basis itself, the new elite, coming from the political or the academic world, is much less equipped in terms of organizational expertise,



but possesses a higher level of knowledge in the political sphere. As a case study centered on the biggest union in Switzerland and its relationship to the Socialist Party shows (Widmer 2007), new elites show an inversed relationship with the political parties in comparison with the past. In the past, the usual trajectory was represented by a transition from union membership to party activism. Nowadays, we observe increasingly often that the head of unions is occupied by individuals coming directly from the political world. While the old ones saw the political involvement as an activity against their main function of economic regulation, new leaders consider the political engagement as a necessity to survive.

This strategy is first translated into an increased level of strikes. In comparison with the period before the '90s, the increase in the level of strikes in Switzerland is the highest observed on the international level (Avdagic and Baccaro 2014). Despite the sudden increase, the level of industrial conflict remains among the lowest in the Western world.

As a second political response, unions strongly expanded their activism in the democratic processes. In particular, they successively employed the instruments of the Swiss direct democracy to launch a series of referenda that blocked the adoption of a number of flexibilization and retrenchment reforms (Häusermann 2010; Häusermann, Mach, and Papadopoulos 2004; Trampusch 2008). Besides proposing themselves democratic initiatives, unions also increased their role as veto players regarding the adoption of several law projects. The most prominent example is given by the bilateral agreements including the Agreement on the Free Movement of Persons, signed by Switzerland and the European Union in June 1999 (Fischer 2002, 2003). After the rejection of the Swiss membership to the European Economic Area in 1992, the export-oriented sectors still needed to reach an agreement with the European Union that would not compromise their interests abroad. In a political context where the political right was divided on the subject, unions played a fundamental role in the adoption of the bilateral agreements. In order to grant their support, side payments from employers' associations were obtained and, in general, the

period before and after the vote was characterized by a strong increase of the collective bargaining activity. These aspects show how the particular functioning of the democratic system in Switzerland is much more robust than other ones to brutal changes towards flexibilization and retrenchment policies.

Furthermore, the increased political involvement of unions consists of a growing media coverage of their activities (Degen 2000). In the attempt to increase their visibility in the public sphere, unions pay attention to propose themselves not only as simple work-regulation actors. With the increase of the importance of the service sector, a recruiting message solely based on the labor-capital conflict is no longer seen as an effective one. Besides highlighting the professional advantages of union membership, unions try to present themselves as broad social movements, as actors that defend universal values that are potentially shared by everyone in a society. The increased attention to gender issues, ecological aspects and consumer sensibility in unions' communication are key examples of this evolution.

The increased social involvement is linked to the second revitalization strategy followed by unions (Oesch 2011). The decrease of the importance of blue-collar workers among the active population shows the necessity of recruiting new members in the growing service sector and white-collar employment. After the end of the '90s, the two main union confederations targeted the efforts of the affiliated unions towards private sector employment in restaurants, hotels and supermarkets. In the latter case, the recruitment strategy has been primarily focused on rank-and-file mobilizations and on an increase of the media visibility of the poor working conditions and unfair retributions in some emergent supermarket chains. The strategy, that proved itself rather successful, was aimed at increasing the consumer sensibility on these subjects and to earn the support of the workers concerned.

Foreigners and women are also among the categories on which unions' recruitment efforts are more and more focused (Degen 2000). In the latter case, because of a higher importance of gender

roles in the Swiss society than in the rest of the Western world, women in Switzerland obtained political rights and entered the labor market later than in most of the surrounding countries. Their growing proportion in the active population, often as part-time workers, is an aspect Swiss unions carefully consider. The increase of female figures at the organizational level, but also in the elite of unions is a clear sign of the desire to increase the female membership rate. Even though the trend is towards an augmentation, the results remain however yet moderate, women having clearly a lower propensity to join unions than men. Foreigners, with their growing proportion among the wage-earners, are also the object of recent recruitment campaigns.

Even though these efforts produced and produce some positive results, they are not enough to inverse the trend of a declining number of union members. In fact, besides the increased efforts of unions, union membership in these new sectors is made more difficult by some objective constraints (Oesch 2006). In particular, the employment is much more volatile in these new sectors and it is complicated for a union to establish a long-term relationship with individuals that change frequently job and/or employers (the analyses of section 2.4 will challenge this view). Hence, the continuous decline of members poses still organizational and financial issues to unions.

A response to these problems is represented by a growing number of mergers between unions (Oesch 2006). In order to be able to provide the services and to sustain the organizational requirements of their functioning, new unions usually do not count less than 10'000 members. These organizational requirements become even more challenging with the increase of the heterogeneity of their affiliates. Besides these aspects, it is also interesting to underline the way these mergers took and take place still today. The Swiss union movement has not yet been able to go beyond the old ideological cleavages between the two biggest union confederations. While the Swiss Federation of Employees has been incorporated in 2007 in the Swiss Christian Federation of Trade Unions by giving birth to a new confederation called "Travail Suisse", all

other mergers have taken place only among unions belonging either to the Catholic Conservative side or the Protestant Liberal one, represented by the Swiss Federation of Trade Unions. This contributes not rarely to the conclusion of unreasonable mergers between unions representing distinct categories of wage-earners even though much more similar employee associations exist in the other confederation. This tendency leads to the creation of multi-sector unions affiliated to one of the two confederations that exacerbate the competition for the representation of conflicted categories of workers. Besides an increased competition, mergers also cause a decrease in the number of independent unions, extending further the power of the two main confederations.

## **2.1.4 THE SWISS SYSTEM OF INDUSTRIAL RELATIONS IN INTERNATIONAL COMPARISON**

In the previous sub-sections, we described a series of features that show the specificity of the Swiss system of industrial relations. To what extent do these features make Switzerland a unique case? In other words, can we find similar characteristics in other countries? These questions are crucial in order to understand if similar results to those we present in the following pages can be expected in other countries. To answer them, we base ourselves on the discussion provided by Klaus Armingeon (2000) in the concluding chapter of a book analyzing the present and future perspectives of Swiss unions.

On one side, we cannot deny that Switzerland presents some peculiarities that can rarely be found in other national contexts. As we described, the presence of a democratic channel that gives the possibility to unions to directly influence the political sphere without having to rely on pre-established alliances is a distinctive element of the Swiss political system. Also, the long-term balance of power between a pluralistic set of parties has never made possible the creation of centralized reforms disproportionately pro-labor or pro-capital like in other countries. The absence of a strong central State and the regional organization of politics and economics

contribute to the creation of a rather decentralized functioning of the industrial relations.

On the other side, despite these specific elements, Switzerland is historically embedded in the territorial and economic European dynamics. Common traditions, cultural habits and similar political and ideological cleavages can be found in surrounding countries. If we give a closer look at some of the main characteristics of the Swiss union movement, we realize that Switzerland does not constitute an extreme case in any of these dimensions. The organization of unions by sector, profession, status, political or ideological cleavages is something we can find also in other countries. The presence of important central confederations mainly active in the political sphere, the union density level (around 20%, cf. next section), the collective agreement coverage (around 50%), the absence of a formal acknowledgment of union activities on the legislative level and even the low level of industrial conflict are all characteristics that do not make of Switzerland an extreme case in any of these dimensions.

The upshot of the discussion is that the specificities of the Swiss context of industrial relations can be considered as falling within the usual variations individual countries have in respect to others. Globally, Switzerland can be clearly seen as a case that is integrated in the mainstream logics of the European Union dynamics.

## **2.2 THE SWISS HOUSEHOLD PANEL (SHP)**

The Swiss Household Panel (SHP) is an annual longitudinal survey that collects representative data on households and individuals living in Switzerland. The SHP is conducted between September and March every year since 1999. The individuals are interviewed using the computer assisted telephone interview technique (CATI). Around 5000 individuals compose the baseline sample in 1999. The sample was refreshed in 2004 to account for attrition issues.

Our analyses are based on the first 13 waves of the SHP, conducted between 1999 and 2011. The question related to our key explanatory variable is expressed as follows: “I will now read out a list of associations and organisations. Could you tell me for each of them whether you are an active member, a passive member or not a member? Syndicate, employees association”. Since the definition of active and passive membership is left to the individual's subjective evaluation, it is difficult to interpret the difference between the two states. Hence, in our key independent variable, the answers “Active member” and “Passive member” have been re-coded into a single “Member” category. The union membership variable is available in all waves between 1999 and 2011, but 2010, which constitutes a gap year in our analyses.

Since wage-earners are the category of individuals on which unions’ priorities are centered, they represent our population of interest. All individuals that in at least one of their participations in the SHP between 1999 and 2011 declare themselves as “wage-earners” will be taken into account in our analyses.

## **2.3 CROSS-SECTIONAL ANALYSIS**

What percentage of Swiss wage-earners are union members? Does this proportion change over time? What is the average profile of the unionized worker? Does the evolution of union density follow the same pattern in all segments of the Swiss population? These are the questions we answer in this section. Since the analyses are made on a purely descriptive cross-sectional level, the results we present are weighted using individual cross-sectional weights that inflate the sample size to the size of the Swiss population.

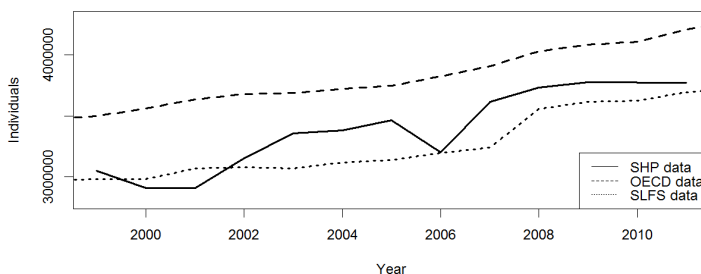
### **2.3.1 OVERALL EVOLUTION**

In the first sub-section we describe the evolution of union membership for the overall population of wage-earners in Switzerland.

In order to ascertain the quality of the SHP data, we compare our results with those given by other sources.

Figure 2.1 represents the evolution of the number of wage-earners in Switzerland according to the data of Swiss Household Panel (SHP), the Swiss Labour Force Survey (SLFS) and the OECD Labour Force Statistics.

**Figure 2.1: Evolution of the number of wage-earners in Switzerland**



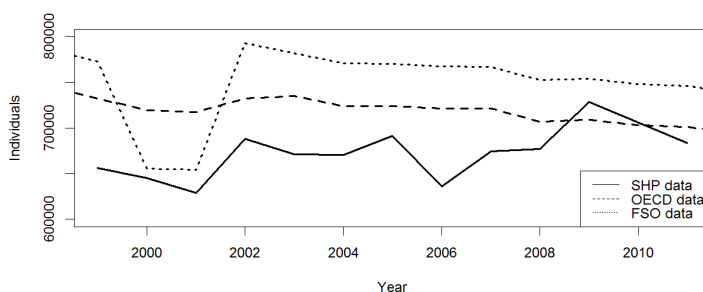
Sources: Swiss Household Panel (SHP); Swiss Labour Force Survey (SLFS); Organisation for Economic Co-operation and Development (OECD)

The definition of wage-earner used in the SHP data and in the SLFS survey is the same one: it includes all people having worked as wage-earners for at least one hour or being wage-earners on temporary leave (sick leave, vacation, maternity leave, military service,...) during the week prior to the survey interview (Swiss Federal Statistical Office 2012). According to both surveys, the active population in Switzerland increases from around 3'000'000 individuals in 1999 to 3'500'000 wage-earners in 2011. The trend is in line with an overall augmentation of the resident population in Switzerland. Although this evolution is not of primary interest for our purposes, it is good to note how the results given by our source, the SHP data, are almost equivalent to those given by the SLFS survey. This is very reassuring regarding the reliability of the

SHP data, since the SLFS survey is by far the most reliable source on the subject, based on approximately 40'000 yearly respondents (Swiss Federal Statistical Office 2012). Regarding the OECD data, they are originally based on the SLFS survey, but include also self-employed people. This explains why the number of individuals indicated is higher than what the other two sources point out.

Figure 2.2 shows the evolution of the number of union members in Switzerland according to the SHP data, to the data provided by the Swiss Federal Statistical Office (FSO) and to the OECD database on Institutional Characteristics of Trade Unions.

**Figure 2.2: Evolution of the number of trade union members in Switzerland**



Sources: *Swiss Household Panel (SHP)*; *Swiss Federal Statistical Office (FSO)*; *Organisation for Economic Co-operation and Development (OECD)*

The data provided by the FSO are based on administrative sources collected by the country's largest union confederation (SGB) (cf. sub-section 2.1.1). They include all registered union members, irrespective of their working status. Unemployed, inactive or retired members are also counted among them. Hence, it is not surprising that the number of members according to this administrative source is always above the one we computed using the SHP data. It is also useful to note that the FSO data for 2000 and 2001, where



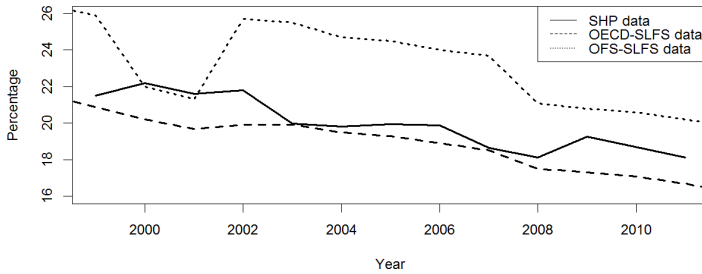
there is a sudden drop in the number of members, are very probably affected by some error in the collection of the data. The OECD data are based on the same source of the FSO, but they have been adapted in order to take into account only employed members. Finally, using the SHP data, we considered only union members being at the same time wage-earners, since they represent our population of interest. We see that, until 2008, the members indicated by the OECD data are above those computed through the SHP data. This is not surprising since, although the OECD tries to adapt the administrative data in order to account only for employed members, the unions that provide the data usually overestimate their real members. Concerning the evolution, according to our source, we see that the number of union members grows from around 650'000 members in 1999 to 700'000 in 2011. The two administrative sources, on the contrary, indicate a slow decline of the number of members during the period under examination. It is not easy to interpret this trend, since we do not know if it concerns wage-earners or if it represents only a diminution of non-employed union members.

The evolution of the number of union members is usually not so interesting in itself. A more appealing indicator is the union density in a given year, computed as:

$$\begin{aligned} & \text{union density} \\ = & \frac{\text{number of wage - earners union members}}{\text{total number of wage - earners}} \quad (2.1) \end{aligned}$$

Figure 2.3, on the next page, shows the evolution of trade union density in Switzerland using the SHP data, a combination of the OFS and SLFS data cited before and the aforementioned OECD database on trade unions.

**Figure 2.3: Evolution of trade union density in Switzerland**



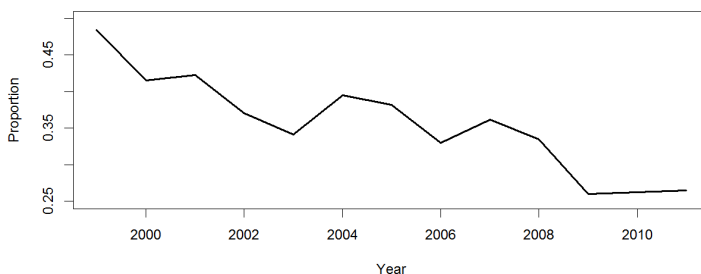
Sources: Swiss Household Panel (SHP); Swiss Federal Statistical Office (FSO); Swiss Labour Force Survey (SLFS); Organisation for Economic Co-operation and Development (OECD)

Our computations with the SHP data are based on the definition of union density given in equation 2.1. The OFS-SLFS data are computed as a ratio of the administrative records on union members represented in figure 2.2 and the number of wage-earners described in figure 2.1 according to the SLFS survey. The same computational procedure is adopted in the database of the International Labour Organization (ILO). It is not surprising to see that the union densities we get with the SHP data are lower than the ones obtained through the OFS-SLFS data, since they include in the numerator also non-employed union members. The densities provided by the OECD are computed as the ratio between the number of union members and the number of wage- and salary-earners described previously for the two OECD databases. Since we do not know exactly how the number of union members has been computed and since the set of wage- and salary-earners considered by the OECD includes more individuals than the definition given in equation 2.1, it is difficult to interpret the union densities provided by the OECD database. However, we can see that the three databases describe the same declining trend of union membership in Switzerland. Referring to the SHP data, which

seems the most reliable source, union density decreases from around 22 % in 1999 to 18% in 2011.

Before turning to the description of the cross-sectional evolution of union membership across different segments of the Swiss population, we provide an interesting analysis (figure 2.4) of the evolution of the proportion of union members that declare themselves as active and passive members.

***Figure 2.4: Evolution of the proportion of union members declaring themselves as “active members”***



*Source: Swiss Household Panel (SHP)*

The representation shows a linear drop of the proportion of members declaring themselves as active union members. In 1999, around 50% of union members declare themselves as “active members”. The same proportion is halved in 2011, counting only 25% “active members”. This seems to show a clear evolution towards a change in the form of union membership, members becoming more and more personally detached of their unions. However, since the definition of active and passive membership is completely subjective, it is complicated to give a clear interpretation to this trend. In the causal analyses of the following chapters, we will however show that an active membership is constantly associated with a higher attitudinal effect than a passive one.

### **2.3.2 EVOLUTION ACROSS SPECIFIC SEGMENTS OF WAGE-EARNERS**

After having described the evolution of union membership for the whole set of wage-earners in Switzerland, in this sub-section we repeat the same analysis on specific segments of the population. These are the same sub-populations we will use in the regression models of the next chapters as interaction terms to observe how the effect of union membership varies depending on the profile of the individuals concerned. The decline of union density we have pointed out for the population as a whole may not follow the same trend in different sub-populations and it is useful to examine the variations between them. Studying the evolution of union membership for different groups of the population involves the analysis of the trends concerning each group and, more importantly, the comparison of the evolutions between the groups taken into account. In order to carry out these analyses, we use four indicators that describe different dimensions of the union membership evolution in each sub-population and the relationship with the trends observed in other sub-populations. Although in most cases the four indicators lead to similar conclusions, each of them is better suited to highlight some aspects than the other ones. We briefly describe each of them in the next paragraphs. Some of the indicators may seem quite abstract at first glance, but they will become clearer when we exploit them subsequently in concrete analyses.

The first indicator is represented by the evolution of the number of members in each segment of the population considered. It constitutes a measure well adapted to observe short-term changes such as sudden unionization waves of particular segments of the population or a drop of membership in other ones. Moreover, the number of members in a given group determines its practical relevance and potential to influence unions' strategies. A group composed of 1'000 union members may certainly not be "heard" the same way as a group of 100'000 members. Also, mobilizing 1'000 or 100'000 individuals implies the use of different organizational dynamics.

The second indicator we use is the proportion of union members in each category of the population taken into account. For a category  $i$ , the proportion of union members in a given year is given by:

$$\begin{aligned} & \textit{proportion of members in category } i \\ &= \frac{\textit{number of wage – earners members in category } i}{\textit{total number of wage – earners members}} \end{aligned}$$

(2.2)

where all the quantities are taken from the same given year. It represents an indicator quite similar to the number of members, but it highlights more explicitly the relative importance of each sub-population compared with the others. For example, if a proportion of 80% members belonged to a specific group, it is very likely that unions' strategies would be highly oriented towards the needs of that particular group. Also, the number of members and the proportion of members of a particular segment of the population can follow divergent evolutions. As an illustration, the number of members of a category of individuals may remain constant over time, while its proportion relative to other categories may increase if the number of members in other categories decreases.

The first two measures we described are usually highly dependent on the relative importance of each category in the population of wage-earners. If a large proportion of wage-earners belong to a particular group, this group is likely to be well represented in terms of number of union members even though only a small fraction of them joins unions. Conversely, a group composed only of a small number of wage-earners is not likely to represent a high proportion of members even though most of the individuals that belong to it are members. In order to account for these disproportions between groups related to their relative importance in the labor market, we compute (on the next page) trade union densities within each category:

$$\begin{aligned}
& \text{trade union density in category } i \\
&= \frac{\text{number of wage – earners members in category } i}{\text{number of wage – earners in category } i} \\
& (2.3)
\end{aligned}$$

This is the same union density concept we presented for the whole population of wage-earners, but computed within each category  $i$ , considered as a distinct sub-population of wage-earners. It represents a measure of the probability of being a union member within each category, the propensity to join a union within each category. Some groups may not have an important weight in terms of proportion of members they represent and yet have high union densities.

The first three indicators are well suited to allow us to compare the union membership dynamics between different categories of union members. As a fourth a measure, we would like to have a quantity that gives us the possibility to compare the relative importance of a given characteristic or of a given sub-population between members and non-members. If the characteristic or the variable that defines different segments of a population is a numeric one, such as age for example, we take the mean of the characteristic among members and non-members. If the variable that we analyze is not expressed in a numeric scale, such as the level of education for example, we cannot compute a mean since the different values of it have not a quantitative meaning. In that case, instead of a mean, we consider (on the next page) the ratio of the proportions in the population of union members and in the population of non-members for each category of the variable taken account:

$$\begin{aligned}
& \text{ratio of the proportions between union members and non – members for category } i \\
&= \frac{\text{proportion of members in category } i}{\text{proportion of non – members in category } i}
\end{aligned}$$

$$= \frac{\frac{\text{number of wage – earners members in category } i}{\text{number of wage – earners members}}}{\frac{\text{number of wage – earners non – members in category } i}{\text{number of wage – earners non – members}}}$$

(2.4)

This corresponds to the ratio of the proportions introduced in equation 2.3 computed separately for members and non-members. Each of the two proportions can be seen as the probability of drawing an individual belonging to category  $i$  by considering separately members and non-members. If the ratio is greater than 1, individuals of category  $i$  are overrepresented among union members. Conversely, a ratio less than 1 implies that the chances to belong to that particular category are lower for union members than for non-members. The principle behind it is the same as the comparison of the means of a numeric variable between members and non-members. As an example, if we consider as category the individuals that vote for a given party, the ratio of the proportions indicates whether the propensity to vote for that party is higher for union members or non-members. If a proportion of 20% of union members vote for that party, while among non-members the same percentage is represented by 10% of individuals, the ratio of the proportions would correspond to a value of 2, showing that a union member has twice more chances of being a voter of that party. The indicator is not of fundamental importance in this chapter, but it will be much more relevant in the descriptive results that precede the causal analyses provided in the next chapters. This same indicator can also be computed for numeric variables, after having defined specific categories decomposing the numeric parameter. However, we prefer to compute the mean because of its higher synthetic power (we compare only one value between union members and non-members instead of one for each category).

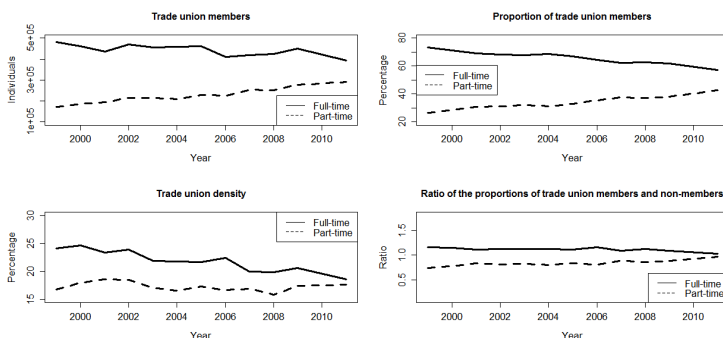
The rest of the sub-section is dedicated to the presentation of the evolution of the four aforementioned indicators for different sub-populations of union members between 1999 and 2011. If needed, we first describe the categories that compose the variable

used to segment the population and then comment the four plots related to the four indicators. It is to note that we created the categories of each variable in light of the causal analyses we turn to in the next chapters. When we merged the original categories into new ones for some of the variables, two main criteria have guided our choices. First, the merged categories had to make sense on a substantive level. There has to be some homogeneity between the units composing each category that gives a coherence to it, a unitary structure. This feature is needed in order to hope to make the heterogeneous attitudinal effects of union membership more homogeneous within each category than in the population as a whole. Second, on a more practical level, we pay attention to create categories that are not composed of too few individuals. In fact, since some of the estimators we use in the next chapters highly rely on asymptotic assumptions, we need to have a minimal number of individuals in order to carry out our analyses. Descriptive statistics on these sub-populations can be found in table 8.1, section 8.1 in the appendix chapter (the columns on cross-sectional data are those that concern this chapter).

As first variable, we consider the type of occupation (full- or part-time) of a wage-earner. Figure 2.5 (on the next page) represents the four indicators by occupation. The first two plots show that, among union members, full-time workers are clearly more numerous than part-time ones. However, the trend is characterized by an obvious decrease of the gap between the two categories over the period (the difference between the two proportions is around 50% in 1999 and drops to 20% in 2011). A similar observation is drawn from the third plot, where the union density of full-time wage-earners is higher than the one of part-time ones, but with a gap that becomes narrower and narrower (the densities of around 24% for full-time workers and 17% for part-time workers at the beginning of the period approach both 17% in 2011). Hence, the union density of full-time workers is declining, while the one of part-time ones remains more or less stable. The last graph leads to very similar conclusions when comparing the propensity to work full- or part-time for union members with non-members.



**Figure 2.5: Cross-sectional descriptive analysis of union membership by occupation**

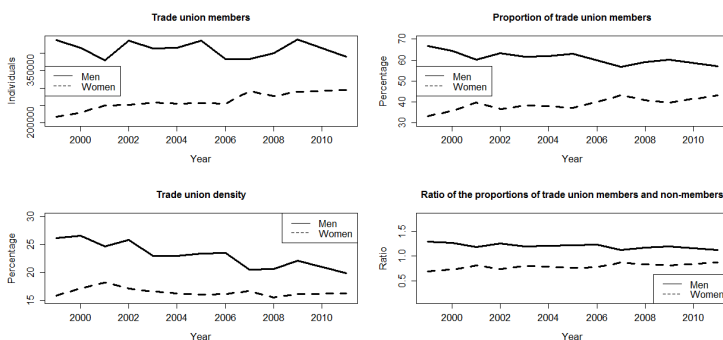


*Source: Swiss Household Panel (SHP)*

The sex of an individual (figure 2.6, on the next page) is the second variable we use to describe the evolution of union membership across different sub-groups. The evolution we observe is very similar to the one of the previous case since the dichotomy full/part-time work is directly related to a dichotomy between the two sexes, women representing the majority of part-time workers. In the first two plots of figure 2.6, we see that, in terms of number of members and of their proportion relative to men, women are less represented than men as union members. That is a foreseeable outcome since it is well known that, despite the progresses made in the last decades, women still occupy a less important position than men in the labor market. As a consequence, they have a lower probability of becoming union members. This is particularly true for Switzerland, where the movement towards the equality between women and men regarding the access to the labor market has been slower than in other occidental countries (cf. sub-section 2.1.3). However, if we look at the trend, we see that the gap is being constantly reduced, the number of female union members increasing every year, while the male members remain more or less constant over the period (the proportion of female members rises from approximately 32% to around 40% in 2011). The third graph

confirms this aspect and shows how, when we account for the disproportion of the number female and male wage-earners (as it is done in the computation of union densities), the gap between men and women is much less important. Men have higher chances to become union members than women, but we see that this advantage is less marked than what the difference in the proportions would lead to think. For example, in 2009, the difference between the two union densities is less than 10%, while the difference in terms of proportions is around 20%. Men show a clearly declining union density (from 25% to 19%), while the one of women is more or less stable (around 16%) over the period. The last representation confirms the evolution in comparison with non-members, showing that the proportion of the two sexes in unions is going to be soon identical to the one they occupy respectively in the job market as non-members.

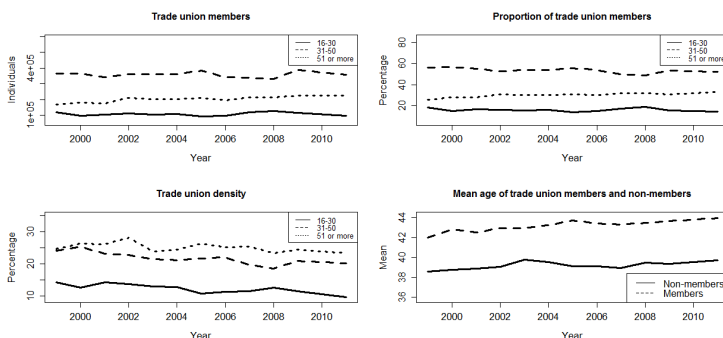
**Figure 2.6: Cross-sectional descriptive analysis of union membership by sex**



Source: Swiss Household Panel (SHP)

The third variable we take into account (figure 2.7, on the next page) is the age of union members.

**Figure 2.7: Cross-sectional descriptive analysis of union membership by age**

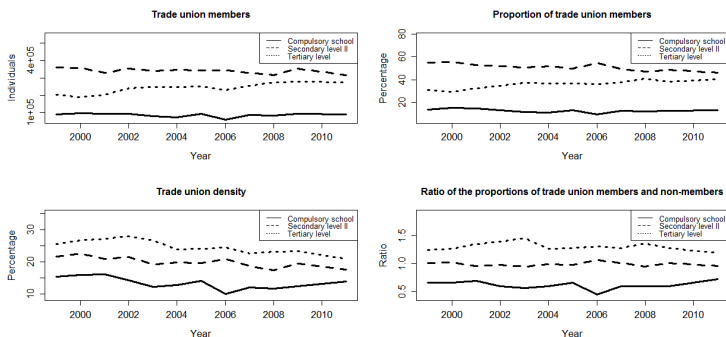


*Source: Swiss Household Panel (SHP)*

For the analyses in the first three plots, we distinguished three age classes: 16-30 years, 31-50 years and 51 year or more. The first two graphs show that the median age category, because of the larger age interval that represents it, is the one most frequently represented among union members. If we control for the disproportions between the number of wage-earners in each age class, we see indeed that old members (51 years of age or more) are those with the highest union density, followed by middle-aged ones. Young workers are clearly underrepresented among union members in comparison with the other two categories (there is a gap of around 10% during the whole period). Hence, the older the individual is, the higher his chances of being a union member are. The graph also reveals that union density is declining for all three age classes. The fourth representation shows that the mean age of union members is 3-4 years higher than the one of non-members and the evolution is towards a widening of this important generational gap.

Figure 2.8 (on the next page) shows the same analyses for the highest level of education attained by the individual.

**Figure 2.8: Cross-sectional descriptive analysis of union membership by education level**



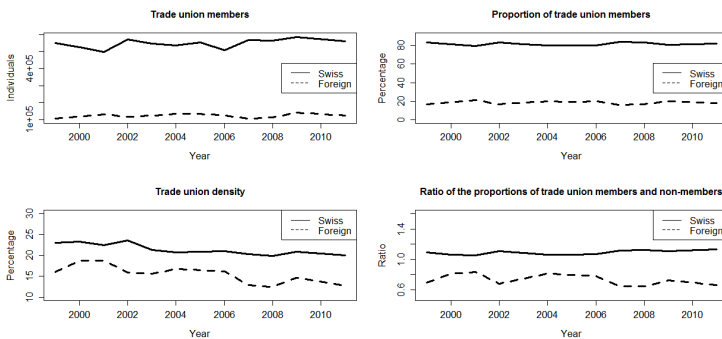
Source: Swiss Household Panel (SHP)

We consider three categories: individuals that did not achieve a qualification beyond compulsory education, individuals with a secondary education and people with tertiary level degrees. The first two graphs show that the secondary level is the most frequent one among union members, followed by the tertiary level. Members with at most a compulsory education level are the less frequent ones. The evolution shows that the difference between secondary and tertiary level becomes narrower every year. These results are in line with the structure of the Swiss labor market, where the secondary education level is the first one in terms of number of wage-earners, followed by the tertiary (with an increasing trend) and the compulsory school level. What happens if we take into account these baseline differences and analyze the probability of being a union member in each of these three categories? The trade union densities show that the situation we observe changes. Individuals with a tertiary level turn out to be those with the highest chances of being members (25% in 1999), followed by those with a secondary level (22% in 1999). Even after taking into account their small presence in the labor market, individuals with a low education remain those with less chances of being union members (15% in 1999). The trend is a declining one for all education levels. A

comparison with non-members, in the fourth representation, shows that it is more likely to have a tertiary education among union members, while there are no big differences between the two populations (members and non-members) regarding the secondary level. Conversely, the proportion of those not having gone beyond the compulsory education level is higher among non-members.

As far as nationality goes, the first two graphs of figure 2.9 show that Swiss are more numerous than foreigners among union members.

**Figure 2.9: Cross-sectional descriptive analysis of union membership by nationality**

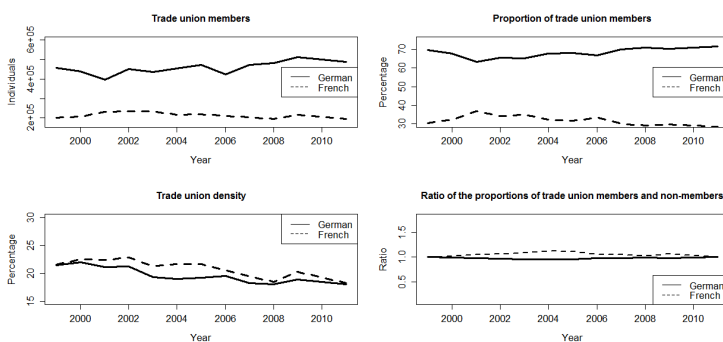


Source: Swiss Household Panel (SHP)

By considering the fact that Swiss are also more numerous in the labor market than foreigners, the trade union densities in the third representation show that the union membership gap between the two groups becomes smaller than what the proportions tell (a gap of around 8% in 1999). The evolution for both groups is towards a decrease of union density. The last graph shows that it is slightly more likely to be a Swiss among union members than non-members.

Regarding our sixth variable, the linguistic region, we assigned each canton to the “German-speaking” or “Latin-speaking” (French- or Italian-speaking) category according to the main official language in each canton. The German cantons are: Aarau, Appenzell Inner-Rhodes, Appenzell Outer-Rhodes, Basle-Town, Basle-Country, Bern, Glarus, Graubunden, Lucerne, Nidwalden, Obwalden, Schaffhausen, Solothurn, St Gall, Schwyz, Thurgau, Uri, Zug and Zurich. The Latin ones are: Fribourg, Geneva, Jura, Neuchatel, Ticino, Vaud and Wallis. The first two plots in figure 2.10 show that the number of union members and the proportion of members in the two linguistic regions are generally in line with the size of the population in the two areas. If we take these differences into account, the trade union densities show that the gap between regions is relatively small and the same aspect becomes apparent when comparing the proportions of non-members and members in each of them.

**Figure 2.10: Cross-sectional descriptive analysis of union membership by linguistic region**

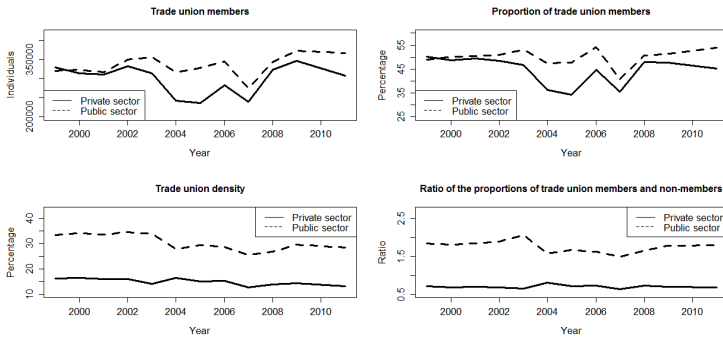


Source: Swiss Household Panel (SHP)

At the sector level, the first two plots of figure 2.11 (on the next page) show that public sector union members are slightly more numerous than those working in the private sector (the fact that the proportions do not sum up to 100% in all years is related to the presence of missing data in the variable characterizing the

membership in one of the two sectors). If we control for the fact that the private sector is much larger than the public one in Switzerland, the union density in the public sector turns out to be much higher (around 20% higher) than in the private one. Union density is declining for both sectors and the gap between the two is slightly reduced after 2004 (the year of the inclusion of a refreshment sample). Public sector workers are overrepresented among union members, while non-members are more likely to belong to the private one, as the fourth graph in figure 2.11 shows.

**Figure 2.11: Cross-sectional descriptive analysis of union membership by private/public sector**

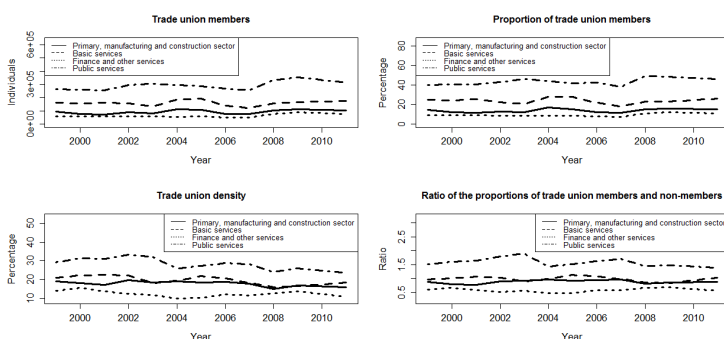


*Source: Swiss Household Panel (SHP)*

In order to analyze a finer sector composition of union members, we use the categories given by the NOGA classification of the economic activities. The NOGA classification is compatible with the NACE classification used by the European Community (Swiss Federal Statistical Office 2014). In order to have enough individuals in each one, we recoded the initial 17 categories given by the SHP into four: "Primary, manufacturing and construction sector" (composed of the following original categories: "Agriculture, hunting, forestry", "Fishing and fish farming", "Mining and quarrying", "Manufacturing", and "Construction"), "Basic Services" (composed of the following original categories: "Electricity, gas and water supply", "Wholesale, retail, repair motor vehicles,

household goods", "Hotels and restaurants", "Transport, storage and communication"), "Finance and other services" (composed of the following original categories: "Financial intermediation; insurance", "Real estate, renting, computer, research") and "Public services" (composed of the following original categories: "Public admin, national defence, compulsory social security", "Education", "Health and social work", "Other community, social and personal service activities", "Private households with employed persons", "Extra-territorial organizations and bodies"). Since unions are mostly active within the same sectors across different cantons, this variable is the one that should allow capturing the best the different internal dynamics that may characterize different types of unions. The first three plots of figure 2.12 show that "Public services" is the sector with more union members and the one with the highest union density. It is followed by "Basic services" and "Primary, manufacturing and construction sector". "Finance and other services" is the one in which unions are less active. All sectors show a declining union density.

**Figure 2.12: Cross-sectional descriptive analysis of union membership by economic NOGA sector**



Source: Swiss Household Panel (SHP)

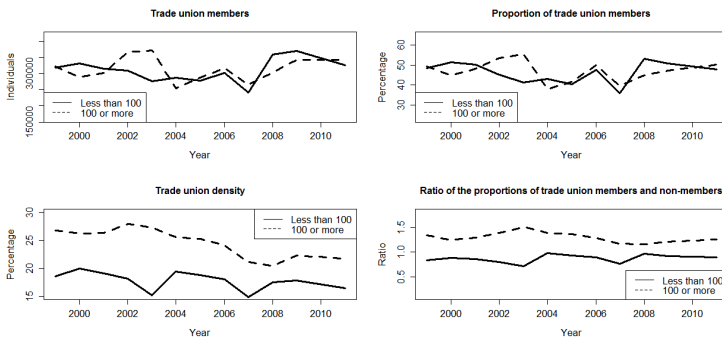
The last graph shows that individuals from "Public services" are overrepresented among union members. "Basic services" and



"Primary, manufacturing and construction sector" show even proportions among members and non-members, while non-members have more chances to belong to the "Finance and other services" sector.

Finally, figure 2.13 highlights the union membership differences according to the size of the company in which an individual works.

**Figure 2.13: Cross-sectional descriptive analysis of union membership by company size**



*Source: Swiss Household Panel (SHP)*

The first two plots show that small and large firms are almost evenly represented among union members (again, the proportions in some years do not sum up to 100% because of missing data regarding the size of the firm in which an individual works as wage-earner). If we control for the importance of these two types of companies in the Swiss labor market, the picture changes. Individuals working in large firms have a higher propensity to join unions than those employed in small ones. The gap is however being reduced over the period (a difference of around 7% in 1999 decreases to 4% in 2011). The last graph indicates that a union member has more chances to belong to larger firms than a non-member, while the inverse is true for small companies.

The cross-sectional analyses show that the average union member in Switzerland is a Swiss male full-time worker with a relatively advanced age and a secondary or tertiary education. Looking at the propensity to join a union, the categories with highest union densities are old individuals, highly educated wage-earners and workers employed in the public or “Public services” sectors and in large firms. In terms of union density, the evolution shows a declining trend almost everywhere. The only exceptions are represented by part-time workers and women, characterized by a relatively stable proportion of unionized wage-earners.

## **2.4 LONGITUDINAL ANALYSIS**

The analyses of the previous section show a continuous decline of union density in Switzerland between 1999 and 2011. Exploiting the longitudinal nature of our data, in this section we investigate the reasons behind this decline. In which ways can the union density of a country vary from a year to another? We defined union density as the ratio between the number of wage-earners that are union members and the total number of wage-earners in a given year. Unions can act on the value of this indicator through two mechanisms. The variations from one year to another are influenced by the number of new union members and by the number of individuals that do not leave the membership status. In other words, unions’ strategies act on union density through the recruitment of new members and through the retention of those already members. The decline of union density we observe is either the product of a non-high enough contingent of new members or the consequence of a decreased duration of membership or a cumulative effect of both trends.

The study of Daniel Oesch (2012) is the only one investigating the issue for the Swiss case. Comparing the explanatory power of the number of outflows and the number of inflows in 70 union locals between 2006 and 2008, he shows that net changes in union membership are primarily determined by the number of inflows rather by the number of outflows. The success of a union is more

influenced by its capacity to attract new members rather than by the retention of old ones. The author argues that the result can be explained by the fact that the outflows are mostly related to events, such as job change, that are independent of unions' efforts. On the contrary, the inflows are heavily determined by unions' recruitment strategies and these are the fundamental force that explains the differences in terms of net changes in the number of union members across unions. The results also show that the evolutions of the labor market context do not represent a key determinant of the membership trends in a union.

In our case, we analyze the effect of inflows and outflows on the diminishing union density level for the whole population of Swiss union members. How can we operationalize these two mechanisms? A straightforward measure of the recruitment capacity of unions may be represented by the number of wage-earners that become union members in a given year. On the other hand, the retention capacity of unions may be represented by the mean duration of union membership of individuals that become members. But how do we compute the mean duration of membership? By definition, the mean duration is a longitudinal concept that can only be measured on an interval of years and not for a single year. One idea may be to compute at different points in time the ratio between the number of years an individual spends as wage-earner and union member and the number of years he spends as wage-earner. Unfortunately, this computation with the data at our disposal would be possible only for individuals that we observe since the beginning of their trajectory as wage-earners. These are only those that are still completing their education during their first participation in the SHP or that achieved their formative path in the previous year. Such a restricted focus would obviously limit the interest and the external validity of our analyses.

A more appealing strategy is to focus on the number of years spent as union members by Swiss wage-earners during different time intervals. For example, we could compute the mean membership duration between 1999 and 2004 and between 2006 and 2011 (the interval 2005-2010 cannot be taken into account since

we do not have data on union membership for 2010). The crucial condition is that the length of the time-intervals has to be the same. Also, the intervals should not be too short in order to be able to take into account the presence of spells long enough to measure unions' retention capacity. Intervals of only two years, for example, would lead to consider all membership durations higher than one year the same way. The 1999-2004 and 2006-2011 intervals are good in this respect, but they are limited from another point of view. With 13 years of data, they allow us to compare only the change in the duration of membership between two periods. We would like to find a way that gives us more time points of comparison in order to observe a more gradual evolution, while still keeping the advantages of these intervals. Our strategy is to analyze the evolution of the duration of union membership on 6-year shifting time-windows. More precisely, we examine the evolution of the duration of union membership on the following time-windows: 1999-2004, 2000-2005, 2001-2006, 2002-2007, 2003-2008, 2004-2009 and 2006-2011 (2005-2010 is excluded because of missing data in 2010). Each time-window is distinguished from the previous one by a shift of one year in the observation interval. The strategy provides a longitudinal analysis of the evolution of the mean duration of union membership, while still giving an evolution year after year. Having illustrated the advantages of shifting time-varying windows, in the following two sub-sections we describe precisely how we exploit them to examine the evolution of the recruitment and retention capacity of Swiss unions.

### **2.4.1 AT LEAST ONCE MEMBERS**

Before turning to the regression analysis, we give some descriptive statistics on the number of wage-earners that become at least once members between 1999 and 2011. The union density we defined in sub-section 2.3.1 is a cross-sectional indicator of the proportion of wage-earners being union members. We extend it here to the longitudinal context by interesting ourselves into the proportion

of individuals that become at least once members between 1999 and 2011. However, in a longitudinal context, the definition of the population of interest is not univocal as in the cross-sectional case, where the focus is on individuals that are wage-earners in a given year. If we consider the percentage of individuals that become at least once members, while being wage-earners between 1999 and 2011, what is our population of interest? We could focus on those individuals that participated in all waves of the SHP and were marked at least once as wage-earners. In that case, our data show that 47.94% of such individuals became union members at least once between 1999 and 2011. If we focus on a more restricted population, analyzing only those individuals that participated in all waves of the SHP, while being wage-earners in all of them, this percentage increases to 63.02. Such indicators are certainly at least partially affected by an attrition problem. Nevertheless, they show that, despite the decline of union density, the individuals that serve themselves at least once of the services provided by unions remain extremely important. In other words, unions still play a very important role for wage-earners, even though the majority of them are not continuously affiliated.

We can now turn to a more formal analysis of the evolution of the recruitment capacity of Swiss unions between 1999 and 2011. In order to be able to compare directly the results with those on the duration of membership, we focus on the same shifting time-windows described above. Therefore, we have 6 time points of data. More precisely, for each time-window, we create a binary variable that takes the value 1 if the individual becomes a union member by being at the same time a wage-earner in one of the years of a time-window and 0 otherwise. The main independent variable we use, represented by the last year in each time-window, is a set of time dummies identifying each time-window. The values of the control variables included in the regressions are also those appearing in the last year of each time-window. As we will motivate in sub-section 3.4.3, in this work and in the models of this particular section we chose to treat as linear the relationship of

interest even though the dependent variable is binary. We thus estimate a linear probability model. The relationship we model can be represented by the following functional form:

$$\begin{aligned} \text{at least once member}_{it} &= \alpha + \text{time dummies}'_it\beta + \text{controls}'_it\gamma + \mu_{it} \\ \text{for } i &= 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T \end{aligned} \quad (2.5)$$

We estimate three nested models by OLS (giving thus a pooled OLS estimator) with an increasing set of control variables. The first type of model contains only the key independent variable and one indispensable control variable. In order to account for the number of years in which an individual has actually the possibility of becoming a union member, it is crucial to include as control a variable that represents the number of waves an individual has participated in the SHP as wage-earner in each time-window. In a second model, we add as controls the main socio-demographic characteristics (sex, age, education, nationality and canton of residence). In a third one, we add a further set of control variables that capture the effect of the flexibilization of the labor market (indeterminate or time-limited contract, full- or part-time work, private or public sector, NOGA sector, company size and job and/or employer change in the last 6 years, i.e. the length of the time-windows under examination). The observations in each time-window are weighted using the cross-sectional weights of the last year of the time-window since only that year distinguishes the given time-window from the previous one. Finally, we use cluster robust standard errors that allow obtaining correct test statistics for arbitrary forms of heteroskedasticity and serial correlation within the observations of each individual.

The results are presented in table 8.2, section 8.2 of the appendix chapter. The first model shows a continuous and significant diminution of the chances of becoming a union member at least for a year in more recent time-windows. For example, the average wage-earner has 4.1% less chances to become a union member in the interval 2004-2009 than in the 1999-2004 period. Only the last

window shows a slight inversion of the trend. Interestingly, the estimates we obtain in the two other models by increasing the number of control variables are almost equivalent to those in the first one. Neither the demographic changes nor the evolutions observed in the labor market modify the diminishing trend we observe in unions' recruitment capacity.

## **2.4.2 DURATION OF MEMBERSHIP**

Focusing on the duration of membership, we start again by providing some descriptive statistics for the period between 1999 and 2011. Unfortunately, since the majority of the individuals interrupt their participation in the SHP at some point, we cannot give reliable information on the mean duration of continuous episodes of union membership. However, for each individual, we can at least compute the ratio between the number of years he belonged to a union being at the same time a wage-earner and the number of years he worked as wage-earner during his participations in the SHP. The mean of this ratio for all participants of the SHP is equal to 0.211. This means that, on average, the typical wage-earner in Switzerland spent  $0.211 * (2011 - 1999 + 1) = 0.211 * 13 = 2.743$  years as union member between 1999 and 2011. If we redo the same count for individuals that became at least once members over the period under examination, the mean of the ratio is equal to 0.559, which implies a mean of 7.267 years spent as union member between 1999 and 2011. As in the previous subsection, these analyses are certainly affected by an attrition problem. They are however interesting in order to get at least a broad image on the number of years Swiss wage-earners spend as union members.

We now turn to a more formal analysis of the evolution of the duration of union membership in Switzerland between 1999 and 2011. We employ the same regression models of the previous subsection:

$$\text{duration membership}_{it} = \alpha + \text{time dummies}'_{it}\beta + \text{controls}'_{it}\gamma + \mu_{it}$$

*for  $i = 1, 2, \dots, N$  and  $t = 1, 2, \dots, T$*  (2.6)

We replace the dependent variable with the number of years spent as union member for each wage-earner that has been at least once a union member within a given time-window. This restriction (having been a union member at least once within the time-window) is crucial since, otherwise, we may observe a decrease of the duration of union membership for all wage-earners because of the diminution of individuals that become members at least once. The objective here is on the contrary to see whether the duration of membership decreases for individuals that become members at least for a year within a given time-window.

The results are presented in table 8.3, section 8.2 of the appendix chapter. In all three models, we do not observe a significant evolution of the number of years spent as union members in more recent time windows in comparison with the 1999-2004 period. In other words, the duration of union membership for wage-earners that actually become members at least once is not subject to a change between 1999 and 2011. Surprisingly, as in the previous set of models, the change of the profile of the average wage-earner and the evolutions of the labor market do not seem to have an impact on the evolution of unions' retention capacity.

What do the results of these two sets of regressions models imply? They lead us to the same conclusions described by Daniel Oesch (2012). The decrease of union density in Switzerland is related to a decreased capacity of unions to recruit new union members and not to a diminution in the mean duration of union membership. Also, the demographic and economic evolutions we observe between 1999 and 2011 do not influence the trends.

One may wonder whether the results we obtained are dependent on the particular strategy of time-varying windows we adopted or also on the 6-year length of the windows we chose to consider.



Additional analyses show that similar results can be obtained with shorter or longer time windows. Also, similar conclusions, even though based on a lower number of time intervals, can be produced by considering separated time-windows as described at the beginning of the section.

## 2.5 IMPLICATIONS

What are the implications of the analyses of this chapter? The cross-sectional analyses of the third section confirm the presence of a declining trend of union membership in Switzerland. However, they also highlight that the declining trend does not concern the same way all categories of wage-earners. In particular, union density decreases sharply for traditional profiles of union members (men, old wage-earners, individuals with a secondary education,...), while the decrease is much less pronounced for some emerging profiles of wage-earners (part-time workers and women in particular).

Is the decline related to a lower inflow of new members or to a more important outflow of wage-earners that become members? The regression analyses of the previous section show that the declining trend is related to a decreased recruitment capacity of Swiss unions rather than to a decrease in the mean duration of membership. If the argument exposed in Oesch (2012) holds, implying that the level of inflows in unions is mostly determined by unions' strategies, while the retention of old members is mostly determined by external events, these conclusions are rather positive for the future of Swiss unions. If the success of a union is mostly determined by its attraction strategies rather than by uncontrollable evolutions, in particular the changes in the labor market, there is still hope that the declining union density trend may be reversed. In particular, such a change can be expected if unions will be capable of increasing their attractiveness with respect to the emerging categories of wage-earners. As we described in sub-section 2.1.3, efforts in this direction are already made by Swiss unions.



### 3. CAUSAL INFERENCE AND METHODOLOGY

After having introduced the reader to the main traits of the Swiss union movement, the third chapter is the occasion to lay the groundwork for the analyses presented in the remaining of the thesis. Since estimating the causal impact of union membership on job, political and other-regarding attitudes is the main goal of the research question at the core of this work, we first of all clarify the meaning of the concept of “causal effect” and show under which conditions it can be estimated through observational data. We focus explicitly on the problem of the endogenous nature of the union membership variable and show how the existing literature has dealt with the issue for some of the attitudes we examine subsequently. In the third section, we highlight to what extent the data and the methodological approach adopted in the following pages are adapted to study the causal relationship under examination. In particular, we show that the advantages offered by panel data, combined with an instrumental variable estimator, allow us to make a substantial improvement over the existing literature. In the final section, we illustrate the population on which we focus, the models our analyses are based on and some statistical and interpretations issues to consider in the following chapters. We also point out the distinctive features of the Swiss Household Panel (SHP) and describe how we take into account the attrition problem in order to ensure the representativity of our results.

Before turning to these aspects, let us say a word on the design and on the objectives of this chapter. Making inferences on causal relationships using observational data is a thorny enterprise. The goal is to present the main issues around this theme in a synthetic and intuitive way. Our discussion is limited to regression analysis since the statistical tools for panel data we present in the third

section are available only in a regression setting. Although these aspects are certainly well-known to the experienced researcher, we think it is worth emphasizing some crucial principles because, as we will see in the next chapters, the empirical evidence and the nature of the conclusions exposed in the previous literature often present questionable elements. On the other hand, we do not fail to complete our intuitive presentation with the necessary statistical formalism. The concepts and the terminology are drawn explicitly from the structural equation modeling framework (Hoyle 2014). However, sometimes we simplify our description and do not follow all of the usual steps in such an analysis because they would lead us far astray from our purposes.

## **3.1 CAUSALITY AND LIVING WITH OBSERVATIONAL DATA**

### **3.1.1 THE CONCEPT OF “CAUSAL EFFECT”**

The declared objective of this thesis is to examine the existence of a causal relationship between union membership and various dimensions of job, political and other-regarding attitudes. What does exactly mean that “union membership has a causal effect on a particular attitude”? One way to explain why union membership may be seen as a “cause” of an attitude would be to find a mechanism, a chain of successive events, each one considered as the cause of the successive one, leading from the fact of becoming a union member to a change in the attitude considered. This is usually the way one begins postulating the existence of a causal relationship. For example, union membership may have a causal impact on job satisfaction because, through the bargaining activity of trade unions, a member may enjoy better objective working conditions than a non-member and thus be more satisfied with his job situation. Although useful on an intuitive level, this strategy does not solve the problem. It only shifts the issue from the rela-

tionship between union membership and the attitudes to the relationship between pairs of successive events (union membership being the first one and the attitude the last one). One is then still asked to define the meaning of the causal relationship between each pair of events.

For simplicity, we suppose that the attitude taken into account is expressed in a numeric scale. Formally, for an individual  $i$ , we define the causal effect of union membership on an attitude as the difference between the attitudinal level declared by the individual as union member and the attitudinal level declared by the individual as non-member, holding all other conditions fixed:

$$\Delta attitude_i = (attitude_i | member_i) - (attitude_i | non - member_i) \quad (3.1)$$

Usually, we are not interested into estimating the causal effect on a single individual, but into determining the average causal effect on the whole population of interest. In our case, the population of interest includes all wage-earners, i.e. the individuals that could potentially become union members. For the average causal effect, equation 3.1 becomes:

$$E[\Delta attitude_i] = E[attitude_i | member_i] - E[attitude_i | non - member_i] \quad (3.2)$$

This “average treatment effect” (ATE) represents the causal effect of union membership on the attitudinal level of the “average individual”, the “typical individual” in the population of interest.

The previous characterization is the so called “counterfactual” definition of causality. It is a very useful theoretical starting point to conceptualize causality, but it cannot be directly used to “measure” the causal impact of union membership on an attitude. In fact, for each individual, we either observe the attitudinal level in a situation in which he is a union member ( $attitude_i | member_i$ ) or

the attitudinal level in a situation in which he is not a union member ( $\text{attitude}_i \mid \text{non-member}_i$ ), but never both at the same time. The condition “both at the same time” is crucial because the only way we can make sure that the two events are compared holding all factors other than union membership fixed (*ceteris paribus* assumption) would be to go back in time and observe the attitudinal outcome on every individual  $i$  in a counterfactual setting. This result is known as the “fundamental problem of causal inference” (Holland 1986). It can be seen as a missing data problem. For the individuals that are members, we would like to observe a counterfactual setting in which they are non-members. For those that are non-members, we would like to observe a counterfactual setting in which they appear as members. To make this more clear, we can rewrite equation 3.2 by decomposing its right-hand side into two components, one representing the average treatment effect on the treatment group (those observed as union members) and the other representing the average treatment effect on the control group (those observed as non-members):

$$\begin{aligned}
 E[\Delta \text{attitude}_i] &= E[E[\Delta \text{attitude}_{i \in \text{member}}] + E[\Delta \text{attitude}_{i \in \text{non-member}}]] = \\
 &E[(E[\text{attitude}_{i \in \text{member}} \mid \text{member}_i] - E[\text{attitude}_{i \in \text{member}} \mid \text{non} - \text{member}_i]) \\
 &+ (E[\text{attitude}_{i \in \text{non-member}} \mid \text{member}_i] - E[\text{attitude}_{i \in \text{non-member}} \mid \text{non} - \text{member}_i])] \\
 &\quad (3.3)
 \end{aligned}$$

where the state that follows the membership symbol “ $\epsilon$ ” is the observed one. In words, the average treatment effect is equal to the average of the sum of the average treatment effect on the treated and the average treatment effect on the non-treated. The two terms in *italic* are the unobserved ones. We have an equation composed of four terms, two of which are observed. Can we hope to get a good estimation of the overall average treatment effect using only the two observed terms? This would lead us to compute an observed average treatment effect as the difference between the average value for the treated in their observed treatment

state and the average value for the non-treated in their observed non-treatment state. In equation form, this corresponds to:

$$\begin{aligned}
 & E[\Delta \text{attitude}_{i \in \text{observed}}] \\
 &= E[\text{attitude}_{i \in \text{member}} | \text{member}_i] - E[\text{attitude}_{i \in \text{non-member}} | \text{non-member}_i]
 \end{aligned}
 \tag{3.4}$$

This equation represents the observed average attitudinal difference between union members and non-members. Under which conditions does the observed difference in equation 3.4 equal the true average treatment effect in equation 3.3? To identify them, with some algebraic operations, it is possible to rewrite equation 3.4 as (Winship and Morgan 1999:667):

$$\begin{aligned}
 E[\Delta \text{attitude}_{i \in \text{observed}}] &= E[\Delta \text{attitude}_i] + \\
 & (E[\text{attitude}_{i \in \text{member}} | \text{non-member}_i] - E[\text{attitude}_{i \in \text{non-member}} | \text{non-member}_i]) \\
 & + (1 - \pi) * \\
 & ((E[\text{attitude}_{i \in \text{member}} | \text{member}_i] - E[\text{attitude}_{i \in \text{member}} | \text{non-member}_i]) \\
 & - (E[\text{attitude}_{i \in \text{non-member}} | \text{member}_i] - E[\text{attitude}_{i \in \text{non-member}} | \text{non-member}_i]))
 \end{aligned}
 \tag{3.5}$$

where  $\pi$  is the proportion of individuals belonging to the treatment group. In words, the observed average attitudinal difference between treatment and control group is equal to the sum of the true average treatment effect and two other terms. These two terms represent the two possible sources of bias that would lead the observed difference between treatment and control group to differ from the true, counterfactual average treatment effect. Each of the two biases can be ruled out when specific assumptions are satisfied.

### 3.1.2 LIVING WITH OBSERVATIONAL DATA: THE SELECTION BIAS

Regarding the first source of bias, it is usually called “selection bias” (Angrist and Pischke 2009). It corresponds to the “baseline difference” we would observe in the outcome variable if we could observe the level of the outcome variable in the non-treated state for the treatment group (unobserved parameter) and the level of the outcome variable in the same state for the control group (observed parameter). This means that the average treatment effect based on the observed parameters may be biased because the mean level of the outcome variable in the non-treated state for the treatment group may differ from the one we observe for the control group in the non-treated state.

Considering again as an example union membership as the treatment and job satisfaction as the outcome variable, we can make a hypothesis (that we will confirm in the fourth chapter) on why this type of bias may affect the estimation of their causal relationship. We suppose that union members, even before joining a union, are individuals with a lower average job satisfaction (this is indeed the case, as we will see in the next chapter) than non-members. In fact, their lower job satisfaction is one of the reasons that may lead them to join a union, hoping for an improvement of their objective working conditions. Now, if that is true, using the observed parameters to estimate the causal effect of union membership on job satisfaction may lead to infer a negative impact of union membership even though the true causal effect was positive. To see that, suppose the average job satisfaction level for future union members is 6 before becoming members (unobserved parameter) and 7 after becoming members (observed parameter). Suppose also that the average job satisfaction level for individuals that would not become members is 8 before joining a union (observed parameter) and 9 afterward (unobserved parameter). In this case, the true causal effect is a net increase of one point in job satisfaction (it is simple to verify it by plugging the four values into equation 3.3). However, if we computed this effect only through the two observed parameters, we would be led



to conclude that union membership decreases job satisfaction by one point (it is easy to verify it by plugging the values of the two observed parameters in equation 3.4).

Where does the selection bias come from? It is a consequence of the non-random assignment of the treatment variable conditional on the values of the outcome variable. Formally:

$$E[\textit{attitude}_{i \in \textit{member}} | \textit{non} - \textit{member}_i] \neq E[\textit{attitude}_{i \in \textit{non-member}} | \textit{non} - \textit{member}_i] \quad (3.6)$$

In other words, the average “baseline difference” between the treatment and the control group is a consequence of the fact that the chances of being selected into the treatment group are correlated with the outcome variable. This is a violation of the “conditional independence” assumption. As we will see, to solve it, the best way is to randomly assign the treatment variable in an experimental setting. However, an experimental setting being rarely available to the researcher, it is possible to accommodate the conditional independence assumption by controlling for observable covariates (“selection on observables”) responsible for the correlation between the treatment and the outcome variables. We describe this procedure in sub-section 3.2.1.

### **3.1.3 LIVING WITH OBSERVATIONAL DATA: THE “HETEROGENEOUS EFFECTS” BIAS**

As far as the second source of bias goes, it is composed of the product of the proportion of those in the treatment group and the difference between two expressions. The first expression represents the average treatment effect on the treatment group and the second one the average treatment effect on the control group. Hence, this bias appears whenever the average causal effect of the treatment variable differs in the treatment and the control group. We can call it “heterogeneous effects” bias.

To what extent is it reasonable to consider that the average causal effect of union membership on a specific attitude is homogeneous among union members and non-members? If we could bring the wage-earners non-members to become union members, would the observed causal impact, if any, be equal to the one observed for actual members? Empirically, this is an untestable question since we cannot observe the causal effect on non-members and compare it with the one we observe for members. However, we can give some theoretical arguments that lead us to believe that the answer is rather negative. We provide two solid arguments to support this claim, even though it is possible to think of other ones. It is also necessary to be aware of the fact that our reasoning applies in a different way depending on the particular attitude taken into account. In the next chapters, we will show that some attitudes are more affected by the “heterogeneous effects” bias than others. The starting point of our arguments is that union membership can be seen as an aspect influenced by two life domains: the professional and the social sphere.

On the professional side, one important difference between union members and non-members is the economic sector to which they belong. Members belong more often to highly unionized sectors since becoming a union member is more likely than in sectors with a low union density. Conversely, non-members are disproportionately more likely to belong to lowly unionized sectors. It is also reasonable to suppose that the internal dynamics of unions active in highly unionized sectors differ from those in lowly unionized sectors. These internal dynamics can be considered as the key driver of the causal impact on members’ attitudes. Hence, the differences in the internal dynamics between unions active in different sectors may be responsible for a different causal effect of union membership on attitudes in different sectors. This may happen even if we were able to control for the selection bias related to baseline attitudinal differences between individuals belonging to different sectors. In other words, if, holding all other factors fixed as in a counterfactual setting, we were able to measure the causal impact of union membership on a particular attitude in two different sectors for the same individual, we may expect

that the causal effect measured in the two sectors may be different because the internal union dynamics leading to the causal impact differ between sectors.

On the social side, we can consider the union membership status as an indicator of the social involvement of an individual. On average, a union member is an individual more socially involved than a non-member. Because of the differential in social involvement, even after controlling again for baseline attitudinal differences between individuals, we can expect that union membership would have a different causal impact on highly socially involved individuals and on lowly socially involved individuals. In fact, we can expect that the effect on lowly socially involved individuals would be greater than the one on highly socially involved individuals. If we could bring a lowly socially involved individual to become a union member, since the individual is not exposed to many other social influences, we can expect that the social dynamics of union membership to which he would be exposed would reasonably have a high potential attitudinal impact. Conversely, a highly socially involved individual that becomes union member would be less likely to experience a high attitudinal change because the union social dynamics would represent just one social dimension added to other ones. For example, the individual may be already affiliated to other voluntary associations.

Which assumptions would guarantee the absence of a bias coming from the heterogeneous causal impact on treatment and control group? We would need to suppose that the average level in the outcome variable for the control and the treatment group are equal for any particular value of the treatment variable. In our case, this means that the average attitudinal level for non-members and members would be the same if we could observe all of them in the member state or in the non-member state (if that is the case, one can easily see that the term related to this bias in equation 3.5 becomes zero). This is called “unit homogeneity assumption” (King, Keohane, and Verba 1994:91). Unfortunately, as we will see, in most research settings, it is not possible to eliminate this source of bias. In general, under certain assumptions, we will be

able to control for the selection bias and estimate the average treatment on the treatment group, but not the global average treatment effect on the whole population since the average treatment effect on the control group is not going to be estimable. In other words, the estimated causal effect does not concern the average individual in the population under examination, but the average individual in the treatment sub-population. If one thinks about it, this is not such a tragedy. If some individuals would never become union members in the real world, what is the use of estimating the causal effect of union membership on them? Estimating the causal effect on those that actually become members can be seen as more than enough (Winship and Morgan 1999).

However, there is a more subtle point to underline for union membership. It is difficult to predict which kind of individuals would never become union members. Working with data for a particular population on a certain time range, the researcher has only access to the individuals that are union members during that time range in that particular population. For example, a researcher may have access to cross-sectional data for a given country on a particular year or to panel data for a given country on a certain time range. These individuals are those that compose the treatment group. Hence, the “treatment effect on the treated” is estimated on them. But if the unit homogeneity assumption does not hold, one has to be aware of the fact that the measured treatment effect on the treated is going to be dependent upon the particular composition of the individuals that are members in the population taken into account during the time range considered. This is a problem of external validity. For example, if it turns out that union members in Switzerland in 2000 come mostly from one sector and in 2008 from another sector, assuming a heterogeneous causal effect of union membership on attitudes between these two sectors, the results would show that union membership has a different impact in 2000 and 2008 because the treatment effect on the treated is measured on two different treatment groups. In the next chapters, we will see that this source of bias is almost never taken into account by researchers, working implicitly with the assumption that the causal impact of union membership is homogeneous on

the observed union members and on the observed non-members. We will come back to the composition issue in sub-sections 3.4.4 and 3.4.5, where we specify on which treatment group our results are applicable. We will also show how it is possible to account at least partially for the heterogeneous effects bias by making causal inferences on distinct treatment groups.

### **3.1.4 RANDOMIZATION WOULD SOLVE EVERYTHING...**

Thinking of causality counterfactually is very useful on a theoretical level, but we need a strategy that would allow us to estimate, to empirically measure the causal effect from actual data on union members. Going back in time not being possible yet for any researcher, the methodological cornerstone for assessing causality is the use of a randomized experiment. Randomization solves both sources of bias that are generated by using observed parameters to estimate the average treatment effect. Because in randomized experiments the treatment is assigned randomly, the correlation between treatment and outcome variable is excluded and the conditional independence assumption holds. Because the treatment is assigned randomly, the treatment and the control group are equivalent and the unit homogeneity assumption holds too. Randomization solves everything. The only gigantic problem is that it is very rare for a social scientist to have the possibility to actually conduct a randomized experiment.

What does an ideal randomized experiment look like in our case? We would like to draw a representative sample of individuals not yet members from the Swiss population, measure the attitudinal level at a given point time for all the individuals in the sample, assign randomly half of them to the treatment group (making them become union members) and the other half to the control group (leaving them non-members). This experiment is obviously impossible to conduct. Closed shop or compulsory union membership that appeared in the past for some sectors in some countries may offer something that could be used to imitate a randomized experiment under certain assumptions. However, since

closed-shops are forbidden in Switzerland since 1925 and since the freedom of union membership and also of non-membership are constitutionally granted in Switzerland (Ebbinghaus 2000), these options are not available in our case.

Even if it is not possible to conduct a randomized experiment, it is still very useful to keep in mind the features such an ideal situation has. Why? Because a randomized experiment is always the benchmark used to infer causality in a non-experimental setting (Angrist and Pischke 2009). In other words, even though we cannot run an experiment, we will design a “quasi-experiment” that allows us to make statements about the causal relationship between union membership and attitudes using observational data. Observational data, as opposed to experimental data, are defined by the fact that the researcher cannot control the assignment of the variable (union membership in our case) supposed to be the cause of the analyzed effect. This is in fact the only form in which the data on union membership are available.

As a starting point, in the next section, we consider the case in which the researcher has access to cross-sectional data representative of the population under examination for a given year on union membership and on the attitudes taken into account. The cross-sectional case represents a natural starting point and almost all previous literature on the relationship between union membership and attitudes is based on single-year data. The discussion on the panel data case will follow as a natural extension of the cross-sectional case and we will be able to see directly the improvement that a panel data approach offers over existing research.

## **3.2 ENDOGENEITY AND INSTRUMENTAL VARIABLES**

There are two main procedures used to draw causal inferences from observational data: matching techniques and regression analysis. We focus here on regression analysis for three reasons. First, the advanced panel data methods we describe in the next section

have been developed and are available only in a regression setting. Second, the existing literature we will analyze in the following chapters is also essentially based on regression analysis. Third, it can be shown that regression analysis and matching methods are both based on the same principle of “selection on observables”, the main difference between the two techniques being the practical procedures used to implement this principle (Angrist and Pischke 2009). Angrist and Pischke also show that the substantive conclusions to which the two procedures lead should generally be the same.

### **3.2.1 ENDOGENEITY AND CONDITIONAL INDEPENDENCE**

In this sub-section, we show under which assumptions it is possible to solve the selection bias issue described in sub-section 3.1.2 by relying on a quasi-experimental setting based on observational data in a regression analysis. More precisely, the conditional independence assumption can be satisfied if the covariates responsible for the correlation between the treatment variable and the outcome variable can be controlled for. As we already pointed out at the end of sub-section 3.1.3, solving the selection bias allows us to estimate the treatment effect on the treated, but does not provide a solution to the bias related to the heterogeneous causal effects between treatment and control group. In other words, we will show under which conditions it is possible to estimate the effect of union membership on a particular attitude for the individuals that are union members during the period under examination. The results are thus generalizable only to those particular union members and not to the population of wage-earners as a whole, including also non-members. One way to try to generalize the results to the control group is by arguing that the causal effect is indeed homogeneous on all kinds of individuals and in all kinds of unions. This could be theoretically done by showing that the mechanisms leading to the causal effect are the same for every

kind of individual and for every kind of union. In the next paragraphs, in order to make the reading more fluid, we will talk about the causal effect of union membership even though we are indeed talking about the causal effect of union membership only on those actually observed as members.

A quasi-experiment related to the research question of this thesis can be represented through the following equation:

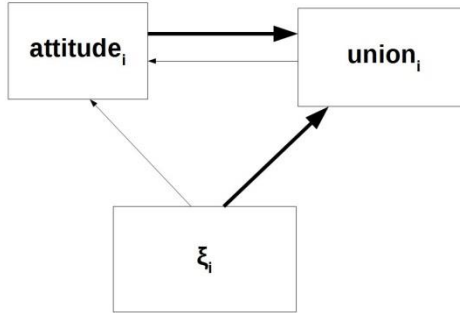
$$attitude_i = \alpha + \beta union_i + \xi_i, \quad \text{for } i = 1, 2, \dots, N \quad (3.7)$$

where attitude is, for simplicity, an attitude measured in a numeric scale.  $\alpha$  represents the intercept term.  $\beta$  is a coefficient that we would like to capture the causal effect of union membership on the dependent variable. Union is a dummy variable representing the union membership status (“Non-member” or “Member”).  $\xi$  is an error term including all variables that have an impact on the considered attitude and for which we do not control for.  $N$  is the number of individuals composing our population and  $i$  a subscript identifying each of them. We describe thus the procedure directly on population parameters. The additional issues to consider with the estimation using actual sample data are described in section 3.4. For simplicity, we also do not include any control variables, but the same procedure could be generalized by including them.

The question here is: does the  $\beta$  coefficient represent the causal effect of union membership on the dependent variable? Under which conditions is this coefficient not affected by the selection bias described in subsection 3.1.2? Before answering these questions, we represent (on the next page) the same quasi-experiment in a path model:



*Figure 3.1: Path model representing the effect of union membership on a particular attitude*



The arrow from the “union” variable to the “attitude” variable represents the causal relationship we would like to estimate. The arrow from the error term “ $\xi$ ” to the “attitude” variable corresponds to the determinants of the considered attitude that are not taken into account in the model. In the path model, the two questions stated before can be translated to: if we estimated the model in equation 3.7 through Ordinary Least Squares (OLS), under which conditions does the  $\beta$  coefficient correspond to the causal effect of union membership on the dependent variable represented in figure 3.1? Can we estimate the causal effect of union membership on the dependent variable represented in figure 3.1 through the  $\beta$  coefficient in equation 3.7? Intuitively, this happens if and only if we are capable of excluding that the relationship under examination (represented by the arrow  $\text{union} \rightarrow \text{attitude}$ ) is not disturbed by the presence of other relationships (represented by the two bold arrows) that interfere with it. Formally, this can be stated through the conditional independence assumption in regression form (we will see that this assumption is equivalent to the one presented in section 3.1.2):

$$E(\xi_i) = E(\xi_i | \text{union}_i) = 0, \quad \text{for } i = 1, 2, \dots, N \quad (3.8)$$

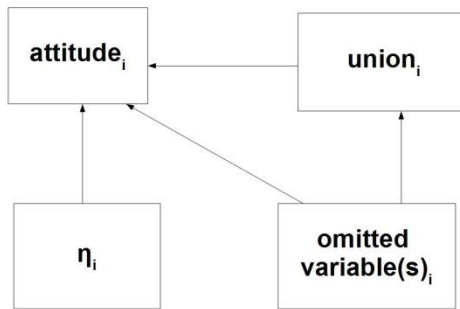
Equation 3.8 states that the average of the error term is zero and that the explanatory variable under examination is uncorrelated with the error term. The first statement is a condition that can be satisfied by shifting the intercept term. The second statement is much more interesting for our purposes. If a variable satisfies this condition, it is called exogenous. Otherwise, if it shows a correlation with the error term, it is said to be endogenous. Why does endogeneity create a problem in estimating the causal impact of a variable? Intuitively, this happens because the coefficient we get through OLS does not represent the impact of union membership alone on the attitude. Indeed, it embodies also the impact of other variables present in the error term. The correlation observed between union membership and the attitude is influenced by relationships other than the studied causal relationship. Hence, the correlation does not represent the sole causal relationship, but the sum of a multiplicity of relationships.

Recapitulating, we are interested into estimating the causal impact of the union membership variable on the dependent variable. In order to know whether equation 3.7 allows us to estimate this causal effect, we must check whether the union membership variable is exogenous. If it is, the correlation between union membership and the dependent variable corresponds to a causal relationship. If it is not the case, in which ways can the union membership variable not be exogenous, i.e. endogenous? Formulate it differently, when is the relationship we are interested in influenced by other ones? For our purposes, there are essentially two cases under which the union membership variable (or in general any other

covariates we would like to include in our model) can be considered as endogenous<sup>3</sup>. They are both represented by the bold arrows in figure 3.1 and we describe each one separately.

Figure 3.2 illustrates the first case, the so called problem of “Omitted Variable Bias” (OVB):

*Figure 3.2: Illustration of the “omitted variable bias” issue*



A bias related to an omitted variable occurs when a relevant variable in the system is included in the error term. A variable is considered relevant if it impacts at the same both the dependent and the independent variable. Its omission creates a bias in the estimation of the causal impact of the independent variable on the dependent one. In the case of a simple regression model (as in equation 3.7), it can be shown that this bias is equal to (Wooldridge 2010:67):

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<sup>3</sup> In reality, there are at least two additional situations that could lead to the endogeneity of an independent variable. The first one, a measurement error in the explanatory variable, is not an issue in our case. In fact, we are pretty confident that the answers to the union membership status given by the respondents are reliable. The other concern, a miss-specification error in the functional form, is an issue we deal with in sub-section 3.4.3.

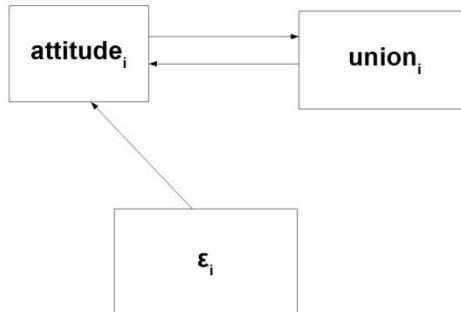
$$\text{Bias}(\beta) = \gamma \frac{\text{cov}(\text{union}, \text{omitted variable})}{\text{var}(\text{union})} \quad (3.9)$$

where  $\gamma$  is the hypothetical coefficient of the omitted variable when included in regression 3.7. It is possible to extend this formula to multiple omitted variables. We see that the bias is zero if the variable has either no impact on the dependent variable or it is not correlated with the explanatory variable (thus violating the definition of relevant omitted variable given above). Let us examine the case of a concrete relevant omitted variable in our setting. For example, if we consider job satisfaction as the dependent variable, an omitted variable could be represented by the level of education of the individual. In the previous chapter, we have seen that, in Switzerland, individuals with a tertiary education have more chances to be union members than the rest of wage-earners. It is also reasonable to suppose that individuals with a tertiary education enjoy better working conditions and are thus more satisfied with their job than the rest of the working population. Education is thus positively correlated with union membership and job satisfaction. Since highly educated individuals are more satisfied with their jobs and have higher chances to become union members than the rest of the population, according to equation 3.9, measuring a simple correlation between union membership and job satisfaction without controlling for the level of education would lead to a selection bias that overestimates the true causal relationship. Including the education level as a control variable would solve the problem. However, education is certainly not the only omitted variable that can bias the estimation. For example, another omitted variable that would generate a bias could be represented by an innate individual predisposition to challenge the views of the management. We can suppose that such a predisposition would be negatively correlated with job satisfaction and positively correlated with union membership. Relying another time on equation 3.9, omitting this variable would lead to a negative bias. Controlling for this variable would again solve the problem. This strategy is called “selection on observables” and it imitates what

we do in a randomized experiment. Controlling for the variables that create a selection bias leads to eliminate the selection bias. The problem is that the omitted variables that potentially have an impact on both attitudes and union membership are very often unobserved. The innate predisposition cited before would be very complicated to measure and the bias could not be eliminated by adding the omitted variable in the regression model. We will come back to this point in sub-section 3.3.1, by showing how panel data can solve the problem associated with this type of unobserved heterogeneity.

Figure 3.3 shows the second major source of endogeneity affecting our research question, the problem of reverse causality:

***Figure 3.3: Illustration of the “reverse causality” issue***



As the name implies, this problem arises when the dependent variable is suspected itself of having an impact on the independent variable. It creates a bias because, again, the coefficient of the union membership variable in equation 3.7 would include the impact of union membership and the impact on it from the dependent variable. As an example, consider again the attitude representing job satisfaction. This attitude presents a problem of reverse causality because a low level of job satisfaction is one of the main

reasons to become a union member, hoping for an improvement of the objective working conditions through the union bargaining activity.

### **3.2.2 THE SOLUTION TO THE ENDOGENEITY PROBLEM: INSTRUMENTAL VARIABLES**

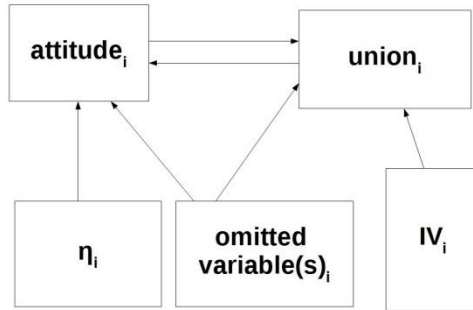
The endogenous nature of the union membership variable, related to a problem of omitted variable bias or reverse causality, is the regression equivalent of the selection bias described in sub-section 3.1.2. We have seen that, if an omitted variable is observable, it is possible to get rid of the bias it creates by including it as control variable in the regression model. However, especially when the dependent variable is an attitude, the omitted variables that possibly bias the estimation may be represented by unobserved parameters that cannot be controlled for. The reverse causality issue contributes to further complicate the estimation.

For these reasons, a classical regression model with a key explanatory variable and a series of covariates is not enough to estimate the causal effect of union membership on any of the attitudes we consider (we will detail in each chapter the type of endogeneity problems to consider). In order to appropriately deal with the problem of the endogenous nature of the union membership variable, an instrumental variable for union membership is needed. An instrument for a given independent variable has to satisfy two conditions:

- 1) it has to be correlated with the independent variable
- 2) it has to be uncorrelated with the error term

Figure 3.4 (on the next page) depicts the features of an instrument for the union membership variable:

*Figure 3.4: Illustration of the properties of an instrumental variable*



In our case, the first assumption states that the instrument has to be correlated with the union membership variable. As we will highlight for the instruments we have constructed in the panel data setting, the higher the correlation, the better.

The second assumption implies that the instrument has to not be correlated with the error term. Equivalently, this means that the instrument can influence the dependent variable only through the union membership variable. There has to not be any other channel through which the instrument affects the dependent variable. This assumption is formally untestable and the researcher needs to provide some solid theoretical arguments to motivate its validity.

If one can find an instrument for the union membership variable, the IV estimation consists of an application of the method of moments (Wooldridge 2013:409). In order to obtain the causal effect represented by the  $\beta$  coefficient in equation 3.7, one substitutes the population parameters with population moments, in this case the covariance with the instrument. Equation 3.7 becomes then:

$$\text{cov}(\text{attitude}, IV) = \beta \text{cov}(\text{union}, IV) + \text{cov}(\eta, IV) \quad (3.10)$$

Since  $\text{cov}(\eta, IV) = 0$  by definition, the  $\beta$  coefficient representing the causal impact of union membership on the attitude can be obtained through:

$$\beta = \frac{\text{cov}(\text{attitude}, IV)}{\text{cov}(\text{union}, IV)} \quad (3.11)$$

In order to better understand why an instrument provides a way to solve the endogeneity problem, it is more useful to illustrate its functioning through the main procedure used to obtain the IV estimates: 2-stage-least-squares (2SLS). The name is motivated by the fact that the procedure involves the use of the OLS estimation in a two-step approach (moreover, it can be shown that every IV estimator can be expressed as a two-step approach).

The first stage of 2SLS consists of an OLS estimation of the union membership variable on the instrument (and on all other exogenous covariates present in the original model):

$$\text{union}_i = \theta IV_i + \delta_i, \quad \text{for } i = 1, 2, \dots, N \quad (3.12)$$

where  $\theta$  is the estimated coefficient of the instrument and  $\delta$  represents the error term.

In the second stage, the predicted values of union membership obtained in the first step are plugged into the original model in lieu of the union membership variable. The  $\beta$  coefficient estimated in this second stage gives the unbiased causal effect:

$$\text{attitude}_i = \alpha + \beta \widehat{\text{union}}_i + \zeta_i, \quad \text{for } i = 1, 2, \dots, N \quad (3.13)$$



with  $\varsigma$  representing again the error term.

Why does the procedure work? Since the union membership variable is endogenous, the goal of the first step is to extract an exogenous counterpart of it by exploiting the instrument. This exogenous version is represented by the predicted values from the first stage regression and they are, by construction, uncorrelated with error term. In fact, since the instrument is uncorrelated with the error term in the original model, the predicted values, representing the part of union membership explained by the instrument, must be themselves uncorrelated with the error term in the original model. This exogenous version of the union membership variable, plugged into the original model, does not suffer anymore from the problem of being endogenous and it allows estimating the desired causal effect.

### **3.2.3 LOCAL AVERAGE TREATMENT EFFECTS (LATE): COOLING DOWN ABOUT INSTRUMENTAL VARIABLES**

The truth about instrumental variables is less bright than what we described in the previous paragraphs. Recent insights on instrumental variables have led to reconsider the scope of the conclusions made on the basis of IV estimators (Imbens and Angrist 1994). We give here only a brief description of the issues related to the so called “Local Average Treatment Effects” (LATE). A more detailed account of it can be found in Angrist and Pischke (2009), fourth chapter.

When the causal effect under examination cannot be considered homogeneous across individuals, as it seems to be the case for the attitudinal impact of union membership (cf. discussion in sub-section 3.1.3), using an instrumental variable estimator leads to identify the causal effect only for a particular sub-population of the individuals in the treatment group. In the words of Angrist and Pischke (2009), an instrumental variable can be thought as an engine that initiates a first causal step that affects the instrumented

variable which, in turn, produces the true causal effect on the dependent variable under examination. This description is in line with the representation in figure 3.4 and with the 2SLS procedure described above. Now, the question is: who are the individuals affected by the instrumental variable? These are called “compliers” and are individuals that experience a change in the instrumented variable in line with the correlation that the instrumental variable shows with it.

To make things more clear, we cite one of the leading examples used by Angrist and Pischke. If we were interested into estimating the effect of military service on the income of veterans, since the veteran status is clearly endogenous with respect to income, we may use as instrument the draft lottery number assigned to each American male eligible for military service. Since these numbers were randomly assigned, they do not have any direct link with income, but they are clearly correlated with conscription. Individuals with low numbers were those drafted for military service. The population of compliers is in this case composed of the individuals that served the US Army because of a low draft number and the IV estimation would lead us to estimate the average treatment effect on them. However, this instrument would not tell us anything about the effect of military service for those that enrolled voluntarily in the Army. In our case, with a dummy instrument (0,1) for union membership that is positively correlated with it, the subpopulation of compliers would be represented by those individuals that would be non-members when the instrument takes the value 0 and that would be members when the instrument takes the value 1. The causal effect estimated with such an instrumental variable gives the treatment effect for the sole population of compliers<sup>4</sup>.

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<sup>4</sup> In reality, there are some additional conditions the instrument has to satisfy in order to lead to the estimation of the treatment effect on the treated (in particular, the monotonicity assumption). Cf. again Angrist and Pischke for more details.

The sub-population of compliers cannot be determined empirically because one of the two conditions that define it is not observable. This is the same problem we discussed with the counterfactual definition of causality. One can however try to describe theoretically the individuals that may belong to the sub-population of compliers. Also, there are some techniques that make it possible to compute the proportion of compliers in the treatment group and to characterize at least broadly their profile (the interested reader may refer again to the book of Angrist and Pischke (2009) or to this presentation: Angrist (2011)). The discussion can be generalized to continuous instruments and continuous instrumented variables.

Summing up, if the causal effect under examination is not homogeneous, using an IV estimator does not lead to estimate the treatment effect on the treated, but only on a sub-population of the treated, the compliers. This is called a local average treatment effect (LATE). It represents a problem of external validity. If an instrument is “too local”, i.e. concerning a very restricted sub-population of compliers or a sub-population of compliers that is not interesting for the research question under examination, the external validity of the results produced with it can be limited. We will get back to the issue when we discuss the level of “locality” of the instruments constructed in our panel data setting.

There exist only a few studies that used an instrumental variable estimator in order to determine the attitudinal impact of union membership (Bender and Sloane 1998; Borjas 1979; Brochu and Morin 2012; Bryson, Cappellari, and Lucifora 2004; Leigh 2006). In the remaining of this chapter and in the following ones, we will apply for the first time an IV estimation using panel data to estimate the causal effect of union membership on job, political and other-regarding attitudes. In fact, the few panel data studies existing on the subject are all of a descriptive nature (Artz 2010; Powdthavee 2011). Combining the advantages offered by panel data and by an instrumental variable estimator, we will show how we

can estimate the impact of union membership on individual attitudes and elucidate some aspects that are not approachable in a cross-sectional setting.

### 3.3 CAUSAL INFERENCE WITH PANEL DATA

As already mentioned, in this thesis, we use the data of the Swiss Household Panel (SHP) between 1999 and 2011 to estimate the causal impact of union membership on the series of attitudes we take into account. In this section, the goal is to recast the previous discussion on causality and on the endogenous character of the union membership variable in a panel data setting. We will highlight the differences with the cross-sectional case and show the advantages offered by a longitudinal perspective.

#### 3.3.1 CAUSALITY AND ENDOGENEITY WITH PANEL DATA

For our purposes, in a panel data setting, the cross-sectional equation 3.7 can be rewritten as follows:

$$attitude_{it} = \beta union_{it} + v_i + \mu_{it}, \quad \text{for } i = 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T \quad (3.14)$$

Two main differences are apparent. The variables in 3.14 present two sub-scripts ( $i$  for the individual  $i$  and  $t$  for the time period  $t$ ). In fact, this is the distinctive feature of panel data: the same  $N$  individuals are followed for  $T$  time periods.

The second difference lies in the presence of two errors terms instead of one. The last term,  $\mu_{it}$ , represents all variables not included in the model that affect the dependent variable and vary across individuals and over time. It is called idiosyncratic or time-varying error. The first error term,  $v_i$ , corresponds to all variables that affect the dependent variable that vary across individuals, but

that are fixed over time (hence the absence of the time sub-script). It is also called fixed effect. It includes the constant, observable variables (if they are not included in the model) such as sex, education (if completed), parent's education,... but also unobservable variables such as innate predispositions towards some behaviors or attitudes. Its presence and, most importantly, the fact that we can estimate the parameters we are interested in after having got rid of it, is one of the main advantages panel data offer. The particular type of dependent variables we take into account makes it even more important. In fact, the potential variables that influence an attitude are probably to a large extent composed of unobserved individual characters that make the individual inherently more or less inclined towards one extreme of the attitude under examination. As our example in sub-section 3.1.2 shows, this unobserved heterogeneity may be correlated with the union membership variable, generating thus a problem of omitted variable bias. Even when using an IV estimator, considering the variety of variables that can be comprised in this category, it is difficult to exclude the absence of a correlation between these variables and the instrument. This makes the assumption of absence of correlation with the error term difficult to justify.

For these reasons, we would like to estimate the causal impact of union membership by excluding from the error term these unobserved fixed effects. By exploiting the time-invariant nature of the fixed effects, it is possible to think of a variety of transformations to get rid of it by modifying equation 3.14. Here, we adopt the first-differencing procedure that consists of taking the difference between the equation for the time period  $t$  and the same equation at a previous time point (usually  $t-1$ ). Hence, for a variable  $x_{it}$ , first-differences are defined as:

$$\Delta x_{it} \equiv x_{it} - x_{it-1}, \quad \text{for } i = 1, 2, \dots, N \text{ and } t = 2, \dots, T \quad (3.15)$$

The  $t$  sub-script starts from 2 since for the first period there is no  $(t-1)$  period to subtract. This procedure is called first-differencing,

but in section 3.4 we describe also the usefulness of using differences of higher order. We use the differencing transformation because it makes the interpretation of some assumptions we will make on instrumental variables easier to interpret and it offers some useful properties we describe in sub-section 3.4.1. Differencing equation 3.14 gives the following first-differenced expression:

$$\Delta attitude_{it} = \beta \Delta union_{it} + \Delta \mu_{it}, \quad \text{for } i = 1, 2, \dots, N \text{ and } t = 2, \dots, T \quad (3.16)$$

The fixed effects have disappeared from the equation. The  $\beta$  coefficient is the same as in the baseline equation 3.14, but, in equation 3.16, its estimation relies only on the variation of the union membership status experienced by each individual. In other words, the coefficient is estimated only by using the variation within each individual, while the variation across individuals has been excluded through the differencing procedure. We explain a change in the dependent variable through a change in the independent one(s). In such a setting, all variables that do not vary over time are excluded from the estimation. For example, it is not possible to estimate the impact of sex on the attitude under examination. Although there are ways to circumvent this limitation, we omit to cite them because the key independent variable we are interested in, union membership, is time-varying. But even for time-varying variables, in order to have precise estimations, it is needed that a sufficient number of individuals experience a variation. This is the price to pay for eliminating the time-invariant heterogeneity. We exclude a source of bias, but the estimation through sample data becomes less efficient. In our case, the coefficient of the union membership variable is highly dependent on the number of individuals that experience a transition from “Non-member” to “Member” or vice versa (our analyses are restricted to specific union membership transitions, cf. sub-section 3.4.2).

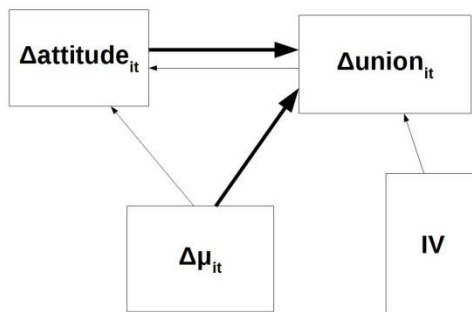
Having converted the cross-sectional model into a longitudinal one, the question to be answered is: under which conditions estimating equation 3.16 through OLS allows getting an unbiased estimation of the causal effect of union membership on the considered attitude? In other words, what is the panel data equivalent of the conditional independence assumption stated in equation 3.8? On first-differenced data, the conditional independence assumption in a panel data setting is stated as follows (Wooldridge 2010:315–318):

$$\text{cov}(\Delta \text{union}_{it}, \Delta \mu_{it}) = 0, \quad \text{for all } i, t \quad (3.17)$$

This means that the variation in the union membership variable has to be uncorrelated with the variation in the idiosyncratic error. Equivalently, equation 3.17 holds if the union membership variable is uncorrelated with the idiosyncratic error term in the two points in time that are implicated in the first-differencing transformation ( $\mu_{it}$  and  $\mu_{i,t-1}$ ). Hence, this assumption rules out the correlation of union membership with the present or the one period ahead value of the idiosyncratic error. In the latter case, it is ruled out an impact of current changes in the idiosyncratic error on future values of the union membership variable, as it would be if  $\text{union}_{it}$  was a lagged dependent variable.

Before describing when this assumption may be violated, it is useful to represent equation 3.16 in a path model (Figure 3.5, on the next page):

**Figure 3.5: Path model representing the effect of union membership on a particular attitude in differenced form**



Not surprisingly, assumption 3.17 is violated in two situations (represented by the two bold arrows in figure 3.5) similar to those described in the cross-sectional case in sub-section 3.2.1. Assumption 3.17 is violated if there are time-varying omitted variables that are correlated with the variation of the dependent variable and the variation in the union membership variable. For example, considering again job satisfaction as attitude, an increased education level accompanied by a change of the position occupied at the workplace may represent such an omitted variable. Occupying a new position at work can obviously influence job satisfaction and at the same time increase the chances of becoming a union member (because, as we have seen in the previous chapter, in Switzerland, a higher level of education implies a higher probability of being a union member). Reverse causality is also an issue. Following the previous example, a change in job satisfaction, as a consequence of the deterioration of working conditions, may lead an individual to become a union member, in the hope for improving his situation through the union bargaining activity. The solution to these two problems is again the use of an instrumental variable.

We have introduced panel data as a means to improve the analysis in a cross-sectional setting. We see that, however, the two issues that interfere with causal inference in the cross-sectional case



appear also in the longitudinal case. Therefore, is there a real gain for using panel data? Indeed, there is. Even though the union membership variable is still endogenous, having eliminated the fixed effects from the estimation represents a huge improvement in this regard. The correlation between the error term and union membership in the cross-sectional setting could be generated by any kind of variable influencing both the dependent variable and union membership. In equation 3.16, we have excluded a huge proportion of the variables that could potentially bias the estimation. More precisely, we have got rid of all time-invariant factors. Among these factors, we cannot find all the innate predispositions that can potentially be correlated with an attitude and union membership. Moreover, it is reasonable to think that the majority of individual predispositions, objective conditions,... that could be possibly seen as relevant omitted variables have a time-invariant nature. Most dimensions of an individual's life remain constant over time or do not change very frequently. Our concerns are now restricted solely on time-varying factors and these are much less numerous than the time-invariant ones. Also, we can suppose that individuals are not pre-programmed to experience some changes, especially if they are already adult wage-earners as in the population we examine here. If an individual shows a variation from one period to another, it is very likely that such variation is related to external, objective, observable events. Identifying such events is the key aspect to evaluate the endogeneity of a variable in an equation like 3.16. The sources of bias to control for are much less various. After having chosen an instrument, it is much easier to rule out its correlation with a restricted set of possibly relevant omitted time-varying factors.

### **3.3.2 FINDING A VALID INSTRUMENT**

In a panel data setting, what kind of parameters could represent good instruments for union membership as an explanatory variable of the attitudes we will analyze in the following chapters? For

each instrument, we should think about the possible direct correlation with each attitude considered. An instrument that works fine for a certain attitude is not necessarily valid for other types of attitudes. Although we give a more detailed account in the following chapters, we describe here the basic reasoning used to choose the instruments we use subsequently and motivate theoretically why they should be valid.

Finding a good instrument is not easy. The best strategy in our case is to think about the processes, the mechanisms that lead an individual to become a union member. As we already noted, union membership can be regarded as an aspect at the intersection of two life domains: the professional sphere and the social sphere.

Regarding the professional sphere, what are the reasons that lead an individual to become a union member? There are many possible explanations for such a choice: a change of job that leads to a workplace where a good proportion of individuals are members, a deterioration of the objective working conditions that leads the individual to see union membership as a possibility to defend his rights, increased contacts with coworkers already members, the recruitment activity of unions,... All these events seem more or less random and it is not easy to see how one of them could be used to find an instrument for union membership. The key idea here is that, although these events are random, they become more likely in certain settings. In particular, we can think that an individual has higher chances to become a union member if the geographic region or the working sector to which he belongs is characterized by an important union density.

The geographic region should somehow reflect the union traditions of individuals leaving closely to each other and having the chance to exert reciprocal influences. The question is: on which geographic level should we focus? The best choice is a geographic level that it is not too broad in order to allow some geographical traditions to matter. Also, it would be good if the geographic level reflected also a legislative one since union membership is usually linked to legislative practices making union membership more or

less favored (even though the freedom of union membership and non-membership is constitutionally guaranteed in Switzerland). Such a level in Switzerland can be represented by cantons, which are usually not too large entities, have a large legislative autonomy and present also strong unitary traditions.

Concerning the working sector, it makes sense to think that the economic sector (defined according to the NOGA classification in Switzerland, which is compatible with the European NACE classification (Swiss Federal Statistical Office 2014)) represents a very important determinant regarding the chances of becoming a union member. In fact, as described in chapter 2, the same unions are usually active in the same sectors across different cantons. The working sector to which one belongs should thus be correlated with the union recruitment activity for new members and also be related to specific common views regarding union membership.

Which kind of instruments should we use given the considerations of the last paragraphs? We could take the canton and the economic sector as instruments, but then we would still have doubts about a possible direct effect of the instrument on the different attitudes because each canton or sector may show particular attitudinal tendencies that distinguish it from others. Also, as discussed in the next sub-section, the strength of the correlation of these instruments with the union membership variable may also not be very high (indeed, our preliminary tests show that they would be quite weak instruments). Instead of taking these variables directly as they are, we decide to take the feature we are interested in, i.e. the union density by canton and by sector. The instruments are constructed as an aggregation of the data we have on union membership. This is a procedure known in the literature trying to estimate “peer effects” of an aggregated variable on the same variable at the individual level. As the literature on “peer effects” shows (Angrist and Pischke 2009), estimating the causal impact of a variable that is the aggregation of another one is a complicated enterprise. Here, however, we are not interested into estimating the causal impact of the aggregated union membership on the individual chances to become a union member. We only

want to make sure that the aggregated variable is correlated with the individual variable and rule out any direct correlation with the individual attitudes we take as dependent variables. In our setting, this strategy has the big advantage of giving us very strong instruments (as we discuss in the next sub-section). In order to increase the strength of the instruments even more, we also cross the cantonal and sectorial union densities with the individual occupation type (full-time or part-time) since we know that full-time working individuals have higher chances of union membership than individuals in other working situations. For each year taken into account in the panel data, our first instrument corresponds to the union density computed according to the occupation and the canton in which an individual lives (it would be better to use the canton in which the individual works, but we do not have information available on that. The residence canton can anyway be considered as a good proxy of it). For example, a particular value of the instrument is given by the union density in 1999 for full-time workers living in Zurich. The second is constructed the same way by replacing the residence canton with the economic sector NOGA in which an individual works. In the construction of both instruments, we use cross-sectional weights.

Regarding the social dimension of union membership, we can construct a valid instrument for union membership when considering job attitudes as dependent variables. Thinking of unions as being one of the many organizations to which an individual can belong, we can suppose that the more associations an individual is member of, the higher is the chance that unions could also be included among those associations. Using the variables available in the SHP about the membership in different types of associations or organizations (associations of parents, sports or leisure organizations, cultural associations, political parties, associations active for the protection of the environment, associations defending women rights and associations promoting tenants' rights), we construct a variable that indicates the number of different associations, except unions, to which an individual belongs. This number should be correlated with the union membership variable and

show no direct effect on job attitudes (as we will argue in chapter 4).

### 3.3.3 EVALUATING THE QUALITY OF AN INSTRUMENT

As it is the case with every instrument, the exogeneity assumption of the instruments we described is never formally testable. Moreover, even with an instrument that actually does not have any correlation with the error term, it happens that, due to sampling error, a correlation appears in finite sample data. We cannot exclude that our instruments also show some correlation with the error term. We can argue theoretically that we are pretty confident about the “almost exogeneity” of them, we will give some empirical evidence to support our reasoning in the next chapters, but our arguments are never going to be enough to completely close the door to potential critics. What we can do, on the other hand, is to try to study what would happen if our instruments showed indeed some correlation with the error term and understand to what extent the results of the IV estimation would be biased. Referring to the model in equation 3.16 in differenced form, it can be shown that the bias of an IV estimator is equal to (Wooldridge 2013:414):

$$plim\hat{\beta}_{IV} - \beta = \frac{corr(IV, \Delta\mu)}{corr(IV, \Delta\mu_{union})} \frac{\sigma_{\Delta\mu}}{\sigma_{\Delta\mu_{union}}} \quad (3.18)$$

where  $\sigma_{\Delta\mu} / \sigma_{\Delta\mu_{union}}$  are the population standard deviations of  $\Delta\mu$  and  $\Delta\mu_{union}$ . We see that the bias is large when the correlation between the instrument and the instrumented variable is small. This is the so called problem of “weak” instruments. Even if the instrument is not correlated with the error term in the population, the small correlation that appears necessarily due to sampling error is capable of severely biasing the whole estimation when the instrument is weakly correlated with the instrumented variable. As a rule of thumb, an instrument is said to be strong when the F-statistic in the first stage is higher than 10 (Stock and Watson 2010,

chapter 12). Our instruments are indeed very strong, giving a first stage F-statistic well above 10. With a strong instrument, we can even tolerate the presence of a small correlation with the error term since the strength of the instrument reduces the bias induced by it. Our preliminary tests also show that, for the two types of union density cited before, using them as instruments in their level form gives a higher correlation with the variation in the union membership status than in differenced form. This is one reason that justifies the use of our instruments in their non-differenced form.

Another one is related to the degree of “locality” of our instruments. Taking the union densities in their original level allows increasing the population of compliers, increasing the external validity of the conclusions drawn using these instruments. In fact, if we took them in their differenced form, we would have an instrument that would be correlated with the variation of the union membership status only for those individuals that experience a sudden important change from one year to another in the union density of their residence canton or the sector in which they work. This usually happens only when the individual changes residence canton or working sector. This would make the population of compliers limited to these individuals and the instruments would be very “local”. Taking the instruments in their original level gives the advantage of incorporating as compliers those that change canton or sector, but also those that do not. In fact, we can think that, even though the union density in a canton or in a sector does not change abruptly, a high proportion of union members makes more likely for an individual to become member sooner or later. Also, as we noted in chapter 2, a high unionization rate can remain constant over the years only if there are substantial new members capable of substituting those that retire and leave the “Member” status.

Regarding the instrument represented by the number of associations an individual is member of, the variable is taken in differenced form since the instrumented variable, union membership, is of the same type and is also in differenced form. In addition to

that, our tests show that the differenced variable provides a stronger instrument than the one in level form. This instrument is much more local than the other two, including as compliers only those that become members as a consequence of an increased social participation. It is still going to be a very useful instrument because, by having a different population of compliers than the union densities, it will allow us to test for the presence of “heterogeneous effects” between the two groups of compliers.

### 3.4 METHODOLOGY

After having presented the cornerstones of causal inference in the cross-sectional and longitudinal setting, in this section we illustrate the methodological approach we adopt in the following chapters in order to estimate the causal effect of union membership on various job, political and other-regarding attitudes. In the first sub-section, we describe an extension of the first-differencing transformation that is more adapted for the purposes of the analyses of this thesis. In the second one we define the population of interest and expose the four models the analyses of the next chapters are based on. We then motivate why we chose to treat as linear all relationships we examine. In the fourth and fifth section we get back to the “heterogeneous effects” bias described in sub-section 3.1.3 and show how, by re-estimating our models on different segments of the population of interest, we can examine its importance. In the sixth sub-section we explain why, contrary to what we did in chapter 2, we decided to not weight our data. In the seventh one we point out some statistical and interpretation issues we need to take into account in the causal analyses of the following chapters. Finally, we provide a recapitulation of the elements of this section and present the way we organized the information in the regression tables presented in section 8.3 of the appendix chapter. Since the discussion of these methodological elements is quite dense, it may be more judicious for the reader to read the recapitulative sub-section 3.4.8 first and then, if wished,

get back to the more detailed description of each element provided in the first seven sub-sections.

### 3.4.1 ADJUSTED DIFFERENCING PROCEDURE

As described in sub-section 3.3.1, for our purposes, the main advantage panel data offer over cross-sectional data is the possibility to get rid of the time-invariant part of the error term and therefore rule out the effect of an important source of selection bias. In the previous section, we introduced the first-differencing procedure. In the analyses of the following chapters we use an adjusted version of the first-differencing transformation that is more adapted for the estimation of the causal effect of union membership on the attitudes we consider. We rewrite equation 3.16 by substituting the first-differenced data with data differenced through this adjusted procedure:

$$\Delta_{adj} \mathbf{attitude}_{it} = \beta \Delta_{adj} \mathbf{union}_{it} + \Delta_{adj} \mathbf{controls}'_{it} \gamma + \Delta_{adj} \mu_{it},$$

*for i = 1, 2, ..., N and t = 2, ..., T* (3.19)

In the union membership variable, we code the “Non-member” status as 0 and the “Member” status as 1. For a generic observation  $x_{it}$ ,  $\Delta_{adj}$ . is then defined as follows:

$$\Delta_{adj} x_{it} \equiv \begin{cases} x_{it} - x_{i,t-1} & \text{if } \mathbf{union}_{it-1} = 0 \text{ and } \mathbf{union}_{it} = 0 \\ x_{it} - x_{i,t-1} & \text{if } \mathbf{union}_{it-1} = 0 \text{ and } \mathbf{union}_{it} = 1 \\ x_{it} - x_{i,t-p} & \text{if } \mathbf{union}_{it-p} = 0, \mathbf{union}_{it-(p-1)} = 1, \\ & \mathbf{union}_{it-(p-2)} = 1, \dots, \mathbf{union}_{it-1} = 1 \text{ and } \mathbf{union}_{it} = 1 \end{cases}$$

*for i = 1, 2, ..., N and t = 2, ..., T* (3.20)

This at first sight strange expression means that we first-difference an observation if it represents a year in which the individual is not a union member or a year in which he is a union member for the



first year. If the individual is a union member for the  $p$ -th consecutive year, we  $p$ -th difference the data (for example: if an individual is in the second consecutive year of union membership, we “second-difference” the observation with the observation of the last year in which he is not marked as a union member, i.e. two years before). In other words, we transform the data by differencing each observation with the observation of the last year in which the individual is marked as “Non-member”. Hence, we model variations with respect to the last year of non-membership. This strategy represents a refinement of the first-differencing procedure, which models the change between two consecutive years. Such a refinement is useful because first-differencing is not well suited to estimate the effect of a variable that depends on the duration of some of its modalities. In our case, we have reason to believe that the effect of becoming a union member may vary according to the duration of membership (cf. sub-section 3.4.5). In such a situation, first-differencing could only provide the mean effect of the first year of union membership (and that would be possible only after having set as missing data all observations that represent higher durations of membership). In our case, we would like to have an estimation procedure that gives the mean effect of all consecutive years of membership an individual experiences.

At this point, an example may be helpful to clarify this aspect:

***Table 3.1: Illustration of the advantages of the adjusted differencing transformation over first-differencing***

year	union	attitude	$\Delta$ union	$\Delta$ attitude	$\Delta_{adj}$ union	$\Delta_{adj}$ attitude
1	0	0				
2	0	0	0	0	0	0
3	1	1	1	1	1	1
4	1	2	0	1	1	2
OLS estimate	1.5		0.5		1.5	

Table 3.1 shows a fictitious dataset representing an individual followed during four years by reporting his union membership status and his score on a particular attitude in each year. The individual becomes a union member in the last two years. For simplicity, let us suppose that, in this particular case, we do not have any endogeneity issues and that the true causal effect of union membership on the attitude taken into account can be directly estimated from these observations. Intuitively, in such a case, what would be the average effect we would like our estimator to provide? The data show that the individual has a 0 score in the attitude during the two years before becoming a union member, 1 in the first year of union membership and 2 in the second year of union membership. Hence, in comparison with the pre-membership phase, union membership increases the attitude by 1 point in the first year of union membership and by 2 points in the second year of union membership. The mean effect of union membership we would like our estimator to give corresponds to the average effect of the two membership years, i.e.  $(1 + 2) / 2 = 1.5$ . Does an estimation based on first-differenced data yield this result? The third and fourth column give the first-differenced version of the observations and the last line shows that the estimated effect by applying OLS is only 0.5. Why does that happen? It happens because the estimation on first-differenced data does not take into account the additional effect of the second year of union membership. The attitudinal variation between the first and the second year of union membership is not attributed to union membership, but to other factors. On the contrary, if we difference the data with the adjusted procedure and run OLS on them, we obtain the true average causal effect of both membership years, i.e. 1.5.

In the example, since we assumed the absence of endogeneity issues, differencing the data was not even necessary and we could have got the right average effect of union membership even by applying OLS directly on the original data, using thus a pooled OLS estimator. Moreover, it could be shown that the estimation on first-differenced data would lead to an underestimation of the average effect of all years of union membership if the effect increased in the years following the first year of membership (as it

is in our example). Conversely, first-differencing would lead to overestimate it if the effect showed a decreasing trend after first year of union membership (in our example, this would happen with an attitudinal level of 0 in the second year of membership). If the effect was not varying after the first year of membership (in our example, if the attitudinal level was 1 even in the second year of membership), applying OLS on first-differenced data or on our adjusted differencing procedure would lead to the same estimated effect (in our example, we would get an effect of 1 with both estimators). Hence, the estimation on first-differenced data does not lead to the desired mean effect of all consecutive years of union membership whenever this effect varies with the duration of membership. The adjusted differencing procedure corrects for this inconvenience by modifying first-differencing in an appropriate way.

It must be said that, in most cases, our preliminary analyses show that the estimations through first-differencing or through the adjusted differencing procedure do not lead to important differences. This happens either because the effect does not dramatically change with the duration of membership or because the individuals that show episodes of membership longer than one year are not the majority (they either quit unions after a single year of membership or they drop out of the sample) (cf. table 8.1, section 8.1 of the appendix chapter). However, for certain attitudes, where the effect varies importantly by duration of membership, the difference between the estimates of the two procedures is substantial. Moreover, as we will describe in sub-section 3.4.5, the adjusted procedure is very well suited to distinguish the effect by particular durations of membership (we will estimate separately the effect of the first, second and third year or more of union membership).

The reader may also wonder why we do not use other well-known estimation procedures that may be better suited than first-differencing to take into account an effect that varies with the duration of one of the modalities of the independent variable of interest. The within-transformation used in a canonical fixed effects model or a model with leads and lags may seem good alternatives.

The main reason that justifies the use of this adjusted version of first-differencing is related to the fact that the first-differences estimator (and thus also our adjusted version of it) is characterized by a much weaker exogeneity assumption than these alternative estimators (Wooldridge 2010, chapter 10). Since our goal is to estimate the causal effect of union membership on various attitudes, this is an aspect to take primarily into account. In fact, for our adjusted version of first-differencing, the adjusted version of the exogeneity assumption stated in 3.17 for first-differences is given by:

$$\text{cov}(\Delta_{adj}\mathbf{union}_{ij}, \Delta_{adj}\mu_{it}) = 0, \quad \text{for all } i, j, t \quad (3.21)$$

Furthermore, as we pointed out in the previous section, our estimation procedure implies the use of an instrumental variable estimator. Wooldridge (2010, chapter 11) shows that the construction of an instrumental variable estimator is much more flexible on differenced data than, for example, on the time-demeaned data used in canonical fixed effects models. In our case, in particular, on time-demeaned data, we would not be allowed to use an instrument in level form as the one exposed in sub-section 3.3.2.

On a third level, we can also say that using a differencing procedure in order to get rid of the time-invariant effects makes the estimation more intuitive than, for example, the within-transformation in the canonical fixed effects model. We model the variation with respect to the last year of non-membership in the attitudinal variable with the same variation in the union membership variable. We link a change to another change by using as reference point the most recent year in which the individual is observed in the “non-treatment” status. This intuitive interpretation will be extremely useful when we will evaluate the validity of an instrument on the basis of theoretical arguments.

The only inconvenient of the adjusted differencing procedure is that it gives an estimator centered around a single variable, union membership in this case, and, in order to ensure the consistent estimation of the effect of the remaining variables, one needs to assume that their effect does not vary with their duration. As we will see, this is a plausible assumption for the control variables employed in the regression models of the next chapters. Anyway, even if it was not, one has always to be aware that every model is a simplified version of the reality and, in this case, since our interest is focused on a single variable, it is acceptable to model in greater detail the effect of that particular variable.

### **3.4.2 POPULATION OF INTEREST AND MODEL SPECIFICATION**

The wage-earners living in Switzerland between 1999 and 2011 represent the population of interest of our analyses. Although a small proportion of individuals with other profiles are affiliated among unions, a wage-earner represents the ideal type of the potential union member. Unions exist to defend the interests of wage-earners and the attitudinal effect of union membership, if any, should be primarily analyzed on them. Using the SHP data between 1999 and 2011 with 2010 as a year we do not have data on, this characterization of the population of interest leaves us with 12'923 distinct individuals and 44'536 years of data (cf. table 8.1, section 8.1 of the appendix chapter).

Contrary to most of the exiting literature, we do not restrict further the profile of the wage-earners taken into account by type of occupation (full-time workers are frequently those on which the analyses are focused on) or by age. Since part-time jobs are becoming increasingly frequent in the last decades, it is more than pertinent to include them in the analysis. A similar argument can be cited for old workers. Nevertheless, as exposed in sub-section 3.4.4, we also estimate separately the effect by type of occupation and age.

In order to estimate the causal effect of union membership on the attitudes we take into account, we use four types of models. Each one gives a specific perspective on the relationship and, most importantly, the comparison between them allows seeing which type of heterogeneity between union members and non-members can bias the estimation. Even though only the first two are indeed nested, it is possible to see the four models as a sequence of models in which we control for the effect of an increasingly larger number of possible sources of bias. In all four models, we use cluster robust standard errors that are correct for arbitrary forms of heteroskedasticity and serial correlation within the observations of each individual. This type of standard errors have been shown to be particularly adapted for panel datasets with a large number of individuals followed on a relatively limited number of periods (Petersen 2009), as it is in our case. Such a strategy has the advantage of allowing us to use the OLS estimator without worrying about the distribution of the error term. Obviously, in the presence of heteroskedasticity and serial correlation between the error terms, OLS is not the most efficient estimator, but it is still consistent. Since our goal is the estimation of a causal effect, consistency is the main aspect we are concerned with (cf. sub-section 7.2.2).

The purpose of the first two types of models is to imitate the cross-sectional analyses most of the existing literature is based on. We run a pooled OLS model on our original data, ignoring thus their panel structure. In other words, this means that we apply the OLS estimator on the following equation:

$$\begin{aligned} \text{attitude}_{it} &= \alpha + \beta \text{union}_{it} + \text{controls}'_{it} \gamma + \omega_{it}, \\ \text{for } i &= 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T \end{aligned} \quad (3.22)$$

In the first model, the “control” vector is the null vector. Hence, the model is given by a pooled OLS estimation of the relationship between union membership and the attitude without control var-

iables. It gives a purely descriptive account of the association between union membership and the dependent variable by estimating the mean attitudinal difference between union members and non-members. In other words, it represents the regression equivalent of equation 3.4 in a panel data setting by giving the mean observed attitudinal difference between union members and non-members.

The second model is again a pooled OLS model, but this time by including some basic control variables used in most past cross-sectional studies. These are: sex, age, education, nationality, canton of residence (since we do not have any information on the workplace canton), economic sector (given by the NOGA classification in Switzerland), size of the firm and a set of time dummies capturing the main trends over the period. In table 8.1, section 8.1 of the appendix chapter, we provide some descriptive statistics of these variables in our sample.

The third and fourth models exploit the longitudinal nature of our data by applying OLS and 2SLS procedures on data differenced according to the adjusted procedure exposed in the previous sub-section. Since with the estimation on differenced data we model a change in the dependent variable through changes in the independent ones, before describing these models, we expose some further restrictions it is needed to impose on the differenced observations.

First, we limit our attention to individuals that do not change job and/or employer and/or type of occupation (full- or part-time) during the spell of years that is differenced. For example, we do not include a first-differenced observation if the wage-earner experiences a change in one of these three aspects between year  $t-1$  and year  $t$ . For a second-differenced observation, we do not include it if the wage-earner experiences a change in one of these three aspects between  $t-2$  and  $t$  (and so on...). This is needed since it would be difficult to disentangle the effect of these changes from the one of union membership. As pointed out in the existing literature (Powdthavee 2011), such changes are correlated with

both the union membership status and the attitudes we consider. It is not possible to include them as controls since they are endogenous and our instruments also show a correlation with them that would bias the estimation. By applying this restriction, we have to be aware that the effect we estimate will not be generalizable to those individuals that become members because of a change in occupation, employer or type of job.

Second, if we look at the definition of the adjusted differencing procedure in equation 3.20, we can see that two other types of differenced observations are coded as missing. Our differenced data do not include differenced observations originated by a transition from the “Member” to the “Non-member” status. In particular, in first-differenced observations, we do not consider the change between the last year of union membership and the year right after it. This restriction is needed since taking into account such a transition would imply that we consider the transition from “Member” to “Non-member” as having the inverse effect of the transition from “Member” to “Non-member”. As we will show in the next chapters, this is not the case since union membership has usually an attitudinal effect that lasts even after an individual left a union. It does not make sense to consider as a true “Non-member” an individual that left the “Member” status in the previous year and that therefore still bears the effect of having been a recent member. Moreover, for individuals already members during their first participation year, since we do not have a measure of the attitudinal variable before union membership, our adjusted differencing procedure implies that we exploit in the analysis only the years after the individual has left at least once the “Member” status.

Finally, we apply some restrictions on the individuals showing gap periods in their participation (they interrupt their participation for a year or more and then participate again successively). For such individuals, if the membership status is the same in the last year before the gap and the first year after the gap, we consider that the union membership status is remained the same during the



gap. If the individual is marked as “Member” in the last year before the gap and as “Non-member” after the gap, we consider all the gap years as “Non-member” years. If the individual is a “Non-member” before the gap and a “Member” after the gap, we take into account only the data from the third year after the gap and only if the individual remains member for more than two years (this is needed because some of the longitudinal analysis we present are based on the distinction between different durations of union membership (cf. sub-section 3.4.5)). Taken together, these restrictions leave us with 5’961 distinct individuals and 18’566 years of data in differenced form (cf. table 8.1, section 8.1 of the appendix chapter).

Getting back to the last two models, the first one is represented by the application of the OLS estimator on the differenced data in equation 3.19. The control variables retained in this model are: age, education, nationality and a set of time dummies. The NOGA sector and the size of the firm are excluded since, by considering only individuals that do not change job and/or employer during the sequence within the differenced period, these variables do not show any within-variation. The canton of residence is also excluded since, by analyzing only individuals for which job and/or employer do not change, we know that the workplace canton does not change and we thus do not care if the canton of residence changes.

Such an estimation procedure exploits the panel structure of our data by applying OLS on data where all time-invariant variables that could possibly bias the estimation have been excluded. In particular, by comparing the results of this model with those of the two pooled OLS models, we can see to what extent the unobserved heterogeneity can bias our estimation and to what extent our analyses provide an improvement over past research.

The only remaining source of bias is represented by time-varying reverse causality or time-varying omitted variables. In order to also control for them, we implement an instrumental variable estimator (using a 2SLS procedure) on the differenced equation

3.19. Comparing the results of such an estimator with those of the OLS estimator on differenced data allows verifying to what extent time-varying endogeneity represents an issue to consider. More importantly, this last procedure gives us the possibility to actually estimate the "true" causal effect of union membership on the dependent variables we take into account. We described the instruments we use in the following chapters in sub-section 3.3.2. The control variables used in these models are the same as those of the previous model.

Summing up, we employ four types of estimation procedures that allow us to show how passing from a purely descriptive analysis to a formal causal analysis of the link between union membership and the attitudes we consider can change the results we obtain. The first model gives a purely descriptive account of the relationship. The pooled OLS estimation allows controlling for observed variables that may lead to a selection bias. With the OLS models on differenced data, we are able to additionally exclude the bias coming from all time-invariant unobserved factors. Finally, the instrumental variable estimator on differenced data leads to control for the last source of bias, time-varying reverse causality and time-varying omitted variables.

### **3.4.3 DEALING LINEARLY WITH NON-LINEARITY**

The models described in the previous sub-section imply the use of an OLS estimator independently of the attitude considered as dependent variable. The reader may wonder whether all of our dependent variables are expressed in a numeric scale and, if not, whether we apply some other estimation procedures to account for this fact. As we will see in the next chapters, most of the attitudes we consider are expressed on a 0-10 scale, some of them will be coded as 0-1 binary variables and others, in the sixth chapter, are expressed on an ordinal 1-3 scale. In such cases, even for the variables expressed on a 0-10 scale (considered representing a cardinal rather than a numeric scale), the cross-sectional literature is usually based on estimation procedures (logit, probit, ordered logit

or ordered probit) that take into account the intrinsic non-linear nature of the functional form representing the relationship between union membership and such a dependent variable. Moreover, the union membership variable in differenced form is also a binary variable, since, following the definition of our adjusted differencing procedure, we only consider differences with transitions from “Non-member” to “Non-member” (giving a value of 0 in differenced data) or from “Non-member” to “Member” (giving a value of 1 in differenced data). In the fourth model, this binary variable appears as a dependent variable in the first stage of a 2SLS procedure in which it would be useful to be able to apply some adjustments that take into account the intrinsic non-linearity modeled in such a first stage. Hence, do we replace the OLS estimators with other ones that represent more efficient alternatives and that allow taking better into account the non-numeric form of such dependent variables? In this work, we decided not to. In other words, we apply everywhere a linear regression through an OLS estimator even though we are dealing with dependent variables that intrinsically imply the presence of an underlying non-linear functional form.

This choice is motivated by the complications that non-linear estimation procedures present in a panel data setting. In particular, the implementation of such estimators working with panel data would force us to use a conditional likelihood function instead of the usual maximum likelihood procedure. The statistical assumptions needed to use a conditional likelihood function are quite restrictive. Also, using a non-linear model in the first-stage without adapting the second stage would lead us into the so called problem of a “forbidden regression” (Wooldridge 2010:267–268). In order to use a 2-stage IV estimator, it would be thus necessary to implement additional adjustments that would further entangle the estimation. Similar problems arise when trying to use estimation procedures that take into account the qualitative nature of some of the attitudes that appear as dependent variables.

To avoid such entanglements, we chose to deal linearly with non-linearity. In other words, we apply the usual estimators without worrying about the non-linear nature of the dependent variables appearing in an OLS estimation or in the first or in the second stage in a 2SLS estimation. This is called a “linear probability model” approach. As Angrist and Pischke (2009) point out, even though less efficient than a non-linear model, an OLS estimation still gives consistent estimates (for both OLS and 2SLS). Even though the underlying functional form with a non-numeric dependent variable (union membership in the first stage of the 2SLS procedure and some attitudes used as dependent variables) is not linear, a linear regression still gives the best (in the sense of the minimization of the sum of squared residuals) linear approximation of it. In a situation like ours, the gain in efficiency that non-linear models would provide does not compensate the complications and the degree of uncertainty (the assumptions in a conditional likelihood setting are rarely satisfied, the adjustments needed in a 2-stage IV estimation are not standardized,...) that would create. Regarding the computation of test statistics and standard errors, as we already said, we use cluster robust procedures that allow accounting for arbitrary forms of heteroskedasticity and serial correlation within the observations of each individual.

### **3.4.4 EXTERNAL VALIDITY: THE COMPOSITION ISSUE**

As described above, our analysis is limited to the wage-earners living in Switzerland between 1999 and 2011. When examining data in differenced form, we apply some additional restrictions. Considering our population of interest, what is the external validity of our results? Is it possible to say that, on average, union membership has a certain impact on a certain type of attitude? If we could repeat the analyses for the Swiss case in another time-window, would we get the same results? Under which conditions, can we expect that similar results could be obtained in other countries?

In order to answer these questions, we need to refer to the discussion presented in sub-section 3.1.3. We showed that, following the counterfactual definition of causality, the causal effect of union membership is represented by the treatment effect on the “average” individual of the population under examination. This average treatment effect being generally estimable only through experimental data, we showed that two types of bias may appear when trying to estimate the causal effect of union membership with observational data. The first bias, called “selection bias”, appears in the regression setting as a problem related to the endogenous nature of the union membership variable. Through an appropriate choice of instrumental variables (if we take aside the problem of the “locality” induced by the instrument and consider a full population of compliers), we are capable of solving it and of estimating consistently the treatment effect on the treated, i.e. in our case the causal impact of union membership on the individuals that become union members (in line with the restrictions described above) between 1999 and 2011. As long as we do not suppose that the causal effect of union membership is homogeneous, independent from the profile of the individual becoming a union member, we have to face a second source of bias coming from the fact that the treatment effect on the treated is not generalizable on those belonging to the control group (the wage-earners that do not show any episodes of union membership between 1999 and 2011). We could say that this is not such a big deal. After all, what is the use of knowing what impact union membership would have on an individual that is not observed as such in the real world? Estimating the average treatment effect on the treated should be enough because those are the only wage-earners that actually become members.

The argument of the last paragraph is correct, but we must also be aware of the fact that, if we indeed face an issue of heterogeneous effects, the average treatment effect on the treated depends on the composition of the individuals we observe in the treatment status. In other words, the average effect of union membership depends directly on the average profile of union members we take into account. For example, if we suppose that the impact of union

membership on job satisfaction differs in the public and in the private sector by being positive in the former and negative in the latter, the average union membership effect is going to depend directly on the proportion of union membership episodes coming from the two sectors. If between 1999 and 2011 new union members worked essentially in the public sector, the average effect of union membership would be positive. Conversely, if between 1999 and 2011 new union members came mainly from the private sector, the average effect of union membership would be negative. This issue becomes obvious by doing an analysis on smaller time windows (1999-2000, 2001-2002,...) that show that the impact of union membership can vary importantly depending on the time window since the average profile of the individuals that become union members in each window can differ greatly. Therefore, concerning the external validity of our results, these are generalizable to the individuals that became union members in Switzerland between 1999 and 2011 in line with the restrictions cited in sub-section 3.4.2. In other words, since we have reason to believe that the attitudinal effect of union membership is not homogeneous (cf. sub-section 3.1.3), the results are strongly dependent on the average profile of the individuals we take into account.

In order to examine the importance of the composition issue, in addition to a main effect on the individuals becoming union members between 2000 and 2011, we provide a separate analysis by re-estimating the four models described in sub-section 3.4.2 on different segments of the population of wage-earners. These sub-populations are identified through the categories of the variables analyzed in the cross-sectional analysis of sub-section 2.3.2. These are the type of occupation, sex, age, education, nationality, linguistic region, private/public sector, NOGA sector and company size. In addition to these, we also distinguish the effect by period of membership (1999-2004, 2005-2011), by type of membership (active, passive) and, as exposed in the next sub-section, by episode (first, second episode or higher) and by duration of membership (first year, second year, third year or more). Descriptive statistics on the number of individuals composing each of these sub-populations in the analysis based on cross-sectional and on differenced

data are given in table 8.1, section 8.1 of the appendix chapter. The descriptive statistics are organized on three levels. The table is first of all split by cross-sectional and differenced observations. For each one of the two types of observations, we provide the number of individuals always considered as non-members or that are marked at least once as members (in the differenced data case, the “Member” label represents a transition from “Non-member” to “Member”). Finally, for each of these two categories, we distinguish the number of distinct individuals and the number of years of data employed in the analyses. By summing up the numbers in the categories of the variables taken into account, the total number of individuals and of years of data do not always coincide for different variables because of a different number of missing values in the categories of different variables.

The approach outlined in the previous paragraph is equivalent to the estimation of models with an interaction term between union membership and the variables identifying these sub-populations. The only difference is that, in our case, we estimate a separate model for each sub-population instead of choosing a reference category and giving the differential of the effect in the other ones with respect to the reference category. With this strategy, we can hope that the causal effect of union membership becomes more homogeneous within these segments. Moreover, this is going to be not only informative on the heterogeneity of the effect, but, as we will show in the interpretations of the following chapters, also to get an idea of the most plausible causal mechanisms explaining the impact we observe in the whole population of union members.

Returning to the questions stated at the beginning of this subsection, if we could redo the same analysis in another historic period in Switzerland, the type of results we would get would again depend on the average profile of the individuals that became members during that other period. Also, we should also suppose that the internal union dynamics leading to the impact are the same as those we analyze between 1999 and 2011. If the compo-

sition of the members and the underlying internal dynamics leading to the causal effect were unchanged, we should get the same results.

It is also useful to note that taking into account the composition issue becomes even more important if the analysis is conducted in a cross-sectional setting, based on the data of a single year. A researcher may produce the same analysis for two different years and get different results only because the composition of the union members from one year to the other has changed. The same problem arises when trying to understand whether the same results could be found in different countries. If we suppose that the same causal dynamics can be found across countries, in order to compare the results, we have to check that the composition of union members is more or less the same. Differences between countries could be explained through the different average profile of union members. Most of the previous literature is based on cross-sectional studies on countries other than Switzerland and we must be aware of that fact when interpreting them. Almost none of these articles pays attention to the composition issue.

### **3.4.5 TAKING INTO ACCOUNT THE LONGITUDINAL DIMENSION: THE COMPOSITION ISSUE FROM ANOTHER PERSPECTIVE**

In addition to distinguishing the effect on different sub-populations, our regression models also differentiate the impact of union membership according to the episode and to the duration of union membership. An individual may experience more than one transition from “Non-member” to “Member” during his participation in the SHP. We distinguish between the effect of the years of membership belonging to the first observed episode of membership and the impact of the second episode or higher of membership. However, we have to be aware of the fact that we cannot exclude that the participants experienced past union membership episodes before their participation in the SHP. In fact, the SHP



data give only information about the membership in the current year and not about potential past memberships. The distinction by episode of membership is thus to be understood as an analysis of the “observed episodes during the participation in the SHP”. Moreover, we estimate separately the impact for the first, the second and the third year or more of membership. In the analyses with differenced data, this is only possible by exploiting the adjusted differencing procedure we adopt (with first-differencing, we would not be able to estimate the mean effect of years of membership after the first one). Distinguishing the effect by these two longitudinal variables is motivated by the fact that previous research (Artz 2010; Gomez and Gunderson 2004; Powdthavee 2011), even though only at a descriptive level and only for job attitudes, shows that the attitudinal effect of union membership is highly dependent on the past union experience and on the duration of union membership. We will give more detailed arguments on the importance of taking into account such longitudinal variations for each group of attitudes we consider. Moreover, as we will show, taking into account this longitudinal dimension will reveal itself crucial to make some inference about the causal mechanisms explaining the link between union membership and each attitude.

The need to distinguish the effect by these two longitudinal dimensions can be seen as motivated again by a composition issue. Assuming the effect varies indeed by duration, without distinguishing the effect by duration of membership, the average impact we would estimate would depend on the mean membership duration of the individuals we take into account. The panel structure of the data allows differentiating the impact of different durations of membership. The same analysis is rarely possible in a cross-sectional setting. In order to distinguish the impact of different union membership durations with cross-sectional data, one should dispose of explicit information on the duration of membership for each individual in the year the survey is conducted. The few cross-sectional studies that tackle the problem of the endogenous nature of union membership through an IV estimator (Bender and Sloane 1998; Borjas 1979; Brochu and Morin 2012; Bryson et al. 2004) do not take into account the heterogeneous effect according

to the duration of membership. This creates a potential composition issue since the results obtained for different countries could differ only because the mean membership durations between the countries differ, even though the same underlying causal processes are in place. For example, the descriptive analyses of Artz (2010) and Powdthavee (2011) show that the first year of union membership is accompanied by an increase in job satisfaction and a continuous decline in the following years, while the causal analysis of Bryson et al. (2004) shows that union membership has no significant causal impact on job satisfaction. If the results of Artz and Powdthavee were confirmed in a causal analysis (as we will do in the fourth chapter) and if we could repeat the analysis of Bryson et al. in two countries, one with a low mean membership duration and one with a high mean membership duration, we would estimate a positive impact in the first one and a negative effect in the second one, even though the underlying causal process is the same. A similar problem may arise when reproducing the same analysis on the same country, but for two points in time with different mean membership durations. Panel data offer a unique possibility to disentangle the impact for different episodes and durations of membership.

### **3.4.6 WEIGHTING AND REPRESENTATIVITY**

In the descriptive analyses of the previous chapter, we used the weights provided by the SHP in order to ensure the representativity of our results. Should we also weight the analyses based on the four regression models described above? In particular, as we described, our panel data are unbalanced and we need to consider the problem related to non-random attrition. Contrary to the previous chapter, the analyses of the following ones are not weighted. Four main reasons motivate this choice.

First, a sensitivity analysis shows that the results we obtain with and without the use of the longitudinal weights provided by the SHP are very similar. DuMouchel and Duncan (1983) argue that the absence of a difference between weighted and non-weighted

results provides indeed a solid evidence of the absence of a bias in the non-weighted analysis.

Second, with the exception of the first model (without control variables), the parameters used to stratify and to weight our data (region, sex, age and nationality) (Voorpostel et al. 2014) are controlled for in our models. If controlling for such background characteristics captures the selectivity of participation, participants and non-participants would not differ systematically after including such variables in the models (Andreß, Golsch, and Schmidt 2013).

A third aspect to consider is that, for some of the variables we take into account in the following chapters, the use of the longitudinal weights provided by the SHP does not correct for the attrition bias in some years (Lipps 2007; Voorpostel 2009, 2010; Weaver 2010). If the exogeneity assumption holds, using the weights may even be deleterious, leading to the formation of a bias (even though, as we said, their use would not change the conclusions we draw from our analyses).

A final motivation that limits the utility of the weights in our analyses is the fact that, as described in the previous two sub-sections, besides estimating the effect of union membership on the whole population of interest, we also analyze the impact on different sub-populations of wage-earners. In these sub-populations, the homogeneity between individuals is higher than in the whole population and the differential between respondents and non-respondents should be lower. Moreover, in the following chapters, we will show that different sub-populations differ systematically in the type of effect we observe (in particular, the effect is much more pronounced on some of them than on others) for almost all attitudes we analyze. If there was an attrition problem inducing a self-selection issue correlated with the dependent variable, we should not expect to see such a regular pattern across different segments of the population.

### 3.4.7 STATISTICAL AND INTERPRETATION ISSUES

Before recapitulating the estimation strategy outlined in the previous sub-sections, it is useful to give a few words on some aspects to consider when interpreting the results of the causal analyses of the following chapters.

#### **A Small Proportion of Explained Variance and Picking the Right Control Variables**

As the tables in section 8.3 of the appendix chapter show, our estimated models usually account for a rather small proportion of explained sample variance. The adjusted  $R^2$  of the estimated models is usually below the 10% level in all attitudes we consider. The models on differenced data are even worse in this respect than the two pooled OLS models since they account only for the within-variation in the sample (in some cases, especially in the 2SLS models, the adjusted  $R^2$  is not even reported because it takes a negative value). This small explained variance is a direct consequence of the nature of the dependent variables we consider. In fact, the variability of an attitude across individuals is determined by a variety of biological, psychological, life-course, objective,... factors that are difficult to take into account in a regression model. This would represent a worrisome aspect if we wanted to use our results for prediction purposes. However, since our only goal is the estimation of a *ceteris paribus* relationship between union membership and the attitudes we consider, a small explained sample variance does not represent in itself an important element threatening the validity of our conclusions. Since the regression models we use to estimate the causal effect of union membership on a variety of attitudes are based on an instrumental variable estimator, the inclusion of additional control variables should not influence the coefficient representing the causal relationship under examination (as long as the correlation between the instrument and the error term is indeed absent). Their only impact concerns the efficiency of the estimator, allowing shrinking the residual variance and thus

reducing the standard error and the p-value of the coefficient of union membership.

On the other hand, however, one could argue that, especially with the efficiency issues that arise with an instrumental variable estimator, the inclusion of additional control variables may be very useful. Adding further control variables may contribute to improve the precision of our estimates. In our analyses, we have explicitly chosen to restrict our control variables to time dummies and some basic socio-demographic and job-related elements because of three main reasons. First, by implementing an analysis on a large number of dependent variables, we needed to standardize our analyses in order to be able to compare the results between different types of attitudes. Such variables are also those usually employed in the existing literature.

Second, since our primary goal is the estimation of the attitudinal effect of union membership, we have always paid attention to include variables that can be considered as truly exogenous. These control variables have to be exogenous since it can be shown that the inclusion of an endogenous variable in a regression model can lead to the bias of the estimates of the remaining variables as well. The list of variables we employ in our models clearly do not show this kind of problem when we consider an attitude as dependent variable.

Regarding the third reason, it is also important that the control variables do not potentially intervene as mediators in the relationship between union membership and the attitudes we consider. For example, when estimating the impact on the satisfaction with working conditions in the next chapter, the inclusion of some control variables capturing some dimensions of the objective working conditions would importantly decrease the residual variance and increase the efficiency of our estimators. This strategy, followed sometimes in previous literature, would lead us to mask a part of the effect under examination since, as we will show, one of the main channels through which union membership acts on the sat-

isfaction with working conditions is an improvement of the objective work situation. A similar reasoning can be applied to possible mediator variables for the other attitudes we consider.

## **A Composition Issue of Higher Order**

In sub-sections 3.4.4 and 3.4.5, we described the usefulness of estimating the attitudinal effect of union membership on different sub-populations in order to take into account the potential heterogeneity of it according to the profile of union members and to the particular type of union dynamics that may arise in different sectors. This strategy is certainly useful to try to homogenize the effect of union membership within smaller segments of the population including individuals that are more similar to each other than those composing the overall population of union members. However, we can never be completely sure that our variables identify the right level of analysis in which the causal impact of union membership becomes truly homogeneous, i.e. where differences between individuals can be considered as simple random variations. In order to identify them, it may be necessary to use interactions of higher order (studying for example the effect on highly educated women). Such an analysis is not possible with the sample size limitations of our data, but it is good to be aware of this fact. Also, it is possible that the variables that define the segments of the population within which the effect union membership would become homogeneous are unobserved ones, such as some innate predispositions.

Nevertheless, when we interpret the difference of the effect between some sub-populations, we will sometimes suppose that its appearance may be related to a composition issue of higher order rather than only to the distinctive features of the sub-populations. For example, we will show that the NOGA sector “Finance and other services” shows quite often an attitudinal effect of union membership that clearly distinguish it from the others ones. In the interpretation of the results, we will suppose that the effect

in the “Finance and other sector” may be related to different union dynamics than those appearing in other sectors, but also to the particular profile of the individuals working in such sector, being in most cases more educated and belonging more often to high-income social classes than the average wage-earner. Likewise, a difference in the impact between Swiss and foreign union members may not only be related to the intrinsic effect of citizenship, but also to the fact that foreigners, on average, are less educated and work in more precarious working conditions than Swiss wage-earners.

### **LATE and the Comparison between OLS and 2SLS Estimates**

Thinking more specifically about the results obtained through the use of instrumental variables, we also need to be aware of the fact that the comparison with those obtained through OLS may not be always pertinent. In fact, as we discussed in sub-section 3.2.3, a valid IV estimator allows determining the treatment effect on a specific population of compliers and not on all individuals receiving the treatment under examination (represented by the fact of becoming a union member in our case), as it is done without the use of instrumental variables. In other words, IV estimators estimate only local average treatment effects (LATE) instead of average treatment effects (ATE). In our case, we chose two instruments that should be “broad enough” in order to not be too much concerned with the problem. However, we must be aware that the population of compliers is always unknown and that the level of comparability between IV and non-IV estimators is never completely testable (even though, as mentioned in sub-section 3.2.3, some procedures allowing characterizing at least some features of the population of compliers exist).

## **Granularity of the Data**

A final issue to be aware of is related to the time granularity of the information we dispose. We know that the repeated interviews with an individual take place at a distance of one year of another. In each year, we are told if the individual is member or not of a union at the time of the interview, but we do not know exactly when he became a member. In the case of what we consider a one year duration of membership, we have to be aware that the actual duration of membership is between one year and a day before the interview. If we suppose that individuals become members more or less homogeneously during the 12 months of the year, the mean membership duration of what we consider the first year of union membership would correspond to six months. For some individuals, however, it may be much lower. In such cases, the individuals may not yet have had the time to undergo the effect related to the fact of becoming a union member. Likewise, for what we consider the second year of union membership, we have to know that the mean duration of membership should correspond to one year and six months, with some individuals being members during 24 months and others only during 13 months. The same discourse applies to what we consider durations of union membership of three years or higher.

### **3.4.8 RECAPITULATION AND PRESENTATION OF THE REGRESSION TABLES**

In the first sub-section, since we suspect that the effect of union membership may vary with the duration of membership, we exposed the usefulness of an adjusted version of the first-differencing transformation in order to be able to get rid of all time-invariant heterogeneity between union members and non-members and at the same time to estimate the mean effect of all consecutive membership years the wage-earners under examination experience. In the second sub-section we described more in detail the four regression models the analyses of the following chapters are



based on (pooled OLS without control variables, pooled OLS with control variables, OLS on differenced data with control variables, 2SLS on differenced data with control variables). Since each successive model accounts for a higher set of potential sources of bias, the comparison between the estimates given in each model allows observing what type of selection effects, if any, affect the relationship between union membership and the attitudes we consider. The model based on the use of an instrumental variable is the one in which all possible sources of bias are controlled for. Therefore, it is the one giving the “true” causal effect (in reality, in the analyses of chapters 5 and 6, we will restrict ourselves to the third model since, as we will show, union membership does not present a problem of time-varying endogeneity when the dependent variable is a political or an other-regarding attitude).

In order not to be forced to deal with the issues arising in the implementation of non-linear estimation procedures in a panel data setting, all models are estimated by using the OLS estimator and by adopting cluster robust standard errors that provide correct standard errors with arbitrary forms of heteroskedasticity and serial correlation within the observations of each individual. As we mentioned earlier in this chapter, since we believe that the effect of union membership on job satisfaction may be heterogeneous across different segments of the population of interest (cf. sub-sections 3.1.3), in each of the four models we provide an analysis of the main effect, but also of the effect in different sub-populations. We distinguish the effect by episode of membership (first, second or higher), by duration of membership (first year, second year, third year or more), by period of membership (1999-2004, 2005-2011), by type of membership (active, passive), by type of occupation (full-time, part-time), by sex (man, woman), by age (16-30 years, 31-50 years, 51 years or more), by education (compulsory education or less, secondary education, tertiary education), by nationality (Swiss, foreign), by linguistic region (German, French or Italian), by sector (private, public), by NOGA sector (Primary, manufacturing and construction sector; Basic services; Finance and other services; Public services) and by company size (small firms and large firms). This analysis, which is equivalent to

an analysis of interaction effects (with the difference that here we estimate separately a model for each category of the interaction variable), will also be crucial to understand what kind of processes explain the effect of union membership, if any, on the dependent variables. Finally, we motivated why we chose to not use the sample weights provided by the SHP in the estimation and pointed out some statistical and interpretation issues to consider when analyzing and comparing the regression results.

The results of the regression models are presented in the tables of section 8.3, in the appendix chapter. Each table gives the results for a single attitude among those we consider. As outlined above, we provide an estimation of the main effect and re-estimate the same models on different sub-populations in order to check for the presence of a heterogeneous effect of union membership. The “estimate” for each sub-population represents thus the estimated causal effect of union membership on the attitude analyzed in each model. We do not provide the coefficients of the control variables because they are not of primary interest in our analyses and also because of parsimony motivations in the presentation of the regression tables. Three rows of information are given each time. In the first row we give the estimate (with stars describing its level of significance) and its standard error. The second line provides some indications about the overall fit of the model giving the adjusted  $R^2$  of the model and the p-value from the F-test (for the three OLS models) or the  $X^2$ -test (for the 2SLS model) describing the explanatory gain given by the model in comparison with the null model without covariates. The third row indicates the number of distinct individuals and the number of observations (individual-years) used in each model.

## 4. JOB ATTITUDES

The fourth chapter is dedicated to the analysis of the causal impact of union membership on four dimensions of job satisfaction. Besides giving useful insights into the internal dynamics of trade unions, the job satisfaction of union members represents a key aspect to take into account when analyzing the broad functioning of the labor market. In fact, job satisfaction has been proven to be a key determinant of job productivity (Mangione and Quinn 1975). Moreover, job satisfaction reduces workers' turnover and the costs associated with it (Akerlof, Rose, and Yellen 1988; McEvoy and Cascio 1985).

We start by showing a puzzling finding: in Switzerland, as in other countries, for certain job attitudes, union members report a lower satisfaction than their non-member counterparts. The second section reviews the results and the theories the existing literature has provided on the subject. We will see that the relationship between union membership and job satisfaction is a controversial one. Different hypotheses trying to explain the nature of the link between the two variables exist and it is not rare to find studies that analyze the same population pointing out opposite conclusions. In the third section, we explain why and how a panel data approach, combined with an instrumental variable estimator, can shed light on this issue. We then describe our results by ruling out step by step the potential sources of bias in the estimation of the causal effect of union membership on the dependent variables we consider. Finally, we conclude the chapter by outlining the contributions our results provide over the existing literature and the implications our findings have regarding unions' regulatory function.

## 4.1 A PUZZLING FINDING: THE DISSATISFACTION OF UNION MEMBERS

If we could compare the mean job satisfaction level between union members and non-members, what would we expect to observe? Intuitively, we would suppose that union members should declare themselves as more satisfied than their non-member counterparts. In fact, the defense and/or the improvement of their working conditions represent the main goal of unions' activity (Degen 2011). Also, if some problems arise at the workplace, members have the possibility to directly voice their dissatisfaction through their unions and hope to redress the situation.

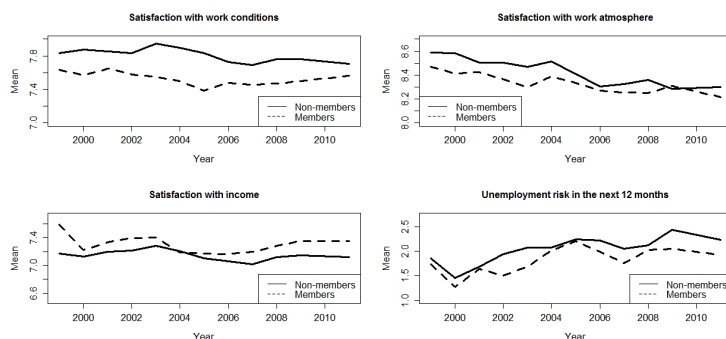
In order to test for this hypothesis empirically, as already mentioned, we use the data of the Swiss Household Panel (SHP) between 1999 and 2011. We focus on three dimensions of job satisfaction (satisfaction with working conditions, satisfaction with the work atmosphere and satisfaction with income) and on a self-evaluation of the risk of unemployment during the 12 months following the survey interview. Regarding the three dimensions of job satisfaction, they are expressed on a scale between 0 and 10 by asking the respondent: "On a scale from 0 "not at all satisfied" to 10 "completely satisfied" can you indicate your degree of satisfaction for each of the following points?" "Your working conditions", "The atmosphere between you and your work colleagues" and "The income you get from your job". The question related to the risk of unemployment is also given on a 0-10 scale and is stated as follows: "How do you evaluate the risk of becoming personally unemployed in the next 12 months, if 0 means "no risk at all" and 10 "a real risk"?". To these attitudinal dimensions, we also add an analysis of the yearly mean and median wages perceived by the two groups. The median wage is the measure mostly used at the international level because of its robustness to extreme values, but we also provide a descriptive analysis of the mean level. In addition, we differentiate between net and gross wages in order to see whether taking into account the level of social contributions can alter the gap between the two categories.

The SHP data provide other three variables related to the satisfaction at the workplace: satisfaction with the job in general, satisfaction with the tasks and satisfaction with the amount of work. We decided not take them account in our analyses for two main reasons. First, the questions related to these dimensions are only available since the sixth wave, conducted between September 2004 and March 2005. After considering the restrictions we impose on the individuals we consider in the regression analyses of the fourth section, taking into account these dimensions would lead us to halve our sample of union members. This would create important problems with the statistical power of our tests and with the asymptotic assumptions our estimators, in particular the one based on instrumental variables, rely on. Second, the fact that these questions are available only since 2004 would also create a problem of comparability with the other dimensions we examine. In fact, the mean profile of the individuals that became union members between 2004 and 2009 differs from the one of those that became members between 1999 and 2009. Since we have reason to believe that the impact of union membership on job attitudes may show heterogeneous effects across different segments of the population (cf. discussion in sub-section 3.1.3), this would lead us to a “composition issue” described in the sub-section 3.4.4. However, the dimensions of job satisfaction we consider are already broad enough to provide a complete horizon of the perception an individual has of his work environment. The working conditions dimension can be considered as a general question that is interpreted by most individuals as a question capturing the overall satisfaction with the job. The work atmosphere dimension gives a more precise account of the relational dynamics at the workplace. The income dimension captures one of the key outcomes determining an individual's professional well-being (Al-Zoubi 2012). The attitudinal analysis is completed by an analysis of the objective measure of this outcome (i.e. wage). Finally, the question related to the self-evaluation of the risk of unemployment accounts for the level of job security. Job security represents an aspect of fundamental importance to examine with the ongoing flexibilization of the labor market.

Figures 4.1 and 4.2 (page 140) give the comparison between the mean level of union members and non-members in the aforementioned variables. The results have been obtained following the same procedure outlined in the cross-sectional analyses of the third section of chapter 2. We focus again only on wage-earners and use cross-sectional weights that allow having representative results of the Swiss population of wage-earners in every year under examination. In the graphs, 2010 is a gap year we do not have data on.

The four graphs in figure 4.1 show some rather puzzling descriptive results.

**Figure 4.1: Mean level in four dimensions of job satisfaction for union members and non-members**



Source: Swiss Household Panel (SHP)

The first two reveal that union members declare a lower mean level of satisfaction with working conditions and work atmosphere than non-members. The magnitude of the difference is not very high (around 0.3 points for working conditions and 0.15 for work atmosphere), but relatively constant. The gap between the two groups in the work atmosphere dimension gets narrower and narrower and becomes null in 2009. Regarding the satisfaction with income, union members show an advantage in comparison with non-members (around 0.2 points during period). As far as

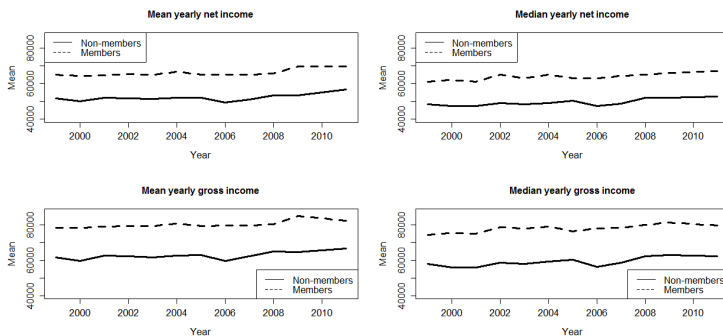
the risk of unemployment goes, union members, on average, declare themselves as less exposed than non-members to the risk of losing their job in the next 12 months (around 0.3 points).

Globally, the descriptive results show that union members are less satisfied than non-members in the dimensions that concern the daily content of their job and the relationship with work colleagues (we can call them “internal dimensions” of job satisfaction). On the other hand, they are significantly more satisfied in the dimensions that concern job security and remuneration (we can call them “external dimensions” of job satisfaction).

Finally, it is also interesting to remark that the trend we observe between 1999 and 2011 is clearly not encouraging for both groups. The satisfaction with working conditions, work atmosphere and job security are clearly declining for both categories, while the satisfaction with wages is more or less constant. This evolution can be probably attributed to the flexibilization of the labor market we described in sub-section 2.1.2.

Figure 4.2 (on the next page) shows a comparison of the mean and median level of the yearly net and gross income for union members and non-members. The four graphs show that union members are clearly better remunerated than non-members. The difference is beyond 10'000 CHF in all graphs. These results lead us to ask ourselves whether the small advantage in satisfaction with income union members show in comparison with non-members is high enough considering the wide wage differential that exists between the two groups.

**Figure 4.2: Mean and median level of yearly net and gross wage for union members and non-members**



*Source: Swiss Household Panel (SHP)*

How can we make sense of these descriptive results? The wage differential can be directly linked to the particular composition of union members in Switzerland, where highly educated individuals are those with the highest chances of becoming union members. The puzzling evidence comes from the attitudinal variables. As we pointed out at the beginning of the section, we would expect union members to report higher values in all dimensions of job satisfaction. The results show that union members present this advantage only in the “external outcomes”, i.e. wages and job security. On the other hand, they show a disadvantage as far as the “internal outcomes” goes, being less satisfied than non-members with working conditions and with the relationships with work colleagues. This is surprising since union membership should lead to an improvement in both external and internal job dimensions.

What does the exiting literature say on this matter? On one hand, the disadvantage that union members declare for working conditions, the relationship with co-workers and, more in general, all aspects that concern the content and the amount of the tasks accomplished at work is a well-established fact. These purely descriptive results have been verified for Australia (Miller 1990), Canada (Renaud 2002), Great Britain (Bender and Sloane 1998;



Bryson et al. 2004; Heywood, Siebert, and Wei 2002; Powdthavee 2011) and the United States (Artz 2010; Berger, Olson, and Boudreau 1983; Borjas 1979; Freeman 1978, 1980; Freeman and Medoff 1984; Hersch and Stone 1990; Pfeffer and Davis-Blake 1990). Also, the same results have been shown when analyzing specific work sectors (Gordon and Denisi 1995) and professions (Rees 1991). On the other hand, regarding the satisfaction with income and job security, the evidence in different countries does not lead to the same consensual conclusions. As our analyses point out for the Swiss case, in Great-Britain and Canada, union members show an advantage in these in dimensions when compared with non-members (Meng 1990; Powdthavee 2011). In Australia, union members and non-members report similar levels of satisfaction in these external outcomes (Miller 1990), while in the United States union members declare themselves less satisfied with their income (Freeman and Medoff 1984) and perceive their job as less safe than non-members (Brochu and Morin 2012).

Explaining the reasons behind the variability between national contexts is not our primary goal, but we will give some insights into these aspects in the concluding chapter. What is important to retain is that, surprisingly, union members show lower levels of satisfaction in the dimensions that capture the daily content of their job. Furthermore, the advantage they show regarding the satisfaction with their income and their job security does not seem large enough considering the objective gap existing in comparison with non-members in these domains.

## **4.2 TEASING OUT THE PATH TO UNHAPPINESS THROUGH THE EXISTING LITERATURE**

How do we explain the apparent paradox of the “dissatisfied union member”? To what extent are these differences indeed related to a causal effect of union membership? Do unions really lead to a decreased level of job satisfaction of their members? The puzzling finding of the “dissatisfied union member” received an enormous attention in the literature during the last four decades. In the

previous section, we have seen that, at least within each country, the descriptive results found in the literature lead to similar results in different studies. However, when trying to explain the origins of these results, different studies often lead to divergent conclusions. In this section, we review the main explanations past research has provided on this matter.

We classify the conclusions of the existing literature into three main categories. In the fourth sub-section we then show how the last two perspectives justify the adoption of a longitudinal perspective when analyzing the link between union membership and job satisfaction. The duration of membership and the past union experience of an individual will be shown to be key aspects to take into account.

#### **4.2.1 NO BLAME ON UNIONS: A SELECTION EFFECT**

The first type of argument outlined in the literature states that union members are more dissatisfied than non-members because their jobs are usually unattractive, unsafe and offer less promotion and self-realization opportunities (Borjas 1979; Worrall and Butler 1983). Indeed, the choice of becoming a union member is inherently influenced by the dissatisfaction related to these aspects. The job content, the atmosphere at the workplace and the absence of a remuneration sufficiently high to compensate these disadvantages are the factors that lead union members to join unions. In other words, the unhappiness of union members at the workplace is the product of a selection effect, those becoming union members being less satisfied than non-members even before joining unions. This can also be seen as a problem of reverse causality. We are interested into determining the causal effect of union membership on job attitudes, but the baseline level in these same attitudes influences the probability of becoming a union member.

Besides the baseline differences in the work environment, it is also plausible that there are individual differences between union members and non-members. For example, we have seen that

highly educated individuals are more likely to join unions than others in Switzerland. Individuals working in the same environment and accomplishing the same tasks could show different levels of satisfaction because of different personal traits.

After controlling for the main demographic characteristics (sex, race, age and education), Gordon and Denisi (1995) tested the link between union membership and job satisfaction for members and non-members working in the same organizations and experiencing the same job conditions. Being able to directly control for baseline-differences related to workplace and working conditions heterogeneity, they showed that union membership does not have a significant impact on job satisfaction. The main limitation of the study is its external validity, since the results apply only on the particular work environments considered by the two researchers.

When controlling for individual differences, Bender and Sloane (1998) show for Britain that the lower job satisfaction declared by union members should be either related to baseline-differences in the working conditions or to a poor industrial relations climate in highly unionized firms. Renaud (2002) presents similar results for Canada. However, the empirical evidence used to back up these conclusions can be questioned. The variable used by Bender and Sloane (1998) to operationalize the concept of “climate of industrial relations” is affected by an obvious endogeneity problem. Furthermore, in both studies, the negative effect of union membership disappears only when controls for the objective working conditions (such as wage in the article of Bender and Sloane) or, even worse, the individual perception of such aspects (as done in Renaud's article) are introduced. Controlling for those variables is questionable since they represent one of the main objects of the bargaining activity of unions. If union membership has any effect on job satisfaction, it is very likely that one of the main channels through which that happens is a change in these objective dimensions. In other words, controlling for such variables creates a mediation effect problem since we cannot know to what extent their

values are determined by the baseline level before union membership or by the effect of union membership on them. The insignificance of the union membership variable after the inclusion of such variables shows at best that the effect of union membership is mediated by these factors (this is a point we discuss further in sub-section 4.2.3).

A more convincing analysis is given by Bryson et al. (2004). Using an unusually rich set of data allowing them to control for an extensive array of individual, job and workplace characteristics, they test for the presence of a causal effect of union membership on job satisfaction for the British case. They show that, even after using these extensive set of control variables, union membership still shows a significant negative, even though small, impact on job satisfaction. However, the negative impact becomes insignificant when instrumenting for the union membership variable. Hence, the small negative significant impact that remains when controlling for observed variables should be related to pre-existing unobserved differences between union members and non-members, leading the former to declare a lower job satisfaction and to have higher chances of becoming union members. An innate predisposition to challenge the views of the management may represent such a difference.

The upshot of the discussion of the previous paragraphs is that the difference in job satisfaction observed between union members and non-members should disappear if one is able to control for a large enough set of variables capturing individual, job and workplace heterogeneity. The dissatisfaction of union members seems to be related to a pure selection effect due to baseline-differences in the level of job satisfaction between members and non-members. So, does the story about the paradox of the dissatisfied union member end here? Indeed, it does not. The only very convincing study we have analyzed is the one provided by Bryson et al. (2004) and their results are only generalizable to the British case. In other contexts, it is possible that unions may also show a different impact on job satisfaction. For example, for the United States, Pfeffer and Davis-Blake (1990), even though their analysis

is less solid than the one provided by Bryson et al. (2004), show that union membership has a significant positive effect on job satisfaction. The effect is more pronounced for individuals highly involved in union dynamics. According to Pfeffer and Davis-Blake, this is indeed an expected outcome since unions provide clear advantages to their members. The difference between the American and the British results may be related to a different functioning of unions between the two countries. If we suppose that the impact of union membership can be heterogeneous across individual profiles and sectors of union activity, it could also be explained through a composition issue, as we pointed out in the previous chapter. Third, as Artz (2010) underlines, the selection effect perspective is not capable of explaining the dynamic relationship that, at least at a descriptive level, union membership has with job satisfaction. The past union experience and the duration of membership are key determinants of the link between the two variables. This “staticity issue” of the selection effect explanation is an aspect we analyze more in detail in the next paragraphs and our analyses will confirm that taking into account a longitudinal perspective is indeed very useful.

#### **4.2.2 THE EXIT-VOICE THEORY**

In the previous sub-section, we cited a series of articles showing that, after controlling for a sufficiently large set of variables, the negative effect of union membership on job satisfaction should disappear or become even positive. This conclusion was not the one taken into account at the beginning of the research on the link between the two variables. The presence of a negative effect of union membership was taken at face value and even some recent articles get to the same conclusion. For example, Heywood et al. (2002) conclude that union membership has a significant negative impact on union membership in Britain, even after controlling for the aforementioned selection effect. Although their analysis is not as convincing as the one of Bryson et al. (2004), their findings certainly challenge at least partially the selection effect perspective.

The differences between the two studies can be explained by two of the arguments cited in the previous paragraph. In fact, the two studies refer to the British working population at two different time points (1991-1994 in Heywood et al. and 1998 in Bryson et al.) and it is possible that either a change in the composition or in the internal union dynamics may explain the contradictory findings. For these reasons, it is still useful to look at the theoretical approaches developed to explain why union membership may indeed have a negative impact on job satisfaction.

The main perspective used to explain the possible negative impact of union membership on job satisfaction consists in an application of Hirschman's (1970) exit-voice theory. First outlined by Freeman (1976, 1978, 1980) in three pioneering articles, the approach is proposed in its complete form in the notable work of Freeman and Medoff (1984): "What Do Unions Do?". The argument states that union members, by having the possibility to voice their dissatisfaction, become more attentive than non-members in detecting problems that arise at the workplace and signal them to union leaders. Furthermore, the more the individual becomes attached to the union, the proximity may lead him to declare a lower level of job satisfaction in order to sustain the bargaining goals of union representatives. Borjas (1979) called this tendency the "politicization" of union membership by pointing out that the job dissatisfaction increases with the duration of membership. As the experience within the union culture grows, the member is more and more likely to express a higher job discontent.

The exit-voice approach leads us to reconsider the meaning of the job satisfaction concept. In the previous sub-section, we have implicitly considered job satisfaction as a purely utility based subjective outcome (Pencavel 2009), a simple reflection of the objective working conditions. Job satisfaction should be high when the objective working conditions are satisfying. In reality, as the exit-voice theory shows, job satisfaction may be much less linked to the objective working conditions than we may think at first glance. In particular, the process of "politicization" postulated by Borjas (1979) shows that the dissatisfaction of union members may not

be genuine. Union membership may lead to an actual improvement of the working conditions and, paradoxically, this very positive impact may be the cause of a decrease in the reported job satisfaction. Declaring a low job satisfaction level becomes a strategic tool to foster unions' bargaining activity. In other words, what we get to measure is not the "real" job satisfaction of union members, but only a "manufactured" version of it union members reveal.

Is there some empirical evidence supporting the hypothesis of a non-genuine declaration of job satisfaction by union members? Two main results seem to confirm this conjecture. First, it has been widely shown that the lower job satisfaction of union members does not lead to an increased propensity to quit their jobs (Borjas 1979; Freeman 1978; Kochan and Helfman 1981; Leigh 1986:198; Lincoln and Boothe 1993). Leigh (1986) provides a second argument by examining the impact of job satisfaction on the desire for unionization for union members and non-members. The desire for unionization is operationalized by asking the individual whether, in case of an election with secret ballots, he would vote for or against having a union or employee association represent him in his current or last job. The results show that job satisfaction does not have a significant impact on the desire for unionization for union members. Union members' desire to belong to a union is independent of their level of job satisfaction. On the contrary, job dissatisfaction constitutes a significant predictor of the desire for unionization for non-members.

The force of the first argument can be relativized through other empirical evidence, as Hammer and Avgar (2005) point out. The relationship between job satisfaction and turnover is less straightforward than it may seem. Job satisfaction is not necessarily the most important determinant of job quit. Other reasons may be more salient. Also, a dissatisfied worker can react to a negative perception of the work environment in a variety of ways that do not imply the exit option (decreased productivity, absenteeism,...). Allen (1984) analyzed the effect of union membership on absenteeism. One hypothesis he considers is that union members may

be less subject to absenteeism than non-members. The availability of a voice option and the bargaining gains attained by unions may be able to create a more pleasing work environment that prevents absenteeism. After controlling for a series of variables that should capture at least partially the baseline individual, job and workplace heterogeneity existing between union members and non-members, he finds that union members are 29% more likely to show an absentee behavior than non-members. This result should lead to question the fact that unions effectively provide an objective improvement of the working conditions. The nature of the lower job satisfaction of union members may be more genuine than the exit-voice theory leads to think. We can also ask ourselves to what extent shrinking is easier in unionized workplaces because of a weaker management control.

Another solid explanation of why the lower job satisfaction of union members does not lead them to show a higher probability of quitting is provided by an analysis of the costs that leaving a unionized job may imply (Kochan and Helfman 1981). Even though not so satisfying, a union job provides a series of external advantages (higher wages, higher job security, higher social contributions,...) that are difficult to find in a non-union job. In other words, it is much more complicated for a union member than for a non-member to find a job that offers the same package of extrinsic rewards of his current job. Even though union members declare themselves more dissatisfied than non-members, these “bread and butter” privileges usually outweigh the unpleasant aspects of the job content. The exit option is thus usually seen as an unlikely one. Job withdrawal, absenteeism,... are much more affordable responses to job discontent for union members.

We found good arguments to explain why a genuine lower satisfaction of union members may not lead to a higher propensity to quit. However, we still have to make sense of the second argument the literature provides to support the hypothesis of a disingenuous self-declared dissatisfaction. How is it possible that the level of dissatisfaction of union members is not directly related to their desire for unionization? Is it possible to find an explanation



other than concluding that this dissatisfaction must be the product of a strategic reasoning? As Bender and Sloane (1998) highlight, why should union members give a non-genuine declaration of their job satisfaction in a survey that will not influence in any way their employer? Indeed, there is a way to accommodate the fact that becoming a union member leads an individual to sincerely report a lower job satisfaction than in the non-member status and still show that the same individual sincerely does not regret the union membership choice. This is what we describe in the next sub-section.

#### **4.2.3 UNIONS AS MIND SHAPERS: THE CHANGING FRAME OF REFERENCE MODEL**

The starting point of the frame of reference model of job satisfaction leads us to reconsider the concept of job satisfaction. As we already noted, job satisfaction may not be a simple utility-based concept reflecting the objective conditions of the environment in which an individual works. We have seen that, when the link to unions becomes stronger, job satisfaction may not represent a genuine description of how a union member perceives his working conditions. Reporting a lower job satisfaction can be used as a strategic tool to foster unions' bargaining activities. Here, we want to go a step further. The simultaneous presence of a decreased job satisfaction and an attachment to unions may not imply the presence of a non-genuine declaration of job satisfaction. Following Hulin's et al. (1985) conceptualization, job satisfaction can be seen as an outcome determined by the intersection between the expectations an individual has about his job and the actual, objective outcomes with which he is confronted at the workplace. Job satisfaction is not a simple reflection of the objective working conditions an individual experiences. Different individuals may react differently to the same working conditions because they attach a different meaning, a different value to different aspects of the employment relationship. In other words, taking into account the frame of reference through which an individual observes his work

environment is essential to understand how the objective work situation leads to declare a certain level of job satisfaction. This frame of reference is influenced by innate preferences, past experiences and, most importantly, by the frames of reference of other individuals. The influence of co-workers may lead an individual to change his frame of reference during the interaction. Becoming a union member may lead the individual to be exposed to interactions with union leaders and other members that are capable of changing his way of observing his work context. It is possible that, even though union membership leads to an objective improvement of some aspects of the work environment, the new union member may nevertheless show a decreased satisfaction with those aspects because he “learned” to value their importance more than in the non-member status. What was considered as “enough” before becoming a union member may not be seen as “enough” after joining a union. This decreased satisfaction is compatible with an attachment to unions and it does not imply a non-genuine or strategic job satisfaction declaration. In evaluating job satisfaction, one has always to be attentive to consider the two channels through which union membership is capable of influencing them: the objective outcomes, but also the frame of reference through which an individual evaluates the objective outcomes.

Two main studies have attempted to show how becoming a union member may modify both the objective features of the work environment and the way an individual evaluates them. The article of Berger et al. (1983) examines the impact of union membership on five facets of job satisfaction (satisfaction with pay, satisfaction with co-workers, satisfaction with supervision, satisfaction with work interest and satisfaction with promotion chances). The main goal is to show that the effect of union membership is mediated by the importance, the value an individual attributes to each one of these dimensions and by the objective conditions that characterize them. The value accorded to each work dimension is measured through questions explicitly asking the individual to give a score on the importance of each dimension. The objective outcomes are measured through the perceptions individuals declare about them. The inclusion of these variables in regression models

leads to the insignificance of the union membership coefficient. The interpretation of these results is quite controversial since the three types of attitudinal variables used in the models (dimensions of job satisfaction, importance given to each dimension of job satisfaction, perception of the objective outcomes related to each dimension of job satisfaction) are clearly not independent and the mediation effects may indeed represent spurious relationships. The study of Schwochau (1987) attempts to show the presence of similar mediation effects. However, the procedure the researcher adopts is even more controversial than the one outlined in Berger et al. (1983). Hence, we do not describe it in detail here.

The upshot of these two studies is that measuring empirically the frame of reference through which an individual assesses his work environment is a complicated issue and we do not attempt to find a solution to it in the following pages. However, the theoretical assumptions presented in Berger et al. (1983) and Schwochau (1987) are very important to retain. Unions do not only influence job satisfaction through objective outcomes, but also by changing the importance an individual attaches to the different dimensions of job satisfaction. Becoming a union member does not solely imply benefiting from an objective improvement of working conditions, but also being involved in a socialization process that may change the cognitive schemes through which the work context is observed.

Can we apply this perspective in order to interpret the descriptive results for the Swiss case in the first section of this chapter? We have shown that union members are less satisfied than non-members in the internal dimensions of job satisfaction (working conditions and work atmosphere), while they report higher levels of satisfaction in the external facets of job satisfaction (income and job security). We suppose for the moment that these differences are not the product of a selection effect, but correspond to a true causal effect of union membership (it is not the case, as we will see in the fourth section, but it is useful to illustrate the principle of the changing frame of reference model). We suppose at

the same time that union membership should lead to an improvement in the objective aspects related to all four of these dimensions. In that case, why does this objective enhancement lead to a higher job satisfaction in the external outcomes, but not in the internal ones? We can suppose that becoming a union member may raise the importance accorded to the internal dimensions. After becoming members, if these internal aspects are highly valued by union leaders and other members, newcomers may increase as well their claims on these internal facets of job satisfaction. If this increase in the demands outweighs the positive effect of the objective achievements, union membership would show a negative causal effect on job satisfaction. The individual, however, would still feel a genuine personal attachment to his union.

## **4.2.4 INTEGRATING THE LONGITUDINAL DIMENSION**

In our review of the main theoretical approaches used to explain the differentials in different dimensions of job satisfaction between union members and non-members, we have shown that the exit-voice theory and the changing frame of reference model are compatible with the adoption of a longitudinal perspective when analyzing the link between union membership and job satisfaction. We present here the results of two recent articles that show the usefulness of such an approach.

Having the United States as reference population, the study conducted by Artz (2010) shows how the past union experience of an individual can highly influence the impact union membership has on his job satisfaction. The theoretical perspective of the article stems from a conception of union membership proposed by Gomez and Gunderson (2004). According to their approach, union membership can be considered as an experience good that becomes gradually known to the union member through repeated exposure to union dynamics. Artz applies this principle to the relationship between union membership and job satisfaction. He postulates that, if union membership shows an impact on job satisfaction, the effect should be the highest for first-time members.

In fact, individuals without prior knowledge of union dynamics are those that should probably be influenced the most by the experience of becoming a union member. The results confirm this aspect by revealing that the first year of union membership implies for first-time members a significant increase of job satisfaction. In the following membership years, the impact of union membership decreases gradually. This is also an expected result since, as the union membership experience increases, the achievements that were valued at the beginning slowly become taken for granted. After the individual has left the union member status, his job satisfaction does not recover instantaneously, but only progressively. Right after leaving the union, the individual is no longer a member, but he still bears the attitudinal effects of having recently been one. However, the impact of union membership is not permanent, but dissipates with time. The level of job satisfaction recovers some years after having left a union, attaining pre-membership levels. These results reveal that union membership is an experience good that takes time to be learned, but also to be forgotten.

The study of Powdthavee (2011), analyzing British full-time wage-earners, provides another very interesting account of the dynamic effect of union membership on job satisfaction. The results are complementary to those of Artz (2010). The author examines how the observed impact changes with the duration of membership. Powdthavee shows that job satisfaction clearly declines in the year before an individual becomes member. This is in line with the fact that a decrease in job satisfaction is one of the main reasons that lead to the unionization choice, hoping for an improvement through unions' intervention. The results show further that the first year of union membership leads to a partial recovery of job satisfaction. Although the satisfaction level does not recover to the same levels as in the two-three years before joining a union, becoming a member still has a net positive impact on job satisfaction if compared with the year right before membership. In the following membership years, this positive effect gradually decreases and becomes negative. Powdthavee interprets this trend as an adaptation process similar to the one described by Artz. How-

ever, he does not exclude that the same evolution could be explained by a strategic choice of union members that declare a non-genuine low job satisfaction in order to sustain unions' bargaining priorities. We can add that it is also possible that the decline may be related to a change in the way union members evaluate their work environment, having increasingly higher claims.

In light of the theoretical perspectives we exposed in the first three sub-sections, we remark again that the selection effect is not well suited to interpret the dynamic effects of union membership. On the contrary, the exit-voice theory and the changing frame of reference model are well adapted to interpret the results obtained by Artz (2010) and Powdthavee (2011). However, we must also note that the results of these two longitudinal studies can only be interpreted at a descriptive level. As Powdthavee points out, determining the dynamic causal effect of union membership on job attitudes requires to deal with time-invariant and time-varying endogeneity issues. The time-invariant issues are appropriately taken care of by exploiting the panel structure of the data, while the time-varying ones need an instrumental variable approach. This is what we do in the following pages, analyzing for the first time the dynamic causal effect of union membership on job attitudes. We will analyze the impact of union membership by episode of membership (first-time members, second-time members,...) and distinguish the effect by duration of membership. By taking into account the presence of past union experience and of the duration of membership, we provide an improvement over the existing cross-sectional causal analysis on the impact of union membership on job satisfaction. In fact, if the results of Artz and Powdthavee were confirmed causally, the findings of Bryson et al. (2004) would depend on the particular composition of union members regarding their past membership experience and their mean duration membership, as we already mentioned in the third chapter.

Before turning to the presentation of our analytical strategy, it is worth emphasizing that the variety of results and explanations provided in the existing literature attests to the complexity of the relationship between union membership and job attitudes. It is

necessary to take into account the multiplicity of the effects that possibly characterize it. The selection effect has to be disentangled from the proper effect that union membership has on job satisfaction. Among these effects, one has to try to understand to what extent it is related to an impact on the objective working conditions or on the subjective value that the member attaches to them. All these analyses have then to be distinguished according to the membership past of an individual and by duration of membership. Furthermore, the effect we observe may differ across different dimensions of job satisfaction. In particular, a distinction between internal dimensions, related to job content and workplace relationships, and external dimensions, related to income and job security, seems particularly pertinent. Finally, as we will show, there are also probable heterogeneous effects to take into account. Union membership has not the same impact on all individuals and in all economic sectors. Hence, determining the causal effect of union membership on job satisfaction is a complex project. It is thus not surprising that past research is characterized by a variety of apparently contradictory results.

### **4.3 METHODOLOGICAL ELEMENTS**

The objective of the analyses presented in the next section is to evaluate the causal effect of union membership on job satisfaction. A detailed account of the methodological approach we adopt is given in section 3.4. The reader finds a description of the population of interest, of the four models implemented in the analyses, the reasons that lead us to re-estimate the relationship on different segments of wage-earners and the arguments that justify the representativity of our results for the Swiss case. In this section, we focus on the elements that are specific to the analyses of this chapter. Since the fourth regression model we employ is based on an instrumental variable estimator, in the first sub-section we explicitly motivate its use by describing the endogeneity issues related to the union membership variable when the dependent variable is a dimension of job satisfaction. In the second and third

sub-section we provide some arguments that justify the validity and the quality (strength and level of “locality”) of the two instruments we use.

#### **4.3.1 THE ENDOGENOUS NATURE OF THE UNION MEMBERSHIP VARIABLE**

The review of the literature provided in the second section of this chapter highlights the existence of three possible sources of selection bias that may lead the union membership variable to be endogenous: individual, job and workplace heterogeneity. It is necessary to be sure to be able to control for all three sources of bias in order to determine the causal effect of union membership on job satisfaction. In particular, as the article of Bryson et al. (2004) shows, the individual heterogeneity may be composed of unobservable factors such as innate predispositions that are difficult to take into account explicitly. The presence of this source of endogeneity will become obvious by comparing the results of the two pooled OLS models with those of the two other estimators.

Regarding the third estimator, the one implying the use of OLS on differenced data, it allows getting rid of all time-invariant heterogeneity derived from the three aforementioned sources. It is anyway still vulnerable to time-varying reverse causality and time-varying omitted variables. The restrictions imposed on our sample limit the sources of such problems. For example, by not considering individuals that change employer or occupation during the sequence of years analyzed, we exclude all biases that could be derived by new working conditions, new work colleagues, a different size of the firm, a different sector of activity,... Still, we have to deal with time-varying changes that can take place within the same firm and sector of activity. For example, a deterioration of the objective working conditions in a recessionary period may lead to a decrease in job satisfaction, which in turn would represent a good reason to join a union. This is a problem of time-varying reverse causality. The analyses provided by Powdthavee (2011) show that there is reason to believe the reverse causality issue is an important



one, as we already pointed out. In fact, at a descriptive level, the researcher reveals that the first year of union membership is preceded by a significant drop of job satisfaction in the previous year(s). Time-varying omitted variables having an impact on both job satisfaction and union membership may also be an issue. For example, increased contacts with co-workers may be able to change the view of the individual on his work environment and increase his chances of becoming a union member if some of the colleagues are already members.

Hence, when analyzing the impact on job satisfaction, the union membership variable is affected by an endogeneity problem in a panel data setting. In order to control for this issue and estimate the unbiased causal effect of union membership on job satisfaction, we use the two instruments we described in sub-section 3.3.2. These are the union density computed by type of occupation and canton and the variation of the number of associations (with the exception of unions) an individual is member of. In the next two sub-sections, we give some arguments that support the validity and the quality of the instruments.

### **4.3.2 EVALUATING THE VALIDITY OF THE INSTRUMENTS**

Regarding the validity of the union density instrument, although the exogeneity assumption is never completely testable, we can give three main arguments motivating the absence of a direct impact on the dependent variable. First, on a theoretical level, it is important to underline that our instrument can be seen as a convincing one in a panel setting, but the same would not hold in a cross-sectional setting. In a cross-sectional setting, since we know from sections 4.1 and 4.2 that union members show different job satisfaction levels than non-members for reasons that are not only related to union membership, a higher union density would be probably correlated with job satisfaction not only because of union membership, but also because of a different composition of individual, job and workplace characteristics in highly and lowly

unionized cantons. These characteristics have themselves a direct impact on job satisfaction. Here, on the contrary, we simply need to rule out that a higher union density, after having controlled for the variation in the union membership variable and the control variable we include, does not lead to an increased probability of experiencing a change in one direction or another of job satisfaction. More formally, this can be expressed as:

$$cov(\Delta_{adj} job\ satisfaction, IV \mid \Delta_{adj} union, \Delta_{adj} controls) = 0 \quad (4.1)$$

By thinking about it, we cannot see why the union density in a particular canton should be directly correlated with the variation in the job satisfaction. One could argue that highly unionized cantons are those with a higher level of industrial conflict and thus those where it is more likely that wage-earners experience a deterioration of working conditions imposed by the employer. On the other hand, the union presence should at the same time guarantee a protection against such deterioration. In other words, there are no obvious reasons that lead us to think that the density by canton and occupation influences the variation in job satisfaction through channels other than a transition from the non-member to the member status.

Second, at an empirical level, it could be argued that the random shocks that influence the objective working conditions and job satisfaction and thus the individual choice of becoming a union member may be also capable of influencing the union density level of each canton. One of the main random shocks of this kind is represented by the economic trends in a canton, capable of leading to a deterioration of the external and internal dimensions of the work context in recessionary periods and to an amelioration of them in times of economic growth. For the years we have data on, we have tested the existence of a correlation between GDP trend and union density in each canton. The correlation between the two variables is very small (it does not go beyond 0.06 in any of the years we took into account) and is probably only related to

sampling error. Hence, if a correlation between the two variables exists, it does not appear at the cantonal level, our chosen level of aggregation. Union density seems to be more the product of past union membership traditions and shows a certain inelasticity to such random shocks.

Third, again at an empirical level, we also tried to use lagged versions (one, two and three years past values) of the union density variable by occupation and canton as instruments. The past level of union density in a canton should not show a relationship with future random shocks influencing the choice of becoming a union member (such as the GDP changes just mentioned). These lagged versions lead us to similar estimates as those obtained with the non-lagged ones. We chose anyway to use the non-lagged versions because of their higher correlation with the union membership variable (by being weaker instruments, lagged versions imply larger standard errors). Also, using lagged versions would lead us to lose a part of our sample since for the observations in 1999 we do not have data on the union densities of 1998 (if we take a lag of only one year. The loss becomes more important with higher lags).

Besides these tests, the time dummies present among the control variables should capture economic and other types of random external macro-level shocks.

Regarding the other instrument, we can also develop a theoretical argument on why it should not show a direct effect on the dependent variables. The key idea is that, although the membership in associations can influence the overall life satisfaction of an individual (probably by increasing it), we think that the professional sphere should not be influenced systematically in either direction. Being member of associations increases the probability of becoming a member of unions too and we suppose that the associations that essentially exert an impact on the professional sphere are the unions. If the membership in other associations has a direct impact on the professional sphere, this influence should nevertheless be comparatively much slimmer than the one exerted by

unions. In other words, if a small direct impact may even be present, the strength of the instrument should be able to make the bias associated with it pretty small.

### **4.3.3 EVALUATING THE QUALITY OF THE INSTRUMENTS**

In the estimation, we use both instruments at the same time. It can be shown that such a strategy leads to an IV estimation composed of a weighted average of the effect on the two populations of compliers identified by each instrument (Soderbom 2011:11). The weight accorded to each effect is proportional to the relative strength of the instruments. Is it thus pertinent to use the two instruments at the same time? In our case, a Sargan test of over-identifying restrictions performed in all models shows that the estimated effects with the two instruments used separately do not significantly differ from each other. This means that the effect on the two compliant populations is homogeneous. Hence, using the two instruments at the same time does not lead to complications in terms of interpretation, but only contributes to increase the strength of the combined instrument.

About the strength of this compound instrument, it shows a strong correlation with union membership. When estimating each model, the F-test performed in the first-stage regression is well above the value of 10 in all models. The value of 10, as already described in sub-section 3.3.3, is the minimum threshold level above which we should not worry about the weakness of an instrument (Stock and Watson 2010, chapter 12). Besides increasing its strength, for the instrument represented by the union density, not taking it in differenced form gives also the advantage of increasing the population of compliers, as we mentioned in sub-section 3.3.3. The other instrument has been chosen in differenced form since our tests show it provides a stronger instrument than the level version of it.

## 4.4 RESULTS

The results of the regression models related to the four job attitudes we consider in this chapter are given in section 8.3 of the appendix chapter, tables 8.4, 8.5, 8.6 and 8.7. A detailed description of these models is provided in section 3.4. In particular, subsection 3.4.8 recapitulates the main elements and illustrates the information presented in the regression tables.

Since the fourth model is the one giving the “true” causal effect of union membership, our interpretations are mainly based on the results of the 2SLS on differenced data model. The other models are only concisely discussed, serving primarily to identify the type of biases affecting the relationship under examination. Nevertheless, since the results we present are rather numerous, the reader not interested into a detailed commentary may directly refer to the next section, where a synthetic account of the main findings is provided.

### 4.4.1 SATISFACTION WITH WORKING CONDITIONS

The first dimension we take into account is the satisfaction with working conditions. The first column of table 8.4 shows that, at a purely descriptive level, union members declare a lower satisfaction with working conditions than non-members. In the main effect, union members are, on average, 0.28 ( $p < 0.1\%$ ) points less satisfied than non-members on a scale from 0 to 10. The negative association is statistically significant in almost all segments of the population we consider. The only exception is represented by individuals working in the “Finance and other services” sector, where the estimate (-0.11) is not significant.

Adding a set of basic control variables in the second series of pooled OLS models leads to a small decrease of the magnitude of the effect. The estimates are again significant in all sub-populations analyzed but the “Finance and other services” sector. The

main effect diminishes to -0.24 and is still significant at the threshold of 0.1%.

What happens if we control for the effect of all time-invariant heterogeneity across individuals? The third class of models shows that the effect of union membership decreases further in magnitude, remains negative and in most cases is still statistically significant at least at the 10% level. For the main effect, we have a negative effect of -0.14 ( $p < 0.1\%$ ). The effect is no longer significant in the first year of union membership, but becomes more negative and more significant as the duration of union membership increases: -0.21 ( $p < 1\%$ ) for the second year and -0.38 ( $p < 0.1\%$ ) for the third year or higher of union membership. The first episode of union membership leads to a higher decrease of satisfaction with working conditions (-0.17,  $p < 5\%$ ) than the successive ones (-0.11,  $p < 10\%$ ). The effect is only significant for the period after 2005 (-0.17,  $p < 1\%$ ). Active members (-0.17,  $p < 1\%$ ) and part-time workers (-0.16,  $p < 5\%$ ) seem to be exposed to a slightly higher negative impact than passive members (-0.13,  $p < 5\%$ ) and full-time workers (-0.13,  $p < 5\%$ ). We also observe that the effect is significant for men (-0.21,  $p < 0.1\%$ ), but not for women, for middle-aged members (-0.15,  $p < 5\%$ ) and individuals older than 50 years (-0.17,  $p < 5\%$ ), but not for those under 30 years of age. Across different levels of education, we observe only a significant effect for those with a secondary level (-0.15,  $p < 1\%$ ). However, the estimates for the other two categories are similar and their insignificance is probably related to sample size limitations and/or an insufficient within-variation in the union membership variable. A similar reasoning can be applied to the analysis by nationality, where the results reveal a significant impact of union membership only for Swiss members (-0.14,  $p < 1\%$ ), but not for foreigners because of the different sample sizes in the two groups. The analysis by linguistic region shows that only German cantons show a negative and significant effect of union membership (-0.19,  $p < 0.1\%$ ). Interestingly, private and public sector members show the same impact of union membership in this model (-0.15,  $p < 5\%$ ). The analysis by NOGA sector now shows that only the “Public services” category is characterized by a negative effect of union

membership ( $-0.17$ ,  $p < 1\%$ ), the other sectors not showing a significant impact. Finally, the effect on small ( $-0.16$ ,  $p < 5\%$ ) and large firms ( $-0.14$ ,  $p < 5\%$ ) is very similar.

Do the results change if we also take into account the possible bias related to the time-varying endogeneity of the union membership variable, in particular a decrease in the satisfaction with working conditions motivating the union membership choice? The 2SLS models show that the negative effect described through the three previous models becomes insignificant in the main effect and in almost all segments of the population we take into account. The only two exceptions are the first year of union membership ( $0.52$ ,  $p < 10\%$ ) and women ( $0.60$ ,  $p < 5\%$ ). Although insignificant, it is also useful to note that most of the estimates have a positive sign, contrary to what the other models show. Considering the higher variance of the 2SLS estimator compared with OLS and looking at the size of some standard errors relative to the estimates, we can suppose that at least some of these coefficients would become significant if we could increase the statistical power of our analyses.

The results outlined in the previous paragraphs show that the three OLS models are biased. There is a marked selection effect leading dissatisfied individuals to have a higher probability of joining unions than satisfied ones. A part of this selection effect is accounted for by the control variables included in the second class of models, leading to a decrease of the magnitude of the estimated coefficients. However, these factors are not enough to take into account all the unobserved heterogeneity across individuals that is correlated with both the union membership variable and the dependent variable. This is why the magnitude and the significance of the estimates further decreases when passing from the second to the third model. The decrease is mainly motivated by pre-existing predispositions that make some individuals more inclined to be dissatisfied workers than others. This unobserved heterogeneity can only be controlled for when eliminating all time-invariant individual specific effects in the third set of models. The models based on the OLS estimator on differenced data, however, also

present a bias related to time-varying reverse causality. One of the main reasons to become a member is very likely represented by a decrease in the satisfaction with working conditions during the year in which the individual joins a union. Becoming a member does not reestablish the same level of satisfaction as in the year just before membership (as underlined by the negative effects we get in the OLS models), but it has nevertheless a small, even though not significant, net impact in comparison with the drop of satisfaction that probably led to the choice of becoming a member. This only partial improvement could be explained by the persistence of a tense relationship with the employer. Hence, instrumenting for the union membership variable reveals that the “true” causal effect of becoming a union member on the satisfaction with working conditions is either positive or at least non-negative. As we already pointed out, we cannot reach a definitive conclusion on the matter because of the higher variance of the 2SLS estimator, combined with a non-enormous within-variation in the union membership variable and a small portion of explained variance in the model. The impact of union membership on the satisfaction with working conditions is thus either very small and not statistically significant, indicating that the dissatisfaction of union members is the consequence of a pure selection effect, or positive in specific sub-populations of union members.

What are the implications of these results in light of the theoretical elements described in section 4.2? Since most of the estimates obtained in the 2SLS models are not significant, we cannot affirm with certainty what are the mechanisms that explain the link between union membership and the dependent variable. However, if we speculate and assume that the results of the 2SLS models where the standard errors are smaller than the corresponding estimates may become significant at least at the 10% level if we could increase the statistical power of our analyses, we can give some interpretations regarding the possible causal mechanisms by comparing the results in different segments of the population of interest.



First, the main effect is clearly insignificant in the 2SLS estimator, while it shows a significant negative effect in the third model. Does this mean that the negative effect observed in the third model is completely accounted for by a phenomenon of time-varying reverse causality and that union membership does not have any influence on the satisfaction with working conditions? It is possible, but we doubt it. We are pretty convinced that unions' activity should at least to some extent contribute to increase the well-being of union members by improving the objective working conditions. This effect may not be very pronounced, but it should be there. How is then possible that we still get an insignificant effect in the IV model? This is possible because, as we described in sub-section 4.2.3, becoming a union member acts on the objective side of working conditions, but also on the subjective one, changing the way the individual interprets his work environment. In this case, we can suppose that the positive impact on the objective side may be counterbalanced by a negative one on the subjective side, leading the individual to increase his satisfaction standards. What was enough before joining a union is no longer enough after having become a union member. During the interaction with other members, the individual may actually realize to what extent the employer "owes" him a decent level of working conditions. As we described in sub-section 4.2.3, methodologically, it is very complicated to measure such a cognitive change, but it remains a very useful theoretical tool to make sense of results as the one we observe in the main effect.

If we look at the effect by episode of union membership, even though both estimates are not significant, for the first episode we see that the magnitude of the effect (0.37, s.e. 0.26) is larger than in the second episode or higher (0.28, s.e. 0.39) and that the standard error is not very large. The analysis by duration of membership shows that only the effect in the first year of union membership is significant (0.52,  $p < 10\%$ ) and the magnitude of the estimates decreases over time. Combining these two sets of results, we can suppose that the positive effect of union membership is higher for individuals not having a past union membership experience. The

remark lends support to the presence of both objective and cognitive processes explaining the results we obtain. First-time members and recent newcomers are those with less expectations about the effect of unions on working conditions. An improvement in the objective working conditions may lead them to actually feel a higher satisfaction and to report it. When the experience increases, the cognitive process becomes more important and the individual starts to rise his satisfaction standards and to decrease the reported satisfaction, even though objectively nothing changed in comparison with the first episode or the first year of union membership.

The effect by type of membership, where active members (0.60, s.e. 0.57) show a higher estimated effect than passive ones (0.17, s.e. 0.22) and a relatively moderate standard error, can also be exploited to make some hypotheses about the underlying mechanisms of the relationship under examination. We can suppose that an individual may become an active rather than a passive member when his need for unions' intervention is high, i.e. when the drop in satisfaction with working conditions motivating the union membership choice is high. This aspect is at least partially confirmed by the fact that the negative effect of union membership in the third model is higher for active members than for passive ones. If that is true, the higher positive estimate in the IV model may be motivated by a higher leeway for unions to improve working conditions severely compromised before the union membership choice. A similar reasoning can be applied when trying to understand why part-time workers show a higher positive estimated effect (0.35, s.e. 0.31) than full-time workers (0.11, s.e. 0.24) and women have a significant positive impact (0.60,  $p < 5\%$ ), while men do not (-0.33, s.e. 0.26). Generally, part-time workers and women are categories of workers that find themselves in job situations more precarious than the average wage-earner. Hence, if we suppose that union membership leads indeed to an improvement of the objective working conditions, the situation of women and part-time workers gives unions a larger margin to improve their working conditions and thus explains the higher positive impact.

Furthermore, we see that the effect between 1999 and 2004 (0.39, s.e. 0.30) is positive and with a relatively low standard error, while the negative coefficient for the period 2005-2011 is close to zero and with a large standard error (-0.059, s.e. 0.23). The differential may be related to a composition issue, individuals like part-time workers or women having become members disproportionately more often during the first period than during the second one. The fact that we observe a positive effect with relatively low standard errors for middle-aged individuals (0.31, s.e. 0.25) and wage-earners with a secondary education (0.35, s.e. 0.23), but not for the other age categories and education classes may be primarily explained by the higher sample size in these categories in comparison with the other ones. Swiss members show also a positive estimate with a relatively low standard error (0.21, s.e. 0.20), while foreigners do not (-0.30, s.e. 0.59) in part because of different sample sizes. Public sector members (0.27, s.e. 0.21) and workers in the “Primary, manufacturing and construction sector” (0.76, s.e. 0.55) are the last two sub-populations we may hope to get significant estimates for by increasing the statistical power of our results. The presence of a higher effect in the public sector can be explained by the higher bargaining power unions active in the public sector have in comparison with those of the private sector (cf. table 2.1, sub-section 2.1.2). The impact in the “Primary, manufacturing and construction sector” is probably explained by dynamics similar to those of part-time workers and women, their more than the average precarious professional situation allowing unions to importantly improve their working conditions.

#### **4.4.2 SATISFACTION WITH WORK ATMOSPHERE**

Focusing on the relationship between union membership and satisfaction with the work atmosphere, the first column of table 8.5 shows that the negative association we observe in the main effect (-0.097,  $p < 0.1\%$ ) is also significant for an important proportion of the segments of the population of interest we consider. The association is not significant in the first year of union membership,

but becomes stronger and significant in the second ( $-0.066$ ,  $p < 10\%$ ) and the third year of union membership or more ( $-0.15$ ,  $p < 0.1\%$ ). Other sub-populations in which the association is not significant are: active members, full-time workers, men, highly educated individuals, foreigners, French and Italian cantons, public sector workers, the NOGA sectors “Primary, manufacturing and construction sector” and “Finance and other services” and large firms.

Adding some essential control variables in the second class of models leads to a general decrease of the magnitude and of the significance of the estimates. The impact is still significant in the main effect ( $-0.088$ ,  $p < 1\%$ ). It remains insignificant in all sub-populations for which the  $p$ -values of the estimates were above the threshold of 10% in the first class of models. These are joined by other segments of the population of interest: the second year of union membership, the second episode of union membership or higher, individuals aged below 30 years of age and workers with a low level of education. In some cases, in particular for individuals below 30 years of age and lowly educated ones, the absence of a significant effect seems to be primarily related to a small sample size.

If we control for all time-invariant heterogeneity across individuals, the third class of models leads to a further reduction of the size and of the significance of the effect of union membership. The main effect ( $-0.072$ ) remains barely significant at the 10% level. In addition to those already insignificant in the second set of models, the estimates in the following sub-populations become also insignificant: both time periods considered (before and after 2005), passive members, women, individuals aged more than 50 years, individuals with a secondary education, Swiss members and the NOGA sectors “Basic services” and “Public services”. Interestingly, the coefficient and the significance of the effect from the third year of union membership on becomes higher and more significant in comparison with the second class of models ( $-0.30$ ,  $p < 1\%$ ). Also, in two cases, active members ( $-0.13$ ,  $p < 5\%$ ) and the “Primary, manufacturing and construction sector” ( $-0.18$ ,  $p <$

10%), estimates insignificant in the first two pooled OLS models become significant in this class of regressions.

What does the instrumental variable estimator tell us about the “true” causal effect of union membership on the satisfaction with the relationship with work colleagues? Essentially, we can say that it all goes down to insignificance. Union membership does not have an impact on the work atmosphere perceived by the individual. Only in three cases we get a barely significant relationship. We still observe a negative effect in the third year or more of union membership ( $-0.69$ ,  $p < 10\%$ ) and for highly educated individuals ( $-0.64$ ,  $p < 10\%$ ). On the contrary, a positive impact in the “Primary, manufacturing and construction sector” ( $0.76$ ,  $p < 10\%$ ) shows up.

As in the analysis on the satisfaction with working conditions, the findings described above show again how the passage from a model giving a purely descriptive account on the relationship between union membership and satisfaction with work atmosphere to models that increasingly limit the possible sources of bias can change the conclusions we draw. The more sources of bias we control for, the lower the magnitude and the significance of the effect of union membership become. Here, we also have to underline that the magnitude of the baseline differences and also of the impact measured in all models is much smaller than the ones we described for the satisfaction with working conditions. For example, the main effect in the first model shows an estimate of  $-0.097$ , indicating that, on average, only a member out of ten declares a point less in terms of satisfaction with the work atmosphere than his non-member counterpart. In other words, the practical significance of the difference between union members and non-members is quite low.

It is interesting to notice that, in comparison with what happened for the satisfaction with working conditions, the 2SLS estimator does not lead us in this case to drastically reconsider the results of the third model. The IV estimate of the main effect ( $-0.069$ ) is quite similar to the one obtained in the third model ( $-$

0.072) even though the standard error is much higher in the former. In both sets of models the effect of union membership is either insignificant or barely significant with a very small magnitude. Why do the IV estimates strongly differ from the OLS ones in the satisfaction with working conditions and not regarding the satisfaction with work atmosphere? This probably happens because the reverse causality issue that affects the first variable does not affect the second one (or at least, not in an important way). In other words, a drop in the satisfaction with working conditions seems to represent a good reason to join a union, while a deterioration of the relationship with co-workers does not. This can be seen as a quite logical result. Unions are seen as capable of having an effect on the objective working conditions, whereas the problems one experiences with co-workers remain an internal matter of the work environment. The scope of unions' intervention includes certain domains, but not other ones.

As we said, the small disadvantage in terms of satisfaction with work atmosphere that union members show in comparison with non-members appears thus as purely related to a selection effect. This aspect becomes already obvious in the third set of models and the IV estimates strongly confirm this aspect. In this case, the size of the standard errors in almost all segments of the population we consider is very high compared with the estimates and the insignificance of the association cannot be primarily traced back to the higher variance of the 2SLS estimator. Hence, here we cannot engage in the speculative interpretations we made in the previous sub-section. We can however at least interpret the results of the coefficients that are actually significant. The negative effect observed for the third year of union membership or higher (-0.69,  $p < 10\%$ ) may be interpreted through a composition issue, the individuals remaining members for a longer period being those that experience long-term work issues. These long-term issues may be attributed to the management or to the supervisors through successive interactions with other members and thus lead to a negative impact on the perceived work atmosphere. The negative effect on highly educated individuals (-0.64,  $p < 10\%$ ) may also be explained through the higher propensity of such individuals to

challenge the views of the management or of their supervisors. This propensity seems to be exacerbated by union membership. Finally, the positive effect of union membership (0.78,  $p < 10\%$ ) in the “Primary, manufacturing and construction sector” may be attributed to the particular type of dynamics that arise in such a sector. In fact, the secondary sector has been historically the one in which unions have thrived and where union membership was associated with a feeling of class affiliation. This trait may still be present today and thus improve the perception of the relationships with work colleagues.

#### **4.4.3 SATISFACTION WITH INCOME**

We now turn to the analysis of the link between union membership and satisfaction with income. The first of column of table 8.6 shows that, at a purely descriptive level, union members declare themselves more satisfied with their income than non-members in almost all segments of the population of interest we consider. The main effect reveals a level of satisfaction 0.17 points higher on a 0-10 scale and significant at the threshold of 0.1%. The sub-populations in which union members do not show a significant advantage on this matter are: individuals below 30 years of age, lowly educated workers, foreigners, private sector employees and individuals working either in the “Primary, manufacturing and construction sector” or in the “Finance and other services” sector.

Partialling out the effect of a group of fundamental control variables in the second type of models leads most of the estimates to become insignificant, the one of the main effect included. In some cases, however, the positive impact of union membership on the satisfaction with income remains significant. This happens for the second episode of union membership or higher (0.17,  $p < 1\%$ ), women (0.098,  $p < 10\%$ ) and French- and Italian-speaking cantons (0.12,  $p < 10\%$ ).

The third class of models, where all individual time-invariant factors are controlled for in addition to the control variables used

in the second model, leads to similar conclusions: most estimates are insignificant and the main effect is among them. The exceptions are individuals with a secondary education ( $-0.099$ ,  $p < 10\%$ ) where union membership has a negative impact on the dependent variable, while for highly educated members ( $0.17$ ,  $p < 5\%$ ) the relationship is a positive one.

What happens when we instrument for the union membership variable? Again, we discover that the causal effect of union membership on the satisfaction with income is statistically insignificant. Some significant effects show however up. The period from 2005 on ( $0.43$ ,  $p < 10\%$ ), part-time workers ( $0.76$ ,  $p < 5\%$ ), women ( $0.67$ ,  $p < 5\%$ ), public sector members ( $0.42$ ,  $p < 10\%$ ) and individuals working in the “Public services” NOGA sector present a positive and significant effect. Members coming from the “Finance and other services” sector are the only ones showing a significant negative effect of union membership ( $-1.46$ ,  $p < 5\%$ ).

The results outlined in the previous paragraphs show that union membership has either a non-negative or a positive effect on income satisfaction. In fact, as with the satisfaction with working conditions, the clearly positive estimate ( $0.17$ ) in the 2SLS model is not significant, but is associated with a relatively moderate standard error (s.e.  $0.20$ ). It is however puzzling that, despite the inefficiency of the IV procedure, we do not observe a significant impact, since union membership should be associated with a wage premium. How is it possible that, although union membership should lead to an income increase, the satisfaction does not follow the same trend? We can suggest two main hypotheses. First, the magnitude of the wage premium may not be seen as high enough to justify an enthusiastic stance on the matter. The wage premium may not meet an individual's expectations about it. Second, a cognitive process as the one described above may take place. Since wage level setting is a key dimension of unions' bargaining activity, it is possible that individuals learn to give a higher importance to this aspect after becoming members. A satisfying wage in the pre-member status may no longer be seen as satisfying in the member status.



As for the satisfaction with working conditions, most of the estimates in the sub-populations we examine are not significant. However, considering again the inefficiency characterizing the 2SLS estimator, we can engage in some speculative interpretations on those estimates associated with relatively moderate standard errors. Focusing on the two longitudinal variables, episode of membership and duration of membership, the estimates reveal that union membership seems to increase the level of satisfaction with income only since the second episode of membership (0.52, s.e. 0.40) and with a longer duration of membership (in the third year we have an estimate of 0.74 with s.e. 0.50). Wage negotiations may take some time and only those remaining members longer can benefit from them. Interestingly, similarly to what we saw for the satisfaction with working conditions, active members are again among the few categories that, even though not significant, show a positive effect of union membership (0.61) with a relatively low standard error (s.e. 0.58).

Apart from these speculative interpretations, as we said, union membership has a positive causal effect on the satisfaction with income on part-time workers, women, for the period from 2005, public sector and “Public services” NOGA sector workers. For the first two categories, it is easy to see why the effect is significantly positive. As with the case of working conditions, the situation of these two categories is usually characterized by a precarious job context where the level of remuneration is in general not very high. This precariousness gives a larger margin for unions to improve the satisfaction of these workers. The wage premium they get by becoming members is probably higher than the one obtained by the average worker. Hence, the increase in the satisfaction with income is a consequence of it. The positive effect on the period since 2005 and not on the one before it is difficult to interpret and is probably related to the particular composition of new union members in that time range. Regarding the public sector workers and those working in “Public services”, as we already mentioned in the first sub-section, we can suppose that the higher bargaining power unions show in the public sector in comparison with those active in the private one may lead them to be capable

of leading to an important wage increase for their members. Finally, we also observe a strong negative effect (-1.46,  $p < 5\%$ ) on individuals working in the “Finance and other services” sector. We can make sense of this aspect by considering that the individuals working in this sector are, by far, those that earn more than the rest of the population. Taking into account the fact that unions often pursue income egalitarian policies, these individuals may not be very satisfied with a prospective income decrease.

#### **4.4.4 EVALUATION OF THE RISK OF UNEMPLOYMENT IN THE NEXT 12 MONTHS**

If we consider the relationship between union membership and self-evaluated risk of unemployment in the next 12 months, the first column of table 8.7 shows that union members, compared with non-members, report a lower self-evaluated risk of losing their job in the majority of the segments of the population of interest we consider. The main effect shows a coefficient of -0.27 on a scale from 0 to 10 significant at the threshold of 0.1%. The sub-populations of union members that do not show this advantage compared with their non-member counterparts are individuals below 30 years of age, those with a low education level, foreigners and three NOGA sectors out of four (“Primary, manufacturing and construction sector”, “Basic services” and “Finance and other services”).

The inclusion of a basic set of control variables in the second class of models leads to an important decrease in the magnitude of the estimates and a large proportion of them become insignificant. The main effect is still significant at the 1% level, but its magnitude is more than halved (-0.13). In addition to those cited in the previous paragraph, the cases in which the coefficients become insignificant are the first and the second year of union membership, men, middle-aged individuals, those with a secondary education, private sector workers and individuals working in small firms.

The hecatomb of significant coefficients continues in the third type of models, where we control for all time-invariant heterogeneity across individuals. Primarily, the main effect becomes insignificant. The only significant estimates can be found for the period from 2005 on ( $-0.15$ ,  $p < 5\%$ ), individuals aged above 50 years ( $-0.19$ ,  $p < 10\%$ ), workers coming from the “Public services” sector ( $-0.15$ ,  $p < 10\%$ ) and those working in small firms ( $-0.17$ ,  $p < 5\%$ ). Hence, some coefficients insignificant in the second model regain significance when controlling for non-varying differences between individuals.

What happens if we also control for the possible time-varying endogeneity of the union membership variable? An important number of coefficients regain significance. Also, like in the main effect, a good proportion of coefficients that are not significant show moderate standard errors compared with the associated estimates and we can thus suppose that they may become significant if we could work on the statistical power of our analyses. Globally, even though not all significant, only the estimate for lowly educated individuals ( $1.70$ ,  $p < 10\%$ ) is non-negative. Union membership has actually an effect towards the decrease of the self-evaluated risk of unemployment in the majority of the segments of the population. The coefficients that are indeed significant are those of the second year of union membership ( $-2.07$ ,  $p < 10\%$ ), episodes of union membership successive to the first one ( $-0.99$ ,  $p < 10\%$ ), individuals with a secondary education ( $-0.62$ ,  $p < 10\%$ ), those living in German cantons ( $-0.91$ ,  $p < 1\%$ ), public sector workers ( $-0.59$ ,  $p < 10\%$ ) and those coming from the “Public sector services” sector ( $-0.64$ ,  $p < 10\%$ ).

The results of the four models described in the previous paragraphs reveal a specific pattern. The protective effect of union membership on the risk of unemployment is gradually relativized when passing from the first to the second and from the second to the third set of models. Adding a group of basic of control variables and accounting for all time-invariant individual specific effects leads most of the estimates to insignificance, letting suppose that the advantage of union members is simply the product of a

selection effect. The IV estimation, however, inverts the trend. A good proportion of estimates become again significant and other coefficients show moderate standard errors (letting us suppose that they may become significant if we could work on the statistical power of our analyses). What is going on then? As with the satisfaction with working conditions, we have again a case of time-varying reverse causality. The feeling of an increased risk of job loss represents very probably an event that leads to the union membership choice. The fact that the third set of models shows generally an insignificant effect of union membership reveals that becoming a union member is capable of recovering the level of job security to the one before joining a union. This differs from what we saw for working conditions, where union membership, at least in the first year of membership, has also a positive effect with respect to the drop motivating the membership choice, but does not reestablish the same level of satisfaction with working conditions reported in the period pre-drop.

It is useful to give a closer look at the coefficients in the IV estimation. The main effect is not associated with a significant estimate (-0.4), but the size of the standard error (0.28) makes it plausible to believe that the coefficient may become significant at least at the 10% level with a slight increase of the statistical power of the 2SLS estimation. Again relying partially on the speculation about the size of the standard errors, the two longitudinal variables show that job security increases with successive episodes (the effect is not significant in the first episode (-0.30, s.e. 0.39), while it is in the second one or higher (-0.99,  $p < 10\%$ ) and with the duration of union membership (first year (-0.49, s.e. 0.45), second year (-2.07,  $p < 10\%$ ), third year or more (-1.19, s.e. 0.79)), something we already pointed out for the satisfaction with income. Therefore, it seems that job preservation negotiations may take some time. We also remark that this protective effect, even though again not significant, seems more accentuated in the pre-2005 period (-0.52, s.e. 0.42). Active members (-1.14, s.e. 0.86), part-time workers (-0.53, s.e. 0.41) and foreigners (-0.97, s.e. 0.80), again even though not in a significant way, are categories that enjoy a higher protective effect than passive members (-0.51, s.e. 0.34) ,

full-time workers (-0.27, s.e. 0.38) and Swiss citizens (-0.34, s.e. 0.30). As above, we can interpret this result by supposing that these groups, by being probably in a more precarious situation than the average union member (active members decide to be active probably because of the need for a higher protection), the margin for improvement they have in this dimension allow unions to actually produce an important positive net effect on their feeling of job security.

Interestingly, in contrast with working conditions and income, women show a similar estimated effect as men. While we do not see important differences across age categories, the analysis by education reveals that lowly educated individuals are the only category for which union membership significantly increases job insecurity (1.70,  $p < 10\%$ ). The estimate probably suffers from small sample bias because of the relatively low number of such individuals (537) and the even smaller number of them that experience a transition from the “Non-member” to the “Member” status (103, cf. table 8.1). However, already in the purely descriptive analysis, we noticed that lowly educated individuals are among the rare categories that do not enjoy a higher feeling of job security in comparison with their non-member counterparts. This is a serious issue, showing that unions do not manage to provide an improvement of job security for these individuals. It is also possible to hypothesize the presence of a non-genuine declaration in order to sustain unions' bargaining activity as described in sub-section 4.2.2, but we do not find this conjecture very convincing. It also appears that unions in German regions significantly increase their affiliates' job security (-0.91,  $p < 1\%$ ), while the contrary effect, even though not significant, but with moderate standard errors, seems to take place in French and Italian cantons (0.6, s.e. 0.47). As with the income satisfaction dimension, public sector workers (-0.59,  $p < 10\%$ ) and those coming from “Public services” (-0.64,  $p < 10\%$ ) enjoy a significant benefit from union membership, while the private sector and the other three NOGA classes do not. Again, the differential across sectors can be traced back to the higher bargaining power of public sector unions. Finally, even

though not significant, the size of the standard errors lets us suppose a close-to-significance effect of union membership only in small firms (-0.57, s.e. 0.41).

## **4.5 DISCUSSION: UNIONS DO WHAT THEY ARE SUPPOSED TO**

We started the analyses of this chapter by showing that, at a purely descriptive level, union members and non-members show clear differences in terms of four dimensions of job satisfaction. Union members present a clear disadvantage regarding the satisfaction with working conditions and work atmosphere, while they declare a higher level of income satisfaction and job security. In order to understand whether the observed differences are related to a selection effect or to a causal impact of union membership, we estimated four models allowing us to exclude stepwise the effect of the possible sources of selection bias.

The first type of models (pooled OLS without control variables) gives a purely descriptive account of the relationship and confirms the results outlined in the first section for almost all segments of the population of interest we consider.

Partiallying out the effect of a set of observed variables in the second group of models (pooled OLS with control variables) shows that the magnitude and the significance of the estimated relationship decrease in all four dimensions. With the exception of the satisfaction with income, the other dimensions still present a significant difference between union members and non-members. Hence, a selection effect takes indeed place by exaggerating the estimated impact of union membership. The observed variables used as controls point out the existence of baseline differences in terms of objective working conditions, but also, to a lesser extent, of subjective aspects distinguishing union members and non-members, the former being more inclined to report a lower level of job satisfaction. The fact that the effect on income satis-

faction becomes insignificant already in this type of model, without the need of getting rid of all “innate predispositions” that may bias the estimation, reveals that the differential between union members and non-members is probably mostly determined by objective differences in this domain (in section 4.1, we showed that the mean and median income of union members are much higher than the one of non-members).

Exploiting the advantages of panel data and controlling for the impact of all time-invariant heterogeneity between union members and non-members in the third type of models (OLS on differenced data with control variables) leads to the insignificance of the effect on the self-evaluated risk of unemployment. The effect on income satisfaction remains insignificant. The negative relationships of union membership with satisfaction with work atmosphere and with satisfaction with working conditions decrease in magnitude but are still significant. These results imply the existence of additional unobserved differences between union members and non-members, probably in the form of pre-existing predispositions, not captured by the control variables included in the second model. Union members are dissatisfied not only because of baseline differences in terms of work atmosphere and working conditions, but also because of pre-existing, subjective attitudes making them more inclined to join unions and to declare a lower satisfaction than the average wage-earner.

Finally, the use of an instrumental variable estimator in a panel data setting (2SLS on differenced data) allows ruling out the presence of a bias related to the time-varying endogeneity of the union membership variable. The instrumental variable estimator does not lead to modify the magnitude of the estimated effect on satisfaction with work atmosphere, but the coefficient becomes clearly insignificant. The estimated effects on satisfaction with working conditions and income become positive, while the negative one on the self-evaluated risk of unemployment increases in magnitude. The variation of the estimates in these three dimensions implies in particular the presence of an issue of time-varying reverse causality, while the same bias does not appear for the satisfaction

with work atmosphere. In other words, a drop in the satisfaction with working conditions, income or in job security represent good reasons to become a union member, while the same is not true as far as the relationships with work colleagues goes. These findings reveal that wage-earners have a clear-defined view on the domains in which unions' actions can be effective.

Focusing specifically on each dependent variable, the fourth model, the one revealing the "true" causal effect, shows that union membership has either a positive or at least non-negative effect on the satisfaction with working conditions. As we already mentioned, the comparison between the third and fourth model shows that a decrease in the satisfaction with working conditions constitutes a good reason to become a union member, hoping for an improvement through unions' bargaining power. The absence of a significant main effect is in line with the results of Bryson et al. (2004) for the British case. However, by considering the size of the standard error compared with the magnitude of the positive estimate, we can suppose that the insignificance is at least in part related to the important variance of the instrumental variable estimator. Taking into account the longitudinal dimension unveils some aspects of the underlying causal mechanism. The positive impact on working conditions is the highest in the first year of union membership and decreases over time. Likewise, the effect is more pronounced in the first episode of membership rather than in the successive ones. These results are in line with the conceptualization of union membership as an experience good (Artz 2010; Gomez and Gunderson 2004; Powdthavee 2011). The relationship between union membership and satisfaction with working conditions requires to take into account the effect of objective and subjective effects of union membership (Berger et al. 1983; Schwochau 1987). Union membership leads to an immediate improvement of the objective working conditions by increasing the declared satisfaction. With time, however, the advantages of union membership become taken for granted and the positive effect decreases.



As far as the satisfaction with income goes, the conclusions we get for the main effect from the 2SLS estimation are quite similar to those of the previous paragraph. We observe a positive estimate which is however not significant, but with a relatively moderate standard error. Even though again the estimates are not significant, a longitudinal analysis reveals a different pattern. If there is a positive impact of union membership, this becomes more important after some years and only in later episodes of membership. This fact may be related to the time wage negotiations take.

Regarding the effect on the self-evaluated risk of unemployment in the next 12 months, the comparison between the third and the fourth model shows that a decrease in job security seems to increase the propensity of wage-earners to become union members. Again, the estimates obtained through the 2SLS procedure are mostly insignificant, but the size of the standard errors let us suppose that they could become significant if we could work on the statistical power of our analyses. Focusing on the fourth model, a longitudinal analysis shows again an inverse trend in comparison with the satisfaction with working conditions. The protective effect (that is traduced into a decrease of the self-evaluated risk of unemployment) increases with the duration and with successive episodes of membership. This evolution is probably related to the time that negotiations regarding job preservation necessitate.

Finally, as far as the satisfaction with work atmosphere goes, the 2SLS estimator points out that union membership has no significant effect on the satisfaction with work atmosphere. However, it is interesting to remark that the fourth model leads to an almost equivalent estimate as the one in the third model. Hence, a drop in the satisfaction with the work atmosphere does not seem related to a variation in the propensity to join a union. An individual that experiences some relational problems at the workplace does not see unions as the actor responsible for solving them. Some issues remain internal to the workplace.

The analyses on specific segments of the population reveal some interesting patterns. Aside from some rare and barely significant coefficients, the effect on work atmosphere remains insignificant also in the sub-populations we consider. Regarding the other three dimensions, active members, part-time workers and women are the segments of the population that constantly show a higher and positive effect in comparison with, respectively, passive members, full-time workers and men. The higher effect on active members is in line with the results of past research (Pfeffer and Davis-Blake 1990), a higher involvement in unions' activities being associated with a higher return in terms of job satisfaction. The important impact on part-time workers and women can be traced back to their objective job situation, more precarious than the one of the average wage-earner. As a consequence, unions have a larger margin to provide an objective improvement of the job situation through their bargaining activity. These findings show us once again how the attitudinal effect of union membership takes place through two channels: a subjective one implying the presence of a cognitive process and an objective one implying an improvement in the objective working conditions of union members.

A sectorial analysis shows some interesting differences. In the three dimensions where an impact appears, public sector workers always benefit from a higher effect of union membership than those working in the private sector. Why does that happen? The most likely explanation is that the bargaining power of unions active in the public sector is higher than those active in the private one. A look at table 2.1, sub-section 2.1.2, confirms this interpretation, revealing that the Swiss public sector unionism belongs to the "Privileged sectors" where unions possess a strong bargaining position.

Looking at the variations across NOGA sectors, the "Primary, manufacturing and construction sector" is the one experiencing the most important improvement in terms of working conditions. This finding is probably related to dynamics similar to those de-

scribed for women and part-time workers, the precarious job situation in such sector allowing unions to strongly improve the objective working conditions. In line with what we observe for public sector members, “Public services” is the sector showing the most important benefits from union membership in terms of income satisfaction and job security. The sector “Finance and other services” shows a striking decrease in terms of income satisfaction. The result can be interpreted by thinking about the egalitarian income policies promoted by unions, aiming at a redistribution that may not be favored by high-income wage-earners overrepresented in such sector.

It is also quite surprising that we do not observe any important variations of the effect by age, education or company size. The only exception is represented by the effect on the job security of lowly educated individuals, the only case in which union membership leads to a decrease of job security. It seems that unions’ actions for such individuals are not effective, leading probably even to a deception mechanism that causes an increased feeling of risk of unemployment.

Finally, some other variations, by period, by nationality and by region, are more difficult to interpret. They can be probably traced back to a composition issue similar to the one cited in sub-section 3.4.7. For example, the higher effect we observe on income satisfaction from 2005 on may be explained by the particular profile of the individuals that become members between 2005 and 2011. Different dynamics in unions in which such groups are overrepresented may also provide some interpretative elements.

So, what do our results tell us on the effect of union membership on job satisfaction? In a nutshell, contrary to what some of our descriptive results could lead to think, unions seem to be doing what they are supposed to do. They improve the satisfaction with working conditions (in particular in the first year of membership), job security and income (in this case, only for those that remain members long enough). On the contrary, they do not have any marked impact on the quality of the relationships between

work colleagues. Also, a variation in terms of satisfaction with work atmosphere does not seem to have an impact on the propensity to become a union member. These findings delineate a clear scope of unions' activities. Unions are and remain actors whose primary function is to defend and/or to improve the professional well-being of their members. Understanding how this happens is not easy since, as we pointed out, the effect of union membership is composed of contemporaneous attitudinal and objective effects. The variations across different segments of the population show however that the effectiveness of unions' actions is far from being homogeneous in every sector or for every type of wage-earner.

## **5. POLITICAL INVOLVEMENT, POLITICAL ORIENTATION AND SATISFACTION WITH DEMOCRATIC INSTITUTIONS**

In the previous chapter, we have analyzed job satisfaction as an important economic variable. Defending and/or improving the working conditions of their members is and remains the primary objective of unions' activity (Degen 2011). However, as we already pointed out by describing the context of industrial relations in Switzerland and its recent evolutions (cf. section 2.1), the role of unions is challenged by a series of developments appeared in the last decades. In almost all Western countries, the globalization process, the tertiarization of the labor market, the increasing number of employers looking for a larger margin of discretion... put into question unions' role of bargaining actor. As a consequence, in the second chapter, we have seen that the proportion of unionized workers is continuously decreasing in Switzerland.

Because of these evolutions, a revitalized perspective on unions has been proposed (Baccaro et al. 2003). In order to survive, to defend the scope of their activities, unions need to step outside of their sole economic role of bargaining partner. A more direct action in the political arena is seen as necessary. Unions find themselves in a position that forces them to increase their visibility in the social sphere, to solidify old alliances and create new ones with political parties (Streeck and Hassel 2003). On the other hand, the capacity to keep a sufficiently high number of affiliates is also a crucial ingredient of this response since the representativeness of unions' actions and their financial means are directly dependent on their members (Oesch 2011). As discussed in section 2.4, this

goal implies an effort to increase the fidelity of old members, but also to attract new ones.

In section 2.1, we have seen that Swiss unions have indeed chosen to follow this “politicization path” from the end of the '90s on. The first year our analyses are based on, 1999, represents thus a good starting point to analyze the effects of these new strategies on the political attitudes of union members. We focus here on three classes of political attitudes. We take into account four dimensions of the political involvement of union members, four dimensions capturing their political orientation and two attitudes related to their satisfaction with the democratic institutions in Switzerland.

In order to examine these aspects, we first of all give a descriptive analysis comparing union members and non-members on various dimensions of the three sets of political attitudes we take into account. In the second section we review the main results and explanations the existing literature has provided on the subject. We then describe the methodological approach we use to determine the nature of the relationship between union membership and political attitudes. The fourth section is dedicated to the presentation of the results. Finally, we discuss the implications of our findings.

## **5.1 POLITICALLY INVOLVED AND LEFT ORIENTED**

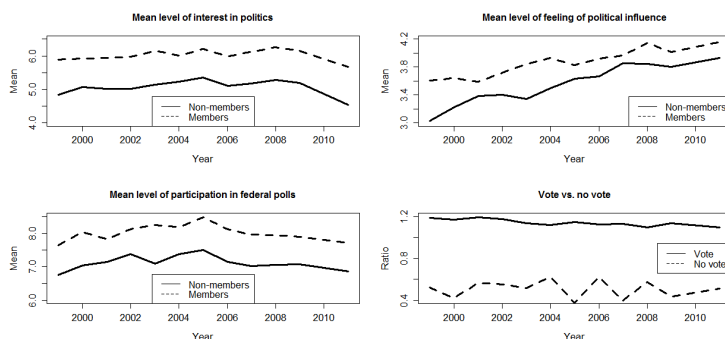
### **5.1.1 POLITICAL INVOLVEMENT**

The first set of political attitudes we take into account is related to the degree of political involvement and participation an individual declares. Four variables of the Swiss Household Panel (SHP) are included in the analyses. The first one assesses the level of interest in politics and is represented by the following question: “Generally, how interested are you in politics, if 0 means “not at all interested” and 10 “very interested”?”. The second variable captures the feeling of political influence declared by the respondent, who

is asked: “How much influence do you think someone like you can have on government policy, if 0 means “no influence”, and 10 “a very strong of influence”?”. The third variable explicitly measures the level of political participation in federal polls and is represented by the following question: “Let's suppose that there are 10 federal polls in a year. How many do you usually take part in?”. The last one is also a question related to political participation, but it is more concrete and probably provides a more valid measure of the concept: “If there was an election for the National Council tomorrow, for which party would you vote?”. The answer options include the list of parties in the Swiss political arena, the vote for a candidate instead of a party and the option of not voting. We dichotomized the answers by “No vote” and “Vote for any party or any candidate”.

Figure 5.1 (on the next page) shows four graphs that compare for members and non-members the mean level or, in the case of the last variable, the ratio of the proportions in the four variables cited in the previous paragraph. As a remainder, the ratio of the proportions is an indicator we introduced in chapter 2 that represents the ratio of the probabilities of being classified in a certain category between union members and non-members. It serves as a substitute of the comparison of the means when analyzing a categorical variable. A ratio greater than 1 implies a higher probability for a union member of being represented in a certain category. Conversely, a ratio less than 1 is a sign of a lower propensity for union members of giving a certain answer compared with non-members. As in the previous chapter, the data concern the period between 1999 and 2011 with a gap in 2010. The observations are again weighted using cross-sectional weights that ensure the representativity of the analyses for the wage-earners living on the Swiss soil.

**Figure 5.1: Mean level and ratio of the proportions in four dimensions of political involvement between union members and non-members**



Source: *Swiss Household Panel (SHP)*

The four graphs of figure 5.1 clearly show a higher level of political involvement for union members when compared with non-members. In the first graph, union members are shown to report a higher level of interest in politics than non-members. Over the whole period, even though some fluctuations are noticeable, union members show an average level of around 6 points on a scale from 0 to 10, while non-members present an average level of 5 points. Moreover, union members declare a higher feeling of political influence, as depicted in the second representation. The difference between the two groups is smaller, being around 0.5 points in 1999 and becoming less important in the following years. Interestingly, for both categories of individuals, the feeling of political influence increases almost linearly over time. The third graph illustrates that union members declare a higher level of participation in federal polls, showing an advantage of around 1 point in comparison with non-members over the whole period. The fourth graph shows similar findings when analyzing the voting behavior in case of elections the day after the interview. However, in this graph, we also see that the advantage of union members regarding the propensity to vote diminishes with time, passing from



around 1.2 times more in 1999 to 1.1 times more in 2011. Since, the “No vote” option is chosen by a small fraction of individuals, the line representing it is fluctuating. Over the whole period, a non-member, in comparison with a member, has twice more chances to choose the “No vote” answer option.

### **5.1.2 POLITICAL ORIENTATION**

After having considered the level of political involvement, we now compare the political orientation of union members and non-members. We start by analyzing a variable that captures the political position of an individual through the following question: “When they talk about politics, people mention left and right. Personally, where do you position yourself, 0 means “left” and 10 “right”?”. We then take into account a more concrete question by using the last variable we described in the previous sub-section: “If there was an election for the National Council tomorrow, for which party would you vote?” From the possible answer options, we create three dichotomous variables that represent the vote for the two parties the two main union Confederations entertain a close relationship with (Socialist Party and Christian Democratic Party, cf. sub-section 2.1.1) and the vote for the main conservative party in Switzerland (Swiss People’s Party (known as SPD in German-speaking regions and as UDC in French- and Italian-speaking cantons)). Hence, the first dichotomous variable operationalizes the vote choice for the Socialist Party with two categories: “Vote not for Socialist Party” and “Vote for Socialist Party”. The Socialist Party is the most important left-wing party in the Swiss political arena and has historical links to the Swiss Federation of Trade Unions, the largest peak organization in the country. The second binary outcome is constructed the same way regarding the vote for the Christian Democratic Party, which constitutes a catholic oriented party with close relationships with the confederation known today as “Travail Suisse” (known before as Swiss Christian Federation of Trade Unions). Likewise, a dichotomous variable

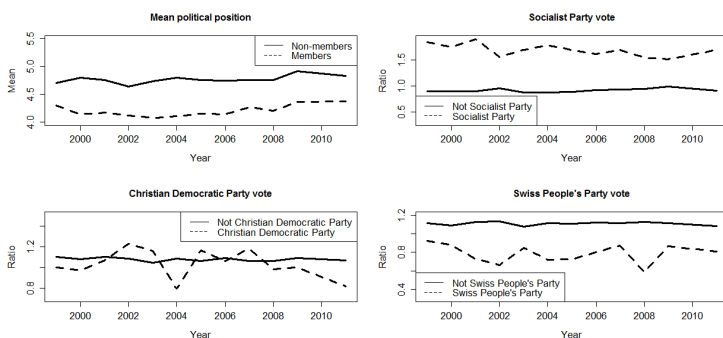
related to the vote behavior for the Swiss People's Party is constructed. In terms of voters share, this party represents the most important conservative force in the Swiss political arena, growing in importance in the last decades. It is also to note that the "Vote not for a given party" option includes the individuals that declare either a preference for another party or candidate or present themselves as non-voters. Moreover, in questions regarding the political orientation, we have to be aware of the possible desirability bias that often affects the answers of individuals with right-wing preferences. The answers given by certain respondents are probably more left-oriented than the real political preference. Hence, answers revealing a right-wing position and the vote for the Swiss People's Party may be underrepresented. However, we can consider the question related to the vote behavior in case of next-day elections as more reliable. It is more complicated to give a non-genuine answer on a very precise question that implies the choice of a well-defined party.

The graphs of figure 5.2 (on the next page) are related to the same period as the previous ones and use the same weighting procedure previously described.

The first graph represents the mean political position of union members and non-members. We see that union members are, on average, 0.3 points more on the left than non-members. Interestingly, we see that both groups are below the neutral score 5, declaring themselves more on the left than on the right. However, we also see a slow trend towards a shift to the right for both groups.

In the second graph, we see that union members have a higher probability (around 1.8 times higher in 1999) of declaring themselves as voters of the Socialist Party than non-members. However, we also notice that the trend is towards a diminution of the differential between the two groups, the ratio of the proportions decreasing from 1.8 in 1999 to 1.7 in 2011. The propensity for an alternative voting choice remains more or less the same over the period.

**Figure 5.2: Mean political position and ratio of the proportions for different voting choices between union members and non-members**



*Source: Swiss Household Panel (SHP)*

The third representation does not show marked differences between union members and non-members regarding the propensity to vote for the Christian Democratic Party. Over the whole period, union members have a slightly higher probability (around 1.1 times more) to opt for an alternative voting choice. The ratio related to the voting choice in favor of the Christian Democratic Party fluctuates around 1 over the years because of the small number of union members that choose this option.

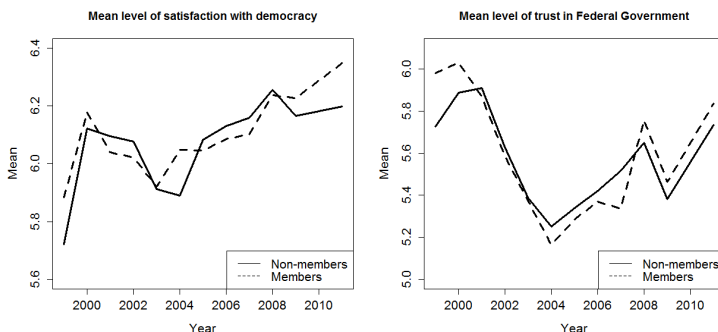
Finally, the fourth graph shows that union members are underrepresented among the Swiss People's Party voters when compared with non-members (the graph is fluctuating because, in our sample, we have only few union members among the Swiss People's party voters). The inverse is true for the chances of opting for another voting choice. These findings are in line with the conclusions we draw from the first graph, union members being more on the left and thus having higher chances of voting for a left-wing party and are less likely to vote for a right-wing party. The enormous difference in the probability of voting for the Socialist Party is related to the narrow relationship this party entertains with the major Swiss union confederation.

### 5.1.3 SATISFACTION WITH DEMOCRATIC INSTITUTIONS

We now turn to the third and last class of political attitudes by considering two variables that capture the level of satisfaction with democratic institutions. The first variable operationalizes the concept of “Overall satisfaction with democracy” through the following question: “Overall, how satisfied are you with the way in which democracy works in our country, if 0 means "not at all satisfied" and 10 "completely satisfied"?”. The second one analyzes more precisely the trust in the Federal Government by asking the respondent: “How much confidence do you have in The Federal Government (in Bern), if 0 means "no confidence" and 10 means "full confidence"?”. In Switzerland, it is particularly pertinent to distinguish the level of satisfaction with the overall democratic system and the trust in the Federal Government. In fact, as described in sub-section 2.1.3, a distinctive feature of the Swiss democratic institutions is a participative system in which the citizens can propose themselves legislative initiatives and are often asked to vote on major political decisions. This system is independent of the power of the Government and is also used as a means to control the actions of the political parties.

Figure 5.3 (on the next page) shows the comparison of the mean level in these two domains between union members and non-members. Again, the analyses presented in the figure refer to the period between 1999 and 2011 with the exception of 2010 and are weighted using the cross-sectional weights provided by the SHP. The first graph shows very similar levels of satisfaction with democracy for union members and non-members. The trend shows an increase in the level of satisfaction in this domain for both groups. The evolution can be linked to the increase in the feeling of political influence cited before. The second graph also shows that the average level of trust union members and non-members put in the Government is similar in all years under examination. The trend we observe for both is a decrease in the trust level between 1999 and 2004 followed by an increase of it from 2005 on.

**Figure 5.3: Mean level of satisfaction with democracy and trust in Federal Government for union members and non-members**



*Source: Swiss Household Panel (SHP)*

## 5.2 THE EXISTING LITERATURE

In the previous section, we have analyzed three sets of political attitudes: political involvement, political orientation and political satisfaction. We have seen that union members are clearly more politically active and more often left-wing oriented than non-members. In terms of satisfaction with democratic institutions, the two groups show a very similar average level. Hence, it is quite interesting to observe that the higher level of political involvement and the left-wing orientation, but also the lower level of job satisfaction described in the previous chapter, do not lead union members to differentiate themselves from non-members as far as political satisfaction goes.

The higher political participation of union members and their left-wing orientation are well established facts in the literature (Freeman 2003; Kerrissey and Schofer 2013; Leigh 2006). The question of the level of satisfaction with democratic institutions has not yet been examined. In this section, we review the main

results and theoretical approaches developed in past research allowing us to make hypotheses about the origins of the differences between union members and non-members we summarized in the previous paragraph. Does union membership really have an impact on the political attitudes of an individual or can we explain the differences between union members and non-members through a pure selection effect? If there is an impact, what is the causal mechanism that explains its appearance?

### **5.2.1 A SELECTION EFFECT?**

As in the previous chapter, in a first type of explanation, the differences in terms of political attitudes between union members and non-members are traced back to a selection effect. Union membership in itself does not influence the level of involvement in politics or the political orientation of an individual. The differences we observe between union members and non-members pre-date the union membership transition. Individuals with a high political involvement and with left-wing views have higher chances of becoming union members than individuals not much interested into politics and having a preference for right-wing parties. In other words, a phenomenon of reverse causality may explain the findings of the previous section.

To what extent is the selection effect hypothesis capable of explaining the differences between union members and non-members? As Kerrissey and Schofer (2013) point out, self-selection plays an important role if the event of becoming a union member is highly dependent on an individual choice rather than on structural features of the industrial relations system. If becoming a union member is largely determined by an individual's will, self-selection represents a serious potential source of bias, even after controlling for the correlation with the main socio-demographic characteristics. Analyzing the impact of union membership on a variety of dimensions of political involvement in a cross-sectional setting, Kerrissey and Schofer conclude that the reverse causality problem is not a big concern for the case of United States, once

they control for basic socio-demographic variables. They provide some empirical evidence supporting this claim by showing that the effect they observe for the whole population of union members does not vary importantly if estimated on subsets of individuals that clearly have a higher discretion regarding the choice of becoming union members than the average wage-earner. Also, they contend that the American industrial relations context makes the union membership choice much more the product of structural features of the labor relations system than an individual decision.

The arguments of Kerrissey and Schofer (2013) are rather convincing, even though, by working with cross-sectional data, they cannot completely exclude the presence of a selection bias. To what extent can we apply the same reasoning to the Swiss case? Apart from the validity of these arguments, the Swiss context may not be so similar to the American one. The individual choice of becoming a union member may play a more important role than in the United States. As we pointed out in sub-section 2.1.1, union membership in Switzerland is associated with an important level of voluntarism. We also saw that unions' activity in the political sphere has clearly increased in the last decades. If this change of strategy allows them to recruit new members, these new members are very likely to be more attentive to the political discourse unions put forward. And if they are, the union membership choice could be more related to their political involvement and orientation than in the past. Highly politically involved and left oriented individuals should be those more receptive to such messages. In the past, since union leaders were attentive to not “invade” the political sphere, seen as beyond the scope of their activities and against the democratic functioning, the political attitudes of a wage-earner did not probably strongly correlate with the probability of being affiliated to a union.

From another perspective, one can argue that political involvement and political orientation are usually highly dependent on family background and long-term life experiences (Manza and Brooks 2010). Can union membership still lead to a modification of past political habits? This seems possible for individuals whose

political opinions are not characterized by an important stability. Young workers may represent such a category of wage-earners.

Finally, there is apparently no literature having examined specifically the effect of union membership on the satisfaction with democracy. However, it is worth emphasizing one point. We have seen that, at a descriptive level, union members and non-members present very similar levels of political satisfaction in the two dimensions we consider. The absence of a difference does not necessarily imply the absence of a selection effect (as we will show in sub-section 5.4.10). For example, individuals having a more critical view on democracy may be those that have a higher probability of joining unions, seeing them as a means to oppose themselves to the democratic institutions. Union membership may then lead to an increase in the satisfaction with democracy. In other words, the absence of a difference between union members and non-members in the level of political satisfaction does not guarantee the absence of a potential selection effect masking the true causal impact of union membership.

### **5.2.2 THREE POSSIBLE CAUSAL MECHANISMS: RATIONALITY, UNIFORMISATION AND VALUE CHANGE**

If union membership had indeed a causal effect on political attitudes, what would this effect be? Previous studies have shown that the level of unionization of a geographic region has a clear positive impact on the aggregate voter turnout (Gray and Caul 2000; Radcliff 2001; Radcliff and Davis 2000; Rosenfeld 2014), but also on individual political participation (Kerrissey and Schofer 2013; Leighley and Nagler 2007; Masters and Delaney 1987; Rosenfeld 2014). Rosenfeld (2010) highlights that the effect on voter turnout is more pronounced in the private sector than in the public one. Other studies, however, contradict these findings. Juravich and Shergold (1988) and Sousa (1993) conclude that union status influences the choice of individuals that actually participate in an election ballot, but it has no impact on the vote vs. no vote choice. Looking more precisely at the effect on political orientation, it is



stated that union membership is responsible for a change in the voting choice, leading their members to vote for left-wing, union-friendly parties and candidates (Boris and Bruno 2010; Bruno 2010; Juravich and Shergold 1988; Leigh 2006; Masters and Delaney 1987; Rosenfeld 2014).

What kind of causal mechanisms may explain the attitudinal change, if any, provoked by union membership? In order to classify the hypotheses made in past research, we refer explicitly to the three main processes identified in the psychological literature as responsible for an attitudinal change (Kelman 1958). Before describing them, it is useful to note that these processes are not mutually exclusive. A single attitudinal change may be driven by a single mechanism, but it may also imply the simultaneous presence of two or of all three processes.

The first process is called “compliance”. It appears when the individual experiences an attitudinal change because of the expected rewards or reactions of other individuals. A compliance-driven change does not imply an internal modification of the attitudinal or behavioral position, but only a modification of the external outcome of it. The individual understands that it is rationally advantageous for him to declare a certain political view even though his intimate beliefs remain unaltered. In other words, compliance takes place whenever the attitudinal change is essentially driven by instrumental motivations.

In which ways could union membership trigger a rational compliance process in union members? Becoming a union member may lead to a rational change in political attitudes if unions act as “information-givers”. An individual may become more politically involved, more attached to a certain political party or change his level of satisfaction with democratic institutions because unions unveil some dimensions on these matters that were previously unknown. In other words, union membership may lead an individual to acquire some knowledge leading him to rationally choose to change his political views. For example, the rhetorical arguments of populist parties may become less effective. On a deeper level,

for some individuals, unions may represent more than a simple association defending their interests at the work workplace and substitute the formative role of other institutions (school, family,...) by building their political outlook. Through the contacts with other members and union leaders, the individual may actually shape his political opinions.

The second mechanism theorized in Kelman (1958), called “identification”, describes the process of uniformisation an individual adopts in order resemble to individual(s) or groups he admires or he wants to belong to. It is important to understand that identification does not imply a rational understanding or an ethical appreciation regarding the attitudinal change by the individual adopting it. The only reason that leads to the change is the desire to resemble to certain individual(s) or groups. In our case, an individual may increase his political involvement, change the declared political orientation or modify his opinion on the democratic institutions in order to feel accepted, to belong to the group of union members without necessarily understanding why the community of affiliates thinks or behaves in a certain way. In this sense, this type of mechanism should mainly concern individuals that do not possess a clear-defined view on the objects of the attitudes.

The third process is what Kelman (1958) describes as “internalization”. It implies a deeper attitudinal transformation than in the two previous processes. The individual modifies his attitudes and/or behaviors because his intimate beliefs about the object of the attitude change. It implies a modification regarding the values, the ethical dimension of the way the individual perceives the world around him. Internalization takes place through a socialization process within the union that leads to a redefinition of the intimate beliefs of the newcomer. In our case, the interaction with other union members and leaders may unveil to the individual new facets of the object of the attitude or the behavior under examination. Union membership may lead an individual to understand why his political involvement is actually important for the democratic functioning, why the arguments of a political party are the “right

ones” and not necessarily those that are rationally more advantageous.

Are there ways to test empirically the importance of each of these processes? Since, as we pointed out at the beginning of this sub-section, the three mechanisms may take place simultaneously and considering the fact that the individual itself may not be always well aware of the reasons leading to the attitudinal change, it is very difficult to think of direct measures of the relative importance of each mechanism. However, by exploiting the fact that our models are estimated on different segments of the population of union members, we can suppose that if some processes are in action, it is more likely to observe a higher effect on individuals with a certain profile than in others. In other words, by comparing the strength of the effect on different sub-populations, we can reasonably infer to what extent the impact may be related to a certain process and not to another.

Regarding the compliance process, the one implying an attitudinal change based on instrumental considerations, one would expect to observe the highest effect, if any, on those individuals that have little knowledge about the political sphere. This kind of knowledge is usually highly correlated with an individual’s education. Hence, if a rational mechanism is in place, lowly educated individuals should be those with the highest attitudinal effect. Kerissey and Schofer (2013) show that this is indeed the case. Regarding the other two mechanisms, identification and internalization, the main studies that confirm their presence are qualitative ones, pointing out the impact of the socialization process union members are exposed to. In particular, they highlight that union membership may lead union members to acquire a class consciousness, to feel as a class in itself in the terms described by Marx (Keddie 1980). In particular, the internalization mechanism can be explained through a process that leads union members to become a “community of fate” leading each member to think of the interest of the union community as his own (Ahlquist and Levi 2013). In the next sub-section we show how, by taking into account the longitudinal dimension of union membership, it is possible to

have some leverage to check for the presence of identification or internalization processes with quantitative data.

## 5.2.3 INTEGRATING THE LONGITUDINAL DIMENSION

In this sub-section, we integrate the perspectives exposed in the two previous sub-sections in a longitudinal perspective. We are not aware of existing longitudinal studies on the effect of union membership on political attitudes. The idea is to show how, by analyzing the variation of the observed effect by duration and episode of membership, we can infer the type of effect explaining the relationship between union membership and political attitudes.

If a selection effect takes place, since it implies that the observed differences between union members are the sole product of pre-existing distinctive traits, an unbiased estimation of the causal effect of union membership on political attitudes should lead to insignificant estimates at every point in time considered. In this chapter, we consider the models based on OLS on differenced data as those consistently estimating the causal effect of union membership (cf. next section to see why it is not necessary to instrument for the union membership variable when the dependent variable is a political attitude). Hence, if a selection effect is what explains the associations described in section 5.1, in the OLS models on differenced data, we should not observe any effect according to any duration or episode of membership.

Regarding the compliance process, we can suppose that, once the individual rationally understands the usefulness of the attitudinal change, union membership should not have an additional effect with time. The only thing that remains to be determined is the duration of membership needed to produce the rational change. If the change only implies the unveiling of certain aspects, the effect should be rather instantaneous, i.e. noticeable already in the first year of membership. If on the contrary it implies the gradual accumulation of political capital for individuals lacking of

knowledge in this domain, we should observe an effect that increases with the duration of membership and the time needed to produce the complete impact may be substantial. Once the effect is fully accomplished, additional years of membership or new episodes of membership should not have an additional impact on the attitudes. In other words, once the needed knowledge is acquired, its effect does not progress over time, it does not disappear after having left unions and it does not increase in new episodes of union membership.

If we focus on the identification mechanism, we can also suppose that the effect should increase during a certain interval of time and not vary with the duration of membership once the individual feels accepted by the union community. The years of membership needed for that to happen are not easy to determine. Here, however, the effect may not last when the individual leaves the community, the main reason for the uniformisation process having disappeared. Hence, if an identification process takes place, the attitudinal effect of union membership should re-present itself in new membership episodes.

Regarding the internalization process, we can again suppose that the effect does not increase once the change in beliefs is fully accomplished. In this case, the time needed to accomplish this process may be longer than in the two previous mechanisms. Changing the intimate beliefs of an individual, modifying the way he observes the world around him may demand a long socialization process. Once the socialization process is accomplished, the new values should remain pretty anchored in the individual's mind. Additional years of union membership or new episodes of membership should not have an additional effect.

Recapitulating, if we are dealing with a selection effect, the impact of union membership should be insignificant in all membership years and episodes of membership. If a rational compliance process explains the relationship, the effect should be observed in the short run and additional years and new episodes of member-

ship should not imply an additional effect. An identification process implies a gradual effect that does not increase further after a certain duration, but that reappears in new episodes of membership. Finally, an internalization mechanism develops gradually during a relatively long time interval, does not increase further after the effect is fully accomplished and does not disappear nor reappear after the individual stops being affiliated to a union or becomes a member for a second, third, ... time.

## **5.2.4 THE FRAGMENTED SWISS UNION LANDSCAPE**

On the basis of the previous arguments, if union membership had indeed a causal impact on political attitudes, what kind of effects would we expect in Switzerland? According to all three processes cited above, considering the descriptive results of section 5.1, we should expect an increase in the political involvement, a shift towards a left position, an increase of the probability to vote for a left-wing party, like the Socialist Party, and a negative effect on the propensity to vote for right-wing parties, like the Swiss People's Party. Regarding the satisfaction with democracy, it is difficult to make hypotheses.

However, as we described in section 2.1, the union landscape in Switzerland is quite fragmented, in particular because of ideological cleavages (Oesch 2006). Contrary to job attitudes, where each union aims at increasing the job satisfaction of its members, some of them in a more effective way than others, here we cannot suppose that all unions pull their members in the same direction. Even though the major union confederation entertains a close relationship with the Socialist Party, not all unions present this affinity. In fact, in chapter 2 we also pointed out the fact that unions affiliated to the confederations enjoy an important degree of autonomy. Moreover, the Swiss union landscape is also characterized by the presence of independent unions. Hence, the party the members may be pulled towards may not always be the Socialist Party (for example, the party may be the Christian Democratic

Party for unions affiliated to the second peak association). Moreover, the emphasis placed on the political dimension may greatly differ across unions since not all of them have been concerned the same way with the recent evolutions of the labor market (Mach and Oesch 2003). Unions more challenged by these new evolutions may exert a higher political influence on their members in comparison with others less threatened by these trends.

Unfortunately, our data do not allow us to take into account the effects of this fragmentation. As we pointed out in sub-section 2.3.2, the analysis by NOGA sector should allow at least partially accounting for the effect in different unions, a union being usually active in certain sectors and not in others. However, in Switzerland it is not rare for wage-earners to have the possibility to choose between conflictual unions (Oesch 2006), making thus the NOGA sector only an imperfect proxy of the type of union an individual is member of. We have to be aware of this fact by interpreting the results.

### **5.3 METHODOLOGICAL ELEMENTS**

In this section, we describe the main methodological elements that distinguish the analyses of this chapter from those of the rest of the thesis. The complete presentation of the overall estimation strategy can be found in section 3.4. In comparison with the analyses of the effect of union membership on job attitudes, the results provided in this chapter do not rely on an instrumental variable estimator. We motivate our choice by arguing why the union membership variable does not present important problems of time-varying endogeneity when the dependent variable is a political attitude. Our analyses are thus based only on the first three models exposed in section 3.4.

### **5.3.1 THE ENDOGENOUS NATURE OF THE UNION MEMBERSHIP VARIABLE**

In the third chapter of the thesis, we highlighted the fact that, when estimating its causal effect on an attitude, the union membership variable may present a problem of time-invariant and of time-varying endogeneity. While the time-invariant selection effect constitutes indeed a potential source of bias to control for, for political attitudes we are led to exclude the presence of a correlation between the variations in the union membership variable and the variations in the error term. Why does time-varying endogeneity, in particular reverse causality, represent a problem for job attitudes, but not for political ones? Intuitively, this happens because, even though unions have increased their political activism, the priority scope of their activities remains the regulation of labor relationships. A decrease in satisfaction with working conditions represents a very good reason to join a union since unions are seen as the main reference organization that can have an impact on this kind of issues. On the contrary, an increase in the level of political involvement or a shift towards a left-wing political orientation do not trigger the transition to union membership as a first response. An individual that becomes more politically involved or more left-oriented is more likely to become a member of a party.

Second, it is very complicated to think of “exogenous shocks” leading an individual to modify his political attitudes and at the same time to increase his propensity to become a union member. This aspect is made even more unlikely by the fact that, for the models on differenced data, we restrict our analyses to individuals that do not change job, employer and/or occupation. More generally, it is also difficult to think of exogenous shocks capable of changing even the sole political attitudes of an individual. In fact, as we pointed out in the previous section, the political stand of an individual is in most cases determined by his social background (family influence, education,...) than by present events. The only events we can think of that could challenge this stability are im-



portant changes in the objective life conditions, such as the transition from employment to unemployment (Owens and Pedulla 2014). However, as just highlighted, the restrictions we impose on the models based on differenced data rule out the impact of such shocks.

We have anyway estimated 2SLS models on differenced data by instrumenting the union membership variable. The instruments used are the density by canton and occupation and the density by NOGA sector and occupation constructed as described in sub-section 3.3.2. The results of these models confirm in almost all cases the absence of a problem of time-varying endogeneity since the estimates of the IV models are very similar to those in the OLS models on differenced data. More formally, implementing a Durbin-Watson test for endogeneity shows that the estimates are quite close and lead to reject the presence of a problem of time-varying endogeneity. The estimates of the 2SLS procedure are however characterized by much higher standard errors than those in the OLS procedure. In such cases, it is always better to rely on the more efficient estimator.

Nevertheless, it is to note that the absence of a problem of time-varying endogeneity does not imply the absence of a problem of time-invariant endogeneity. We know that politically involved individuals and left-oriented ones are more likely to join unions than others. Moreover, we have to be aware of the existence of “innate predispositions” making an individual's political views different from those of other ones and that are difficult to control for. By comparing the estimates from the second and the third model, we will see that controlling for time-invariant heterogeneity across individuals actually leads to important changes. However, being politically involved or voting on the left are usually not sufficient conditions (they are not even necessary) to become a union member. In most cases, a motivation coming from a job dimension has to be there. In general, a change in the political attitudes alone does not lead to a problem of time-varying reverse causality. The pre-existing political attitudes can nonetheless foster the process. A low job satisfaction is more likely to lead to a

union membership choice if the individual is also politically involved and/or left oriented (for example because it is more likely for him to interact with other members with the same political beliefs).

## **5.4 RESULTS**

The fourth section is dedicated to the presentation of the results of the regression models described in section 3.4. The actual results can be found in section 8.3 of the appendix chapter, tables 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16 and 8.17. Section 3.4 gives a detailed description of the models. In particular, in subsection 3.4.8, we provide a recapitulation of the main elements and expose the way the information in the regression tables is organized.

The information given in the models is the same as the one already exposed in the previous chapter, section 4.4. Hence, we do not repeat ourselves. The only difference is that, as we motivated in the previous section, we base our comments only on the first three sets of models introduced in section 3.4. Since the third set of models represents the one we see as the one estimating the “true causal effect” of union membership on political attitudes, our focus is mainly directed towards the estimates of the third column. Nevertheless, the commentary may result rather dense to the reader not interested into the description of every detail. In that case, the reader may directly refer to the synthetic discussion provided in the following section.

### **5.4.1 INTEREST IN POLITICS**

The first political attitude we take into account is the interest in politics. Looking at the main effect, table 8.8, we see that the significantly higher level of political interest union members show compared with non-members in the first model (0.96,  $p < 0.1\%$ ) is still highly significant, but with halved magnitude (0.48,  $p <$

0.1%) in the second pooled OLS model, including a basic set of observable control variables. A similar observation is true for all segments of the population we analyze.

If we control for all time-invariant unobserved heterogeneity in the third model, we see that, in the main effect, the magnitude drops even more (0.12) and the significance level decreases from 0.1% to the threshold of 5%. In different sub-populations, it is now possible to remark important differences. The first episode of membership leads to a significant increase in political interest (0.18,  $p < 5\%$ ), while no significant effect is given for successive episodes. If we distinguish the effect by duration of membership, even though only the effect in the third year or higher is significant (0.30,  $p < 5\%$ ), we see that the impact clearly increases with the duration of membership. Analyzing separately the effect before and after 2005, we observe that the third model shows a significant effect of union membership only for the second period (0.14,  $p < 5\%$ ). The impact on active members (0.14,  $p < 10\%$ ) is slightly higher than the one observed for passive members (0.11,  $p < 10\%$ ). If we focus on the effect on full-time and part-time workers, we observe that the third model points out a higher effect on the second category of individuals significant at the 10% level (0.15,  $p < 10\%$ ). The effect is clearly significant on women (0.21,  $p < 1\%$ ), but not on men. An analysis by age does not reveal substantial differences between the three categories. Only the effect on middle-aged wage-earners is significant (0.13,  $p < 10\%$ ) because they are by far the most numerous group among the three. Highly educated members are those shown to present the highest and the only significant impact of union membership on their political interest (0.19,  $p < 10\%$ ). The results reveal a significant effect on Swiss members (0.11,  $p < 5\%$ ), but not on foreign ones probably because of sample size restrictions in the second category. The results also show a clear contrast between the effect in the private and public sector. While we do not detect large differences in the first two models, once the unobserved heterogeneity is accounted for, the third model clearly shows that the impact of union membership on political interest is insignificant in the private sector, while it is clearly significant in the public sector (0.21,  $p < 1\%$ ).

The analysis by economic sector NOGA reveals a significant effect only in the “Public services” category (0.14,  $p < 10\%$ ). The effect in small and large firms has the same magnitude (0.11), even though it is not significant in neither of the two.

The findings exposed in the previous paragraphs show primarily that the higher level of political interest of union members is at least partially explained by a selection effect. The correlation between union membership and political interest diminishes by passing from the first to the second model and even more when comparing the results between the second and the third model. The control variables included in the second model capture only a part of this selection effect. An important proportion of the selection effect is accounted for by unobserved heterogeneity across individuals, such as pre-existing predispositions that lead some individuals to be more politically active than others. Once we get rid of these individual specific effects in the third model, the effect of union membership becomes much smaller and is often insignificant in the sub-populations we consider.

By analyzing the impact across different sub-populations, we can make some inference about which causal mechanism, among the three cited in sub-section 5.2.2, is most likely the one responsible for the effect we observe. The fact that the impact is only significant for the first episode of membership and not for the successive ones leads us to reject the “identification” process, since the uniformisation mechanism it implies should re-present itself in renewed membership episodes. We have also noticed that the effect increases with the duration of membership, becoming significant only from the third year on. Both the rational “compliance” and the “internalization” process allow for the presence of an increasing effect with the duration of membership. However, the fact that the effect becomes significant only since the third year lends more support to the internalization hypothesis than to the compliance one. In fact, if the effect was explained primarily by the role of “information giver” of unions, we should expect a significant impact already since the first year. We cannot tell if the effect is explained by a deep ethical change in the way members

interpret the world around them, but something more profound than a pure interest-based mechanism seems to be in place.

The analysis by education level lends further evidence against the compliance hypotheses. The rational compliance process implies a higher effect on lowly educated individuals, those with a low political capital and being potentially those that may benefit the most from the formative role of unions. Contrary to the results outlined in the existing literature (Kerrissey and Schofer, 2013), the third model shows that the effect is the highest for highly educated individuals and is not significant in the other two categories. How can we explain that? We can ask ourselves to what extent this aspect could be related to a different type of functioning of unions composed of a large proportion of highly educated members. It is possible that highly educated individuals have a higher propensity to continue the discussion on political matters even outside union meetings.

Regarding the effect by period, since the first two models show pretty similar estimates for both time intervals, the different results that arise in the third model are related to a different importance of unobserved heterogeneity, a selection effect of time-invariant nature being more an issue in the first period than in the second one. Also, the fact that the causal effect of union membership is only significant in the second period lends evidence for an increasing involvement of unions in political matters.

Moreover, the third model reveals that the effect on active members, probably because of their deeper involvement in union dynamics, is higher than on passive ones. It is also quite interesting that individuals in a more precarious work situation, such as part-time workers and women, show a higher effect than full-time workers and men. Since they have more reasons to be dissatisfied with their work situation than the average wage-earner, union membership may lead them to realize that their precarious situation and the outcomes associated are influenced by the political sphere. On the other hand, since these categories are also among

those for which union membership leads to an important improvement in the professional domain (cf. section 4.5), it is also plausible that part-time workers and women develop a deeper attachment to unions than the average member because of these objective benefits. A deeper attachment may then explain the effect in domains that are not directly associated with the main scope of unions' activities.

The absence of marked differences across age classes and small and large firms suggests that the causal mechanism in place is not influenced by the amount of work experience of an individual or by the different union dynamics that may arise in small and large firms.

Finally, the analyses by region, private/public sector and NOGA sector lead us to postulate different politicization levels across different groups identified by these variables. The fact that union membership leads to a significant increase in the level of interest in politics only in German cantons may be interpreted as a sign of a different functioning of unions in these regions, probably more politicized than those in French- and Italian-speaking cantons. The fact that we observe a significant impact only for public sector workers and those working in "Public services" can be interpreted again through the two hypotheses cited above for part-time workers and women. The increased interest in politics may be on one hand related to the fact that public sector workers are led to realize that their job security and their working conditions are highly dependent on regulatory politics. On the other hand, since public sector workers also show higher benefits from union membership in the professional domain (cf. section 4.5), they may be led to develop a higher attachment to unions because of a "gratitude mechanism" and thus be also influenced by unions as far as their political attitudes goes. These results contrast with those described by Rosenfeld (2010) for the United States, where the effect, at least on voter turnout, is much higher in the private than in the public sector.

### 5.4.2 FEELING OF POLITICAL INFLUENCE

Table 8.9 shows the results of the regression models analyzing the relationship between union membership and the feeling of political influence. In the first model, the main effect reveals a significant association between the two variables. (0.32,  $p < 0.1\%$ ). By controlling for the effect of an increasingly larger set of possible sources of bias, we notice that the size of the effect decreases gradually by passing to 0.20 ( $p < 0.1\%$ ) in the second and to 0.18 ( $p < 5\%$ ) in the third model. A similar evolution takes place in almost all segments of the population we consider.

As in the previous sub-section, in the third model, the impact is significant only for the first episode of union membership (0.21,  $p < 10\%$ ). The analysis by duration shows that the effect becomes higher in magnitude and significance as the duration of membership grows (for the third year or more of union membership, an effect of 0.50 significant at the 1% level in the third model). Likewise, the effect from 2005 on is significant (0.20,  $p < 5\%$ ), while it is not during the first period. By referring again to the third model, active members show a higher effect (0.21,  $p < 10\%$ ) than passive ones (0.16,  $p < 5\%$ ). The third model reveals that union membership increases significantly the feeling of political influence for part-time workers (0.27,  $p < 1\%$ ) and women (0.28,  $p < 1\%$ ), while it does not for full-time workers and men. The impact is only significant for middle-aged individuals (0.19,  $p < 10\%$ ) because of the small sample size in the other two age classes. The analysis by education level points out a significant effect only for lowly educated individuals (0.57,  $p < 5\%$ ). By comparing this estimate with those in the first two models, it is interesting to see how, for this category, the effect becomes more important by eliminating the impact of an increasing set of sources of selection bias. This suggests that these confounding factors, such as innate predispositions, are responsible for an underestimation of the effect on lowly educated individuals. The effect is also significant for Swiss members (0.19,  $p < 5\%$ ), but not for foreign ones and for French and Italian cantons (0.26,  $p < 10\%$ ), but not for German ones. Finally, the third model shows that union membership

increases the feeling of political influence for private sectors workers (0.21,  $p < 5\%$ ), but not for those in the public one, for those working in “Primary, manufacturing and construction sector” (0.39,  $p < 5\%$ ) and “Basic services” (0.25,  $p < 10\%$ ), but not in “Finance and other services” and “Public services” and in large firms (0.21,  $p < 5\%$ ), but not in small ones.

The feeling of political influence presents clearly an important correlation with the interest in politics we analyzed in the previous sub-section. Therefore, we comment the results by comparing them with those obtained in the previous sub-section. We describe important similarities, but also striking differences that lead us to reconsider the interpretations given for the effect of union membership on the interest in politics.

The comparison of the three models shows that, as in the case of the interest in politics, the association between union membership and feeling of political influence is at least in part due to a selection effect, individuals feeling politically influential having a higher probability of becoming union members. Once the selection effect is accounted for, union membership still bears a positive and significant effect on the feeling of political influence. It is also interesting to compare the magnitude of the estimates in the main effect for interest in politics and feeling of political influence. The first model reveals that union membership shows a higher correlation with the level of interest in politics (0.96) than with the feeling of political influence (0.32). However, once the problem of the endogeneity of the union membership variable is controlled for, the “true” causal effect of union membership is higher for the feeling of political influence (0.18) than for the interest in politics (0.12). This implies that the self-selection is a phenomenon that affects more strongly the level of interest in politics than the feeling of political influence.

The analyses on the segments of population identified by the two longitudinal variables, episode and duration of membership, show similar results to those described for the interest in politics. In the third model, the impact of union membership is significant



only for the first episode of membership and increases with the duration of membership. These findings lend again support to the rational compliance or the internalization mechanisms, while they are not in line with the expected results in an identification process. Again in line with the results of the previous sub-section, only the period between 2005 and 2011 is characterized by a significant effect of union membership on the feeling of political influence, active members show a slightly higher effect than passive members, part-time workers and women experience a significant increase, while full-time workers and men do not. Contrary to what we observe for the effect on the interest in politics, Swiss members present a higher and more significant impact than foreigners that cannot be solely attributed to the different size of the samples in the two categories. This differential is probably related to the fact that Swiss members can actually vote and convert the attitudinal effect into a behavioral one (the coefficient for foreigners is not zero because some of them, even though they declare a foreign nationality, have also the Swiss citizenship and hence have the right to vote). A last similarity in the estimates between the two attitudes is given by the analysis by age, where only middle-aged individuals present a significant effect of union membership. Since the estimates of the effect are very similar in the other two age classes, this fact is probably only related to the larger sample size in the middle-age category.

The first important distinction with the findings described in the previous-subsection is represented by the fact that, in the analysis by education level, the highest effect and the only significant one is found for lowly educated individuals, while for interest in politics the effect was more pronounced on highly educated individuals. How can we accommodate these results? How is it possible that lowly educated individuals are those that are less influenced by union membership regarding their political interest, while the results reveal a contrary effect on the feeling of political influence? This apparent paradox may be explained by the interpretation the individuals give to the “interest in politics” question. In fact, especially for individuals with a low political capital, the

concept of interest in politics may assume a normative connotation about the political world in general rather than an aseptic evaluation of the level of actual importance given to politics. Declaring oneself “interested in politics” may actually seem to imply “liking politics”. Interestingly, the inversion of the category with the highest effect is also found in other segments of the population. French and Italian cantons are now those in which unions exert the highest and the only significant effect. The same is true for private sector workers. In this case, the results are in line with those on turnout found by Rosenfeld (2010) for United States. We can suppose that, since private sector workers do not work in firms under the direct control of the Government, becoming union members creates for them the sole channel to dialogue with political institutions in the professional sphere. Similarly, contrary to what we saw for interest in politics, the “Public services” sector does not show a significant effect in terms of feeling of political influence, while “Primary, manufacturing and construction sector” and “Basic services” are the only ones with a significant impact. This aspect can be linked to the fact that individuals working in these two sectors are, on average, more active in the private sector and less educated than those in the other two. Finally, while in the previous sub-section the insignificant effect we estimate is the same for small and large firms, here the highest and only significant impact is found in firms with more than 100 employees. We can make sense of this aspect by supposing the existence of different union dynamics between small and large firms, the political mobilization of union members being much easier when these are numerous and interact with each other on a daily basis within the same workplace.

## **5.4.3 PARTICIPATION IN FEDERAL POLLS**

Table 8.10 shows the regression models related to the effect of union membership on the participation in federal polls. Our comments will be very brief since the results show a homogeneous pattern across almost all sub-populations taken into account.

As we pointed out in the descriptive analysis of sub-section 5.1.1, the first model shows that union members are significantly more likely to declare a higher participation in federal polls than non-members. For the main effect, this higher propensity is equal to 0.86 points on a scale from 0 to 10 and is significant at the threshold of 0.1%. A similar significant association can be found in all segments of the population with the exception of foreigners, where the effect is insignificant since most of them do not have the right to vote at the federal level (the coefficient for foreigners is not zero because some of them, even though they declare a foreign nationality, have also the Swiss citizenship and hence have the right to vote).

By controlling for a series of observed variables in the second group of models, the magnitude of the effect of union membership decreases, but, again with the exception of foreigners, remains significant at least at the 1% level in all estimates. For the main effect, the magnitude of the effect is halved (0.43) in comparison with the first model, but is still significant at the 0.1% level.

What happens if we also control for unobserved time-invariant heterogeneity? Surprisingly, the positive effect of union membership goes down almost every time to insignificance. Even more surprisingly, in the few cases in which it shows a significant impact, the direction of it is negative. This happens for active members (coefficient -0.20,  $p < 5\%$ ), part-time workers (coefficient -0.13,  $p < 10\%$ ), the economic sector NOGA “Public services” (coefficient -0.14,  $p < 10\%$ ) and small firms (-0.13,  $p < 10\%$ ). The decrease in such sub-populations may be interpreted as an effect of union membership that leads to view in a more critical way the political world because of the increasingly frequent struggles unions experience when defending their bargaining role (cf. section 2.1).

#### 5.4.4 NO VOTE vs. VOTE

Table 8.11 presents the results of the regression models analyzing the relationship between union membership and vote choice (no vote or vote) in case of elections the next day. The dependent variable is clearly correlated with the one we analyzed in the previous sub-section and the results we find are quite similar.

The first type of models shows that the propensity to vote is significantly higher for union members than non-members in the main effect and in all segments of the population we consider. The main effect reveals that union members have 4.7% ( $p < 0.1\%$ ) more chances to vote on next-day-elections than non-members.

Accounting for the effect of observable variables reduces the effect of union membership, but it remains still statistically significant at least at the 10% level everywhere with the exception of the economic sector NOGA “Basic Services”. In the main effect, the gap between members and non-members is halved (the former having a higher propensity to vote of 2.3%,  $p < 0.1\%$ ).

If we control for all individual time-invariant characteristics, the third model shows that the positive relationship between union membership and election participation goes down almost everywhere to insignificance. In contrast to the participation in federal polls, the few exceptions in which this does not happen, union membership has still a positive effect on the likelihood to vote. These are: full-time workers (0.015,  $p < 10\%$ ), men (0.014,  $p < 10\%$ ), individuals not having gone beyond the compulsory education level (0.05,  $p < 10\%$ ) and the NOGA sector “Finance and other Services” (0.034,  $p < 5\%$ ). The political involvement of unions composed mostly of individuals with such profiles or active in the “Finance and other services” sector may be more pronounced than in the other ones.

### 5.4.5 POLITICAL POSITION

After having examined the effect of union membership on four dimensions of political involvement, we now turn to the analysis of the impact on members' political orientation. We start by focusing on the self-reported political position. By looking at table 8.12, we observe similar findings to those presented in the two previous sub-sections.

With the exception of individuals under the age of 31, where we do not observe a significant difference between members and non-members, the first model shows that, at a purely descriptive level, union members declare themselves significantly more left-oriented than non-members. In the main effect, union members are shown to be 0.64 points ( $p < 0.1\%$ ) more on the left than non-members on a scale from 0 to 10.

Controlling for a set of observed variables in the second type of models leads to a decrease of the effect of union membership, which nevertheless remains pretty important (-0.54 with  $p < 0.1\%$  for the main effect).

Finally, if we control for all time-invariant heterogeneity, the ideological effect of union membership goes down to insignificance in almost every segment of the population of interest we analyze. Only two exceptions appear in the results. In the NOGA sector "Basic services", union membership leads to a slight shift (0.16 with  $p < 10\%$ ) towards a right-wing position. The "Finance and other services" sector is the only one to still show a non-trivial (-0.38) and highly statistically significant effect ( $p < 0.1\%$ ) of union membership towards a left ideological orientation. This last sector was also the only one in which union membership leads to a significant increase in the likelihood to vote in case of next-day elections.

### 5.4.6 VOTE FOR SOCIALIST PARTY

Table 8.13 exposes the analyses of the causal effect of union membership on the likelihood to vote for the Socialist Party in case of next-day elections. The first set of models shows that union members have a significantly higher propensity to vote for the Socialist Party than non-members in all segments of the population examined. For example, in the main effect, union members declare 13% more frequently than non-members a pro-Socialist Party vote intention and the estimate is significant at the 0.1% level.

The estimated effect of union membership decreases when we control for a set of observed variables in the second class of models, but remains still important and statistically significant everywhere with the exception of individuals aged below 31 and foreigners. In the main effect, the 13% effect diminishes to 9.2% and is still highly statistically significant ( $p < 0.1\%$ ).

Controlling for all time-fixed heterogeneity across individuals in the third set of models leads once again the effect of union membership on vote for the Socialist Party choice to insignificance in almost all sub-populations under examination. For the few exceptions we observe, the causal effect is surprisingly directed towards a decrease of the propensity to vote for the Socialist Party. This happens for the third year of union membership or more (coefficient -0.046,  $p < 10\%$ ), the period after 2005 (coefficient -0.025,  $p < 10\%$ ) and women (coefficient -0.041,  $p < 5\%$ ). How to explain these unexpected effects? They can probably be traced back to a composition effect, individuals belonging to these segments coming disproportionately from unions with a low sympathy for the Socialist Party (in particular, unions affiliated to the other main confederation, "Travail Suisse", being more often close to the Swiss Christian Democratic Party).

### **5.4.7 VOTE FOR CHRISTIAN DEMOCRATIC PARTY**

If we focus on the propensity to vote for the Christian Democratic Party, the first column of table 8.14 shows that, in the main effect and across most of the sub-populations taken into account, there is no significant difference between union members and non-members. The only exceptions are part-time workers ( $-0.013$ ,  $p < 10\%$ ), highly educated individuals ( $-0.023$ ,  $p < 1\%$ ) and wage-earners from the “Public services” NOGA sector ( $-0.012$ ,  $p < 10\%$ ) where union members are less likely to vote for the Christian Democratic Party.

If we partial out the effect of a basic set of control variables, the pooled OLS estimations in the second column reveal that the estimate of the main effect remains insignificant, while the coefficients in some sub-populations become significant at least at the threshold of 10%. These are part-time workers ( $-0.017$ ,  $p < 5\%$ ), middle-aged individuals ( $-0.012$ ,  $p < 10\%$ ), highly educated wage-earners ( $-0.020$ ,  $p < 10\%$ ), members coming from the “Basic services” ( $0.022$ ,  $p < 10\%$ ) or the “Public services” ( $-0.018$ ,  $p < 1\%$ ) sector and those working in small firms ( $-0.015$ ,  $p < 5\%$ ).

What happens if we control for all time-invariant heterogeneity between union members and non-members? Almost all effects become insignificant. The only exception is represented by French or Italian-speaking regions ( $0.014$ ,  $p < 10\%$ ) where union members show a slightly higher propensity to vote for the Christian Democratic Party than non-members. This fact may be explained by a stronger presence of unions associated with the “Travail Suisse” confederation in such regions.

### **5.4.8 VOTE FOR SWISS PEOPLE'S PARTY**

In table 8.15, we give the results regarding the relationship between union membership and the propensity to vote for the Swiss People's Party in case of next-day elections. The first class of models shows that union members are generally significantly less likely

to vote for the Swiss People's Party than non-members. The only exceptions are people aged under 31, individuals with at most a compulsory education level, foreigners and wage-earners coming from the "Finance and other services" sector, where the difference with non-members is not statistically significant. In the main effect, we observe a 3.3% ( $p < 0.1\%$ ) lower probability of a Swiss People's Party vote intention for union members.

Accounting for the effect of a series of observed variables in the second type of models leads to a decrease in the magnitude and, in some cases, in a slight diminution of the significance of the effect of union membership. For the main effect, the impact decreases to 2.4% and is still significant at the 0.1% level.

The third type of models, where we are capable of getting rid of all possible time-invariant confounding factors, leads us again to cool down about the statistical euphoria. The effect of union membership becomes insignificant almost everywhere. The only exception is the effect of the first year of union membership, where an effect smaller than 1% towards a decrease in the propensity to vote for the Swiss People's Party and significant at the 10% level still remains.

### **5.4.9 OVERALL SATISFACTION WITH DEMOCRACY**

After having described the effect of union membership on the political involvement and orientation of an individual, we now turn to the analysis of the impact on political satisfaction. Table 8.16 gives the results of the regression models on the relationship between union membership and the overall satisfaction with democracy. The estimates of the purely descriptive models represented in the first column reveal an absence of significant differences between union members and non-members or a small positive effect of union membership in some cases. This effect appears in the main effect (0.061,  $p < 10\%$ ), union membership for three years or more (0.12,  $p < 5\%$ ), the second episode or higher of union membership (0.16,  $p < 5\%$ ), the period before 2005 (0.083,  $p <$



10%), passive members (0.11,  $p < 1\%$ ), part-time workers (0.11,  $p < 5\%$ ), women (0.14,  $p < 1\%$ ), individuals aged more than 50 years (0.17,  $p < 5\%$ ), individuals with a secondary education (0.10,  $p < 5\%$ ), Swiss members (0.089,  $p < 5\%$ ), German-speaking regions (0.067,  $p < 10\%$ ), public sector workers (0.10,  $p < 5\%$ ), the NOGA sector “Public Services” (0.11,  $p < 5\%$ ) and small firms (0.092,  $p < 5\%$ ). Highly educated members are the only ones that are, on average, significantly less satisfied than their non-member counterparts (-0.12,  $p < 5\%$ ).

All these effects become insignificant in the second class of models, once we control for a basic set of observed variables. They are thus the consequence of a selection effect.

The third class of models confirms this aspect with a single exception. Controlling for all non-varying heterogeneity across individuals reveals a negative effect of union membership (-0.26) on the satisfaction with democracy for individuals aged below 31 years and significant at the 10% threshold. The fact that a significant effect is only found for these individuals may be explained by the lack of an important political experience allowing them to shape a stable opinion on the Swiss democracy before joining unions. The negative direction of the effect may be explained by the increasingly higher struggles of unions to defend their bargaining role, in particular for the rights of young wage-earners.

#### **5.4.10 TRUST IN FEDERAL GOVERNMENT**

Finally, in table 8.17 we focus on the effect of union membership on the trust in the Federal Government. In the pooled OLS models without control variables, we generally do not detect significant differences between union members and non-members in the level of trust in the central Government. Significant differences between union members and non-members appear only in certain sub-populations. Union membership is associated with a higher level of trust for first-year union members (0.14,  $p < 0.1\%$ ), the period before 2005 (0.085,  $p < 10\%$ ), women (0.095,  $p < 10\%$ ),

individuals with a secondary education level (0.13,  $p < 5\%$ ), Swiss members (0.085,  $p < 10\%$ ), German-speaking regions (0.10,  $p < 5\%$ ) and small firms (0.098,  $p < 10\%$ ). The only significant negative effect shows up for highly educated individuals (-0.19,  $p < 5\%$ ).

Controlling for observed variables in the second set of models makes all the effects insignificant with the exception of the negative one on highly educated individuals (-0.13,  $p < 10\%$ ). Hence, it seems that most of the effects detected in the first type of models are the result of a selection effect.

What happens if we partial out the effect of all time-invariant unobserved heterogeneity? Interestingly, the results reveal that the negative effect observed for highly educated members shows up in other categories. What does it mean? This means that the second set of models does not account for some non-varying individual characteristics that lead individuals more trustful in the Government than the average wage-earner to have a higher propensity to join unions. This is indeed a selection problem, but in this case it masks the true effect instead of exaggerating it. The selection problem leads to a positive bias in the estimation of the effect of union membership on the trust in the Federal Government. We see that the main effect of union membership is a negative one (-0.14,  $p < 1\%$ ). Unions lead thus their members to have a more critical view on this central institution.

The third set of models also reveals that the effect is significant only in the first episode of union membership (-0.20,  $p < 1\%$ ). This negative relationship increases with the duration of membership: there is no significant effect in the first year, while the negative effect becomes apparent in the second (-0.16,  $p < 10\%$ ) and after the third year of union membership (-0.35,  $p < 0.1\%$ ). The presence of an effect that does not reappear after the first episode of membership excludes that the causal relationship is explained by an “identification” mechanism. The fact that the effect becomes significant already since the second year of membership makes more likely that a rational “compliance” process may be in

place instead of a “internalization” mechanism that would probably require a higher duration, as in the first attitude analyzed at the beginning of this section. The presence of a rational rather than a value-based process is indeed a logical hypothesis. The level of trust in the Federal Government has not much to do with ethics, but more with the interests members may see supported or not by the central institution. The fact that the impact is negative suggests that the politicization process started in the 90's leads unions to represent the Government as a hostile actor, not guaranteeing to unions to fully play their bargaining role.

The relationship is also significant before 2005 ( $-0.22$ ,  $p < 0.1\%$ ), but not from 2005 on. It seems that the hostile view of the Government has been put forward especially in the first phase of the politicization process. We observe a higher negative effect on active ( $-0.18$ ,  $p < 5\%$ ) than on passive members ( $-0.13$ ,  $p < 5\%$ ), lending evidence for a process that is dependent on the level of involvement in unions' activities.

If we look at the type of occupation, we remark that the negative effect is only significant for full-time workers ( $-0.20$ ,  $p < 5\%$ ). It is difficult to interpret this differential between part-time and full-time workers since it apparently contradicts the higher effect we observed for part-time workers in terms of interest in politics and feeling of political influence.

The effect by education is only significant for highly educated individuals ( $-0.23$ ,  $p < 1\%$ ). We can suppose this happens because, by having a higher knowledge on the matters discussed during union meetings, they react more vigorously to the problems experienced by unions than individuals with a lower education level.

Very interestingly, the negative effect is apparent in the public sector ( $-0.19$ ,  $p < 1\%$ ), but not in the private one. We can make sense of this result by supposing that the emphasis unions place on the governmental responsibility in the labor market regulation is higher in firms in which the Government actually has a primary role, i.e. in public firms.

The negative relationship shows up for the “Primary, manufacturing and construction sector” ( $-0.27, p < 5\%$ ) and “Public services” ( $-0.14, p < 5\%$ ) NOGA sectors, while it is not significant in the “Basic services” and in the “Finance and other services” categories. The explanation of the effect in “Public services” is the same as the one given in the previous paragraph since public sector jobs are the majority in it. Why does a negative effect show up for the “Primary, manufacturing and construction sector”, but not for the other two? The tertiarization of the labor market, implying a strong decline in the “Primary, manufacturing and construction sector”, may be responsible for a more critical view on the Federal Government of unions in this sector than in other ones.

A final set of analyses on the remaining segments of the population shows either homogenous effects or effects that can be traced back to the sample size disproportions across groups. We see that the impact is rather homogeneous for men ( $-0.14, p < 5\%$ ) and women ( $-0.15, p < 5\%$ ). The effect is significant only for middle-aged individuals ( $-0.14, p < 5\%$ ), probably because of smaller sample sizes in the two other age categories. The statistical significance of the relationship that appears in the German-speaking regions ( $-0.16, p < 1\%$ ) and not in the French or Italian ones is probably due to sample size limitations in the latter category. Finally, a slightly lower negative relationship is apparent in small ( $-0.13, p < 10\%$ ) in comparison with big firms ( $-0.17, p < 5\%$ ).

## **5.5 DISCUSSION: THINKING DOES NOT NECESSARILY MEAN DOING...**

We introduced the reader to this chapter by showing that union members are, on average, more politically involved than non-members, often left-wing ideologically oriented and as satisfied as the rest of the population of wage-earners with the democratic institutions in Switzerland. In order to ascertain whether these results are related to a causal effect of union membership, we estimated three sets of models that exclude stepwise the possible sources of selection bias. The third model, OLS on differenced

data, represents the one we consider as giving the “true” causal effect of union membership on the ten political attitudes and behaviors we considered in this chapter.

The estimates in the first model (pooled OLS without control variables), giving a purely descriptive account of the relationship, confirm the observations made at the beginning of the chapter. In comparison with non-members, union members are significantly more interested in politics, declare a higher feeling of political influence and show a higher propensity to participate in federal polls and elections. On average, they declare significantly more often a left-wing position, vote more frequently for the Socialist Party and are less inclined to favor the Swiss People’s Party. They do not show a significant differential in terms of vote propensity for the Christian Democratic Party and are also as trustful as non-members in the Federal Government. Finally, they show a slight and barely significant higher level of overall satisfaction with democracy in Switzerland.

Including a basic set of control variables in the second model (pooled OLS with control variables) reveals that the significant difference union members show in certain attitudes in comparison with non-members is at least in part related to a selection effect. In all these variables (interest in politics, feeling of political influence, participation in federal polls, vote in case of next-day elections, political position, vote for Socialist or Swiss People’s Party) the gap between the two groups decreases in magnitude, but remains nevertheless highly significant. The effect of union membership on the propensity to vote for the Christian Democratic Party and the level of Trust in the Federal Government remain insignificant. The barely significant positive association in the overall satisfaction with democracy becomes also insignificant.

The final model (OLS on differenced data with control variable) shows that union membership has an attitudinal effect, but not a behavioral one. All significant effects related to the voting behavior and to the political position become clearly insignificant.

The overall satisfaction with democracy remains insignificant. Accounting for all time-invariant unobserved heterogeneity between union members and non-members decreases further the magnitude of the impact for “Interest in politics” and “Feeling of political influence”, but the estimates are still significant. Finally, the impact on the trust in the Federal Government becomes negative and significant, revealing the presence of a particular form of selection effect. In this case, the self-selection bias leads to mask the true causal impact instead of exaggerating its magnitude like in all dependent variables examined in this work. Wage-earners naturally more inclined to trust the Federal Government (and probably also institutions or people in general) have a higher propensity to join unions and obscure the “true” negative effect of union membership in this domain.

Overall, these results show that self-selection into union membership correlated with political attitudes represents a serious source of bias in our estimations for the Swiss case. Contrary to what Kerrissey and Schofer (2013) describe for the United States, the reverse causality issue related to pre-existing predispositions is anything but trivial in Switzerland. Apart from questioning the conclusions of Kerrissey and Schofer, we can say that union membership in Switzerland is probably much less a product of structural features of the labor market than in the United States. As we described in sub-section 2.1.1, unionism in Switzerland is associated with high levels of freedom and voluntarism. Becoming a union member is often the consequence of an individual choice rather than an event originated by the sole features of the working context (closed shops, in particular, are abolished in Switzerland since 1925 (Ebbinghaus 2000)).

Looking more in detail at the three attitudinal variables that show indeed a significant effect of union membership (interest in politics, feeling of political influence and trust in the Federal Government), we observe that in all three cases the impact increases with the duration of membership and is more marked in the first episode of membership than in successive ones. Trying to understand the leading mechanism of the effect, since the impact does

not reappear in repeated episodes, the presence of an identification process can be ruled out. The negative effect on the trust in the Federal Government and the positive impact on the feeling of political influence become significant only from the second year of union membership on. If we were dealing with a purely instrumental attitudinal change, we would expect an impact already in the first year and probably not observe a constant augmentation after the second year of membership. On the other hand, a value-driven internalization process should not be apparent earlier than in the third year of membership. The truth lies probably somewhere in-between, even though we can suppose that the weight of instrumental considerations should be more important than a value-driven attitudinal change. In fact, the trust in the Federal Government and the feeling of political influence can be seen as dimensions primarily related to pragmatic considerations rather than to ethical ones. On the contrary, the effect on the interest in politics becomes significant only from the third year of membership on and it seems thus primarily related to a value-driven change.

The interest in politics question seems therefore more affected by ethical considerations than the other two. This is something we are also led to suppose by analyzing the effect across different segments of the population. In fact, contrary to our expectations, the effect on the level of interest in politics is the highest for individuals with a high political capital (highly educated individuals), while the impact on the feeling of political influence is more pronounced on those with little knowledge on the political sphere (lowly educated individuals). Interpreting this inversion of the category most affected by the impact in the two attitudes is not straightforward. The difference between the two variables is probably related to the interpretation some respondents give to them. Being interested in politics may be seen as implying “liking politics”, while feeling politically influential may not be associated with a normative evaluation of the political world. The effect on lowly educated individuals in the feeling political influence is thus presumably related to a role of “information-giver” of unions,

while the increased interest in politics for highly educated individuals may be the product of their higher propensity to continue the political discussion with other members even outside of union meetings. Among the three education levels taken into account, highly educated individuals are also the only sub-population to show a significant decrease in the trust in the Federal Government. This may again be related to the higher-than-the-average cultural capital of such individuals, being more equipped to continue the critical discussion on the Government's actions even outside union reunions.

As we said, quite surprisingly, the final model shows that union membership has an attitudinal impact in some dimensions, but does not significantly influence the political position and the voting behavior of an individual. How can we make sense of this absence of effect? We cite two hypotheses. These two competing explanations, a decreased attachment of members to unions and a higher self-selection, contribute probably simultaneously to the results we observe.

First, if we suppose that a behavioral effect is the sign of a more profound impact of union membership than an attitudinal one, the attachment members feel for their unions may not be strong enough to trigger a behavioral change. Contrary to the period before the '90, where a high proportion of male industrial workers composed the bulk of Swiss union members, unions may not represent anymore a group considered as an identity reference. The decrease of active membership described in sub-section 2.3.1 goes towards this direction. We can suppose the appearance of a more pragmatic type of membership, wage-earners becoming members only for the time needed to exploit unions' services and leave once the instrumental motivations of membership have disappeared. In this respect, it would be very interesting to analyze the importance of free-riding behavior. The analyses of sub-section 2.4.2, however, do not confirm this trend and show that, at least between 1999 and 2011, the mean duration of membership is not affected by a significant decrease. It is also possible that the increased po-



litical involvement that Swiss unions show from the '90s on is essentially focused on the institutional level of bargaining by neglecting the organizational dynamics involving interactions with their affiliates.

On a second level, we can ask ourselves to what extent the very increase of the political involvement of Swiss unions may be responsible for a decreasing causal effect on members' attitudes. After all, by considering the clear disproportion of union members having left-wing preferences and voting for the Socialist Party, we may expect that at least some of the newcomers should modify their political stand by interacting with other members. We can try to explain this fact through the important self-selection that characterizes union membership regarding political attitudes. As we described in sub-section 2.1.3, from the '90s on, Swiss unions heavily increased their involvement in the political sphere by pursuing a twofold purpose. On one hand, they attempt to defend their bargaining position at the institutional level. On the other hand, this strategy is also aimed at recruiting new members not only on the basis of work-related issues, but also because of an affinity between unions' political orientation and the one of potential new members. If this strategy was effective, it would lead to a higher selection effect. As a consequence, if an increasing proportion of new members show political attitudes already very similar to those of other members and union leaders, the causal effect of union membership would be lower. An individual that already has a political view very similar to the one advocated by unions has not much margin for variation. In the case of interest in politics and political involvement, since the attitudes are measured on a 0-10 scale, we still observe an effect because individuals that show extreme values of political involvement are not very frequent. On the contrary, the variable that represents the vote for the Socialist Party is binary. If an individual is already a Socialist Party voter and most unions promote the vote for such a party, we do not have the possibility to observe a change. Union membership may indeed contribute to improve the image of the Socialist Party to that very individual, but, since he was already a Socialist Party voter before becoming a member, we cannot observe

such a change. It would be interesting to analyze the attitude towards the Socialist Party on a finer scale. This hypothesis is corroborated by the high differential in terms of propensity to vote for the Socialist Party we observe at a descriptive level, but it is also challenged by the absence of an effect regarding the dimension measuring the political position. In fact, the political position question is expressed on a 0-10 scale and we still do not observe a significant effect of union membership. This may actually imply that the increased political involvement triggered by union membership is not politically oriented. We may also question the validity of such a measure of political position, being quite abstract and leading most individuals to declare a neutral answer. Moreover, the fact that left-wing and right-wing political arguments include an increasingly higher set of similar items may contribute to blur the left-right dichotomy.

The presence of a high selection effect limiting the possible impact of union membership can also be applied to explain the absence of an effect against the vote for non-union-friendly political forces, such as the Swiss People's Party. We can suppose that an individual with right-wing preferences may join a predominantly left-wing union mainly because of issues in the professional sphere and not because of political affinity motivations. If that is the case, we can expect that such an individual would have a lower propensity to participate in union meetings and to interact with union members that do not share his political view. Hence, paradoxically, unions that are more politically involved and promoting a strong preference for a certain party may be those that produce a smaller causal effect because the self-selection is higher. This does not mean that such unions are ineffective since this strategy may increase the number of new members and constitute indeed a sign of success. This hypothesis only implies that such unions do not shape the political behavior of newcomers since they attract individuals that already share their political views.

If we look at the variations across different sub-populations in the three attitudes that show a significant effect of union mem-

bership, in terms of interest in politics and feeling of political influence, as in the previous chapter, active members, part-time workers and women are the sub-populations in which the effect of union membership is more pronounced. We can trace back this differential to the precarious job situation of such wage-earners that may lead to a higher politicization process than in other sub-populations. Union membership may lead these categories of individuals to become aware of the extent to which their situation is related to regulatory politics. On the other hand, since these categories are also among those for which union membership leads to an important improvement in the professional domain (cf. section 4.5), it is also plausible that part-time workers and women develop a deeper attachment to unions than the average member because of these objective benefits. A deeper attachment may then explain the effect in domains that are not directly associated with the main scope of unions' activities. It is also interesting to remark that active members and those working part-time are among the few categories for which union membership leads to a decrease in the likelihood to participate in federal polls. The increased politicization seems thus to lead to a disengagement from the institutional sphere rather than a growing implication.

Focusing on the dichotomy public/private sector, we observe that the positive effect on the interest in politics and the negative one on the trust in the Federal Government is significant only for public sector members, while the effect on the feeling of political influence is only apparent in the private sector. The significant effect on public sector members can be related to particular union dynamics and to the fact that, by being directly influenced by the Government's decisions, the hostile feeling unions trigger towards the central institution is more pronounced on them. As for part-time workers and women, we can also suppose that the higher benefits public sectors manage to provide to their members in the professional domain (cf. section 4.5) may trigger a higher attachment to unions and thus explain the presence of an effect outside of the working sphere. The significant increase in terms of feeling of political influence observed only for private sector workers can be attributed to the fact that, by not having a direct link to public

institutions, union membership creates for them a unique channel of political influence in the professional sphere. Similar conclusions can be drawn with an analysis by NOGA sector by assimilating “Public services” to “Public sector” and “Primary, manufacturing and construction sector” and “Basic services” to “Private sector”.

While there is no significant variation according to firm size in the impact of union membership on the interest in politics, the effect is more pronounced for large firms when analyzing the impact on the feeling of political influence and the trust in the Federal Government. These differences are probably related to the different sectorial implantation of companies with different sizes and also to different union dynamics.

In conclusion, a causal analysis of the impact of union membership on political attitudes reveals that the important differences we observe between union members and non-members are to a large extent related to pre-existing distinctive traits between the two groups. Union membership shows a significant, even though small, attitudinal effect on political attitudes which, however, is not transposed into a variation of the voting behavior or into a change of the self-declared political position. The absence of a behavioral effect may be traced back to the low identity role unions play for their members or to a high selection effect not leaving much margin for an impact on newcomers that already share unions’ political views. Becoming a union member increases the interest in politics and the feeling of political influence and decreases the trust accorded to the Federal Government. A longitudinal analysis shows that the attitudinal change is related to instrumental and/or value-driven motivations. An analysis on different segments of union members reveals interesting patterns. Some of them are clearly in line with the theoretical expectations and with the results outlined in the previous chapter on job attitudes, while others are more surprising.

## **6. BEYOND WORK AND POLITICS: UNIONS AS SOCIAL ACTORS**

In the previous two chapters, we examined how becoming a union member can influence the job satisfaction and the political attitudes of an individual. In both cases, the attitudinal impact of union membership has been considered in light of the function unions accomplish in the regulation of employment relations. Unions can influence different facets of job satisfaction of their members because the defense and/or the improvement of their working conditions is the main purpose of their existence (Degen 2011). Regarding the political dimensions, the potential impact of unions on their affiliates has been analyzed as strictly related to the necessity of protecting their scope in an increasingly hostile industrial environment. In this chapter, we want to go a step further and see whether the attitudinal effect of union membership can influence dimensions that are not directly linked to the protection of the individual work situation of a particular union member. We will examine whether unions can be seen as communities, as groups that do not only contribute to the objective interests of the individual, but that also shape his values, his identity, his way of observing the world around himself. In other words, we want to see if the revitalization process (Baccaro et al. 2003) we mentioned in the previous chapter has taken other forms than an increased instrumental political involvement.

Two main arguments can be cited to suppose the existence of an effect on the attitudes of union members in domains that are distinct from work and politics. The first one is the increased tendency of unions to present themselves as “social movements”, as “moral actors” and not only as instrumental defenders of the in-

terests of their affiliates (Degen 2000; Oesch 2011). Such a strategy is mainly transposed into a growing media coverage of unions involved in the discussion of matters not directly related to the employee-employer relationship (gender equality, abortion, environmental policies, racial discrimination,...).

On the other hand, in particular in Switzerland, unions have understood the need of developing important efforts directed towards the increase of the commitment of their affiliates. In a growingly flexible labor market, a long-term relationship with union members can only be established by emphasizing the relevance of elements that go beyond the professional domain. Unions accord an increasingly higher importance to the symbolic level of membership (community slogans, union gadgets,...) (Degen 2011). Also, since the population of union members is no longer essentially represented by a monolithic block of blue-collar workers, but by an increasing variety of professional profiles and ethnic origins, a deeper attachment to unions going beyond the particularistic interests of each member is necessary in order to guarantee the cohesion of union members. In this respect, the tendency described in the previous paragraph is in line with this objective.

Although the goal behind these strategies is realistically once again represented by unions' efforts to survive, trying to attract new union members and to increase the fidelity of old ones, it does not mean these strategies are not effective. Unions attempt to expand the set of reasons leading a wage-earner to become a member from simple utilitarian considerations related to working conditions to other types of motivations. The affinity with old or potential members is being expanded on new grounds. An individual may join a union not only because of instrumental considerations, but also because of an affinity with the values, the ethical aspects unions defend in the public sphere.

In this chapter, the objective is to examine whether these tendencies conduct only to a selection of union members with certain types of beliefs or whether union membership is indeed

responsible for an attitudinal change for a specific set of attitudes. We will verify whether union membership leads to a change in the attitudes related to the defense of interests that go beyond those of the individual itself. In particular, we will analyze the effect on the opinion on the redistribution from the wealthy layers of the society to the poor ones, the attitudes regarding the opportunities that should be offered to foreigners on the Swiss soil and the predisposition to engage in volunteering activities.

The chapter is structured the same way as the two previous ones. The starting point is a purely descriptive account of the evolution of the differences between union members and non-members in the four dimensions of the “other-regarding” attitudes we take into account. These differences are then analyzed through the theoretical approaches and the empirical evidence the existing literature has provided on the subject. The third section briefly describes the methodological approach used to test for the presence of a causal relationship between union membership and these dimensions. The fourth one presents the results of the analyses. Finally, we discuss the implications of our findings.

## **6.1 UNION MEMBERS: OTHER-REGARDING INDIVIDUALS**

In order to examine the effect of union membership on the other-regarding attitudes of an individual, we use four variables available in the data of the Swiss Household Panel (SHP). Two of them are related to the opinion of an individual on the welfare distribution towards the most disadvantaged, a third one takes into account the point of view regarding the opportunities Switzerland should offer to foreigners and the last one represents the participation in volunteer work.

The first variable captures the respondent's opinion on social expenses and is operationalized through the question: “Are you in favour of a diminution or in favour of an increase of the Confederation social spendings?”. The possible answers are: “In favour

of a diminution”, “Neither” and “In favour of an increase”. The second variable describes the opinion regarding the taxes on high income and takes the form of the following question: “Are you in favour of an increase or in favour of a decrease of the tax on high incomes?”. The answer options are: “In favour of an increase”, “Neither” or “In favour of a decrease”. Both questions are implicitly related to an individual's attitude regarding the welfare redistribution towards the more disadvantaged. However, the first one may be perceived in a different way than the second one, since it implies an increase in the social spending, but not specifying exactly the source of these allocations. Low-income individuals may also feel affected by this increased spending. The second question, on the contrary, explicitly gives the target population the resources for the redistribution are drawn from, i.e. high-income individuals. We should be aware of these differences when interpreting our results. Because of these reasons, the answer options revealing an attitude favorable to redistribution in the first question are subject to a more negative connotation than those in the second one. Moreover, in light of what we will present about the existing literature, it has to be said that these two questions differ from the usual questions about redistribution used to understand whether union membership has an impact on that kind of attitude. For example, the dependent variable examined by Mosimann and Pontusson (2014) explicitly asks the individuals whether “the Government should take measures to reduce differences in income levels”. Such a question is more directly interested into the moral side of the issue without really focusing on the practical channels used to accomplish this redistribution. Our two questions, on the contrary, highlight much more the pragmatic level.

The third variable captures the opinion on the chances that should be given to foreigners on the Swiss soil and is phrased as follows: “Are you in favour of Switzerland offering foreigners the same opportunities as those offered to Swiss citizens, or in favour of Switzerland offering Swiss citizens better opportunities?”. The possible answers are: “In favour of equality of opportunities”, “Neither” and “In favour of better opportunities for Swiss citizens”. As in the answers related to the preference for right-wing

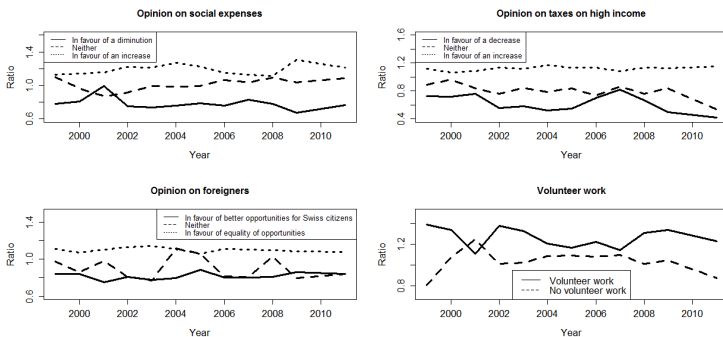


parties, we can ask ourselves to what extent the option of better opportunities for Swiss citizens may be subject to a social desirability bias for a part of the respondents, leading to an underrepresentation of such answer option.

The last variable asks for the presence of volunteering activities: “Do you have honorary or voluntary activities within an association, an organisation or an institution?”. “Yes” and “No” are the two answer options. It is also specified that “voluntary activities relating to private initiative, such as helping neighbours, at local fetes are not included here; payments for meetings, expenses or payment of symbolic amounts are not considered as forms of remuneration”.

After having described the variables at the center of the chapter, figure 6.1 represents the ratio of the proportions between union members and non-members in each answer option of the four variables.

**Figure 6.1: Ratio of the proportions between union members and non-members in four other-regarding attitudes**



Source: Swiss Household Panel (SHP)

The concept of “ratio of the proportions” is the same as the one introduced in chapter 2 and already used in sub-sections 5.1.1 and 5.1.2 when comparing the voting behavior of union members and

non-members. A ratio greater than 1 implies that union members have a higher propensity to be represented in a given answer option than non-members. Conversely, a ratio less than 1 means that a union member has a lower probability of giving a certain answer than a non-member. The analysis is again based on the period between 1999 and 2011 with missing data on 2010. Cross-sectional weights are used in order to ensure the representativity of the results.

The first graph shows that union members are overrepresented among the category of individuals in favor of an increase of social expenses. They have on the contrary a lower probability of desiring a decrease in welfare spending, while they are more or less on the same level as non-members regarding the “Neither” answer option. If we look at the evolution, we see that the higher propensity of union members of being favorable to an increase of social expenses, with the exception of some fluctuations over the period, remains more or less constant at the 1.1 level. On the contrary, the ratio in the answer related to a decrease in social expenses becomes lower in recent years, passing from 0.8 in 1999 to 0.7 in 2011. Also, we see that the proportions of union members and non-members unwilling to change the present situation become more and more similar, their ratio being very close to 1 in 2011.

By looking at the second graph, we get to similar conclusions. Union members are more likely to declare themselves in favor of an increase of high-income taxation in comparison with non-members. This higher propensity remains more or less constant over the period, the ratio showing an overrepresentation of 1.1 times for union members in this dimension. Union members are less likely than non-members to declare themselves in favor of a diminution or to affirm a no-change preference on the level of taxation on high income. The ratio in both these answers decreases over the period of around 0.2 points between 1999 and 2011.

The third graph shows that union members are 1.1 times more likely than non-members to be in favor of the equality of opportunities between foreigners and Swiss citizens. This differential remains constant over the period. Conversely, they are 0.8 times less likely to affirm the right of better chances for Swiss citizens. These ratios remain relatively constant over the period. The intermediate answer, “Neither”, is very rarely chosen. Because of that, it presents a fluctuating behavior, a change in the opinion of few individuals being capable of drastically modifying its level from one year to the other. Hence, we leave aside the interpretation of this third ratio of the proportions.

Finally, the fourth graph shows that union members are clearly more often engaged in volunteering activities than non-members. This higher propensity fluctuates between 1.3 and 1.4 times between 1999 and 2011.

The observations made on the basis of figure 6.1 are well known facts. The higher propensity of union members to support redistributive policies, their higher tolerance for foreigners and also their higher propensity to engage in volunteer work have already been highlighted in other national contexts (see for example Leymon (2011) for the United States). If the results of these descriptive findings are well known, the reasons behind the differential between union members and non-members in these domains are much less the object of a consensus among researchers. In the next section, we provide the main explanations the existing literature has provided on the subject.

## 6.2 THE EXISTING LITERATURE

This section is structured the same way as the second section in the previous chapter. We first of all describe why there is good reason to believe that the differences observed between union members and non-members may at least be in part the result of a selection effect. We then analyze the main mechanisms through which union membership may be responsible for a causal effect,

if any, on individual other-regarding attitudes. We then outline how these processes may be analyzed in a longitudinal perspective. Finally, we stress again the importance of considering the fragmentation of Swiss unions in order to interpret the results we describe in the fourth section.

### **6.2.1 A SELECTION EFFECT: AGAIN?**

The first type of argument explaining the higher other-regarding propensity of union members is again represented by a selection effect (Checchi, Visser, and Van De Werfhorst 2010). Being favorable to redistribution towards the more disadvantaged, accepting foreigners as individuals with the same rights as native citizens and being engaged in volunteering activities are aspects clearly correlated with the social participation of an individual. Since, as we pointed out several times in the previous pages (cf. in particular sub-section 3.1.3), the union membership choice can be seen as an outcome determined by professional and social factors, the more an individual is socially involved, the higher are the chances he becomes a union member. In other words, if a selection effect takes place, it would be responsible for an upward bias of the impact of union membership on the attitudes we consider in this chapter. If self-selection constitutes a source of bias, we also have to be aware of the fact that the impact of “innate predispositions” difficult to control for may be crucial factors responsible for the observed correlation between union membership and other-regarding attitudes.

To what extent is the selection effect a real issue in the dimensions we consider? By thinking about the evolutions we described in chapter 2 and also by reciting some arguments cited in chapter 5, we have reason to suspect that the reverse causality issue should represent a very important source of bias explaining the differences between union members and non-members. The fact that the proportion of active members is constantly decreasing is a good reason to believe that it is difficult for unions to trigger deep

changes in the beliefs of an individual. Also, we should ask ourselves how frequently unions organize their meetings, how many members indeed participate and how many of them interact with each other after the meetings. As described in the next sub-section, day-to-day interactions between union members and/or leaders are a necessary condition in order to observe an attitudinal change concerning the values an individual shares. Also, we might also question the degree of malleability of such beliefs. Since they are anchored in the way an individual observes the world around him, we might suppose that they are associated with a certain inertia to change and, if a change takes place, it may take some time to be observed. Finally, we can also suppose that, if the new strategies of unions promoting themselves as social and moral actors are effective, they would trigger the influx of members having already internalized the other-regarding preferences promoted by unions. For example, the fact that, in the last years, Swiss unions have targeted their efforts towards the recruitment of foreign workers may lead to an increased selection effect at least as far as the opinion on foreigners' rights goes.

### **6.2.2 THREE POSSIBLE CAUSAL MECHANISMS: RATIONALITY, UNIFORMISATION AND VALUE CHANGE**

As in the previous chapter, in order to categorize the main processes that may explain the presence of a causal effect of union membership on other-regarding attitudes, we refer to the classification theorized by Kelman (1958). A three-theory typology of the reasons of the support for redistribution given in Corneo and Grüner (2002) could also be exploited and lead to a very similar classification. We prefer however to use Kelman's categorization in order to ensure the comparability of the interpretations with those of the previous chapter.

The first process is again represented by the rational compliance mechanism, leading an individual to change his point of view when guided by rational motivations. Union membership may un-

veil some aspects of the objects of the attitudes that were unknown to union members and lead them to modify their view on them because of instrumental considerations.

In the case of the first two dimensions, it is quite obvious that there are interest-based aspects to consider. In fact, welfare redistribution implies, by definition, the transfer of resources from some individuals to others. If we consider the attitudes towards redistribution as mainly determined by such considerations (Meltzer and Richard 1981), union membership should increase the favorability to such transfers only for economically disadvantaged individuals. On the contrary, by thinking about the egalitarian policies usually supported by unions on such aspects, we would expect a negative effect on high-income individuals. As we pointed out in section 6.1, the compliance process, if present, should also be reinforced by the fact that the two questions we examine are of a pragmatic nature rather than directed towards the ethical dimension of redistribution.

Regarding the attitudes towards the rights of foreigners, a rational compliance process may imply a negative effect on individuals that, by becoming union members, realize the threat immigrants represent in the labor market. Foreigners may be seen as competitors leading to a decrease of work standards because of their higher propensity to comply with worse professional conditions. The segments of the population in which this effect may appear depend on the type of foreigners we take into account. If we assume that immigrants are, on average, employed in more precarious situations than Swiss citizens, we can suppose that the effect should be negative, i.e. towards a decrease of a positive opinion on the equality of rights, for individuals with a low education. On the contrary, highly educated individuals may even be led to increase their tolerance level since they may realize how foreign workers can lead to a decrease of the cost of basic services. This type of effect is more likely to appear in highly homogeneous unions with almost exclusively native Swiss members. A qualitative study conducted by Wilson (2008) on grocery workers supports this supposition.

As far as volunteering work goes, we can suppose that union membership may have a positive effect on it through a rational compliance process if the individual is led to discover how the time spent in such activities can trigger rewards in some other domains, by increasing his social network for example (Wollebaek and Selle 2002). A negative effect on volunteering work may appear if union membership leads the individual to participate in other activities, such as union meetings or union-related mobilizations, taking away some time previously allocated for volunteering.

The second process, identification, takes place when the individual modifies his attitudes in order to resemble to individuals or groups of individuals he admires. This desire of belonging does not imply that the individual understands the reasons behind the attitudinal change on a rational or ethical level. In this sense, this type of mechanism should mainly concern individuals that do not possess a clear-defined view on the objects of the attitudes.

Finally, the internalization mechanism implies the presence of an attitudinal change based on a modification of the intimate beliefs about the object of the attitude taken into account. Since the four attitudes we consider in this chapter have a strong ethical dimension, the third process seems the most appealing one. If union membership indeed produces an attitudinal effect through an internalization process, this means that becoming a union member is an event capable of reorienting the way the individual observes the world around him. Union membership may lead to widen his horizons and to make him genuinely pursue not only his own interests, but also those of other categories of workers (Ahlquist and Levi 2013). In other words, unions may be capable of creating a community spirit leading members to have a more encompassing view of the individuals composing their group of peers (Mosimann and Pontusson 2014). Analyzing the preferences for redistribution with cross-sectional data, Mosimann and Pontusson highlight that this effect may take place only in unions that are “encompassing enough”, where individuals coming from different

professional realities and backgrounds have the possibility to interact. Public sector unions should be more encompassing than private ones since they show a higher union density. In particular, members coming from different earning distributions should have the possibility to exchange their views. Regarding foreigners, in particular, the fact that their proportion in the Swiss labor market is rising and the fact that unions target them more frequently as members (Degen 2000) should also increase the probability of interactions with Swiss union members. Studies in other countries underline the efforts made by union leaders on the integration of immigrant members (Clawson and Clawson 1999; Forester 2004; Lucio and Perrett 2009; Nissen 2010).

Mosimann and Pontusson (2014) conclude that union membership has indeed a significant positive impact on the attitudes for redistribution by creating a solidarity atmosphere between members. The presence of an internalization process rather than a compliance mechanism is motivated by the fact that the effect increases with income, contrary to what we would expect if a rational change was in place. In encompassing unions, the promotion of egalitarian values by union leaders and, most importantly, the day-to-day interactions between union members coming from different wage distributions contribute to create a more other-regarding point of view in union members. Similar mechanisms may be in place regarding volunteering activities and the inclusion of foreigners as individuals having the same rights as native citizens. Regarding foreigners, however, a recent study of Donnelly (2014) highlights the importance of the strategies adopted by union leaders more than the day-to-day interactions between members.

The big question here is: does union membership constitute an experience deep enough to trigger such an intimate attitudinal change? Do union members really have the possibility to interact on a daily basis? How often are union meetings organized? Which proportion of individuals does actually participate in union meetings? The answers to these questions are probably highly dependent on the particular unions one takes into account. Also, in our



case, we should again stress the fact that the two questions capturing the attitudes towards redistribution are more focused on the pragmatic level of the issue than on the ethical one. It may therefore be more difficult to capture an impact based on an ethical process.

### **6.2.3 INTEGRATING THE LONGITUDINAL DIMENSION**

As we pointed out in sub-section 5.2.3 for political attitudes, taking into account the longitudinal dimension of union membership gives the possibility to make some inferences about the causal mechanism explaining the association between the affiliation to a union and other-regarding attitudes. As in the previous chapter, we are not aware of existing longitudinal studies on the effect of union membership on other-regarding attitudes. The discussion here is equivalent to the one given sub-section 5.2.3. Hence, we propose here a synthetic version of our arguments, letting the reader consult again sub-section 5.2.3 for a more detailed account.

Taking into account the longitudinal dimension of union membership, if we are dealing with a selection effect, the impact of union membership should be insignificant in all membership years and episodes of membership. If a rational compliance process explains the relationship, the effect should be observed in the short term and additional years and new episodes of membership should not imply an additional effect. An identification process implies a gradual effect that does not increase further after a certain duration of membership, but that reappears in new episodes of membership. Finally, an internalization mechanism develops gradually during a relatively long time interval, does not increase further after the effect is fully accomplished and does not disappear nor reappear after the individual stops being affiliated to a union or becomes a member for a second, third, ... time.

## **6.2.4 THE FRAGMENTED SWISS UNION LANDSCAPE**

As in the previous chapter (cf. sub-section 5.2.4 for a more detailed discussion), it is very important to be aware that unions in Switzerland are quite fragmented entities, divided by political, confessional and professional cleavages (cf. section 2.1). As we pointed out in subsection 6.2.2, the impact we measure should be highly dependent on the composition of union members in each union. In particular, unions encompassing members with a variety of profiles may trigger a positive effect on other-regarding attitudes. On the contrary, narrowly organized unions where only individuals with very similar profiles have the possibility to interact may have a negative effect, leading union members to become increasingly less open to defend interests other than particularistic ones.

Unfortunately, our data do not allow us to take into account the effects of this fragmentation. The analysis by NOGA sector should allow accounting at least partially for the effect in different unions, a union being usually active in certain sectors and not in others. However, in Switzerland it is not rare for wage-earners to have the possibility to choose between two or even more unions (Oesch 2006), making thus the NOGA sector only an imperfect proxy of the type of union an individual is member of. We have to be aware of this fact when interpreting the results.

## **6.3 METHODOLOGICAL ELEMENTS**

The methodological elements that distinguish the analyses of this chapter from the general discussion provided in section 3.4 are exactly equivalent to those exposed in section 5.3 for political attitudes. Hence, in this section, we just recast very briefly the same arguments for the case of other-regarding attitudes. For an extended discussion, the reader is advised to refer to sections 3.4 and 5.3.

### **6.3.1 THE ENDOGENOUS NATURE OF THE UNION MEMBERSHIP VARIABLE**

As for political dimensions, when estimating the causal effect of union membership on other-regarding attitudes, we employ only the first three models exposed in section 3.4. In our analyses, we do not employ a 2SLS estimator on differenced data because we have reason to believe that, for the particular case of other-regarding attitudes, the union membership variable is affected by a problem of time-invariant endogeneity, but not by an issue of time-varying endogeneity. In particular, a variation in the level of other-regarding attitudes does not appear to be a possible cause of union membership. The main source of motivations for joining a union is and remains the work domain and time-varying reverse causality is an aspect to consider only for job attitudes. A change in one of the attitudes examined in this chapter is much more likely to influence the membership in charitable organizations or the propensity to engage in volunteer work. Random shocks causing a variation in both union membership and these attitudes seem very unlikely events, especially with the sample restrictions imposed on the models based on differenced data. Estimating anyway the 2SLS models using union density by canton and occupation and union density by sector and occupation as instruments confirms the validity of these arguments. The Durbin-Watson test for endogeneity leads to reject the endogeneity hypothesis. However, as the comparison between pooled OLS and OLS on differenced data will show in the next section, time-invariant endogeneity represents still a serious source of bias even when analyzing the relationship between union membership and other-regarding attitudes.

## **6.4 RESULTS**

As in the previous two chapters, the fourth section is dedicated to the presentation of the results of the regression models introduced in section 3.4. The type of models and the structure of the results

presented in the tables of section 8.3 (tables 8.18, 8.19, 8.20 and 8.21) are the same as those of the fifth chapter. The reader may consult again the recapitulative description given in sub-section 3.4.8. Since the comments on the models are quite dense, we provide again a synthetic discussion of the main findings in the next section.

### **6.4.1 ATTITUDE TOWARDS SOCIAL EXPENSES**

Table 8.18 shows the results of the regression models analyzing the relationship between union membership and the first variable we consider in this chapter, i.e. the attitude towards social expenses. Confirming the descriptive analyses given in section 6.1, the first type of models shows that union members are significantly more inclined to desire an increase in social expenses than non-union members. The only two exceptions are represented by individuals aged below 31 years and wage-earners coming from the sector “Finance and other services”. The main effect is 0.14 on a scale between 1 and 3 and is significant at the 0.1% level.

Adding a set of basic control variables in the second class of pooled OLS models leads to a decrease of the magnitude of the effect in all segments of the population taken into account. The impact remains however generally highly significant. For the main effect, the impact decreases to 0.10 and remains significant at the threshold of 0.1%. Interestingly, the insignificant relationship for young individuals remains, while it becomes positive and significant for individuals coming from the sector “Finance and other services”. The latter implies that, for the “Finance and other services” category, in the first set of models, there is a self-selection problem related to at least one of the control variables added in the second class of models that leads individuals non-favorable to distribution to have higher chances of becoming union members.

Finally, controlling for all time-invariant heterogeneity across individuals in the third class of models leads the effect either to an

important decrease of its magnitude and significance or to the insignificance of the estimates. In other words, the association we observe at a descriptive level between union membership and opinion on social expenses is mainly the result of a selection effect. The fact that, in the second set of models, the impact of union membership is significant in almost all sub-populations considered shows that unobserved heterogeneity between union members and non-members in the form of pre-existing predispositions difficult to account for plays an important role in the self-selection process.

Regarding more precisely the results, the main effect drops to 0.033 and is significant only at the 10% level. Hence, union membership has indeed a positive causal effect on the opinion on social expenses, but the magnitude of it (0.033 points on a scale from 1 to 3) is rather small.

Neither of the two longitudinal variables show a significant effect in some of its categories. By looking at the estimates and the associated standard errors, at least for our sample, we see that the effect is higher in the first episode of membership and increases with the duration of membership. The effect is only significant for the period before 2005 (0.060,  $p < 5\%$ ). This could be explained by an increased emphasis unions place on other-regarding dimensions during union meetings over time, but it could also be related to a different composition of union members in the two periods, individuals with a profile that makes them more inclined to experience an effect being overrepresented after 2004.

Part-time workers (0.048,  $p < 10\%$ ), women (0.072,  $p < 1\%$ ) and lowly educated individuals (0.17,  $p < 5\%$ ) are the only segments of the population showing a significant effect among the categories in which they are included. Since these are categories of workers usually experiencing a precarious work situation, contrary to the results of Mosimann and Pontusson (2014), this aspect lends support to the rational compliance hypotheses rather than for the alternative ones. Interestingly, if we based our comments on the second model, the one imitating the analysis of the two

authors, we would have been led to their same conclusions, highly educated individuals being those with the highest estimated effect. The fact that the impact is the highest and only significant for middle-aged members (0.041,  $p < 10\%$ ) is not easy to interpret. Swiss union members (0.035,  $p < 10\%$ ) show a significant impact, while foreigners do not. This can be explained by the fact that foreigners, by probably being already frequently favorable to redistribution, cannot experience an additional shift towards a pro-redistribution preference. Only French and Italian cantons show a significant effect (0.050,  $p < 10\%$ ), suggesting the presence of different union dynamics in comparison with German-speaking regions. Finally, the fact that public sector members (0.060,  $p < 5\%$ ) and individuals working in the NOGA sector “Public services” are the only ones to experience a significant impact is in line with the encompassment hypothesis cited by Mosimann and Pontusson (2014) (because, as we described in chapter 3, these two segments of the population have much higher unions densities than the other ones). On the other hand, the effect may also be explained by the fact that public sector workers are more likely to benefit from increased public sector expenditures.

#### **6.4.2 ATTITUDE TOWARDS TAXES ON HIGH INCOME**

Table 8.19 presents the results of the regression models analyzing the relationship between union membership and the opinion on taxes on high income. The first column shows that, at a descriptive level, union members are significantly more inclined to be favorable to an increase in the level of taxation of high-income individuals. The result appears no matter on which sub-population of union members we focus. The main effect shows that union members are 0.12 points ( $p < 0.1\%$ ) more likely to be favorable to an increase of the taxes on high income on a scale from 1 to 3.

Adding a basic set of control variables in the second type of models leads to a decrease of the magnitude of the coefficients, but the effect of union membership is still highly significant in almost all segments of the population of interest we consider. The

main effect decreases to 0.091, but remains significant at the 0.1% threshold. Lowly educated individuals and foreigners are the only two sub-populations in which the inclusion of the control variables leads the effect to become insignificant, also because of sample size limitations.

What happens if we control for all time-invariant heterogeneity across individuals? The third set of models clearly shows that the effect of union membership on the opinion on taxes on high income becomes insignificant almost everywhere. A selection effect is the main process explaining the differences between union members and non-members in this domain. The only exception is the coefficient of German cantons, showing a positive, even though small (0.045), and significant ( $p < 5\%$ ) impact of union membership. It is difficult to interpret this result since it contradicts the one we found in the previous sub-section, where the effect was significant only for French and Italian regions. This apparent paradox can be probably traced back to the different connotations the two questions have, the first one being negatively valued and the one of this sub-section being positively connoted.

### **6.4.3 ATTITUDE TOWARDS FOREIGNERS' RIGHTS**

If we focus on the effect of union membership on the rights foreigners should enjoy on the Swiss soil, the pooled OLS models presented in the first column of table 8.20 show that union members have a higher propensity than non-members to be in favor of the equality of rights between Swiss citizens and foreigners. The result is true in almost all sub-populations we take into account. The only exceptions are men, people under 31 and wage-earners coming from the “Finance and other services” sector. The estimate for the main effect is 0.14 on a scale from 1 to 3 and is significant at the 0.1% level.

The inclusion of a basic set of control variables in the second type of models generally leads to a decrease of the magnitude and,

in some cases, also of the significance of the effect. The main effect diminishes to 0.093 and is still significant at the 0.1% level. The effect of the first year of union membership decreases in magnitude (from 0.052 to 0.034), but also in significance (from  $p < 1\%$  to  $p < 10\%$ ). Interestingly, the insignificant impact on male union members detected in the first model becomes significant (0.044,  $p < 10\%$ ). The other two groups for which the effect was already insignificant in the first set of models, people under 31 and those working in the “Finance and other services” sector, do not show again a significant effect of union membership and are joined by other segments of the population in this respect: highly educated individuals, foreigners and individuals working in the “Basic services” sector.

In the third class of models, controlling for all non-time-varying baseline differences between individuals leads almost all effects to become insignificant. Hence, we face again a selection effect. The only exceptions are the first year of union membership (-0.036,  $p < 10\%$ ) and highly educated individuals (-0.067,  $p < 10\%$ ) where we observe, even though small and barely significant, an impact towards a conservative position claiming privileged opportunities for Swiss citizens over foreigners. The significant effect on the first year of union membership may be explained by a composition issue, the individuals remaining members only for a year being those more inclined to experience such a change because of a friction between the egalitarian policies of unions and their opposite expectations. The result for highly educated individuals is clearly not in line with a rational process of attitudinal change. It may be explained by a low presence of foreigners in unions to which they belong. The interaction with almost exclusively Swiss members should not foster an encompassing view on foreigners' rights.

#### **6.4.4 VOLUNTEERING**

When we consider the relationship between union membership and volunteer work, at a descriptive level, in the first column of



table 8.21, we remark that union membership is generally associated with a higher propensity to volunteering. In the main effect, union members have 6% ( $p < 0.1\%$ ) more chances of declaring a volunteering activity than non-members. In some sub-populations, the association is not significant. This is the case for first-year union members, individuals aged 51 or more and those working in the “Finance and other services” sector.

Accounting for the effect of some basic control variables in the second set of models leads in most cases to a drop in the magnitude of the effect and also in its significance. The coefficient of the main effect falls to 0.021 and the significance level to 5%. Interestingly, the first year of union membership now shows a positive and significant impact (0.036,  $p$ -value  $< 1\%$ ), while no significant relationship is detected from the second year of union membership on. Other cases where the effect becomes insignificant are: the second episode or higher of union membership, the period from 2005 on, passive members, part-time workers, women, people aged 51 or more (as already in the first model), individuals having at most a compulsory or a secondary education level, Swiss wage-earners, French- and Italian-speaking regions, the public sector, “Basic services” sector, “Finance and other services” sector, “Public services” sector and individuals working in large firms.

What happens if we also control for all time-invariant heterogeneity across individuals? The effect in almost every segment of the population of interest goes down to insignificance. We are dealing again with a selection effect. Only highly educated individuals (0.061,  $p < 5\%$ ) and members coming from French- or Italian-speaking cantons (0.079,  $p < 5\%$ ) present a positive effect of union membership on the propensity to participate in volunteering. The result for French and Italian cantons is consistent with the one found for the opinion on social expenses. The effect on highly educated individuals is difficult to interpret since it apparently contradicts the result of the previous sub-section. Foreigners, on the contrary, show a strong negative and highly significant effect of union membership on their unwillingness to engage in

voluntary work ( $-0.21$ ,  $p < 1\%$ ). The result may be related to the particular dynamics governing unions with an important proportion of foreigners.

## **6.5 DISCUSSION: CARING...EASIER SAID THAN DONE?**

We started the analyses of this chapter by showing that union members show, on average, a higher propensity to declare other-regarding attitudes and behaviors than non-members. In order to understand whether these differences are related to a selection effect or to a causal impact of union membership, we examined the results of three regression models in which we exclude stepwise the possible sources of selection bias. The third model, controlling for all time-invariant heterogeneity between members and non-members, is the one we consider giving the “true” causal effect of union membership on other-regarding attitudes.

The first model (pooled OLS without control variables), giving a purely descriptive account of the relationship, confirms our initial analyses. Compared with non-members, union members express significantly more often a favorable opinion regarding the increase in social expenses and of the level of taxation on high income, they are more open to grant the equality of opportunities to foreigners and are more engaged in volunteer work.

Partiallying out the effect of some basic control variables in the second model (pooled OLS with control variables) leads to a decrease of the magnitude of the effect of union membership, which however remains significant for all four dependent variables we take into account.

Excluding also the impact of time-invariant heterogeneity between union members and non-members reveals itself however fatal for the significance of the results. Only the impact on the opinion on social expenses remains barely significant, while the other main effects become clearly insignificant.

How can we explain the absence of an effect of union membership on other-regarding attitudes even though some exiting research implies the existence of a positive effect? We provide three hypotheses.

First, as in the previous chapter, we can ask ourselves to what extent these results are indeed surprising. Are unions associations important enough in the life of an individual to trigger such an intimate change as the one related to the level of solidarity with other individuals? Despite the growing social involvement of unions and the importance given to members' attachment, the drop of the proportion of active members described in sub-section 2.3.1 lends support to this hypothesis.

On a second level, again in a similar way as for political attitudes, we can ask ourselves to what extent the very increase of the social implication of unions may decrease the potential effect of union membership because of a higher selection effect. If an increasingly higher proportion of individuals become members because of the affinity between their moral beliefs and those promoted by unions, union membership cannot lead such individuals to become more other-regarding than what they already are. In other words, if the increased social involvement of unions is effective as a recruitment strategy, it is less likely to observe an impact related to the implication of newcomers in unions' activities. For example, this is an expectable evolution when considering the increased recruitment efforts directed towards foreigners described in sub-section 2.1.3. This aspect is even more plausible when we consider that the four variables we examine have only three or two answer options. Furthermore, individuals that do not share these values, becoming members primarily because of work issues, are less likely to actively engage in union meetings and to interact with other members.

A third argument leads us to ask ourselves to what extent the dimensions we analyze are comparable to those analyzed in the existing literature. As we already pointed out in section 6.1, our two questions related to welfare redistribution, opinion on social

expenses and opinion on taxes on high income, are oriented towards the pragmatic dimension of the issue. Respondents are not asked whether they think that welfare redistribution is a normatively desirable outcome. They are indeed asked whether a particular way of extracting the resources for this redistribution is desirable. Union membership may lead an individual to affirm a positive attitude towards the normative dimension of redistribution, but at the same time, the same individual may show much less enthusiasm when the practical means of this redistribution should be drawn from himself. If that was true, we should not expect the same theory vs. practice issue in the question related to the opportunities to offer to foreigners. Contrary to this hypothesis, we do not observe a significant effect on the attitude related to the rights of foreigners on the Swiss soil either.

Regarding the increase of social expenses, the only variable that shows a barely significant effect, a longitudinal analysis reveals that, even though the estimates are not significant, the effect increases with the duration of membership and is more pronounced in the first episode of membership than in successive ones. This evolution is consistent with both the rational compliance and the internalization process.

An analysis across different segments of union members shows that, once again, part-time workers and women are among the rare categories that show a positive significant effect of union membership regarding their opinion on the increase of social expenses. Contrary to the findings of Mosimann and Pontusson (2014), lowly educated individuals are the most concerned with this increase. This fact lends support to the presence of a rational mechanism motivating the attitudinal change, but we cannot exclude that an internalization process may also take place. Interestingly, if we had based our comments only on the second model, the one that imitates cross-sectional studies, we would have been led to the same conclusion of the two authors, highly educated individuals showing the highest estimated effect in such analyses. Unobserved time-invariant heterogeneity concerns thus more importantly highly educated members than lowly educated ones. On

the other hand, the fact that the effect is significant only for public sector and “Public services” workers may be in line with the “encompassment hypothesis” of Mosimann and Pontusson, but it can also be explained through other mechanisms. In particular, public sector workers are more likely to benefit from such expenses than those in the private sector.

Alternatively, we remark again that the three groups (part-time workers, women and public sector workers) marked among those experiencing a significant impact of union membership in job and political attitudes are again among such categories in this chapter. Therefore, for such individuals, we can again suppose the presence of a relationship between the effects observed in different domains. In particular, it seems plausible that the important benefits union membership provides to these groups in the professional domain may trigger an increased attachment to unions through a “gratitude mechanism”. The increased attachment may then explain the effect in domains distinct from the professional sphere.

Regarding the other attitudes, we observe a significant impact for German-speaking regions that is probably related to particular union dynamics in such regions. Union membership leads to a decrease of the favorability towards the equality of opportunities between Swiss citizens and foreigners for first-year members and highly educated ones. The effect on first-year members may be related to an attrition between the beliefs of some newcomers and those promoted by unions and old members. Such individuals should thus be expected to not extend their membership beyond the first year, as pointed out by the insignificance of the effect for higher durations of membership. The effect on highly educated workers stands in contradiction with a rational compliance mechanism and it may be explained by a low presence of foreigners in the unions they are members of. The result becomes even more difficult to interpret when we remark that highly educated wage-earners are one of the rare categories for which union membership leads to an increase in the propensity to engage in volunteering activities.

In conclusion, we showed that the other-regarding predisposition of union members we observe at a descriptive level is essentially the product of a selection effect rather than the consequence of a causal effect of union membership. The variations across different sub-populations provide some interesting insights, but also some quite puzzling findings.

## **7. CONCLUSIONS AND CRITICAL REGARD**

### **7.1 A WALK THROUGH THE THESIS**

The reader was introduced to the thesis through a reflection on the puzzling character of the thinking process. The personal convictions of an individual appear to be very stable elements of his identity and, at the same time, as aspects that may be challenged by the experiences he is inevitably exposed to during his existence. A social perspective of the thinking process allowed us to make sense of both the inertia and the malleability the attitudes of an individual are characterized by. With the goal of analyzing more concretely to what extent an individual's outlook on the world around him may be malleable, we decided to focus on the effect trade unions may exert on their members' attitudes. Besides being informative on the attitudinal malleability of wage-earners, taking into account the point of view of union members reveals itself a crucial element to get an understanding of unions' dynamics and to make some hypotheses about the future of employee organizations in Switzerland.

#### **7.1.1 WHAT DO UNIONS "SEEM" TO DO?**

We started the description of the world of Swiss unions by portraying a fragmented landscape. Divided by regional, social and ideological differences, Swiss unions never had the unitary strength to firmly oppose themselves to employers' associations historically characterized by a high internal cohesion. In such a context, unions learned to develop their regulatory role as subordinate partners in a decentralized system of industrial relations. Despite their organizational weakness, compromises, peaceful

agreements and strategies focused on collaboration rather than on conflictual actions led Swiss unions to flourish after the Second World War in a period of political stability and economic growth.

The structural transformation of the labor market initiated in the '80s and the pressures coming from a growing integration into the international economic system put into question this system of concerted agreements between labor and capital. Since the number of affiliates remained stable during these years, unions did not take important measures to reform their internal functioning. The lack of a renewal of unions' strategies becomes however obvious at the beginning of the '90s when a 6-year-long recession strikes the Swiss economy. The economic crisis and a rationalization process in the public sphere provoke a sudden loss of affiliates among unions. At the same time, the legitimacy of collective agreements reached in more prosperous times is questioned by an increasing number of employers claiming higher flexibility in a competitive international market.

Employers' demands, a decreasing number of affiliates leading to a diminution of the financial means and of the democratic representativity of their actions threaten the very function of regulatory agents unions exert in the economic sphere. Swiss unions react to these evolutions on three plans. First, they increase their involvement and visibility in the political and social sphere. Shifting the scope of their activities from the sole economic domain serves a twofold purpose. It is first aimed at the defense of their bargaining role on the institutional level, proving in particular their relevance as veto players in the Swiss system of direct democracy. On the other hand, the strategy is also focused on the recruitment of new members not only on the basis of instrumental work-related motivations, but also because of an affinity of potential members with the political, social and moral principles unions present themselves as the defenders of. The implication in the social sphere is also in line with the second reform measure Swiss unions adopt after the '90s. With the inexorable decline of the importance of the highly unionized secondary sector, the recruitment of new affiliates is directed towards part-time workers, women, foreigners



and the emerging private service sector. New members' attraction is often organized through media campaigns targeted at rising consumers' sensibility regarding the working conditions of these categories of workers. On a third level, as a consequence of the diminishing number of affiliates, mergers between unions become frequent events. However, the logic of these fusions is still highly influenced by old ideological cleavages. In particular, it is not rare to observe the formation of multi-sector unions affiliated to one of the main peak associations competing for the representation of the same categories of wage-earners.

Having described the historical background, we examined more in particular the importance and some of the possible determinants of unions' decline in Switzerland between 1999 and 2011 using the data of the Swiss Household Panel (SHP). The descriptive analyses reveal an almost linear decline of union density, decreasing from around 22% of unionized wage-earners in 1999 to 18% in 2011. The decreasing proportion of affiliated workers is accompanied by a strong fall of the part of members declaring themselves as "active members" (one member out of two reports an active participation in unions' activities in 1999, while only one out of four does the same in 2011). Exploring the evolution of union membership across different segments of wage-earners reveals that the decline of union density is primarily related to the diminution of the proportion of traditionally unionized wage-earners (full-time workers, men,...). The union density in some emerging categories, such as part-time workers and women, shows on the contrary a relative stability over the period.

After having assessed the declining trend of union membership in Switzerland, we examined more in detail whether the evolution is related either to a decrease of the inflow of new members or to an increase of the outflows of old members. As already outlined in previous research (Oesch 2011), the regression results show that the decline of union members can be essentially attributed to a decrease of the number of wage-earners that join unions, while the mean duration of membership does not show significant variations over the period. Surprisingly, controlling for the effect of

the socio-demographic evolutions and the changes observed in the labor market does not lead to modify these conclusions. Assuming that the mean duration of union membership is primarily determined by external factors (increased job mobility,...), while the number of new members is mostly related to unions' recruitment strategies, these evolutions let suppose a possible inversion of the declining union membership trend in the following years. In particular, such a change can be expected if the increase in unions' recruitment capacity in emerging labor market sectors will persist in the future.

### **7.1.2 WHAT DO UNIONS “REALLY” DO?**

After having looked at the objective evolutions of union membership in Switzerland, we focused specifically on the question at the core of the thesis. The objective evolutions let us suppose that the change observed in unions' activities may have triggered a modification in the type of influence they exert on their members. If in the past the affiliation to a union was a taken-for-granted fact for a large proportion of unionized workers, unions representing a reference group with identity implications, nowadays union membership seems to be founded on new grounds. Besides the instrumental considerations related to the professional sphere, Swiss unions seem to be expanding their roots to new domains. The attempt is to present themselves as broad political and social actors with the twofold purpose of defending their bargaining role and creating new elements of affinity with old, new and potential union members. Does this revitalization process have an impact on the way union members perceive the world around themselves? Does becoming a union member lead to a change in the attitudes of an individual? We analyzed these questions for three types of individual attitudes: attitudes related to the professional domain, attitudes directed towards the political sphere and attitudes representing the “other-regarding” position of union members.

Since the defense and/or the improvement of their affiliates' professional well-being is and remains the main scope of unions'

activities, a descriptive analysis of the mean job satisfaction level for union members and non-members leads at first sight to puzzling findings. In Switzerland, as in other countries, union members show an advantage in the external dimensions of job satisfaction (satisfaction with income and job security), while they are clearly less satisfied than non-members as far as the internal dimensions (satisfaction with working conditions and satisfaction with work atmosphere) goes. In order to understand whether the observed differences between union members and non-members are explained by a selection effect (union members and non-members may show pre-existing differences regarding their objective working conditions and/or their subjective inclination to be more or less critical towards their job) or whether they are indeed related to a causal effect of union membership, we constructed four regression models that stepwise exclude the possible sources of selection bias. The results lead to reject the paradox of the dissatisfied union member. Unions do indeed what they are supposed to. Becoming a union member leads to an improvement of the satisfaction with working conditions (especially in the first year of membership), with income (after some years of membership) and to an increase of job security (from the second year of membership on), while it does not show a marked effect on the satisfaction with the work atmosphere. The results let us also infer that a variation in the satisfaction with the work atmosphere does not influence the propensity to join a union, whereas a diminution of the satisfaction in the other three dimensions increases the likelihood of becoming a union member. Wage-earners seem to have a clear-defined view on the scope of unions' activities, the improvement of objective work aspects being included among them, while the issues related to the relationship with work colleagues remain an internal matter. A longitudinal analysis reveals an interesting pattern. The positive effect on the satisfaction with working conditions appears since the first year of membership and decreases with the duration or new episodes of union membership, whereas the inverse evolution is observed for the impact on job security and income satisfaction. These dynamic trends let us suppose that the impact of union membership on job attitudes takes place

through two channels, an impact on the objective working conditions and another on the way the individual perceives them. The rapid increase in the satisfaction with working conditions is probably related to an immediate improvement of some objective aspects, while the decrease in the following years is the consequence of an adaptation process leading members to take for granted unions' achievements and to increase their demands on employers. The time needed to observe an effect in the other two dimensions is probably related to the time wage and job preservation negotiations take.

As far as political attitudes and behavior goes, descriptive analyses show that union members are clearly more politically involved than non-members, often left-wing ideologically oriented and as satisfied as the rest of wage-earners with the democratic institutions in Switzerland. Disentangling to what extent the observed association between union membership and these dimensions is related to a selection effect leads to realize that union membership has an attitudinal causal impact, but not a behavioral one. Becoming a union member contributes to increase the interest in politics and the feeling of political influence, while it leads to a reduction of the trust in the Federal Government. A longitudinal analysis on the three attitudes reveals that the effect on the interest in politics becomes significant only since the third year of union membership, while the one on the feeling of political influence and on the decrease of trust in the Federal Government is apparent already since the second year. This pattern let us infer that the variation in terms of interest in politics may involve a deeper value-driven change than the one we observe for the other two attitudes where rational motivations probably count more than ethical considerations. On the contrary, union membership in itself does not lead to pronounced variations in the self-reported political position, in the voting behavior or in the overall satisfaction with democracy. The absence of a behavioral effect stands in contrast to the increased political involvement Swiss unions show. The apparent paradox may be explained by the fact that the political efforts of Swiss unions may be mostly directed towards the development of an influence on the institutional level

rather than on the organizational one, related to the interactions with their affiliates. On the other hand, if the increased political visibility of unions works indeed as an effective recruitment strategy, the selection effect on new members may have become so strong that most newcomers cannot approach themselves more to unions' political views since they already share them before becoming members. This aspect may also be accentuated by the fact that most dimensions of political behavior are operationalized as binary outcomes.

Focusing on other-regarding attitudes, at a descriptive level, unions members are shown to be significantly more favorable to an increase of social expenses and of the level of taxation on high income than non-members. They are also more likely to be willing to accord the same opportunities to Swiss and foreign citizens and are more often engaged in volunteering activities than the average wage-earner. A causal analysis reveals that the differences between union members and non-members are almost exclusively related to a selection effect. The only attitude on which union membership has a positive, small and barely significant effect is the one representing the favorability regarding the increase of social expenses. A longitudinal analysis let us suppose that effect increases with duration and decreases with renewed episodes of membership. Such a pattern is consistent with both a rational attitudinal change and a value-driven variation. The absence of a significant effect on the other dimensions despite the increased social involvement of unions may be related to the same reasons we cited for the absence of an impact on the political behavior. In this case, we can also ask ourselves to what extent the fact that our questions are focused on the pragmatic dimension of such attitudes rather than on the ethical one may explain the difference between our findings and those outlined in past research.

An important aspect emerging from the regression analyses in the three domains concerns the set of activities wage-earners consider as those belonging to unions' scope. As outlined by the fact that we were led to employ an instrumental variable estimator only in the analyses of the fourth chapter, a variation in job attitudes,

in particular a drop in some dimensions of job satisfaction, is seen by wage-earners as a good reason to join a union, while the same finding is not observed for political and other-regarding attitudes. In other words, the professional sphere still appears to be the pivotal domain through which unions recruit new affiliates. The political and social visibility probably increase the affinity with some potential members, but the membership choice is still highly dependent on the expectations individuals have about unions as regulatory agents in the professional sphere.

A final remark it is useful to provide concerns the small magnitude of the effects union membership shows on the attitudes we take into account. The effect varies in absolute value between 0.1 and 0.4 points on a 0-10 scale according to the attitudes. The size of the impact can in some cases increase up to 1 point. If we focus on specific durations of membership (it gets above 2 points only for the self-evaluated risk of unemployment in the second year of membership, but with a quite important standard error). The low magnitude signals that the effect concerns only a small proportion of union members. These are probably those that participate in union meetings and that can actually be affected by the implication in union dynamics and by the arguments of union leaders. The supposition is confirmed by the fact that active members constantly present a higher impact than passive ones. Such a finding is not surprising because most individuals probably join unions because of customary practices at the workplace. Only those that actually become members because of an individual choice, following for example an objective deterioration of the working conditions, have the possibility to become conscious of the importance of unions' achievements. The low participation may also explain the absence of a marked effect on political behavior and on other-regarding attitudes.

### **7.1.3 Do “ALL” UNIONS DO THE “SAME” AND DO “ALL” UNION MEMBERS REACT THE “SAME” WAY?**

The effect of union membership described for the overall population of wage-earners is however far from being homogeneous. We observe important variations that can be traced back to the profile of the affiliates and to the particular union dynamics that characterize different economic sectors. Moreover, the heterogeneity of the effect reveals itself informative on the underlying causal mechanisms explaining the appearance of an attitudinal impact.

Active members, part-time workers and women show a higher impact than passive members, full-time workers and men in almost all attitudes in which union membership presents a significant main effect. Union membership seems to affect members' attitudes on the basis of both cognitive and objective dynamics. Active members show a higher effect because of their involvement, of their attachment to unions. Part-time workers and women, on the contrary, present a higher effect because, considering their precarious job situation, they objectively have more to gain of their membership than the average wage-earner. It is therefore pretty clear why the positive impact on job attitudes is more pronounced on them. But how to explain that such categories present also a higher effect in political and other-regarding attitudes? Assuming that the effect in such dimensions should be related to an attachment to the union that goes beyond instrumental considerations, the significant objective improvement union membership provides in the professional sphere may also trigger the effect in these dimensions. In other words, the achievements of unions in the professional domain may be transposed into a cognitive effect characterized by an increase in the level of attachment to unions through a gratitude mechanism. Alternatively, the effect on political and other-regarding attitudes may also be explained by the fact that union membership leads such categories to become aware of the extent to which their precarious job situation is influenced by regulatory politics and to understand that they are the

groups that would benefit the most from social redistribution measures.

Another constant pattern across almost all attitudes analyzed is the more pronounced effect union membership has on public sector workers in comparison with those working in the private one. The sole exception is represented by the impact on the feeling of political influence, where private sector members experience a more marked impact probably because, by not being directly affected by governmental actions, the affiliation to a union represents the sole channel through which they can exert a political influence on the professional sphere. As far as the other attitudes goes, the higher effect on public sector members can be explained through a process similar to the one described for part-time workers and women. The starting point is however not the precarious working conditions such workers are subject to. Union membership is accompanied by an important improvement in the dimensions related to the professional sphere because, historically, public sector unions have managed to acquire a higher bargaining power than those in the private one (Mach and Oesch 2003). The important objective benefits union membership provides may then increase the attachment of the affiliates and therefore the likelihood of observing an impact also in domains distinct from the professional one. In other words, the success of a union in its reference domain may be the key factor that also explains a higher cohesion at the organizational level. Alternatively, the effect on political and other-regarding attitudes may also be explained by the higher dependence of public sector jobs on political decisions and by the fact that an increased social spending is usually more advantageous for them than for wage-earners in the private sector.

The results we obtain by NOGA sector can be interpreted by referring on the particular composition of wage-earners in each of them. For example, the effect of union membership on the categories "Primary, manufacturing and construction sector" and "Basic services" presents a similar pattern to the one outlined for part-time workers and women because of the precariousness that often characterizes their job situation. In a similar way, members



from “Public services” show similar results to those from the public sector since the wage-earners in the two groups are to a large extent the same ones. The sector “Finance and other services” is often distinguished from the other ones in our results. In particular, probably because of the important proportion of high-income individuals in such a sector, as a reaction to unions’ redistribution policies, individuals coming from “Finance and other services” are the only ones to show a clear negative effect of union membership on the satisfaction with income.

When analyzing the potential impact on political attitudes, one of the leading hypotheses in the literature points out that the mechanism through which unions can be responsible for an effect is related to the formative role they play for lowly educated individuals (Kerrissey and Schofer 2013). Therefore, individuals with little knowledge on the political sphere should be those that, by becoming union members, experience the highest effect. Our results give contradictory evidence regarding this hypothesis. Among the three political attitudes on which union membership shows a significant causal effect, lowly educated individuals are the education category most affected only as far as the increase in the feeling of political influence goes. In the two other significant effects, an increase in the interest in politics and a decrease in the trust in the Federal Government, highly educated wage-earners are on the contrary those showing the most pronounced impact. We tried to interpret these unexpected results by supposing that the attitude related to the interest in politics may assume a normative connotation for lowly educated individuals and thus explain the absence of a significant effect on them. The effect we observe for highly educated individuals is plausibly related to the particular dynamics that characterize unions in which they are overrepresented, where the discussion on political matters probably continues even outside union meetings.

Likewise, one of the leading hypotheses trying to explain the link between union membership and an increased tendency to declare a favorable opinion on welfare redistribution highlights

value-driven rather than instrumental motivations of the attitudinal change (Mosimann and Pontusson 2014). The main effects point out only a small and barely significant effect regarding the propensity to be willing to increase social expenses. The analysis by education level, however, contrary to the results outlined in the existing literature, reveals that lowly educated individuals are those that show the highest impact in this dimension. Since they are those that may profit the most from the redistribution, the finding lends evidence for a rational process, rather than solidarity motivations explaining the impact of union membership. Interestingly, if we had based our interpretations only on a pooled OLS model, the one imitating the cross-sectional studies on which most of the existing literature is based on, we would have been led to conclusions similar to those outlined by past research.

Aside from a couple of exceptions, it is also shown that the effect of union membership does not vary significantly by age or firm size. This is quite surprising since we could have expected that an individual may react differently to unions' influence according to the amount of work experience. Moreover, the different union dynamics that characterize small and large firms do not seem to have an important influence on the impact we observe.

Finally, some variations by period, nationality and region also appear in our results. Their interpretation is however less straightforward than those outlined in the previous paragraphs. In particular, a deeper contextual knowledge and some additional analyses would be needed to make sense of the heterogeneity of the effect of union membership across these segments of wage-earners.

## **7.2 METHODOLOGY: BRIGHT AND IMPROVABLE ASPECTS**

### **7.2.1 THE MAIN STRONG POINT: A LONGITUDINAL APPROACH**

If we focus on the strengths and weaknesses of the methodological approach described in the previous pages, first of all, we would like to stress again the importance of adopting a longitudinal perspective when analyzing the relationship between union membership and the dependent variables we took into account. Since our dependent variables are represented by attitudes, it is extremely important to be aware of the fact that one of the main sources of bias is constituted by the unobserved heterogeneity between union members and non-members. In particular, the selection effect related to time-invariant characteristics such as “innate predispositions” should be carefully considered. Excluding the potential bias associated with such characteristics is possible only by having a series of repeated observations over the same individuals. The comparison of the models on differenced data with the two pooled OLS models confirms this aspect by showing important differences between their results. With the exception of the variable representing the level of trust in the Federal Government, by not taking into account the bias associated with the unobserved heterogeneity, the cross-sectional perspective reproduced in the pooled OLS models leads to an overestimation of the magnitude and of the statistical significance of the “true” causal effect of union membership on the attitudes we examined. Therefore, a panel data approach constitutes an immense improvement in such respect.

Moreover, a longitudinal perspective revealed itself indispensable to highlight how the attitudinal effect of union membership presents clear dynamic features. Almost all attitudes show an important variation by episode and by duration of union membership. These variations were also crucial to infer the most plausible mechanisms explaining the causal effects our analyses point out.

### **7.2.2 CONSISTENCY AND ROBUSTNESS OVER EFFICIENCY AND COMPLEXITY**

As far as the estimation procedures adopted in the previous chapters goes, our choices have been directed towards a “safety strategy” leading us to privilege the consistency and the robustness of an estimator over more efficient and complex alternatives. All analyses are based on the use of the Ordinary Least Squares (OLS) estimator (in a single or 2-stage procedure) and of cluster robust standard errors that allow obtaining correct standard errors for arbitrary forms of heteroskedasticity and serial correlation within the observations of each individual. The OLS estimator, aside from being the most important tool in regression analysis, is also the “least demanding” estimator in terms of statistical assumptions. Once we have ascertained the exogeneity of the variables and/or of the instruments included in the model, the only aspect to be considered to obtain a consistent estimation with correct standard errors is to have a sample with a sufficiently large number of individuals and a limited number of time periods in order to be able to rely on the asymptotic properties of OLS.

Such an estimation procedure can certainly be improved in its efficiency. In particular, the implementation of estimators taking into account the non-numeric and binary nature of some of the variables that appear as dependent parameters at some point in the estimation may be considered as an improvement. Also, more precise estimates may be achieved by making some assumptions on the distribution of the error term and by adopting estimators capable of exploiting such information. Such efficiency ameliorations would be extremely useful for the estimation on differenced data, especially in the 2SLS procedure, where only the within-variation of the variables is exploited. However, one has to pay attention to what extent such improvements may threaten the consistency of the estimation. The assumptions on which these alternative estimators are based are usually quite restrictive, especially in a panel data setting. Moreover, their small sample properties are in general less attractive than those of the OLS estimator. Increas-

ing the efficiency, but getting an inconsistent estimation is certainly not the desired outcome. Since our primary interest was represented by the consistent estimation of the causal effect of union membership on various attitudes, these motivations led us to choose to restrict ourselves to the most “safe and simple” estimation procedure there is.

A higher efficiency may also be achieved by decreasing the residual sample variance with the inclusion of additional control variables. Considering the important number of attitudes taken into account and because of comparability reasons between chapters and with the results of the existing literature, we decided to standardize the analyses on different dependent variables by always including the same basic set of socio-demographic and work-related control variables. A finer analysis of the determinants of each attitude may certainly provide good candidates to be included as control parameters. However, as we pointed out in the methodological chapter, since an attitude is always determined by a variety of factors (biological, psychological, life-course related,...) that are difficult to include in a regression analysis, the residual variance may shrink to some extent, but it will always remain quite important. As sometimes wrongly done in the existing literature, a high  $R^2$  may be achieved by including control variables that are either clearly endogenous or that intervene as mediators between union membership and the attitude under examination. For these reasons, we decided to focus only on the inclusion of the most important control parameters (that are clearly exogenous and certainly do not play the role of mediators) cited in past research.

## 7.3 RESEARCH HORIZONS

### 7.3.1 WHY AND HOW: MEDIATION EFFECTS, REASONS OF MEMBERSHIP AND QUALITATIVE ANALYSES

Thinking about the possible research paths the analyses of the previous pages open, one of the aspects we explored only incompletely is represented by the underlying causal mechanisms leading from union membership to an attitudinal change. We provided a series of indirect arguments that allowed us to make some inferences about the most plausible processes that may explain the link between two variables. However, we also pointed out that each effect is usually the product of a variety of simultaneous processes. The objective changes union membership provokes are simultaneous to the adaptation processes in the subjective appreciation each individual gives of these changes. Rational motivations are often amalgamated with more moral considerations and the desire to belong to the union community. Disentangling the importance of each mechanism is not an easy task, but some specific analyses can be implemented. In particular, studying the importance of some mediation effects may reveal some interesting aspects. For example, when analyzing the effect on job attitudes, if we assume that the total effect of union membership is given by the sum of the impact on subjective and objective dimensions, it would be interesting to include as control variables some parameters capturing the main dimensions of the objective working conditions. If the assumption is correct, this strategy would allow inferring indirectly the relative importance of the two channels through which unions influence the job attitudes of their members. A similar reasoning can be constructed for the causal mechanisms that are suspected of explaining the impact on political and other-regarding attitudes.

Second, when we interpreted the variation of the effect across different segments of the population of union members, we often relied on suppositions on the main reasons that may have led most of the individuals of a certain category to become union members.

For example, for women and part-time workers, we supposed that their precarious work situation may explain their membership choice and also, through chain and/or interest-based processes, the effects we observe in almost all attitudes. Since the reason of membership seems a key determinant of the subsequent attitudinal impact, it would be very interesting to create a variable that distinguishes union members by the main motivation that led them to become members. A decrease in one of the dimensions of job satisfaction as main union membership motivation may lead to a different “attitudinal trajectory” than for example an individual that becomes member because the affiliation to a union is a customary practice at his workplace. The procedures developed in survival analysis, in particular competing risk models, seem well adapted for this purpose (Mills 2011).

The complementarity of our quantitative analyses with qualitative research is also obvious. At several points, contextual knowledge on some matters would be useful to complete our quantitative findings. For example, when trying to explain the absence or the small magnitude of an effect on some attitudes, we asked ourselves to what extent the result may be related to the non-participation of the majority of members in union meetings. Moreover, the understanding of why and how an effect takes place is an aspect that may be analyzed by directly questioning union members. In general, all contextual knowledge related to union dynamics may be more effectively gained through a research design including a field study.

### **7.3.2 ADDITIONAL PERSPECTIVES: THE “MESO” LEVEL AND FREE RIDING**

Besides improving and deepening the analyses related to our research question, exploring other research domains may also reveal itself very fruitful to get a more complete picture about the “What Unions Do “Really” Do?” question. Such a question implies to take into account two units of analysis. In this work, we analyzed it through the eyes of the main target of unions’ actions, i.e. union

members. It would be interesting to have data that focus on specific “unions”. The “meso” level (Oesch 2012) is the key level to consider when trying to understand the logic of unions’ actions. In other words, considering the high independence they enjoy with respect to the main confederations, the strategic behavior of Swiss unions must be examined on the “union level”. For example, in order to understand to what extent the absence of an influence on members’ voting behavior is related to a neglect of the organizational dimension in favor of an increased institutional influence, a “union-centered” analysis would be essential. In our analyses, we tried to capture it indirectly and only in an imperfect way by examining the variations across NOGA sectors.

By examining the evolution of union membership in Switzerland, in particular the linear fall of the proportion of active members, and the absence of an impact on some key behavioral dimensions, we were led more than once to ask ourselves whether the identity role unions played in the past for their members has completely disappeared. A more pragmatic type of membership, essentially based on instrumental considerations, may be becoming more and more frequent. Interestingly, despite the linear decline of union density, in sub-section 2.4.1 we pointed out that more than 60% of individuals belonging continuously to the population of wage-earners became union members at least once between 1999 and 2011. This let us suppose that a good proportion of such individuals become members only when the necessity arises and probably try to profit of unions’ services as free riders during the rest of the time. If we could show that the number of free riders is growing at a similar rate of the decrease of union members, this would highly relativize the decline of the importance of unions as work regulation actors. An increasing number of “memberships on call” would imply the rise of a new form of membership, but it would not call into question the role of reference point unions represent in the professional domain. The fact that a decrease in most dimensions of job satisfaction appears to be an important reason motivating the union membership choice lends support to this hypothesis.



### **7.3.3 EXTERNAL VALIDITY AND CROSS-COUNTRY VARIATION**

Another very promising research horizon concerns the evaluation of the external validity of the results obtained for the Swiss case. When we attempted to situate the Swiss system of industrial relations in international comparison, we highlighted the presence of certain specificities, but also of a wide range of common elements with surrounding countries. We know that most Western countries experience flexibilization trajectories similar to the Swiss case and that a generalized process of revitalization characterizes the union movement in various European countries (Baccaro et al. 2003). Did and does the revitalization process take place the same way as in Switzerland? Is the effect on union members the same? To what extent do institutional constraints play a mediator role? Describing the cross-country variation on these matters and trying to link it to contextual elements in each one (level of centralization of bargaining, level of coordination, unions' bargaining power,...) may reveal the effectiveness of different revitalization strategies.

It is also useful to remark that the variables used in the analyses (union membership status and a set of basic socio-demographic and work-related variables) are all parameters available in most national panel surveys.

## **7.4 WHAT “SHOULD” UNIONS DO?**

Focusing on the attitudinal change individuals experience after becoming union members, the analyses of this thesis have shown that Swiss unions influence their affiliates' outlook in some dimensions, while they do not provoke important variations in other ones. Unions do essentially what they are supposed to in the professional domain by increasing the job satisfaction of their members as far as the objective aspects of their work situation goes. The impact takes place through a direct improvement in such dimensions, but also by modifying the way these dimensions are interpreted. Focusing on the political sphere, union membership

contributes to increase the political participation and to observe in a more critical fashion some democratic institutions. Rational and value-driven motivations appear to be the leading mechanisms of the effect. The impact is however not transposed into a behavioral one, union membership not being responsible for a variation in terms of voting behavior or political orientation. A focus on the development of an institutional influence rather than an attention to organizational dynamics and an increased self-selection of new union members related to their political views may explain the absence of a behavioral impact. Moreover, unions seem to have little influence on their affiliates' other-regarding inclinations. An analysis on different sub-populations of union members reveals that the impact is highly dependent on the profile of the members and on the sector of activity of a union. The attachment to unions and the objective gains union membership provides to certain categories of individuals (active members, part-time workers, women) appear to be key factors influencing the effect. Moreover, the bargaining power unions achieved in some sectors (the public sector in particular) also appears to be an important predictor of unions' attitudinal effect.

What is the future of Swiss unions? Are they destined to an inexorable decline, independently of their strategic choices? Quite surprisingly, as far as the period between 1999 and 2011 goes, the descriptive analyses of the second chapter lead us to confirm Oesch's (2012) conclusions on the inflow-outflow dynamics in 70 union locals. The declining trend of union membership is mainly the consequence of unions' inability to recruit new union members rather than the result of the socio-demographic and structural evolutions of the labor market. The decline of union membership does not seem inevitable. In particular, the fate of Swiss unions is primarily related to an increase of their ability to influence the union membership propensity in the emerging categories of workers (women, foreigners, highly educated individuals, service sector workers,...).

By looking at the attitudinal reactions of union members, what kind of strategies appear to be the most appropriate ones to counterbalance today's decline? As we described, unions reacted to the challenges they faced from the '90s on by focusing on the defense of their bargaining role in the political and social sphere, but also by intensifying their efforts on the organizational level, attempting to increase the attachment of old members and the inflows of wage-earners from emerging sectors. As we pointed out, it is very likely that the increased political and social involvement of Swiss unions may have triggered a high self-selection of individuals becoming members because of the affinity with unions' views in these domains. Considering this fact, if we focus on the effectiveness in terms of recruitment of new members, in the future, should Swiss unions privilege the efforts aimed at an increase of their visibility in the public sphere or should they still give the priority to their organizational function of bargaining actors in the professional domain? It is not easy to give a clear-cut answer to the question since an individual may join a union because of both work-related and political-social motivations. Two main recurring results lead us to be more inclined to support the importance of the organizational dynamics. First, as we already pointed out, a variation, in particular a drop in job satisfaction, appears very often as a key motivation determining the union membership choice, while the same does not appear to be true when an individual experiences a variation in his political or other-regarding attitudes. In other words, despite the increased political and social activism, in the eyes of most wage-earners that choose to become members for reasons not solely related to customary practices at the workplace, the main scope of unions' activities is and remains the defense and/or the improvement of their affiliates' working conditions. Moreover, unions' organizational efficiency appears to be a key determinant of their capacity to broaden the relationship with their affiliates on new grounds, such as political and social views. In fact, the groups that consistently show the highest impact in political and other-regarding attitudes, part-time workers, women and public sector members, are also those for which union

membership leads to a significant improvement in terms of satisfaction with working conditions, income and job security. We interpreted this pattern by supposing that the achievements unions are capable of providing in the professional sphere are probably the pivotal element that triggers an effect in political and social dimensions. In other words, by redrawing on the argument of Baccaro et al. (2003), the political and social activism unions show recently as a response to their increasingly questioned role at the institutional level should not lead them to forget that, in order to achieve a long-term revitalization of the union movement, their main efforts have to be primarily related to the professional well-being of the very actor giving legitimacy and strength to their actions, i.e. union members. The consideration of union members' point of view is and will always be the key element of the success of every existing union.

## 8. APPENDIX

### 8.1 DESCRIPTIVE STATISTICS BY COVARIATES

*Table 8.1: Descriptive statistics for cross-sectional and differenced data for union members and non-members by covariates*

	Cross-sectional data				Differenced data			
	Non-members		Members		Non-members		Members	
	Individuals	Observations	Individuals	Observations	Individuals	Observations	Individuals	Observations
<u>Union membership</u>								
Non-member	9921	35108	0	0	4767	16063	0	0
Member	0	0	3002	9428	0	0	1194	2503
<u>Episode of membership</u>								
First episode	0	0	2931	7576	0	0	793	1330
Second episode or higher	0	0	717	1852	0	0	542	1173
<u>Duration of membership</u>								
First year	0	0	2910	3652	0	0	1171	1416
Second year	0	0	1321	1466	0	0	427	460
Third year or more	0	0	1234	4310	0	0	252	627

<b><u>Period</u></b>								
1999-2004	7188	16576	2127	4668	2808	6737	652	1078
2005-2011	6560	18532	1870	4760	3386	9383	759	1425
<b><u>Type of membership</u></b>								
Active	0	0	1560	3471	0	0	468	759
Passive	0	0	2417	5957	0	0	963	1744
<b><u>Occupation</u></b>								
Full-time	6438	19349	2039	5775	3005	9034	744	1538
Part-time	5094	15589	1327	3637	2255	7059	489	963
<b><u>Sex</u></b>								
Man	4626	16153	1631	5168	2282	7667	638	1347
Woman	5295	18955	1371	4260	2533	8453	556	1156
<b><u>Age</u></b>								
16-30 years	3994	9625	731	1298	948	1739	146	205
31-50 years	4940	17366	1791	5381	3065	9621	737	1486
51 years or more	2617	8116	942	2749	1631	4760	399	812
<b><u>Education</u></b>								
Compulsory education or less	2715	6660	442	908	537	1655	103	190
Secondary education	5853	20232	1785	5599	3033	10066	730	1502
Tertiary education	2256	8216	894	2921	1337	4399	374	811
<b><u>Nationality</u></b>								
Swiss	8651	30921	2671	8628	4192	14207	1058	2259
Foreign	1356	4183	344	800	653	1913	140	244
<b><u>Region</u></b>								
German	7005	24463	2081	6543	3359	11025	800	1627
French or Italian	2975	10645	928	2885	1480	5095	394	876

<b><u>Sector</u></b>								
Private	7220	21450	1627	3757	3483	9986	609	1045
Public	4205	10914	1650	5145	1858	4961	628	1312
<b><u>NOGA sector</u></b>								
Primary, manufacturing and construction sector	1815	5135	449	1147	931	2705	166	315
Basic services	3159	8240	802	2018	1358	3718	270	504
Finance and other services	2002	5802	384	844	1021	3018	162	274
Public services	3537	10769	1364	4603	1693	5337	559	1245
<b><u>Company size</u></b>								
Small firms	6954	19094	1802	4420	3132	8304	632	1114
Large firms	4557	12298	1674	4345	2378	6396	638	1215

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*Source: Swiss Household Panel (SHP)*





## 8.2 REGRESSION MODELS ANALYZING THE EVOLUTION OF THE RECRUITMENT AND RETENTION CAPACITY OF SWISS UNIONS

*Table 8.2: Regression models estimating the likelihood of becoming at least once a union member in shifting time-windows*

	Pooled OLS (1)		Pooled OLS (2)		Pooled OLS (3)	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
<b>Time-window</b>						
1999-2004 (reference)	0	(.)	0	(.)	0	(.)
2000-2005	-0.0090*	(0.0037)	-0.0081*	(0.0037)	-0.0095	(0.012)
2001-2006	-0.018***	(0.0042)	-0.016***	(0.0042)	-0.016	(0.012)
2002-2007	-0.025***	(0.0044)	-0.023***	(0.0045)	-0.032*	(0.014)
2003-2008	-0.035***	(0.0050)	-0.033***	(0.0051)	-0.025*	(0.013)
2004-2009	-0.041***	(0.0055)	-0.039***	(0.0056)	-0.041**	(0.013)
2006-2011	-0.026***	(0.0059)	-0.026***	(0.0059)	-0.028*	(0.014)
<b>Waves as wage-earner</b>	0.074***	(0.0019)	0.072***	(0.0021)	0.055***	(0.0047)
<b>Sex</b>						
Man (reference)			0	(.)	0	(.)

Woman	-0.060***	(0.017)	-0.050***	(0.0079)
<b>Age</b>				
16-30 years (reference)	0	(.)	0	(.)
31-50 years	0.035+	(0.019)	0.039***	(0.0098)
51 years or more	0.076***	(0.022)	0.047***	(0.0089)
<b>Education</b>				
Compulsory education or less (reference)	0	(.)	0	(.)
Secondary education	0.0028	(0.022)	0.012	(0.0089)
Tertiary education	0.0017	(0.025)	0.031*	(0.012)
<b>Nationality</b>				
Swiss (reference)	0	(.)	0	(.)
Foreign	-0.0066	(0.023)	-0.017	(0.011)
<b>Canton</b>				
Zurich (reference)	0	(.)	0	(.)
Aarau	0.012	(0.016)	-0.011	(0.029)
Appenzell Inner-Rhodes	0.052	(0.088)	0.23	(0.25)
Appenzell Outer-Rhodes	0.026	(0.038)	-0.077	(0.058)
Basle-Town	0.029*	(0.014)	0.020	(0.028)
Basle-Country	0.058*	(0.028)	0.12*	(0.054)
Fribourg	-0.0013	(0.021)	-0.011	(0.041)

Geneva	0.033	(0.021)	0.017	(0.038)
Glarus	0.059**	(0.022)	0.054	(0.046)
Graubunden	0.098+	(0.057)	0.097	(0.10)
Jura	0.036	(0.024)	0.092+	(0.050)
Lucerne	-0.027	(0.041)	-0.088	(0.062)
Neuchatel	0.011	(0.017)	-0.020	(0.030)
Nidwalden	0.021	(0.019)	0.010	(0.037)
Obwalden	0.016	(0.047)	0.013	(0.085)
St. Gall	-0.011	(0.035)	-0.048	(0.073)
Schaffhausen	0.0016	(0.017)	0.025	(0.034)
Solothurn	0.0084	(0.035)	0.065	(0.094)
Schwyz	0.046+	(0.023)	0.0047	(0.042)
Thurgau	0.052	(0.032)	0.029	(0.049)
Ticino	0.048+	(0.026)	0.072	(0.054)
Uri	0.012	(0.019)	-0.017	(0.043)
Vaud	-0.017	(0.064)	0.0065	(0.096)
Wallis	0.022	(0.015)	0.017	(0.031)
Zug	0.081**	(0.026)	0.098*	(0.046)

#### Type of contract

Indeterminate (reference)			0	(.)
Time-limited			-0.086***	(0.017)

#### Occupation

Full-time (reference)	0	(.)
Part-time	-0.037*	(0.015)
<b>Sector</b>		
Private (reference)	0	(.)
Public	0.096***	(0.016)
<b>NOGA sector</b>		
Manufacturing (reference)	0	(.)
Agriculture, hunting, forestry	0.0017	(0.072)
Fishing and fish farming	0.14*	(0.058)
Mining and quarrying	0.030	(0.31)
Electricity, gas and water supply	0.040	(0.093)
Construction	0.096*	(0.041)
Wholesale, retail, repair motor vehicles, household goods	-0.0082	(0.027)
Hotels and restaurants	0.0015	(0.038)
Transport, storage and communication	0.16***	(0.037)
Financial intermediation, insurance	-0.061+	(0.032)
Real estate, renting, computer, research	-0.048+	(0.027)
Public admin, national defence, compulsory social security	0.054	(0.036)
Education	0.19***	(0.032)
Health and social work	0.053+	(0.030)

Other community, social and personal service activities	-0.024	(0.032)
Extra-territorial organizations and bodies	0.11	(0.19)

#### Company size

50-99 (reference)	0	(.)
1-4	-0.051+	(0.026)
5-9	-0.035	(0.026)
10-19	-0.023	(0.023)
20-24	0.0030	(0.027)
25-49	0.010	(0.024)
100-499	0.012	(0.021)
500-999	0.037	(0.031)
1000 or more	0.027	(0.025)

#### Job and/or employer change in the last 6 years

No (reference)	0	(.)
Yes	-0.0038	(0.018)

#### Constant

-0.010 (0.048)

Adj. R <sup>2</sup> – F p-value	0.16	6.2e-305	0.17	9.0e-322	0.14	0.14
Individuals – Observations	12216	49565	12215	49562	5633	16022

Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

*Source: Swiss Household Panel (SHP)*

*Table 8.3: Regression models estimating the mean duration of union membership in shifting time-windows for all wage-earners becoming at least once union members*

	Pooled OLS (1)		Pooled OLS (2)		Pooled OLS (3)	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
<b>Time-window</b>						
1999-2004 (reference)	0	(.)	0	(.)	0	(.)
2000-2005	0.030	(0.029)	0.046	(0.029)	0.059	(0.063)
2001-2006	-0.0058	(0.037)	0.017	(0.036)	0.014	(0.071)
2002-2007	-0.019	(0.044)	0.015	(0.043)	-0.025	(0.089)
2003-2008	0.0021	(0.049)	0.035	(0.048)	0.094	(0.075)
2004-2009	-0.051	(0.058)	0.0017	(0.055)	0.025	(0.081)
2006-2011	-0.0091	(0.055)	0.016	(0.053)	0.0083	(0.081)
<b>Waves as wage-earner</b>	0.56***	(0.018)	0.54***	(0.017)	0.46***	(0.027)
<b>Sex</b>						
Man (reference)			0	(.)	0	(.)
Woman			-0.17*	(0.068)	-0.29**	(0.11)
<b>Age</b>						
16-30 years (reference)			0	(.)	0	(.)

31-50 years	0.41***	(0.080)	0.42***	(0.11)
51 years or more	0.52***	(0.086)	0.49***	(0.13)

#### Education

Compulsory education or less (reference)	0	(.)	0	(.)
Secondary education	0.094	(0.11)	0.076	(0.14)
Tertiary education	0.11	(0.12)	0.030	(0.15)

#### Nationality

Swiss (reference)	0	(.)	0	(.)
Foreign	-0.37***	(0.11)	-0.38**	(0.15)

#### Canton

Zurich (reference)	0	(.)	0	(.)
Aarau	0.33*	(0.13)	0.36*	(0.17)
Appenzell Inner-Rhodes	0.26*	(0.11)	0.80**	(0.28)
Appenzell Outer-Rhodes	-0.66**	(0.23)	-0.92*	(0.46)
Basle-Town	0.26*	(0.13)	0.26	(0.19)
Basle-Country	0.69***	(0.20)	0.71*	(0.29)
Fribourg	0.53*	(0.22)	0.64*	(0.31)
Geneva	0.0037	(0.15)	-0.043	(0.21)
Glarus	0.46**	(0.15)	0.60**	(0.20)
Graubunden	0.20	(0.55)	0.34	(0.84)
Jura	0.32	(0.21)	0.45	(0.29)

Lucerne	0.15	(0.66)	-1.38	(0.84)
Neuchatel	0.17	(0.15)	0.21	(0.21)
Nidwalden	0.24	(0.19)	0.16	(0.22)
Obwalden	-0.65*	(0.27)	-0.87*	(0.37)
St. Gall	-0.46	(0.53)	-1.16	(0.73)
Schaffhausen	0.13	(0.15)	0.051	(0.20)
Solothurn	-0.42	(0.41)	-0.70	(0.53)
Schwyz	-0.021	(0.18)	-0.096	(0.21)
Thurgau	0.18	(0.21)	-0.040	(0.28)
Ticino	-0.17	(0.19)	-0.27	(0.30)
Uri	-0.39+	(0.23)	-0.70*	(0.30)
Vaud	0.52	(0.48)	-0.049	(0.51)
Wallis	0.014	(0.15)	-0.0033	(0.19)
Zug	0.31+	(0.18)	0.17	(0.22)
<b>Type of contract</b>				
Indeterminate (reference)			0	(.)
Time-limited			-0.21*	(0.10)
<b>Occupation</b>				
Full-time (reference)			0	(.)
Part-time			-0.17+	(0.091)



**Sector**

Private (reference)	0	(.)
Public	0.24*	(0.096)

**NOGA sector**

Manufacturing (reference)	0	(.)
Agriculture, hunting, forestry	-2.83***	(0.36)
Fishing and fish farming	-1.74***	(0.36)
Mining and quarrying	0.54	(0.61)
Electricity, gas and water supply	-0.55	(0.59)
Construction	0.059	(0.25)
Wholesale, retail, repair motor vehicles, household goods	-0.39*	(0.19)
Hotels and restaurants	-0.25	(0.23)
Transport, storage and communication	0.015	(0.19)
Financial intermediation, insurance	-0.48*	(0.21)
Real estate, renting, computer, research	-0.20	(0.20)
Public admin, national defence, compulsory social security	-0.049	(0.21)
Education	0.55**	(0.18)
Health and social work	0.12	(0.18)
Other community, social and personal service activities	-0.096	(0.22)

Extra-territorial organizations and  
bodies

-0.78+ (0.41)

#### Company size

50-99 (reference)

0 (.)

1-4

-0.15 (0.18)

5-9

-0.13 (0.16)

10-19

-0.33\* (0.14)

20-24

-0.31+ (0.18)

25-49

-0.34\* (0.14)

100-499

-0.23+ (0.13)

500-999

-0.29 (0.19)

1000 or more

-0.12 (0.14)

#### Job and/or employer change in the last 6 years

No (reference)

0 (.)

Yes

-0.43\*\*\* (0.10)

<b>Constant</b>	0.32***	(0.045)	0.22	(0.16)	1.03***	(0.31)
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Adj. R <sup>2</sup> – F p-value	0.32	4.1e-186	0.36	2.4e-233	0.32	0.32
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Individuals – Observations	2409	9200	2409	9200	1773	5233
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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

### 8.3 REGRESSION MODELS ESTIMATING THE CAUSAL EFFECT OF UNION MEMBERSHIP ON INDIVIDUAL ATTITUDES

*Table 8.4: Regression models estimating the effect of union membership on the satisfaction with working conditions*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables		2SLS on differenced data with control variables	
<b><u>Main effect</u></b>								
Estimate – Standard error	-0.28***	(0.031)	-0.24***	(0.033)	-0.14***	(0.046)	0.15	(0.19)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0045	2.2e-19	0.036	3.8e-92	0.0025	0.000000038	.	0.0000015
Individuals – Observations	10852	44430	9443	35170	5194	18422	4986	16684
<b><u>Episode of membership</u></b>								
<b>First episode</b>								
Estimate – Standard error	-0.32***	(0.035)	-0.27***	(0.038)	-0.17*	(0.067)	0.37	(0.26)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0056	1.1e-19	0.035	3.3e-79	0.0024	0.0000011	.	0.000016
Individuals – Observations	10686	37723	9149	29531	4498	15082	4339	13748
<b>Second episode or higher</b>								
Estimate – Standard error	-0.18***	(0.054)	-0.14*	(0.056)	-0.11+	(0.062)	0.28	(0.39)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00053	0.00083	0.034	1.1e-71	0.0017	0.0000082	.	0.0000068

Individuals – Observations	9928	36859	8540	28745	4983	17105	4772	15420
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### Duration of membership

#### **First year**

Estimate – Standard error	-0.22***	(0.033)	-0.18***	(0.036)	-0.022	(0.042)	0.52+	(0.29)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0014	2.1e-11	0.033	4.2e-77	0.0013	0.000011	.	0.00000093
Individuals – Observations	10802	38663	9326	30193	5179	17287	4971	15551

#### **Second year**

Estimate – Standard error	-0.33***	(0.048)	-0.28***	(0.052)	-0.21**	(0.077)	0.82	(0.79)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0015	3.5e-12	0.034	9.1e-76	0.0022	0.000000053	.	0.00000014
Individuals – Observations	10389	36475	8952	28391	4937	16336	4739	14721

#### **Third year or more**

Estimate – Standard error	-0.31***	(0.044)	-0.29***	(0.046)	-0.38***	(0.10)	0.13	(0.48)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0034	7.9e-13	0.035	1.8e-82	0.0037	0.000000014	0.000027	0.0000011
Individuals – Observations	10420	39318	9036	30888	4865	16565	4666	14948

### Period

#### **1999-2004**

Estimate – Standard error	0.30***	(0.039)	-0.21***	(0.043)	-0.098	(0.065)	0.39	(0.30)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0050	3.5e-14	0.037	7.1e-50	0.0031	0.000033	.	0.000074
Individuals – Observations	8250	21171	6534	16489	3100	7678	3094	7639

#### **2005-2011**

Estimate – Standard error	-0.27***	(0.038)	-0.27***	(0.041)	-0.17**	(0.056)	-0.059	(0.23)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0042	3.0e-12	0.037	1.5e-120	0.0025	0.00011	0.0020	0.015

Individuals – Observations	7376	23259	6470	18681	3683	10744	3386	9045
<b><u>Type of membership</u></b>								
<b>Active</b>								
Estimate – Standard error	-0.29***	(0.046)	-0.26***	(0.049)	-0.17**	(0.064)	0.60	(0.57)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0024	3.5e-10	0.036	2.6e-79	0.0017	0.0000022	.	0.000037
Individuals – Observations	10476	38481	9072	30130	4929	16656	4726	15013
<b>Passive</b>								
Estimate – Standard error	-0.27***	(0.034)	-0.24***	(0.037)	-0.13*	(0.055)	0.17	(0.22)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0032	1.5e-15	0.034	2.4e-82	0.0025	0.000000012	-0.00074	0.000000053
Individuals – Observations	10629	40962	9200	32191	5087	17649	4879	15939
<b><u>Occupation</u></b>								
<b>Full-time</b>								
Estimate – Standard error	-0.19***	(0.038)	-0.20***	(0.041)	-0.13*	(0.058)	0.11	(0.24)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0023	0.00000053	0.026	3.6e-29	0.0025	0.00012	-0.00089	0.0022
Individuals – Observations	7245	25099	6401	20388	3320	10501	3184	9598
<b>Part-time</b>								
Estimate – Standard error	-0.38***	(0.048)	-0.29***	(0.051)	-0.16*	(0.076)	0.35	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0074	3.0e-15	0.052	0.052	0.0030	0.0014	.	0.0082
Individuals – Observations	5607	19173	4621	14713	2396	7896	2260	7062
<b><u>Sex</u></b>								
<b>Man</b>								
Estimate – Standard error	-0.21***	(0.041)	-0.20***	(0.044)	-0.21***	(0.062)	-0.33	(0.26)

Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0031	0.00000026	0.033	8.4e-34	0.0043	0.00015	0.0028	0.021
Individuals – Observations	5183	21281	4594	17159	2514	8944	2418	8116
<b>Woman</b>								
Estimate – Standard error	-0.33***	(0.047)	-0.26***	(0.048)	-0.064	(0.069)	0.60*	(0.28)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0053	3.3e-12	0.048	0.048	0.0025	0.00016	.	0.000044
Individuals – Observations	5669	23149	4849	18011	2680	9478	2568	8568
<b>Age</b>								
<b>16-30 years</b>								
Estimate – Standard error	-0.36***	(0.063)	-0.24***	(0.067)	-0.0095	(0.11)	0.32	(0.67)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0043	0.000000015	0.026	3.5e-17	0.00077	3.9e-19	-0.0022	8.8e-72
Individuals – Observations	4254	10888	3525	7964	1014	1911	950	1778
<b>31-50 years</b>								
Estimate – Standard error	-0.25***	(0.041)	-0.22***	(0.042)	-0.15*	(0.061)	0.31	(0.25)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0038	1.6e-09	0.032	1.2e-38	0.0024	0.0021	.	0.0088
Individuals – Observations	5628	22712	5026	18501	3342	11001	3181	10056
<b>51 years or more</b>								
Estimate – Standard error	-0.34***	(0.059)	-0.29***	(0.062)	-0.17*	(0.079)	-0.19	(0.29)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0078	8.6e-09	0.057	0.057	0.0038	0.0028	0.0046	0.0039
Individuals – Observations	3040	10829	2678	8705	1786	5510	1606	4850
<b>Education</b>								
<b>Compulsory education or less</b>								
Estimate – Standard error	-0.37***	(0.086)	-0.19*	(0.091)	-0.12	(0.18)	-0.46	(0.71)

Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0044	0.000021	0.040	0.040	0.0027	0.11	0.00072	0.0072
Individuals – Observations	2871	7527	2173	5124	568	1806	554	1669
<b>Secondary education</b>								
Estimate – Standard error	-0.24***	(0.039)	-0.22***	(0.042)	-0.15**	(0.057)	0.35	(0.23)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0032	1.4e-09	0.039	2.7e-56	0.0035	0.0000012	.	0.000027
Individuals – Observations	6436	25777	5676	20735	3274	11440	3145	10387
<b>Tertiary education</b>								
Estimate – Standard error	0.29***	(0.061)	-0.29***	(0.061)	-0.14	(0.088)	-0.26	(0.35)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0060	0.0000026	0.040	0.040	0.0033	0.0024	0.0030	0.0074
Individuals – Observations	2580	11126	2336	9311	1468	5176	1386	4628
<b><u>Nationality</u></b>								
<b>Swiss</b>								
Estimate – Standard error	-0.28***	(0.032)	-0.24***	(0.034)	-0.14**	(0.048)	0.21	(0.20)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0047	5.0e-18	0.035	1.4e-77	0.0026	0.00000043	.	0.0000096
Individuals – Observations	9497	39454	8330	31406	4531	16297	4354	14756
<b>Foreign</b>								
Estimate – Standard error	-0.42***	(0.11)	-0.28*	(0.11)	-0.16	(0.15)	-0.30	(0.59)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0072	0.000087	0.028	0.028	-0.00020	0.10	0.00094	0.15
Individuals – Observations	1457	4972	1183	3764	697	2125	662	1928
<b><u>Region</u></b>								
<b>German</b>								
Estimate – Standard error	-0.28***	(0.037)	-0.27***	(0.039)	-0.19***	(0.057)	0.19	(0.23)

Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0047	3.0e-14	0.032	3.7e-56	0.0036	0.0000020	.	0.000029
Individuals – Observations	7683	30917	6638	24176	3615	12511	3462	11286
<b>French or Italian</b>								
Estimate – Standard error	-0.28***	(0.057)	-0.21***	(0.060)	-0.049	(0.080)	0.058	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0041	0.0000013	0.037	0.037	0.0016	0.013	0.0015	0.0092
Individuals – Observations	3238	13513	2864	10994	1603	5911	1545	5398

**Sector****Private**

Estimate – Standard error	-0.27***	(0.043)	-0.22***	(0.044)	-0.15*	(0.071)	-0.075	(0.35)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0032	2.7e-10	0.033	0.033	0.0016	0.0054	0.0015	0.015
Individuals – Observations	7832	25161	6868	21213	3694	10909	3526	9788

**Public**

Estimate – Standard error	-0.29***	(0.044)	-0.27***	(0.046)	-0.15*	(0.061)	0.27	(0.21)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0063	9.8e-11	0.047	0.047	0.0057	0.000011	.	0.000037
Individuals – Observations	4925	16028	4393	13711	2114	6206	1982	5618

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	-0.14+	(0.077)	-0.17*	(0.078)	-0.051	(0.14)	0.76	(0.55)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00090	0.073	0.035	0.035	0.0047	0.0015	.	0.0043
Individuals – Observations	2017	6276	1914	5622	995	3003	936	2694

**Basic services**

Estimate – Standard error	-0.31***	(0.063)	-0.26***	(0.066)	-0.19	(0.12)	0.30	(0.40)
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Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0047	0.0000013	0.033	3.9e-20	0.0027	0.12	.	0.29
Individuals – Observations	3513	10241	3346	9339	1474	4198	1388	3792
<b>Finance and other services</b>								
Estimate – Standard error	-0.11	(0.076)	-0.041	(0.079)	-0.10	(0.094)	-0.34	(0.62)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00033	0.17	0.024	7.7e-17	-0.0017	0.79	-0.0020	0.61
Individuals – Observations	2144	6643	2013	5916	1083	3282	1024	2947
<b>Public services</b>								
Estimate – Standard error	-0.29***	(0.048)	-0.32***	(0.048)	-0.17**	(0.066)	0.14	(0.25)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0061	2.1e-09	0.049	0.049	0.0053	0.000022	-0.0018	0.00014
Individuals – Observations	4048	15349	3888	14293	1910	6540	1792	5881
<b><u>Company size</u></b>								
<b>Small firms</b>								
Estimate – Standard error	-0.27***	(0.042)	-0.28***	(0.044)	-0.16*	(0.066)	0.084	(0.30)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0038	1.5e-10	0.040	2.4e-68	0.0034	0.000019	0.0011	0.00015
Individuals – Observations	7714	23463	6893	20227	3378	9297	3216	8361
<b>Large firms</b>								
Estimate – Standard error	-0.22***	(0.043)	-0.20***	(0.043)	-0.14*	(0.060)	0.15	(0.26)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0034	0.00000019	0.033	7.6e-29	0.0028	0.0026	.	0.045
Individuals – Observations	5356	16635	4953	14943	2648	7551	2489	6801

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.5: Regression models estimating the effect of union membership on the satisfaction with work atmosphere*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables		2SLS on differenced data with control variables	
<b>Main effect</b>								
Estimate – Standard error	-0.097***	(0.026)	-0.088**	(0.028)	-0.072+	(0.041)	-0.069	(0.16)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0007	0.00024	0.036	3.2e-088	0.00097	0.0029	0.001	0.0067
Individuals – Observations	10619	43141	9358	34703	5078	17930	4868	16232
<b>Episode of membership</b>								
<b>First episode</b>								
Estimate – Standard error	-0.099***	(0.029)	-0.088**	(0.032)	-0.13*	(0.056)	-0.026	(0.23)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00068	0.00082	0.037	2.9e-081	0.0015	0.00082	0.0015	0.0017
Individuals – Observations	10448	36534	9062	29108	4387	14621	4225	13323
<b>Second episode or higher</b>								
Estimate – Standard error	-0.14**	(0.050)	-0.058	(0.052)	-0.0035	(0.058)	-0.094	(0.35)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00039	0.006	0.04	4.4e-084	0.0006	0.022	0.00019	0.038
Individuals – Observations	9699	35632	8457	28315	4868	16625	4655	14980

**Duration of membership****First year**

Estimate – Standard error	-0.041	(0.028)	-0.042	(0.031)	-0.0012	(0.038)	0.16	(0.26)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000037	0.15	0.037	1.8e-083	0.00088	0.0028	-0.00012	0.0034
Individuals – Observations	10569	37410	9238	29742	5062	16799	4852	15103

**Second year**

Estimate – Standard error	-0.066+	(0.039)	-0.055	(0.044)	0.023	(0.069)	-0.12	(0.69)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000049	0.086	0.039	8.7e-084	0.00083	0.0051	0.00045	0.0074
Individuals – Observations	10158	35252	8865	27961	4822	15862	4623	14287

**Third year or more**

Estimate – Standard error	-0.15***	(0.038)	-0.13**	(0.041)	-0.30**	(0.091)	-0.69+	(0.42)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0011	0.000048	0.039	2.1e-092	0.0023	0.00092	0	0.012
Individuals – Observations	10189	38087	8954	30458	4751	16091	4551	14514

**Period****1999-2004**

Estimate – Standard error	-0.14***	(0.032)	-0.11**	(0.035)	-0.052	(0.054)	-0.074	(0.25)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0015	0.000015	0.035	8.5e-049	0.0011	0.0094	0.0011	0.01
Individuals – Observations	8056	20554	6456	16222	3006	7409	2999	7371

**2005-2011**

Estimate – Standard error	-0.063+	(0.033)	-0.070+	(0.036)	-0.087	(0.053)	-0.057	(0.21)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00026	0.058	0.033	1.5e-041	0.0011	0.03	0.00089	0.17
Individuals – Observations	7192	22587	6415	18481	3619	10521	3324	8861

**Type of membership****Active**

Estimate – Standard error	-0.033	(0.039)	-0.052	(0.041)	-0.13*	(0.063)	-0.51	(0.50)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000014	0.4	0.039	4.5e-087	0.0013	0.00089	0	0.0022
Individuals – Observations	10251	37243	8989	29685	4812	16180	4608	14577

**Passive**

Estimate – Standard error	-0.13***	(0.029)	-0.11***	(0.032)	-0.046	(0.047)	-0.0012	(0.19)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.001	0.0000049	0.037	1.2e-085	0.00069	0.01	0.00056	0.017
Individuals – Observations	10392	39702	9114	31747	4972	17161	4762	15491

**Occupation****Full-time**

Estimate – Standard error	-0.014	(0.033)	-0.033	(0.035)	0.02	(0.050)	0.11	(0.22)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.000025	0.67	0.029	6.1e-032	0.0014	0.002	0.0004	0.026
Individuals – Observations	7192	24916	6367	20270	3286	10397	3152	9501

**Part-time**

Estimate – Standard error	-0.21***	(0.041)	-0.17***	(0.044)	-0.22***	(0.064)	-0.32	(0.26)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0032	0.00000026	0.051	0.051	0.0029	0.0087	0.0027	0.094
Individuals – Observations	5346	18100	4535	14370	2292	7509	2154	6708

**Sex****Man**

Estimate – Standard error	-0.01	(0.036)	-0.026	(0.038)	-0.063	(0.056)	0.0063	(0.23)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.000038	0.78	0.033	1.3e-026	0.0016	0.0067	0.00074	0.049
Individuals – Observations	5126	21051	4563	17036	2494	8859	2396	8035

**Woman**

Estimate – Standard error	-0.18***	(0.039)	-0.15***	(0.042)	-0.086	(0.060)	-0.17	(0.24)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0021	0.0000059	0.047	0.047	0.00033	0.28	0.0003	0.37
Individuals – Observations	5493	22090	4795	17667	2584	9071	2472	8197

**Age****16-30 years**

Estimate – Standard error	-0.12*	(0.054)	-0.089	(0.060)	0.054	(0.13)	-0.37	(0.58)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0006	0.02	0.018	0.00000029	0.00013	0.48	-0.007	1.3e-143
Individuals – Observations	4156	10540	3508	7900	1004	1892	940	1760

**31-50 years**

Estimate – Standard error	-0.058+	(0.034)	-0.063+	(0.036)	-0.10*	(0.050)	-0.043	(0.22)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00024	0.089	0.04	2e-055	0.00071	0.15	0.00023	0.5
Individuals – Observations	5536	22217	4984	18293	3278	10771	3118	9840

**51 years or more**

Estimate – Standard error	-0.15**	(0.049)	-0.12*	(0.053)	-0.048	(0.074)	-0.059	(0.26)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0021	0.0018	0.046	0.046	0.0015	0.034	0.0026	0.017
Individuals – Observations	2952	10383	2636	8510	1728	5267	1548	4632

**Education****Compulsory education or less**

Estimate – Standard error	-0.21**	(0.077)	-0.12	(0.090)	-0.24	(0.16)	-1.08	(0.68)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0017	0.0068	0.034	0.034	0.0018	0.24	0	0.14
Individuals – Observations	2735	7037	2151	5022	539	1694	523	1565

**Secondary education**

Estimate – Standard error	-0.080*	(0.035)	-0.097**	(0.037)	-0.032	(0.050)	0.32	(0.20)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00047	0.02	0.04	6.9e-054	0.00041	0.14	0	0.14
Individuals – Observations	6323	25063	5622	20422	3196	11099	3067	10075

**Tertiary education**

Estimate – Standard error	-0.033	(0.047)	-0.048	(0.050)	-0.11	(0.075)	-0.64+	(0.33)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000015	0.49	0.035	0.035	0.00049	0.17	0	0.17
Individuals – Observations	2562	11041	2322	9259	1459	5137	1377	4592

**Nationality****Swiss**

Estimate – Standard error	-0.11***	(0.027)	-0.095**	(0.029)	-0.068	(0.044)	0.005	(0.17)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00091	0.000099	0.033	4.2e-069	0.00088	0.008	0.00063	0.016
Individuals – Observations	9302	38337	8256	30994	4431	15889	4254	14383

**Foreign**

Estimate – Standard error	-0.13	(0.088)	-0.014	(0.095)	-0.12	(0.11)	-0.64	(0.52)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00056	0.15	0.03	0.03	-0.0019	0.84	0	0.67
Individuals – Observations	1416	4800	1172	3709	681	2041	644	1849

**Region****German**

Estimate – Standard error	-0.11***	(0.029)	-0.12***	(0.032)	-0.084+	(0.050)	-0.017	(0.20)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00094	0.00026	0.024	7.3e-041	0.0016	0.0027	0.0012	0.013
Individuals – Observations	7520	30001	6577	23865	3532	12178	3378	10982

**French or Italian**

Estimate – Standard error	-0.073	(0.054)	-0.014	(0.057)	-0.044	(0.071)	-0.072	(0.29)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00025	0.18	0.031	0.031	-0.0000055	0.54	0.00058	0.31
Individuals – Observations	3167	13140	2840	10838	1570	5752	1511	5250

**Sector****Private**

Estimate – Standard error	-0.16***	(0.039)	-0.13**	(0.040)	-0.10+	(0.056)	-0.33	(0.30)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0015	0.000027	0.038	0.038	0.00081	0.083	0	0.086
Individuals – Observations	7661	24528	6781	20883	3596	10618	3428	9522

**Public**

Estimate – Standard error	-0.037	(0.036)	-0.047	(0.039)	-0.045	(0.059)	0.22	(0.21)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000079	0.3	0.038	0.038	0.0013	0.051	0	0.055
Individuals – Observations	4857	15777	4355	13579	2081	6092	1951	5512

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	-0.025	(0.070)	-0.039	(0.072)	-0.18+	(0.10)	0.76+	(0.45)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.00012	0.72	0.035	0.035	0.0017	0.17	0	0.22
Individuals – Observations	1992	6173	1892	5545	982	2947	922	2641

**Basic services**

Estimate – Standard error	-0.13*	(0.057)	-0.11+	(0.061)	-0.074	(0.081)	-0.11	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00098	0.027	0.037	3.9e-023	0.00046	0.35	-0.00032	0.58
Individuals – Observations	3489	10135	3325	9259	1451	4131	1366	3730

**Finance and other services**

Estimate – Standard error	-0.037	(0.073)	-0.029	(0.073)	0.016	(0.12)	-0.28	(0.56)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000083	0.61	0.03	0.000000029	-0.00019	0.43	0	0.7
Individuals – Observations	2095	6455	1975	5799	1052	3183	993	2857

**Public services**

Estimate – Standard error	-0.091*	(0.039)	-0.11**	(0.039)	-0.066	(0.061)	0.024	(0.23)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00075	0.021	0.042	0.042	0.0013	0.033	0.0013	0.026
Individuals – Observations	3980	15071	3842	14100	1871	6386	1756	5743

**Company size****Small firms**

Estimate – Standard error	-0.17***	(0.036)	-0.16***	(0.038)	-0.095+	(0.057)	-0.073	(0.25)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0019	0.0000033	0.038	8.4e-056	0.0023	0.00079	0.0026	0.0012
Individuals – Observations	7569	22902	6812	19863	3288	9019	3129	8105

**Large firms**

Estimate – Standard error	0.014	(0.036)	-0.013	(0.037)	-0.026	(0.055)	-0.0011	(0.25)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000043	0.69	0.034	1.8e-033	0.00085	0.16	0.00078	0.17
Individuals – Observations	5316	16505	4919	14840	2626	7489	2467	6742

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)



*Table 8.6: Regression models estimating the effect of union membership on the satisfaction with income*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables		2SLS on differenced data with control variables	
<b><u>Main effect</u></b>								
Estimate – Standard error	0.17***	(0.036)	0.016	(0.037)	-0.015	(0.045)	0.17	(0.20)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0013	0.0000012	0.053	1.1e-125	0.002	0.00000053	0.000074	0.000014
Individuals – Observations	10816	44361	9426	35131	5192	18421	4984	16684
<b><u>Episode of membership</u></b>								
<b>First episode</b>								
Estimate – Standard error	0.14***	(0.040)	-0.00012	(0.044)	-0.065	(0.065)	0.059	(0.28)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00081	0.00034	0.047	4.8e-104	0.0023	0.0000019	0.0012	0.00031
Individuals – Observations	10648	37652	9129	29490	4497	15081	4337	13746
<b>Second episode or higher</b>								
Estimate – Standard error	0.37***	(0.062)	0.17**	(0.063)	0.049	(0.058)	0.52	(0.40)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0016	2.5e-009	0.053	7e-109	0.002	0.0000013	0	0.000016
Individuals – Observations	9893	36794	8523	28708	4982	17105	4771	15421
<b><u>Duration of membership</u></b>								
<b>First year</b>								
Estimate – Standard error	0.15***	(0.036)	0.058	(0.038)	-0.056	(0.043)	0.094	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00043	0.000042	0.051	1.4e-114	0.0021	0.0000003	0.0012	0.000011

Individuals – Observations	10764	38589	9307	30149	5176	17284	4968	15549
<b>Second year</b>								
Estimate – Standard error	0.14**	(0.052)	0.037	(0.056)	0.043	(0.074)	0.5	(0.84)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00016	0.007	0.052	3.1e-108	0.002	0.0000022	-0.0006	0.000013
Individuals – Observations	10354	36409	8935	28354	4936	16336	4738	14722
<b>Third year or more</b>								
Estimate – Standard error	0.21***	(0.051)	-0.015	(0.054)	0.035	(0.097)	0.74	(0.50)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0011	0.000046	0.05	1.5e-108	0.0018	0.000011	0	0.000062
Individuals – Observations	10384	39251	9018	30850	4863	16563	4664	14947
<b>Period</b>								
<b>1999-2004</b>								
Estimate – Standard error	0.17***	(0.042)	0.05	(0.046)	-0.044	(0.063)	-0.12	(0.30)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0012	0.000076	0.046	3e-061	0.002	0.0026	0.0015	0.0044
Individuals – Observations	8226	21150	6522	16478	3104	7683	3098	7644
<b>2005-2011</b>								
Estimate – Standard error	0.18***	(0.045)	-0.02	(0.047)	0.0063	(0.054)	0.43+	(0.24)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0013	0.00009	0.061	3.5e-087	0.0017	0.00032	0	0.0038
Individuals – Observations	7359	23211	6461	18653	3682	10738	3385	9040
<b>Type of membership</b>								
<b>Active</b>								
Estimate – Standard error	0.17***	(0.049)	-0.0012	(0.050)	-0.051	(0.066)	0.61	(0.58)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00059	0.00046	0.052	1.5e-111	0.0022	0.00000068	0	0.000011
Individuals – Observations	10440	38411	9054	30090	4927	16655	4724	15013

**Passive**

Estimate – Standard error	0.17***	(0.040)	0.031	(0.043)	-0.00025	(0.052)	0.15	(0.24)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00094	0.000014	0.051	3e-116	0.0018	0.0000018	0.00083	0.000041
Individuals – Observations	10593	40894	9183	32152	5085	17647	4877	15938

**Occupation****Full-time**

Estimate – Standard error	0.17***	(0.042)	-0.022	(0.044)	-0.078	(0.055)	-0.23	(0.25)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0014	0.000055	0.06	1.5e-089	0.0034	0.0000091	0.0018	0.001
Individuals – Observations	7235	25081	6395	20378	3323	10505	3185	9602

**Part-time**

Estimate – Standard error	0.19**	(0.058)	0.06	(0.063)	0.089	(0.074)	0.76*	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0012	0.0014	0.053	0.053	0.0017	0.0085	0	0.004
Individuals – Observations	5580	19123	4605	14681	2391	7890	2256	7057

**Sex****Man**

Estimate – Standard error	0.11*	(0.046)	-0.047	(0.047)	-0.056	(0.057)	-0.36	(0.26)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00065	0.013	0.065	1.5e-070	0.0029	0.00029	0	0.002
Individuals – Observations	5172	21262	4589	17147	2515	8945	2419	8118

**Woman**

Estimate – Standard error	0.24***	(0.056)	0.098+	(0.058)	0.036	(0.070)	0.67*	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0019	0.00002	0.055	0.055	0.0014	0.0017	0	0.00061
Individuals – Observations	5644	23099	4837	17984	2677	9476	2565	8566

**Age****16-30 years**

Estimate – Standard error	0.027	(0.078)	0.071	(0.085)	-0.13	(0.14)	-0.6	(0.81)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.000077	0.73	0.024	1.4e-012	0.0099	0.000068	0.0037	9.9e-207
Individuals – Observations	4247	10868	3519	7949	1013	1910	949	1777

**31-50 years**

Estimate – Standard error	0.12**	(0.045)	0.01	(0.047)	-0.0018	(0.061)	0.37	(0.26)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00072	0.0079	0.037	3.7e-037	-0.00006	0.32	0	0.33
Individuals – Observations	5623	22701	5028	18494	3340	11000	3180	10056

**51 years or more**

Estimate – Standard error	0.12+	(0.065)	-0.041	(0.069)	-0.011	(0.067)	0.025	(0.29)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00066	0.071	0.056	0.056	0.0017	0.039	0.0011	0.12
Individuals – Observations	3016	10791	2665	8688	1786	5511	1606	4851

**Education****Compulsory education or less**

Estimate – Standard error	-0.048	(0.11)	0.0083	(0.12)	-0.14	(0.16)	0.29	(0.69)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.000088	0.67	0.04	0.04	0.00066	0.28	-0.0019	0.12
Individuals – Observations	2854	7499	2162	5109	567	1808	553	1671

**Secondary education**

Estimate – Standard error	0.17***	(0.046)	0.002	(0.049)	-0.099+	(0.057)	0.29	(0.25)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0013	0.0002	0.055	1.3e-069	0.0028	0.0000061	0	0.00012
Individuals – Observations	6422	25744	5671	20715	3272	11437	3143	10384

**Tertiary education**

Estimate – Standard error	0.17**	(0.064)	0.037	(0.066)	0.17*	(0.080)	-0.3	(0.40)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0016	0.0088	0.054	0.054	0.0011	0.19	0	0.69
Individuals – Observations	2573	11118	2333	9307	1469	5176	1387	4629

**Nationality****Swiss**

Estimate – Standard error	0.18***	(0.037)	0.016	(0.039)	-0.026	(0.046)	0.18	(0.21)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0014	0.0000015	0.052	5.8e-106	0.0023	0.0000007	0.000043	0.0000069
Individuals – Observations	9467	39392	8315	31372	4529	16297	4352	14756

**Foreign**

Estimate – Standard error	-0.052	(0.12)	-0.1	(0.12)	0.072	(0.15)	-0.16	(0.53)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.00012	0.66	0.052	0.052	-0.00051	0.69	-0.0037	0.85
Individuals – Observations	1451	4965	1181	3759	697	2124	662	1928

**Region****German**

Estimate – Standard error	0.15***	(0.043)	-0.034	(0.044)	-0.056	(0.055)	0.089	(0.24)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00093	0.00052	0.053	6.7e-090	0.0018	0.00016	0.0005	0.0027
Individuals – Observations	7659	30865	6624	24142	3609	12507	3457	11284

**French or Italian**

Estimate – Standard error	0.23***	(0.065)	0.12+	(0.069)	0.061	(0.077)	0.3	(0.34)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0022	0.00031	0.04	0.04	0.0026	0.015	-0.00045	0.042
Individuals – Observations	3226	13496	2861	10989	1607	5914	1548	5400

**Sector****Private**

Estimate – Standard error	0.024	(0.049)	-0.058	(0.050)	-0.073	(0.062)	-0.099	(0.36)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.000022	0.63	0.048	0.048	0.003	0.000011	0.0025	0.0006
Individuals – Observations	7807	25118	6856	21189	3696	10913	3527	9791

**Public**

Estimate – Standard error	0.21***	(0.049)	0.037	(0.051)	0.023	(0.064)	0.42+	(0.24)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0025	0.000029	0.052	0.052	0.002	0.0032	0	0.0026
Individuals – Observations	4914	16010	4385	13697	2115	6207	1984	5621

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	0.022	(0.078)	-0.1	(0.079)	-0.023	(0.11)	0.069	(0.49)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.00014	0.78	0.046	0.046	0.0031	0.04	0.0023	0.11
Individuals – Observations	2012	6270	1909	5616	997	3006	937	2696

**Basic services**

Estimate – Standard error	0.18*	(0.078)	-0.045	(0.079)	-0.12	(0.10)	0.15	(0.42)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0011	0.018	0.048	4.8e-033	0.0021	0.0027	-0.00086	0.018
Individuals – Observations	3509	10236	3343	9335	1473	4201	1387	3795

**Finance and other services**

Estimate – Standard error	0.027	(0.087)	-0.047	(0.087)	-0.07	(0.10)	-1.46*	(0.65)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.00013	0.75	0.046	1.3e-014	0.00077	0.37	0	0.023
Individuals – Observations	2141	6636	2009	5912	1083	3280	1024	2945

**Public services**

Estimate – Standard error	0.25***	(0.054)	0.058	(0.054)	0.043	(0.065)	0.74**	(0.28)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0035	0.0000038	0.056	0.056	0.0027	0.001	0	0.00027
Individuals – Observations	4035	15321	3876	14268	1908	6534	1791	5877

**Company size****Small firms**

Estimate – Standard error	0.23***	(0.050)	0.011	(0.052)	-0.03	(0.063)	0.19	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0018	0.0000058	0.059	1.4e-086	0.0019	0.0058	-0.00011	0.018
Individuals – Observations	7693	23419	6881	20199	3379	9297	3217	8362

**Large firms**

Estimate – Standard error	0.13**	(0.046)	0.028	(0.047)	-0.0063	(0.062)	0.23	(0.28)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00095	0.0045	0.049	1.2e-050	0.0022	0.002	-0.0017	0.017
Individuals – Observations	5346	16623	4944	14932	2652	7558	2493	6808

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

*Source: Swiss Household Panel (SHP)*

*Table 8.7: Regression models estimating the effect of union membership on the self-evaluated risk of unemployment in the next 12 months*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables		2SLS on differenced data with control variables	
<b><u>Main effect</u></b>								
Estimate – Standard error	-0.27***	(0.042)	-0.13**	(0.043)	-0.081	(0.065)	-0.4	(0.28)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0019	1.7e-010	0.048	1.2e-208	0.0061	8.4e-020	0.0042	1.2e-019
Individuals – Observations	10754	43799	9384	34775	5137	18088	4926	16367
<b><u>Episode of membership</u></b>								
<b>First episode</b>								
Estimate – Standard error	-0.26***	(0.047)	-0.12*	(0.049)	-0.051	(0.098)	-0.3	(0.39)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0017	0.000000046	0.045	5.2e-185	0.0069	3.5e-019	0.006	5.7e-019
Individuals – Observations	10580	37139	9082	29169	4442	14775	4280	13457
<b>Second episode or higher</b>								
Estimate – Standard error	-0.26***	(0.075)	-0.25***	(0.074)	-0.13	(0.081)	-0.99+	(0.59)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00049	0.00059	0.041	1.1e-147	0.006	3.3e-018	0	4.4e-018
Individuals – Observations	9827	36303	8483	28411	4928	16806	4714	15137



**Duration of membership****First year**

Estimate – Standard error	-0.20***	(0.044)	-0.067	(0.048)	-0.052	(0.067)	-0.49	(0.45)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00052	0.0000071	0.041	1.2e-167	0.0062	9.4e-019	0.0038	6.8e-019
Individuals – Observations	10696	38073	9263	29829	5118	16969	4907	15250

**Second year**

Estimate – Standard error	-0.27***	(0.067)	-0.051	(0.073)	-0.1	(0.12)	-2.07+	(1.23)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00044	0.000048	0.041	1.5e-155	0.0059	2.5e-017	0	1.5e-017
Individuals – Observations	10284	35910	8894	28051	4882	16040	4680	14440

**Third year or more**

Estimate – Standard error	-0.32***	(0.060)	-0.25***	(0.060)	-0.13	(0.13)	-1.19	(0.73)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0016	0.000000079	0.046	5.3e-183	0.0059	9.7e-018	0	8.1e-018
Individuals – Observations	10317	38740	8976	30537	4812	16267	4609	14665

**Period****1999-2004**

Estimate – Standard error	-0.23***	(0.050)	-0.14**	(0.053)	0.016	(0.11)	-0.52	(0.42)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0015	0.0000035	0.042	0	0.0087	3.2e-013	0.0032	1.7e-013
Individuals – Observations	8147	20792	6468	16251	3056	7491	3048	7452

**2005-2011**

Estimate – Standard error	-0.29***	(0.054)	-0.12*	(0.057)	-0.15*	(0.076)	-0.29	(0.36)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0022	0.000000092	0.05	4.1e-266	0.0038	0.0000012	0.0035	0.0000012
Individuals – Observations	7329	23007	6441	18524	3659	10597	3365	8915

**Type of membership****Active**

Estimate – Standard error	-0.27***	(0.060)	-0.11+	(0.061)	-0.049	(0.11)	-1.14	(0.86)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00097	0.0000067	0.044	1.6e-170	0.006	4e-018	0	6e-018
Individuals – Observations	10376	37900	9013	29773	4875	16358	4668	14730

**Passive**

Estimate – Standard error	-0.26***	(0.046)	-0.17***	(0.048)	-0.095	(0.074)	-0.51	(0.34)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0014	0.000000013	0.044	3.2e-182	0.006	1.6e-018	0.0033	2.7e-018
Individuals – Observations	10526	40361	9140	31823	5030	17324	4819	15631

**Occupation****Full-time**

Estimate – Standard error	-0.21***	(0.053)	-0.11+	(0.055)	-0.11	(0.084)	-0.27	(0.38)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0013	0.000078	0.056	2.5e-154	0.0079	2.5e-013	0.0077	2.3e-013
Individuals – Observations	7194	24836	6366	20204	3283	10339	3148	9442

**Part-time**

Estimate – Standard error	-0.36***	(0.061)	-0.17**	(0.064)	-0.032	(0.10)	-0.53	(0.41)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.003	5.4e-009	0.045	0.045	0.0049	0.0000047	-0.00044	0.0000072
Individuals – Observations	5531	18832	4580	14510	2361	7725	2223	6902

**Sex****Man**

Estimate – Standard error	-0.19**	(0.058)	-0.082	(0.062)	-0.094	(0.091)	-0.37	(0.40)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0011	0.0013	0.055	6.9e-133	0.0078	3.6e-010	0.0064	1.8e-010
Individuals – Observations	5149	21046	4564	16995	2492	8815	2394	7990

**Woman**

Estimate – Standard error	-0.36***	(0.059)	-0.18**	(0.059)	-0.051	(0.093)	-0.37	(0.40)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0031	8.8e-010	0.046	0.046	0.0057	6e-010	0.0038	9e-010
Individuals – Observations	5605	22753	4820	17780	2645	9273	2532	8377

**Age****16-30 years**

Estimate – Standard error	-0.014	(0.089)	-0.079	(0.096)	-0.21	(0.16)	-0.41	(0.87)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.00009	0.87	0.033	7.7e-031	0.018	0.0000037	0.012	0.000017
Individuals – Observations	4204	10733	3500	7892	1007	1897	943	1764

**31-50 years**

Estimate – Standard error	-0.29***	(0.055)	-0.092	(0.056)	-0.0057	(0.087)	-0.37	(0.38)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0025	0.00000019	0.056	1.1e-191	0.0065	4.1e-011	0.0032	1.7e-010
Individuals – Observations	5600	22453	5005	18329	3306	10819	3147	9880

**51 years or more**

Estimate – Standard error	-0.40***	(0.076)	-0.21**	(0.079)	-0.19+	(0.11)	-0.45	(0.44)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0048	0.00000016	0.066	0.066	0.003	0.0022	0.0018	0.0097
Individuals – Observations	3008	10612	2655	8554	1758	5372	1576	4723

**Education****Compulsory education or less**

Estimate – Standard error	0.073	(0.11)	-0.069	(0.13)	0.18	(0.27)	1.70+	(0.99)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.000049	0.52	0.042	0.042	0.0028	0.1	0	0.059
Individuals – Observations	2817	7337	2149	5027	544	1721	529	1588

**Secondary education**

Estimate – Standard error	-0.25***	(0.055)	-0.086	(0.057)	-0.07	(0.087)	-0.62+	(0.36)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0017	0.0000056	0.048	6.2e-125	0.0079	6.5e-016	0.0026	3.4e-016
Individuals – Observations	6383	25427	5644	20496	3251	11249	3120	10208

**Tertiary education**

Estimate – Standard error	-0.49***	(0.074)	-0.28***	(0.074)	-0.15	(0.11)	-0.66	(0.49)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0086	5.9e-011	0.07	0.07	0.0029	0.021	0	0.024
Individuals – Observations	2568	11035	2326	9252	1457	5118	1375	4571

**Nationality****Swiss**

Estimate – Standard error	-0.28***	(0.043)	-0.15***	(0.044)	-0.09	(0.068)	-0.34	(0.30)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0023	5.9e-011	0.049	4.9e-197	0.0052	8.4e-015	0.0041	9.6e-015
Individuals – Observations	9424	38967	8283	31096	4495	16067	4316	14540

**Foreign**

Estimate – Standard error	0.044	(0.15)	0.059	(0.16)	0.0091	(0.24)	-0.97	(0.80)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.00017	0.77	0.048	0.048	0.011	0.0029	-0.0055	0.00012
Individuals – Observations	1431	4828	1171	3679	673	2021	637	1827

**Region****German**

Estimate – Standard error	-0.21***	(0.048)	-0.091+	(0.050)	-0.12	(0.079)	-0.91**	(0.35)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0012	0.000022	0.042	8.4e-135	0.0054	4.1e-012	0	2.4e-013
Individuals – Observations	7622	30502	6602	23919	3579	12308	3422	11093

**French or Italian**

Estimate – Standard error	-0.41***	(0.080)	-0.24**	(0.083)	-0.02	(0.12)	0.6	(0.47)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.004	0.00000044	0.06	0.06	0.0096	1.5e-009	0.0011	3.2e-009
Individuals – Observations	3198	13297	2839	10856	1582	5780	1525	5274

**Sector****Private**

Estimate – Standard error	0.10+	(0.060)	0.05	(0.063)	-0.012	(0.098)	-0.11	(0.54)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.00017	0.089	0.035	0.035	0.0098	9.8e-018	0.0096	2.1e-017
Individuals – Observations	7753	24738	6814	20917	3639	10663	3468	9556

**Public**

Estimate – Standard error	-0.34***	(0.051)	-0.23***	(0.054)	-0.12	(0.085)	-0.59+	(0.31)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0048	3.9e-011	0.045	0.045	0.0051	0.000027	-0.0016	0.000014
Individuals – Observations	4874	15875	4361	13615	2095	6135	1964	5550

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	0.044	(0.12)	0.00053	(0.12)	0.042	(0.21)	-1.28	(0.79)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.00012	0.71	0.049	0.049	0.02	2.2e-009	0	1.5e-010
Individuals – Observations	1998	6181	1898	5541	985	2947	925	2640

**Basic services**

Estimate – Standard error	0.078	(0.092)	0.14	(0.096)	-0.072	(0.17)	-0.34	(0.65)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.000048	0.4	0.039	2.1e-037	0.0066	0.00029	0.0066	0.00012
Individuals – Observations	3482	10091	3319	9208	1454	4099	1369	3699

**Finance and other services**

Estimate – Standard error	-0.084	(0.11)	-0.022	(0.12)	0.054	(0.19)	-0.23	(0.97)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	-0.000025	0.45	0.031	9.3e-032	0.0089	0.00012	0.0085	0.000005
Individuals – Observations	2136	6565	2003	5846	1070	3217	1013	2888

**Public services**

Estimate – Standard error	-0.40***	(0.054)	-0.30***	(0.054)	-0.15+	(0.082)	-0.64+	(0.34)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0066	1.1e-013	0.034	0.034	0.0052	0.0000069	-0.0024	0.0000056
Individuals – Observations	4008	15206	3861	14180	1892	6471	1775	5815

**Company size****Small firms**

Estimate – Standard error	-0.25***	(0.056)	-0.06	(0.060)	-0.17*	(0.086)	-0.57	(0.41)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0015	0.0000087	0.045	4.3e-210	0.0055	7.5e-009	0.003	0.000000043
Individuals – Observations	7649	23118	6845	19967	3335	9108	3170	8182

**Large firms**

Estimate – Standard error	-0.32***	(0.057)	-0.22***	(0.056)	-0.03	(0.092)	-0.14	(0.43)
Adj. R <sup>2</sup> – F/X <sup>2</sup> p-value	0.0035	0.00000001	0.056	1e-095	0.009	1.4e-010	0.0084	2.4e-010
Individuals – Observations	5320	16463	4925	14808	2619	7442	2458	6696

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.8: Regression models estimating the effect of union membership on the interest in politics*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.96***	(0.058)	0.48***	(0.057)	0.12*	(0.053)
Adj. R <sup>2</sup> – F p-value	0.021	6.6e-061	0.19	0	0.015	5.5e-056
Individuals – Observations	10825	44416	9421	35143	5251	18604
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	1.08***	(0.065)	0.57***	(0.065)	0.18*	(0.072)
Adj. R <sup>2</sup> – F p-value	0.024	6.5e-061	0.19	0	0.015	9.7e-045
Individuals – Observations	10657	37704	9124	29501	4557	15245
<b>Second episode or higher</b>						
Estimate – Standard error	0.90***	(0.11)	0.31**	(0.10)	0.045	(0.078)
Adj. R <sup>2</sup> – F p-value	0.0051	7.8e-017	0.18	0	0.015	1.1e-055
Individuals – Observations	9899	36848	8520	28724	5039	17274
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.66***	(0.053)	0.39***	(0.053)	0.056	(0.047)
Adj. R <sup>2</sup> – F p-value	0.0048	1.2e-035	0.18	0	0.015	1.3e-056

Individuals – Observations	10773	38643	9303	30163	5236	17460
<b>Second year</b>						
Estimate – Standard error	0.96***	(0.074)	0.45***	(0.077)	0.075	(0.084)
Adj. R <sup>2</sup> – F p-value	0.0047	2.3e-038	0.18	0	0.016	1.6e-053
Individuals – Observations	10362	36462	8932	28369	4994	16504
<b>Third year or more</b>						
Estimate – Standard error	1.22***	(0.081)	0.56***	(0.081)	0.30*	(0.13)
Adj. R <sup>2</sup> – F p-value	0.019	5.8e-051	0.19	0	0.016	1.8e-052
Individuals – Observations	10391	39305	9015	30865	4917	16728
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.96***	(0.068)	0.51***	(0.069)	0.096	(0.073)
Adj. R <sup>2</sup> – F p-value	0.02	3.9e-045	0.19	4.5e-292	0.0036	0.0000027
Individuals – Observations	8273	21230	6538	16504	3150	7809
<b>2005-2011</b>						
Estimate – Standard error	0.98***	(0.069)	0.47***	(0.068)	0.14*	(0.064)
Adj. R <sup>2</sup> – F p-value	0.021	5.2e-045	0.19	0	0.017	6.8e-037
Individuals – Observations	7331	23186	6444	18639	3709	10795
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	1.16***	(0.083)	0.63***	(0.083)	0.14+	(0.082)
Adj. R <sup>2</sup> – F p-value	0.014	4.9e-044	0.19	0	0.016	2.6e-054



Individuals – Observations	10447	38464	9051	30103	4983	16821
<b>Passive</b>						
Estimate – Standard error	0.85***	(0.063)	0.39***	(0.061)	0.11+	(0.058)
Adj. R <sup>2</sup> – F p-value	0.012	1.6e-041	0.19	0	0.015	3.1e-054
Individuals – Observations	10602	40949	9179	32167	5144	17827

### Occupation

#### **Full-time**

Estimate – Standard error	0.95***	(0.072)	0.53***	(0.071)	0.11	(0.068)
Adj. R <sup>2</sup> – F p-value	0.021	1.7e-039	0.21	0	0.013	3.2e-030
Individuals – Observations	7229	25071	6381	20359	3349	10562

#### **Part-time**

Estimate – Standard error	0.97***	(0.088)	0.48***	(0.086)	0.15+	(0.084)
Adj. R <sup>2</sup> – F p-value	0.02	1.4e-027	0.18	0.18	0.018	5e-024
Individuals – Observations	5583	19163	4616	14712	2429	8013

### Sex

#### **Man**

Estimate – Standard error	0.65***	(0.076)	0.39***	(0.076)	0.041	(0.074)
Adj. R <sup>2</sup> – F p-value	0.011	1.5e-017	0.17	4.8e-211	0.013	1.4e-024
Individuals – Observations	5165	21266	4574	17135	2542	9006

#### **Woman**

Estimate – Standard error	1.11***	(0.087)	0.62***	(0.085)	0.21**	(0.075)
Adj. R <sup>2</sup> – F p-value	0.025	4.7e-037	0.15	0.15	0.017	3.9e-030

Individuals – Observations	5660	23150	4847	18008	2709	9598
<b><u>Age</u></b>						
<b>16-30 years</b>						
Estimate – Standard error	0.75***	(0.11)	0.60***	(0.12)	0.15	(0.16)
Adj. R <sup>2</sup> – F p-value	0.0077	9.7e-012	0.14	7.5e-118	0.033	2.1e-010
Individuals – Observations	4209	10831	3495	7923	1035	1944
<b>31-50 years</b>						
Estimate – Standard error	0.86***	(0.077)	0.47***	(0.074)	0.13+	(0.074)
Adj. R <sup>2</sup> – F p-value	0.018	5.5e-029	0.18	8.8e-228	0.011	6.9e-025
Individuals – Observations	5634	22732	5031	18510	3365	11093
<b>51 years or more</b>						
Estimate – Standard error	0.85***	(0.099)	0.48***	(0.10)	0.1	(0.074)
Adj. R <sup>2</sup> – F p-value	0.02	1.5e-017	0.16	0.16	0.019	1.3e-018
Individuals – Observations	3054	10852	2682	8710	1812	5567
<b><u>Education</u></b>						
<b>Compulsory education or less</b>						
Estimate – Standard error	0.86***	(0.17)	0.50**	(0.18)	0.13	(0.20)
Adj. R <sup>2</sup> – F p-value	0.0092	0.00000082	0.12	0.12	0.011	0.0021
Individuals – Observations	2827	7470	2143	5085	576	1845
<b>Secondary education</b>						
Estimate – Standard error	0.87***	(0.076)	0.51***	(0.077)	0.08	(0.062)
Adj. R <sup>2</sup> – F p-value	0.018	5e-030	0.13	2.2e-206	0.019	1.8e-045

Individuals – Observations	6454	25812	5685	20743	3314	11551
<b>Tertiary education</b>						
Estimate – Standard error	0.57***	(0.090)	0.46***	(0.090)	0.19+	(0.10)
Adj. R <sup>2</sup> – F p-value	0.012	2.3e-010	0.15	0.15	0.01	0.0000001
Individuals – Observations	2581	11134	2336	9315	1478	5208

### Nationality

#### **Swiss**

Estimate – Standard error	0.97***	(0.060)	0.52***	(0.060)	0.11*	(0.053)
Adj. R <sup>2</sup> – F p-value	0.022	3.4e-057	0.18	0	0.017	1.5e-054
Individuals – Observations	9473	39447	8311	31386	4579	16455

#### **Foreign**

Estimate – Standard error	0.52**	(0.19)	0.11	(0.18)	0.2	(0.22)
Adj. R <sup>2</sup> – F p-value	0.0037	0.0058	0.2	0.2	0.0061	0.01
Individuals – Observations	1454	4965	1180	3757	706	2149

### Region

#### **German**

Estimate – Standard error	0.96***	(0.066)	0.45***	(0.065)	0.14*	(0.060)
Adj. R <sup>2</sup> – F p-value	0.022	1.7e-047	0.19	0	0.022	1.3e-052
Individuals – Observations	7669	30919	6622	24158	3653	12641

#### **French or Italian**

Estimate – Standard error	0.98***	(0.12)	0.56***	(0.11)	0.081	(0.10)
Adj. R <sup>2</sup> – F p-value	0.018	4.1e-017	0.17	0.17	0.0073	0.00000026

Individuals – Observations	3225	13497	2858	10985	1622	5963
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**Sector****Private**

Estimate – Standard error	0.75***	(0.082)	0.46***	(0.079)	0.0086	(0.078)
Adj. R <sup>2</sup> – F p-value	0.0091	7.7e-020	0.17	0.17	0.014	1.4e-030
Individuals – Observations	7823	25161	6854	21198	3739	11020

**Public**

Estimate – Standard error	0.98***	(0.077)	0.51***	(0.074)	0.21**	(0.070)
Adj. R <sup>2</sup> – F p-value	0.03	1.6e-036	0.2	0.2	0.021	5.1e-023
Individuals – Observations	4917	16025	4383	13699	2137	6268

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	0.85***	(0.15)	0.51***	(0.14)	-0.0027	(0.12)
Adj. R <sup>2</sup> – F p-value	0.014	9.3e-009	0.16	0.16	0.013	0.0000014
Individuals – Observations	2005	6260	1901	5607	1001	3017

**Basic services**

Estimate – Standard error	0.96***	(0.12)	0.45***	(0.12)	0.19	(0.13)
Adj. R <sup>2</sup> – F p-value	0.018	6.7e-016	0.15	1.2e-112	0.02	4.2e-015
Individuals – Observations	3505	10237	3339	9332	1481	4218

**Finance and other services**

Estimate – Standard error	0.65***	(0.15)	0.37***	(0.14)	0.059	(0.13)
Adj. R <sup>2</sup> – F p-value	0.0062	0.00002	0.19	4e-089	0.017	0.00000006

Individuals – Observations	2143	6638	2012	5912	1084	3290
<b>Public services</b>						
Estimate – Standard error	0.92***	(0.084)	0.53***	(0.078)	0.14+	(0.073)
Adj. R <sup>2</sup> – F p-value	0.026	3e-027	0.19	0.19	0.015	1e-017
Individuals – Observations	4038	15346	3882	14292	1923	6576
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	1.05***	(0.078)	0.51***	(0.074)	0.11	(0.068)
Adj. R <sup>2</sup> – F p-value	0.022	3e-041	0.2	0	0.017	2.5e-031
Individuals – Observations	7704	23460	6875	20214	3422	9409
<b>Large firms</b>						
Estimate – Standard error	0.75***	(0.079)	0.45***	(0.077)	0.11	(0.076)
Adj. R <sup>2</sup> – F p-value	0.015	4.6e-021	0.18	6e-212	0.013	1.3e-018
Individuals – Observations	5351	16621	4948	14929	2673	7603

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.9: Regression models estimating the effect of union membership on the feeling of political influence*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.32***	(0.050)	0.20***	(0.053)	0.18*	(0.076)
Adj. R <sup>2</sup> – F p-value	0.0025	3.4e-010	0.07	2.2e-168	0.0014	0.00078
Individuals – Observations	10740	43784	9366	34728	5180	18200
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.34***	(0.057)	0.22***	(0.060)	0.21+	(0.11)
Adj. R <sup>2</sup> – F p-value	0.0027	2.2e-009	0.071	3.1e-153	0.0013	0.0032
Individuals – Observations	10563	37115	9064	29120	4487	14877
<b>Second episode or higher</b>						
Estimate – Standard error	0.45***	(0.093)	0.27**	(0.097)	0.13	(0.093)
Adj. R <sup>2</sup> – F p-value	0.0015	0.0000011	0.069	4.7e-147	0.00096	0.0055
Individuals – Observations	9816	36281	8467	28357	4972	16891
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.18***	(0.049)	0.22***	(0.052)	0.02	(0.067)
Adj. R <sup>2</sup> – F p-value	0.00041	0.00018	0.068	5.8e-155	0.00089	0.0045

Individuals – Observations	10681	38045	9241	29776	5164	17066
<b>Second year</b>						
Estimate – Standard error	0.25***	(0.072)	0.19*	(0.079)	0.22+	(0.12)
Adj. R <sup>2</sup> – F p-value	0.00033	0.00052	0.069	2.1e-147	0.0013	0.00057
Individuals – Observations	10277	35893	8877	27999	4928	16127
<b>Third year or more</b>						
Estimate – Standard error	0.45***	(0.073)	0.17*	(0.076)	0.50**	(0.18)
Adj. R <sup>2</sup> – F p-value	0.003	6.1e-010	0.071	1.7e-159	0.002	0.00074
Individuals – Observations	10310	38728	8963	30489	4852	16353
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.38***	(0.060)	0.25***	(0.063)	0.15	(0.11)
Adj. R <sup>2</sup> – F p-value	0.0036	1.7e-010	0.093	1.7e-151	0.0016	0.0029
Individuals – Observations	8174	20848	6476	16253	3100	7603
<b>2005-2011</b>						
Estimate – Standard error	0.27***	(0.062)	0.15*	(0.067)	0.20*	(0.083)
Adj. R <sup>2</sup> – F p-value	0.0019	0.0000091	0.041	2.9e-045	0.00072	0.1
Individuals – Observations	7285	22936	6409	18475	3666	10597
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	0.44***	(0.072)	0.36***	(0.076)	0.21+	(0.12)
Adj. R <sup>2</sup> – F p-value	0.0024	7.3e-010	0.068	2.8e-150	0.0014	0.00055

Individuals – Observations	10362	37877	8998	29722	4916	16440
<b>Passive</b>						
Estimate – Standard error	0.24***	(0.056)	0.094	(0.057)	0.16*	(0.079)
Adj. R <sup>2</sup> – F p-value	0.0011	0.000012	0.071	1.3e-167	0.001	0.0036
Individuals – Observations	10517	40348	9122	31774	5073	17433

**Occupation****Full-time**

Estimate – Standard error	0.22***	(0.066)	0.13+	(0.069)	0.12	(0.10)
Adj. R <sup>2</sup> – F p-value	0.0012	0.00094	0.072	3.5e-096	0.0011	0.051
Individuals – Observations	7168	24749	6341	20133	3306	10368

**Part-time**

Estimate – Standard error	0.47***	(0.072)	0.29***	(0.075)	0.27*	(0.11)
Adj. R <sup>2</sup> – F p-value	0.0053	9.3e-011	0.078	0.078	0.0028	0.0026
Individuals – Observations	5537	18859	4586	14525	2389	7803

**Sex****Man**

Estimate – Standard error	0.14+	(0.074)	0.088	(0.077)	0.095	(0.11)
Adj. R <sup>2</sup> – F p-value	0.00046	0.061	0.068	4.9e-065	0.00026	0.5
Individuals – Observations	5134	21064	4559	16996	2519	8874

**Woman**

Estimate – Standard error	0.50***	(0.067)	0.30***	(0.069)	0.28**	(0.100)
Adj. R <sup>2</sup> – F p-value	0.0059	1e-013	0.079	0.079	0.0034	0.000016



Individuals – Observations	5606	22720	4807	17732	2661	9326
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### Age

#### **16-30 years**

Estimate – Standard error	0.27**	(0.097)	0.26*	(0.10)	0.18	(0.20)
Adj. R <sup>2</sup> – F p-value	0.0011	0.0059	0.051	2.4e-032	-0.0011	0.52
Individuals – Observations	4165	10663	3469	7827	1018	1902

#### **31-50 years**

Estimate – Standard error	0.29***	(0.067)	0.12+	(0.067)	0.19+	(0.10)
Adj. R <sup>2</sup> – F p-value	0.0023	0.00001	0.089	1.7e-104	0.0011	0.052
Individuals – Observations	5591	22404	4998	18284	3317	10853

#### **51 years or more**

Estimate – Standard error	0.42***	(0.090)	0.26**	(0.098)	0.17	(0.11)
Adj. R <sup>2</sup> – F p-value	0.0049	0.0000032	0.066	0.066	0.00027	0.43
Individuals – Observations	3034	10716	2669	8617	1786	5445

### Education

#### **Compulsory education or less**

Estimate – Standard error	0.23	(0.15)	0.32*	(0.16)	0.57*	(0.23)
Adj. R <sup>2</sup> – F p-value	0.00065	0.12	0.061	0.061	0.0027	0.28
Individuals – Observations	2769	7191	2111	4923	543	1696

#### **Secondary education**

Estimate – Standard error	0.30***	(0.066)	0.22**	(0.070)	0.11	(0.100)
Adj. R <sup>2</sup> – F p-value	0.0023	0.0000054	0.065	1.8e-090	0.0015	0.0053

Individuals – Observations	6429	25537	5665	20550	3283	11351
<b>Tertiary education</b>						
Estimate – Standard error	0.17+	(0.090)	0.1	(0.089)	0.21	(0.13)
Adj. R <sup>2</sup> – F p-value	0.00086	0.055	0.077	0.077	0.0026	0.023
Individuals – Observations	2573	11056	2330	9255	1471	5153

**Nationality****Swiss**

Estimate – Standard error	0.30***	(0.052)	0.22***	(0.055)	0.19*	(0.080)
Adj. R <sup>2</sup> – F p-value	0.0024	8.5e-009	0.047	1.9e-098	0.0017	0.00063
Individuals – Observations	9435	39086	8280	31133	4543	16225

**Foreign**

Estimate – Standard error	-0.027	(0.15)	-0.083	(0.16)	0.055	(0.20)
Adj. R <sup>2</sup> – F p-value	-0.0002	0.86	0.054	0.054	0.00094	0.36
Individuals – Observations	1399	4694	1155	3595	671	1975

**Region****German**

Estimate – Standard error	0.35***	(0.059)	0.21***	(0.062)	0.13	(0.089)
Adj. R <sup>2</sup> – F p-value	0.0033	1.7e-009	0.055	4.6e-093	0.0017	0.00036
Individuals – Observations	7604	30496	6586	23889	3609	12381

**French or Italian**

Estimate – Standard error	0.24*	(0.094)	0.16+	(0.099)	0.26+	(0.14)
Adj. R <sup>2</sup> – F p-value	0.0013	0.011	0.063	0.063	0.0018	0.089

Individuals – Observations	3204	13288	2838	10839	1594	5819
<b><u>Sector</u></b>						
<b>Private</b>						
Estimate – Standard error	0.25***	(0.073)	0.24**	(0.074)	0.21*	(0.10)
Adj. R <sup>2</sup> – F p-value	0.0012	0.00049	0.072	0.072	0.002	0.0034
Individuals – Observations	7761	24749	6809	20914	3679	10750
<b>Public</b>						
Estimate – Standard error	0.28***	(0.067)	0.16*	(0.070)	0.14	(0.11)
Adj. R <sup>2</sup> – F p-value	0.0026	0.000037	0.067	0.067	0.0009	0.25
Individuals – Observations	4883	15865	4358	13579	2106	6163
<b><u>NOGA sector</u></b>						
<b>Primary, manufacturing and construction sector</b>						
Estimate – Standard error	0.40**	(0.14)	0.30*	(0.14)	0.39*	(0.19)
Adj. R <sup>2</sup> – F p-value	0.0033	0.0037	0.072	0.072	0.0031	0.12
Individuals – Observations	1989	6171	1889	5534	987	2952
<b>Basic services</b>						
Estimate – Standard error	0.22*	(0.10)	0.22*	(0.11)	0.25+	(0.13)
Adj. R <sup>2</sup> – F p-value	0.0011	0.029	0.067	4.6e-049	0.00092	0.23
Individuals – Observations	3473	10080	3313	9192	1455	4105
<b>Finance and other services</b>						
Estimate – Standard error	0.2	(0.13)	0.13	(0.13)	-0.056	(0.19)
Adj. R <sup>2</sup> – F p-value	0.00053	0.13	0.079	6.6e-029	0.0022	0

Individuals – Observations	2132	6570	1998	5852	1071	3234
<b>Public services</b>						
Estimate – Standard error	0.28***	(0.073)	0.17*	(0.072)	0.13	(0.12)
Adj. R <sup>2</sup> – F p-value	0.0027	0.00011	0.068	0.068	0.00072	0.22
Individuals – Observations	4009	15177	3856	14150	1902	6470
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.40***	(0.066)	0.25***	(0.069)	0.15	(0.10)
Adj. R <sup>2</sup> – F p-value	0.0036	1.8e-009	0.074	1.4e-113	0.0021	0.0058
Individuals – Observations	7637	23101	6819	19939	3373	9185
<b>Large firms</b>						
Estimate – Standard error	0.19**	(0.071)	0.14*	(0.071)	0.21*	(0.099)
Adj. R <sup>2</sup> – F p-value	0.00097	0.0084	0.069	2e-069	0.0016	0.034
Individuals – Observations	5323	16453	4923	14789	2632	7461

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.10: Regression models estimating the effect of union membership on the participation in federal polls*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.86***	(0.065)	0.43***	(0.067)	-0.052	(0.057)
Adj. R <sup>2</sup> – F p-value	0.013	2.9e-039	0.11	3.5e-259	0.0074	2.7e-021
Individuals – Observations	9211	38330	8167	30968	4610	16552
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.94***	(0.074)	0.51***	(0.077)	-0.0065	(0.088)
Adj. R <sup>2</sup> – F p-value	0.015	4.8e-037	0.1	4.4e-212	0.0071	1.6e-017
Individuals – Observations	9002	32258	7865	25830	3982	13503
<b>Second episode or higher</b>						
Estimate – Standard error	0.96***	(0.12)	0.35**	(0.12)	-0.1	(0.073)
Adj. R <sup>2</sup> – F p-value	0.0046	3.3e-016	0.096	1.1e-192	0.0086	1.5e-022
Individuals – Observations	8358	31395	7337	25044	4428	15353
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.59***	(0.061)	0.37***	(0.064)	-0.062	(0.051)
Adj. R <sup>2</sup> – F p-value	0.003	1.9e-022	0.095	7.1e-210	0.008	2.9e-022

Individuals – Observations	9143	32916	8042	26283	4596	15487
<b>Second year</b>						
Estimate – Standard error	0.93***	(0.081)	0.49***	(0.088)	0.011	(0.093)
Adj. R <sup>2</sup> – F p-value	0.0035	3e-030	0.095	2.8e-198	0.0087	4.2e-023
Individuals – Observations	8791	31029	7721	24704	4386	14642
<b>Third year or more</b>						
Estimate – Standard error	1.05***	(0.089)	0.43***	(0.093)	-0.07	(0.13)
Adj. R <sup>2</sup> – F p-value	0.012	5.8e-032	0.1	1.8e-223	0.008	4.8e-021
Individuals – Observations	8834	33775	7813	27123	4316	14863
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.85***	(0.077)	0.44***	(0.082)	-0.087	(0.088)
Adj. R <sup>2</sup> – F p-value	0.013	5.2e-028	0.11	2.4e-165	0.0076	8.3e-009
Individuals – Observations	6937	18101	5608	14383	2745	6863
<b>2005-2011</b>						
Estimate – Standard error	0.88***	(0.077)	0.42***	(0.080)	-0.026	(0.070)
Adj. R <sup>2</sup> – F p-value	0.014	1.9e-029	0.11	7.9e-144	0.0025	0.000071
Individuals – Observations	6371	20229	5685	16585	3309	9689
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	1.04***	(0.084)	0.56***	(0.089)	-0.20*	(0.084)
Adj. R <sup>2</sup> – F p-value	0.0094	8.2e-035	0.1	2.2e-213	0.0089	5.6e-023

Individuals – Observations	8863	32898	7829	26339	4376	14948
<b>Passive</b>						
Estimate – Standard error	0.76***	(0.074)	0.34***	(0.074)	0.015	(0.064)
Adj. R <sup>2</sup> – F p-value	0.0075	1.4e-024	0.1	1.7e-229	0.0076	9.6e-022
Individuals – Observations	9008	35127	7946	28200	4509	15824
<b><u>Occupation</u></b>						
<b>Full-time</b>						
Estimate – Standard error	0.99***	(0.083)	0.57***	(0.086)	0.000049	(0.078)
Adj. R <sup>2</sup> – F p-value	0.018	3.6e-032	0.12	6.3e-187	0.009	7.1e-013
Individuals – Observations	5993	20969	5391	17418	2886	9209
<b>Part-time</b>						
Estimate – Standard error	0.73***	(0.096)	0.29**	(0.097)	-0.13+	(0.079)
Adj. R <sup>2</sup> – F p-value	0.0089	5.8e-014	0.099	0.099	0.0057	0.00000043
Individuals – Observations	4868	17228	4145	13492	2190	7317
<b><u>Sex</u></b>						
<b>Man</b>						
Estimate – Standard error	0.74***	(0.087)	0.39***	(0.089)	-0.053	(0.082)
Adj. R <sup>2</sup> – F p-value	0.012	2.5e-017	0.12	4.8e-124	0.0077	5.1e-009
Individuals – Observations	4334	18065	3905	14830	2201	7908
<b>Woman</b>						
Estimate – Standard error	0.90***	(0.098)	0.45***	(0.098)	-0.049	(0.078)
Adj. R <sup>2</sup> – F p-value	0.012	7.2e-020	0.096	0.096	0.0063	1.1e-009

Individuals – Observations	4877	20265	4262	16138	2409	8644
<b><u>Age</u></b>						
<b>16-30 years</b>						
Estimate – Standard error	0.60***	(0.14)	0.52***	(0.15)	-0.27	(0.20)
Adj. R <sup>2</sup> – F p-value	0.0035	0.00003	0.071	6e-046	0.00074	0.27
Individuals – Observations	3349	8310	2882	6472	915	1736
<b>31-50 years</b>						
Estimate – Standard error	0.76***	(0.087)	0.42***	(0.088)	-0.057	(0.079)
Adj. R <sup>2</sup> – F p-value	0.011	2.7e-018	0.085	2.4e-089	0.0082	2.5e-014
Individuals – Observations	4920	19981	4430	16401	2920	9706
<b>51 years or more</b>						
Estimate – Standard error	0.75***	(0.10)	0.40***	(0.11)	0.014	(0.085)
Adj. R <sup>2</sup> – F p-value	0.014	1.1e-013	0.083	0.083	0.0089	0.0000015
Individuals – Observations	2800	10038	2477	8095	1654	5110
<b><u>Education</u></b>						
<b>Compulsory education or less</b>						
Estimate – Standard error	0.78***	(0.22)	0.52*	(0.25)	-0.063	(0.29)
Adj. R <sup>2</sup> – F p-value	0.0056	0.00051	0.067	0.067	-0.0037	0.84
Individuals – Observations	1869	4697	1494	3481	411	1352
<b>Secondary education</b>						
Estimate – Standard error	0.82***	(0.088)	0.43***	(0.092)	-0.053	(0.068)
Adj. R <sup>2</sup> – F p-value	0.011	1.6e-020	0.083	2.4e-117	0.01	4.3e-018



Individuals – Observations	5893	23641	5213	19072	3001	10542
<b>Tertiary education</b>						
Estimate – Standard error	0.57***	(0.091)	0.41***	(0.094)	-0.056	(0.11)
Adj. R <sup>2</sup> – F p-value	0.011	4.6e-010	0.072	0.072	0.0065	0.000018
Individuals – Observations	2284	9992	2084	8415	1307	4658
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	0.86***	(0.066)	0.43***	(0.067)	-0.064	(0.055)
Adj. R <sup>2</sup> – F p-value	0.013	1.1e-038	0.11	2.4e-251	0.0076	7.6e-022
Individuals – Observations	9023	37728	8000	30474	4541	16323
<b>Foreign</b>						
Estimate – Standard error	0.62	(0.50)	-0.63	(0.49)	0.82	(0.85)
Adj. R <sup>2</sup> – F p-value	0.0028	0.21	0.26	0.26	0.012	0.012
Individuals – Observations	244	602	209	494	87	229
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.84***	(0.076)	0.41***	(0.078)	-0.067	(0.065)
Adj. R <sup>2</sup> – F p-value	0.013	1.5e-028	0.11	5e-171	0.0081	5e-017
Individuals – Observations	6608	26927	5817	21534	3242	11349
<b>French or Italian</b>						
Estimate – Standard error	0.91***	(0.13)	0.46***	(0.13)	-0.028	(0.11)
Adj. R <sup>2</sup> – F p-value	0.013	2e-012	0.11	0.11	0.0071	0.000034

Individuals – Observations	2661	11403	2398	9434	1388	5203
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**Sector****Private**

Estimate – Standard error	0.67***	(0.097)	0.46***	(0.097)	-0.091	(0.087)
Adj. R <sup>2</sup> – F p-value	0.0055	7.7e-012	0.085	0.085	0.0077	1.5e-012
Individuals – Observations	6577	21312	5858	18323	3233	9682

**Public**

Estimate – Standard error	0.74***	(0.082)	0.38***	(0.086)	-0.021	(0.075)
Adj. R <sup>2</sup> – F p-value	0.015	2.5e-019	0.12	0.12	0.0065	0.000031
Individuals – Observations	4272	14405	3862	12445	1914	5710

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	0.94***	(0.18)	0.57***	(0.18)	0.14	(0.14)
Adj. R <sup>2</sup> – F p-value	0.013	0.00000018	0.088	0.088	0.01	0.01
Individuals – Observations	1683	5270	1602	4719	854	2577

**Basic services**

Estimate – Standard error	0.91***	(0.15)	0.33*	(0.15)	-0.22	(0.15)
Adj. R <sup>2</sup> – F p-value	0.012	1.6e-009	0.096	1.8e-065	0.011	0.00000033
Individuals – Observations	2928	8690	2798	7931	1285	3705

**Finance and other services**

Estimate – Standard error	0.77***	(0.16)	0.63***	(0.16)	0.28	(0.18)
Adj. R <sup>2</sup> – F p-value	0.0069	0.0000013	0.1	3.1e-044	0.013	0.000025

Individuals – Observations	1894	5920	1782	5282	976	2997
<b>Public services</b>						
Estimate – Standard error	0.64***	(0.089)	0.37***	(0.088)	-0.14+	(0.078)
Adj. R <sup>2</sup> – F p-value	0.011	1.1e-012	0.094	0.094	0.0084	0.0000019
Individuals – Observations	3609	13966	3477	13036	1746	6015
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.95***	(0.082)	0.45***	(0.084)	-0.13+	(0.079)
Adj. R <sup>2</sup> – F p-value	0.015	4.2e-031	0.11	1.7e-171	0.0075	6.1e-011
Individuals – Observations	6591	20396	5972	17894	3055	8524
<b>Large firms</b>						
Estimate – Standard error	0.70***	(0.093)	0.39***	(0.092)	0.018	(0.084)
Adj. R <sup>2</sup> – F p-value	0.01	6.3e-014	0.1	5.3e-133	0.0067	0.0000002
Individuals – Observations	4627	14402	4325	13074	2320	6635

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.11: Regression models estimating the effect of union membership on the no vote vs. vote choice*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.047***	(0.0036)	0.023***	(0.0040)	0.0055	(0.0057)
Adj. R <sup>2</sup> – F p-value	0.0054	3.4e-038	0.064	2.3e-149	0.0024	0.00049
Individuals – Observations	10130	38979	8840	31153	4630	15339
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.050***	(0.0043)	0.024***	(0.0048)	0.011	(0.0090)
Adj. R <sup>2</sup> – F p-value	0.0054	7e-031	0.063	3e-136	0.0016	0.025
Individuals – Observations	9901	32833	8507	25979	3966	12412
<b>Second episode or higher</b>						
Estimate – Standard error	0.063***	(0.0050)	0.022***	(0.0058)	-0.00069	(0.0064)
Adj. R <sup>2</sup> – F p-value	0.0026	1.1e-036	0.063	1.2e-129	0.0026	0.00061
Individuals – Observations	9214	32023	7960	25236	4432	14206
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.031***	(0.0045)	0.021***	(0.0049)	0.0064	(0.0069)
Adj. R <sup>2</sup> – F p-value	0.0011	6.1e-012	0.061	7.9e-134	0.0028	0.00018

Individuals – Observations	10038	33595	8689	26512	4599	14338
<b>Second year</b>						
Estimate – Standard error	0.051***	(0.0057)	0.032***	(0.0063)	0.015	(0.011)
Adj. R <sup>2</sup> – F p-value	0.0013	3.6e-019	0.063	8.1e-126	0.0024	0.0012
Individuals – Observations	9640	31632	8334	24879	4381	13517
<b>Third year or more</b>						
Estimate – Standard error	0.059***	(0.0045)	0.018***	(0.0052)	-0.005	(0.0095)
Adj. R <sup>2</sup> – F p-value	0.0049	5.4e-040	0.063	1.7e-132	0.0024	0.0015
Individuals – Observations	9693	34362	8440	27278	4320	13730
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.058***	(0.0052)	0.028***	(0.0058)	0.0038	(0.0093)
Adj. R <sup>2</sup> – F p-value	0.0068	5.6e-028	0.09	3.1e-159	0.0041	0.00007
Individuals – Observations	7568	18529	6031	14553	2734	6354
<b>2005-2011</b>						
Estimate – Standard error	0.039***	(0.0040)	0.019***	(0.0044)	0.0063	(0.0070)
Adj. R <sup>2</sup> – F p-value	0.0046	1.1e-022	0.038	1.6e-049	0.00043	0.42
Individuals – Observations	6865	20450	6038	16600	3266	8985
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	0.051***	(0.0046)	0.027***	(0.0051)	-0.0076	(0.0076)
Adj. R <sup>2</sup> – F p-value	0.003	4.9e-029	0.064	1.7e-131	0.0025	0.00066

Individuals – Observations	9750	33531	8466	26536	4376	13806
<b>Passive</b>						
Estimate – Standard error	0.045***	(0.0043)	0.019***	(0.0047)	0.011	(0.0070)
Adj. R <sup>2</sup> – F p-value	0.0035	3.7e-026	0.062	5.6e-142	0.0025	0.00033
Individuals – Observations	9892	35753	8594	28375	4525	14656

**Occupation****Full-time**

Estimate – Standard error	0.052***	(0.0049)	0.029***	(0.0054)	0.015+	(0.0084)
Adj. R <sup>2</sup> – F p-value	0.0065	2.8e-026	0.073	2.1e-099	0.0044	0.00083
Individuals – Observations	6680	21937	5905	18006	2920	8756

**Part-time**

Estimate – Standard error	0.042***	(0.0049)	0.015**	(0.0056)	-0.0097	(0.0065)
Adj. R <sup>2</sup> – F p-value	0.0044	1.3e-017	0.058	0.058	0.0005	0.18
Individuals – Observations	5182	16894	4308	13087	2111	6559

**Sex****Man**

Estimate – Standard error	0.035***	(0.0050)	0.019***	(0.0056)	0.014+	(0.0083)
Adj. R <sup>2</sup> – F p-value	0.0039	1.1e-012	0.07	1.1e-055	0.0054	0.0028
Individuals – Observations	4912	19324	4346	15689	2321	7863

**Woman**

Estimate – Standard error	0.057***	(0.0053)	0.023***	(0.0058)	-0.0055	(0.0077)
Adj. R <sup>2</sup> – F p-value	0.0061	1.3e-026	0.061	0.061	0.0012	0.081

Individuals – Observations	5218	19655	4494	15464	2309	7476
<b><u>Age</u></b>						
<b>16-30 years</b>						
Estimate – Standard error	0.040***	(0.0100)	0.024*	(0.011)	0.014	(0.030)
Adj. R <sup>2</sup> – F p-value	0.0017	0.000056	0.056	4.3e-035	0.0084	0.06
Individuals – Observations	3774	8904	3131	6620	836	1487
<b>31-50 years</b>						
Estimate – Standard error	0.046***	(0.0050)	0.024***	(0.0055)	0.0064	(0.0077)
Adj. R <sup>2</sup> – F p-value	0.0056	5.5e-020	0.067	4.7e-073	0.0045	0.00017
Individuals – Observations	5346	20112	4768	16516	2926	9075
<b>51 years or more</b>						
Estimate – Standard error	0.032***	(0.0052)	0.021***	(0.0057)	0.0011	(0.0078)
Adj. R <sup>2</sup> – F p-value	0.0046	8.8e-010	0.055	0.055	-0.0016	0.85
Individuals – Observations	2921	9962	2577	8017	1655	4777
<b><u>Education</u></b>						
<b>Compulsory education or less</b>						
Estimate – Standard error	0.071***	(0.014)	0.045**	(0.017)	0.050+	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0044	0.00000051	0.048	0.048	0.0054	0.16
Individuals – Observations	2441	5819	1853	4043	444	1266
<b>Secondary education</b>						
Estimate – Standard error	0.043***	(0.0050)	0.023***	(0.0057)	-0.0034	(0.0077)
Adj. R <sup>2</sup> – F p-value	0.0045	4.8e-018	0.051	2e-067	0.0031	0.029

Individuals – Observations	6090	22791	5371	18379	2922	9407
<b>Tertiary education</b>						
Estimate – Standard error	0.020***	(0.0048)	0.0100+	(0.0052)	0.011	(0.0087)
Adj. R <sup>2</sup> – F p-value	0.0024	0.000023	0.073	0.073	0.001	0.23
Individuals – Observations	2481	10369	2245	8731	1357	4666

**Nationality****Swiss**

Estimate – Standard error	0.041***	(0.0035)	0.020***	(0.0039)	0.0038	(0.0052)
Adj. R <sup>2</sup> – F p-value	0.0051	1.9e-032	0.033	2.5e-080	0.0025	0.0025
Individuals – Observations	9001	35490	7894	28436	4177	14129

**Foreign**

Estimate – Standard error	0.069***	(0.021)	0.050*	(0.023)	0.023	(0.043)
Adj. R <sup>2</sup> – F p-value	0.0036	0.00093	0.083	0.083	0.0027	0.16
Individuals – Observations	1214	3488	1007	2717	479	1210

**Region****German**

Estimate – Standard error	0.051***	(0.0044)	0.023***	(0.0049)	0.0045	(0.0066)
Adj. R <sup>2</sup> – F p-value	0.0063	6.4e-031	0.071	4.6e-106	0.0023	0.0079
Individuals – Observations	7260	27634	6280	21815	3288	10701

**French or Italian**

Estimate – Standard error	0.038***	(0.0065)	0.018**	(0.0069)	0.0076	(0.011)
Adj. R <sup>2</sup> – F p-value	0.0036	5.1e-009	0.057	0.057	0.0038	0.13



Individuals – Observations	2932	11345	2607	9338	1360	4638
<b><u>Sector</u></b>						
<b>Private</b>						
Estimate – Standard error	0.041***	(0.0060)	0.029***	(0.0063)	0.0097	(0.010)
Adj. R <sup>2</sup> – F p-value	0.0027	8.3e-012	0.059	0.059	0.0017	0.079
Individuals – Observations	7183	21743	6331	18527	3217	8930
<b>Public</b>						
Estimate – Standard error	0.037***	(0.0044)	0.016***	(0.0046)	-0.0012	(0.0067)
Adj. R <sup>2</sup> – F p-value	0.0057	9e-017	0.07	0.07	0.0019	0.13
Individuals – Observations	4588	14464	4102	12440	1874	5331
<b><u>NOGA sector</u></b>						
<b>Primary, manufacturing and construction sector</b>						
Estimate – Standard error	0.052***	(0.012)	0.033*	(0.013)	0.028	(0.019)
Adj. R <sup>2</sup> – F p-value	0.0045	0.000021	0.078	0.078	0.0035	0.054
Individuals – Observations	1857	5432	1756	4855	859	2394
<b>Basic services</b>						
Estimate – Standard error	0.040***	(0.0095)	0.015	(0.010)	0.00022	(0.017)
Adj. R <sup>2</sup> – F p-value	0.0027	0.000033	0.06	1.7e-040	0.00054	0.33
Individuals – Observations	3192	8747	3047	7983	1252	3342
<b>Finance and other services</b>						
Estimate – Standard error	0.041***	(0.0083)	0.036***	(0.0092)	0.034*	(0.017)
Adj. R <sup>2</sup> – F p-value	0.0028	0.00000099	0.061	1.7e-018	0.0086	0.0086

Individuals – Observations	2015	5961	1893	5325	982	2828
<b>Public services</b>						
Estimate – Standard error	0.035***	(0.0042)	0.020***	(0.0045)	-0.0096	(0.0062)
Adj. R <sup>2</sup> – F p-value	0.0056	9.9e-017	0.056	0.056	0.0015	0.26
Individuals – Observations	3821	13914	3668	12990	1731	5629
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.052***	(0.0046)	0.023***	(0.0051)	-0.0019	(0.0075)
Adj. R <sup>2</sup> – F p-value	0.0059	3.1e-029	0.065	4.5e-100	0.00095	0.29
Individuals – Observations	7106	20453	6356	17769	2964	7706
<b>Large firms</b>						
Estimate – Standard error	0.036***	(0.0058)	0.021***	(0.0058)	0.013	(0.0090)
Adj. R <sup>2</sup> – F p-value	0.0037	7.1e-010	0.066	1.5e-053	0.0027	0.13
Individuals – Observations	4982	14830	4617	13384	2328	6346

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.12: Regression models estimating the effect of union membership on the political position*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	-0.64***	(0.048)	-0.54***	(0.047)	-0.018	(0.050)
Adj. R <sup>2</sup> – F p-value	0.016	5.8e-041	0.094	1.3e-171	0.00027	0.13
Individuals – Observations	10059	39126	8772	31229	4620	15437
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	-0.68***	(0.054)	-0.59***	(0.054)	-0.014	(0.077)
Adj. R <sup>2</sup> – F p-value	0.017	5.1e-035	0.096	2e-154	0.00033	0.24
Individuals – Observations	9836	32985	8431	26056	3932	12515
<b>Second episode or higher</b>						
Estimate – Standard error	-0.57***	(0.080)	-0.48***	(0.079)	-0.026	(0.061)
Adj. R <sup>2</sup> – F p-value	0.0038	2.3e-012	0.076	6.8e-114	0.00021	0.17
Individuals – Observations	9162	32127	7901	25278	4413	14294
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	-0.45***	(0.043)	-0.39***	(0.046)	-0.033	(0.044)
Adj. R <sup>2</sup> – F p-value	0.004	1.3e-024	0.076	6.8e-132	0.00025	0.17

Individuals – Observations	9972	33712	8628	26555	4596	14436
<b>Second year</b>						
Estimate – Standard error	-0.69***	(0.061)	-0.59***	(0.066)	0.0017	(0.079)
Adj. R <sup>2</sup> – F p-value	0.0046	1.5e-029	0.077	2.5e-131	0.0002	0.2
Individuals – Observations	9589	31749	8282	24930	4362	13606
<b>Third year or more</b>						
Estimate – Standard error	-0.79***	(0.067)	-0.66***	(0.066)	-0.0037	(0.12)
Adj. R <sup>2</sup> – F p-value	0.015	1.3e-031	0.09	1.8e-154	0.00014	0.29
Individuals – Observations	9641	34455	8383	27314	4299	13811
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	-0.62***	(0.057)	-0.55***	(0.059)	0.031	(0.068)
Adj. R <sup>2</sup> – F p-value	0.015	1.2e-027	0.086	3.7e-100	0.00031	0.26
Individuals – Observations	7390	18212	5868	14290	2685	6274
<b>2005-2011</b>						
Estimate – Standard error	-0.66***	(0.056)	-0.52***	(0.057)	-0.054	(0.060)
Adj. R <sup>2</sup> – F p-value	0.017	4.9e-031	0.1	1.5e-132	-0.00019	0.66
Individuals – Observations	6893	20914	6077	16939	3290	9163
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	-0.64***	(0.070)	-0.60***	(0.068)	-0.029	(0.096)
Adj. R <sup>2</sup> – F p-value	0.0082	6.5e-020	0.084	3.4e-143	0.00018	0.29

Individuals – Observations	9684	33626	8411	26565	4355	13887
<b>Passive</b>						
Estimate – Standard error	-0.64***	(0.051)	-0.52***	(0.051)	-0.014	(0.053)
Adj. R <sup>2</sup> – F p-value	0.012	4.6e-036	0.086	2.7e-146	0.00022	0.16
Individuals – Observations	9835	35895	8530	28449	4513	14758

### Occupation

#### **Full-time**

Estimate – Standard error	-0.59***	(0.061)	-0.53***	(0.060)	-0.00099	(0.065)
Adj. R <sup>2</sup> – F p-value	0.014	3.6e-022	0.084	4.6e-092	0.00032	0.22
Individuals – Observations	6688	22235	5923	18174	2948	8890

#### **Part-time**

Estimate – Standard error	-0.81***	(0.065)	-0.58***	(0.067)	-0.044	(0.078)
Adj. R <sup>2</sup> – F p-value	0.026	2.3e-035	0.1	0.1	0.00045	0.28
Individuals – Observations	5118	16736	4245	12996	2087	6523

### Sex

#### **Man**

Estimate – Standard error	-0.68***	(0.068)	-0.61***	(0.066)	-0.016	(0.061)
Adj. R <sup>2</sup> – F p-value	0.019	3.6e-023	0.086	2.2e-075	0.0013	0.058
Individuals – Observations	4922	19450	4355	15728	2336	7937

#### **Woman**

Estimate – Standard error	-0.69***	(0.065)	-0.44***	(0.065)	-0.022	(0.082)
Adj. R <sup>2</sup> – F p-value	0.019	5.4e-026	0.084	0.084	-0.00034	0.51

Individuals – Observations	5137	19676	4417	15501	2284	7500
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**Age****16-30 years**

Estimate – Standard error	-0.13	(0.10)	-0.14	(0.097)	0.14	(0.17)
Adj. R <sup>2</sup> – F p-value	0.00028	0.19	0.083	8.3e-049	-0.0013	-0.0013
Individuals – Observations	3855	9485	3215	6998	876	1568

**31-50 years**

Estimate – Standard error	-0.61***	(0.060)	-0.47***	(0.058)	-0.005	(0.065)
Adj. R <sup>2</sup> – F p-value	0.017	3.9e-024	0.099	7.3e-089	-0.00031	0.46
Individuals – Observations	5200	19917	4656	16382	2924	9158

**51 years or more**

Estimate – Standard error	-0.98***	(0.086)	-0.86***	(0.087)	-0.086	(0.082)
Adj. R <sup>2</sup> – F p-value	0.042	2.9e-029	0.12	0.12	0.00059	0.32
Individuals – Observations	2846	9723	2495	7849	1605	4711

**Education****Compulsory education or less**

Estimate – Standard error	-0.33*	(0.15)	-0.36*	(0.14)	0.23	(0.25)
Adj. R <sup>2</sup> – F p-value	0.0022	0.027	0.053	0.053	-0.00061	0.56
Individuals – Observations	2458	5956	1861	4120	419	1213

**Secondary education**

Estimate – Standard error	-0.56***	(0.063)	-0.53***	(0.062)	-0.015	(0.071)
Adj. R <sup>2</sup> – F p-value	0.013	1.4e-018	0.088	1.7e-127	0.00054	0.071

Individuals – Observations	6041	22613	5319	18246	2901	9387
<b>Tertiary education</b>						
Estimate – Standard error	-0.84***	(0.079)	-0.57***	(0.076)	-0.077	(0.059)
Adj. R <sup>2</sup> – F p-value	0.035	1.6e-025	0.14	0.14	0.00005	0.37
Individuals – Observations	2505	10557	2264	8863	1397	4837
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	-0.67***	(0.050)	-0.55***	(0.049)	-0.03	(0.053)
Adj. R <sup>2</sup> – F p-value	0.018	5.7e-040	0.1	4.5e-165	0.00021	0.26
Individuals – Observations	8956	35419	7850	28336	4124	13963
<b>Foreign</b>						
Estimate – Standard error	-0.47**	(0.15)	-0.39**	(0.15)	0.1	(0.14)
Adj. R <sup>2</sup> – F p-value	0.0066	0.0015	0.047	0.047	-0.0036	0.83
Individuals – Observations	1187	3703	985	2893	520	1474
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	-0.62***	(0.055)	-0.55***	(0.054)	-0.0076	(0.060)
Adj. R <sup>2</sup> – F p-value	0.017	7.1e-029	0.096	6.3e-113	-0.00027	0.72
Individuals – Observations	7221	27901	6259	22004	3291	10848
<b>French or Italian</b>						
Estimate – Standard error	-0.70***	(0.093)	-0.49***	(0.093)	-0.032	(0.090)
Adj. R <sup>2</sup> – F p-value	0.016	7.9e-014	0.08	3.2e-039	0.0021	0.017

Individuals – Observations	2902	11225	2566	9225	1352	4589
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### **Sector**

#### **Private**

Estimate – Standard error	-0.50***	(0.065)	-0.50***	(0.067)	0.035	(0.064)
Adj. R <sup>2</sup> – F p-value	0.0074	3.7e-014	0.064	0.064	0.00032	0.28
Individuals – Observations	7158	21800	6295	18540	3219	8982

#### **Public**

Estimate – Standard error	-0.61***	(0.064)	-0.54***	(0.063)	-0.09	(0.076)
Adj. R <sup>2</sup> – F p-value	0.019	6.2e-021	0.12	0.12	0.00026	0.35
Individuals – Observations	4560	14520	4078	12491	1884	5371

### **NOGA sector**

#### **Primary, manufacturing and construction sector**

Estimate – Standard error	-0.43***	(0.12)	-0.42***	(0.12)	0.21	(0.13)
Adj. R <sup>2</sup> – F p-value	0.0064	0.00046	0.04	0.04	0.00055	0.46
Individuals – Observations	1836	5421	1737	4854	844	2429

#### **Basic services**

Estimate – Standard error	-0.56***	(0.097)	-0.53***	(0.096)	0.16+	(0.094)
Adj. R <sup>2</sup> – F p-value	0.011	9.7e-009	0.05	1.3e-019	0.0018	0.33
Individuals – Observations	3175	8730	3026	7965	1252	3316

#### **Finance and other services**

Estimate – Standard error	-0.43***	(0.13)	-0.45***	(0.12)	-0.38***	(0.10)
Adj. R <sup>2</sup> – F p-value	0.0055	0.00065	0.056	3.7e-014	0.0077	0.0077



Individuals – Observations	1997	5961	1876	5321	974	2823
<b>Public services</b>						
Estimate – Standard error	-0.60***	(0.067)	-0.56***	(0.063)	-0.085	(0.078)
Adj. R <sup>2</sup> – F p-value	0.019	3.8e-019	0.1	0.1	0.000012	0.35
Individuals – Observations	3795	14018	3658	13089	1732	5702
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	-0.77***	(0.063)	-0.61***	(0.062)	-0.015	(0.080)
Adj. R <sup>2</sup> – F p-value	0.021	5.3e-034	0.1	5.2e-120	-0.00034	0.51
Individuals – Observations	7067	20508	6324	17809	2947	7700
<b>Large firms</b>						
Estimate – Standard error	-0.54***	(0.064)	-0.45***	(0.062)	-0.043	(0.060)
Adj. R <sup>2</sup> – F p-value	0.013	3.1e-017	0.088	0.088	0.00013	0.41
Individuals – Observations	4996	14900	4617	13420	2342	6437

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.13: Regression models estimating the effect of union membership on the vote for the Socialist Party*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.13***	(0.0099)	0.092***	(0.010)	-0.015	(0.011)
Adj. R <sup>2</sup> – F p-value	0.016	6.7e-038	0.058	2e-097	0.0016	0.00016
Individuals – Observations	10878	44536	9452	35208	5253	18623
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.14***	(0.011)	0.098***	(0.012)	-0.012	(0.015)
Adj. R <sup>2</sup> – F p-value	0.018	8.1e-035	0.061	2e-092	0.0011	0.0049
Individuals – Observations	10711	37818	9157	29564	4559	15262
<b>Second episode or higher</b>						
Estimate – Standard error	0.11***	(0.019)	0.084***	(0.019)	-0.02	(0.017)
Adj. R <sup>2</sup> – F p-value	0.004	1.3e-009	0.046	8e-070	0.0017	0.000024
Individuals – Observations	9952	36960	8549	28781	5041	17293
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.094***	(0.0085)	0.065***	(0.0092)	-0.0049	(0.0098)
Adj. R <sup>2</sup> – F p-value	0.0048	4.2e-028	0.047	8.4e-088	0.0012	0.00016

Individuals – Observations	10826	38760	9334	30226	5238	17479
<b>Second year</b>						
Estimate – Standard error	0.14***	(0.013)	0.11***	(0.015)	-0.0088	(0.018)
Adj. R <sup>2</sup> – F p-value	0.0049	4.9e-026	0.047	7.5e-096	0.0011	0.00088
Individuals – Observations	10414	36574	8961	28427	4997	16523
<b>Third year or more</b>						
Estimate – Standard error	0.15***	(0.015)	0.11***	(0.015)	-0.046+	(0.028)
Adj. R <sup>2</sup> – F p-value	0.014	1e-025	0.055	3.1e-091	0.0024	0.000013
Individuals – Observations	10444	39418	9044	30923	4920	16747
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.14***	(0.012)	0.096***	(0.012)	-0.0033	(0.015)
Adj. R <sup>2</sup> – F p-value	0.019	3.5e-032	0.072	2.1e-116	0.001	0.041
Individuals – Observations	8277	21244	6540	16513	3151	7815
<b>2005-2011</b>						
Estimate – Standard error	0.12***	(0.012)	0.088***	(0.012)	-0.025+	(0.015)
Adj. R <sup>2</sup> – F p-value	0.014	5.1e-024	0.046	3.1e-050	0.0017	0.046
Individuals – Observations	7385	23292	6475	18695	3711	10808
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	0.14***	(0.014)	0.11***	(0.015)	-0.0055	(0.015)
Adj. R <sup>2</sup> – F p-value	0.01	1.4e-023	0.052	4.7e-087	0.0011	0.00015

Individuals – Observations	10501	38579	9081	30164	4986	16840
<b>Passive</b>						
Estimate – Standard error	0.12***	(0.011)	0.085***	(0.011)	-0.02	(0.013)
Adj. R <sup>2</sup> – F p-value	0.011	5.1e-028	0.053	6.9e-085	0.0018	0.0001
Individuals – Observations	10654	41065	9209	32228	5146	17846

**Occupation****Full-time**

Estimate – Standard error	0.13***	(0.012)	0.091***	(0.012)	-0.012	(0.014)
Adj. R <sup>2</sup> – F p-value	0.018	7.8e-025	0.059	1.4e-052	0.0017	0.033
Individuals – Observations	7253	25124	6406	20403	3349	10572

**Part-time**

Estimate – Standard error	0.14***	(0.015)	0.089***	(0.016)	-0.022	(0.020)
Adj. R <sup>2</sup> – F p-value	0.016	6.6e-020	0.066	0.066	0.0011	0.061
Individuals – Observations	5622	19226	4627	14733	2431	8022

**Sex****Man**

Estimate – Standard error	0.13***	(0.013)	0.10***	(0.013)	0.0067	(0.014)
Adj. R <sup>2</sup> – F p-value	0.019	3.2e-022	0.065	3.5e-051	0.00071	0.27
Individuals – Observations	5193	21321	4597	17172	2542	9014

**Woman**

Estimate – Standard error	0.13***	(0.015)	0.074***	(0.015)	-0.041*	(0.019)
Adj. R <sup>2</sup> – F p-value	0.014	4.9e-018	0.06	0.06	0.004	0.00018

Individuals – Observations	5685	23215	4855	18036	2711	9609
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### Age

#### **16-30 years**

Estimate – Standard error	0.044**	(0.017)	0.026	(0.019)	0.014	(0.030)
Adj. R <sup>2</sup> – F p-value	0.0013	0.0089	0.046	9.5e-077	-0.00095	0.52
Individuals – Observations	4261	10923	3526	7972	1035	1944

#### **31-50 years**

Estimate – Standard error	0.12***	(0.013)	0.086***	(0.013)	-0.023	(0.015)
Adj. R <sup>2</sup> – F p-value	0.015	3.7e-020	0.061	7.3e-056	0.0018	0.012
Individuals – Observations	5635	22747	5031	18518	3368	11107

#### **51 years or more**

Estimate – Standard error	0.18***	(0.017)	0.14***	(0.018)	-0.0089	(0.019)
Adj. R <sup>2</sup> – F p-value	0.036	1.5e-024	0.071	0.071	0.00025	0.12
Individuals – Observations	3054	10865	2682	8718	1812	5572

### Education

#### **Compulsory education or less**

Estimate – Standard error	0.11***	(0.025)	0.082**	(0.025)	0.016	(0.031)
Adj. R <sup>2</sup> – F p-value	0.0095	0.000011	0.058	0.058	0.0049	0.23
Individuals – Observations	2881	7568	2174	5136	576	1845

#### **Secondary education**

Estimate – Standard error	0.12***	(0.013)	0.095***	(0.013)	-0.0068	(0.013)
Adj. R <sup>2</sup> – F p-value	0.015	2.2e-020	0.048	6.4e-160	0.0017	0.00048

Individuals – Observations	6454	25831	5685	20756	3316	11568
<b>Tertiary education</b>						
Estimate – Standard error	0.12***	(0.019)	0.084***	(0.019)	-0.036	(0.025)
Adj. R <sup>2</sup> – F p-value	0.015	4.6e-011	0.067	0.067	0.00058	0.44
Individuals – Observations	2581	11137	2336	9316	1478	5210
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	0.13***	(0.011)	0.096***	(0.011)	-0.018	(0.012)
Adj. R <sup>2</sup> – F p-value	0.017	4e-035	0.061	2e-090	0.002	0.00017
Individuals – Observations	9520	39549	8338	31439	4581	16466
<b>Foreign</b>						
Estimate – Standard error	0.093***	(0.027)	0.042	(0.028)	0.012	(0.040)
Adj. R <sup>2</sup> – F p-value	0.0076	0.00065	0.06	0.06	-0.0019	0.67
Individuals – Observations	1460	4983	1184	3769	706	2157
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.14***	(0.012)	0.11***	(0.012)	-0.0075	(0.014)
Adj. R <sup>2</sup> – F p-value	0.02	5.1e-031	0.065	2.3e-072	0.0026	0.000028
Individuals – Observations	7706	31006	6644	24203	3654	12652
<b>French or Italian</b>						
Estimate – Standard error	0.11***	(0.018)	0.056**	(0.019)	-0.031	(0.020)
Adj. R <sup>2</sup> – F p-value	0.01	5.4e-009	0.044	0.044	0.0036	0.028

Individuals – Observations	3241	13530	2867	11005	1623	5971
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**Sector**

**Private**

Estimate – Standard error	0.099***	(0.012)	0.087***	(0.013)	0.0014	(0.014)
Adj. R <sup>2</sup> – F p-value	0.0084	1.4e-015	0.04	0.04	0.00049	0.1
Individuals – Observations	7844	25207	6875	21237	3742	11031

**Public**

Estimate – Standard error	0.12***	(0.014)	0.095***	(0.015)	-0.027	(0.018)
Adj. R <sup>2</sup> – F p-value	0.015	1.1e-016	0.06	0.06	0.0036	0.0034
Individuals – Observations	4938	16059	4399	13724	2137	6273

**NOGA sector**

**Primary, manufacturing and construction sector**

Estimate – Standard error	0.12***	(0.023)	0.10***	(0.023)	-0.01	(0.023)
Adj. R <sup>2</sup> – F p-value	0.015	0.00000047	0.037	0.037	0.004	0.053
Individuals – Observations	2019	6282	1915	5627	1001	3020

**Basic services**

Estimate – Standard error	0.10***	(0.018)	0.067***	(0.018)	-0.02	(0.025)
Adj. R <sup>2</sup> – F p-value	0.011	0.000000019	0.031	4.4e-056	0.0009	0.25
Individuals – Observations	3516	10258	3349	9351	1482	4222

**Finance and other services**

Estimate – Standard error	0.084***	(0.025)	0.076**	(0.023)	0.031	(0.022)
Adj. R <sup>2</sup> – F p-value	0.0054	0.00079	0.04	2.7e-012	-0.0014	0.38

Individuals – Observations	2145	6646	2014	5919	1085	3292
<b>Public services</b>						
Estimate – Standard error	0.13***	(0.015)	0.10***	(0.015)	-0.027	(0.018)
Adj. R <sup>2</sup> – F p-value	0.016	8.1e-016	0.056	0.056	0.0038	0.0021
Individuals – Observations	4052	15372	3892	14311	1923	6582
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.15***	(0.013)	0.12***	(0.013)	-0.0027	(0.017)
Adj. R <sup>2</sup> – F p-value	0.02	3.2e-028	0.066	2.5e-064	0.0007	0.015
Individuals – Observations	7731	23514	6902	20258	3425	9418
<b>Large firms</b>						
Estimate – Standard error	0.093***	(0.013)	0.064***	(0.013)	-0.024	(0.015)
Adj. R <sup>2</sup> – F p-value	0.0094	1.9e-012	0.051	6.8e-080	0.0032	0.017
Individuals – Observations	5359	16643	4956	14950	2673	7611

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)



*Table 8.14: Regression models estimating the effect of union membership on the vote for the Christian Democratic Party*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	-0.0021	(0.0051)	-0.0063	(0.0054)	0.0019	(0.0074)
Adj. R <sup>2</sup> – F p-value	-0.000011	0.68	0.039	4.2e-49	0.0015	0.0000070
Individuals – Observations	10878	44536	9452	35208	5253	18623
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	-0.0045	(0.0053)	-0.0069	(0.0058)	-0.00066	(0.011)
Adj. R <sup>2</sup> – F p-value	0.000026	0.39	0.040	5.2e-47	0.0016	0.000038
Individuals – Observations	10711	37818	9157	29564	4559	15262
<b>Second episode or higher</b>						
Estimate – Standard error	0.014	(0.012)	0.0014	(0.013)	0.0049	(0.0086)
Adj. R <sup>2</sup> – F p-value	0.00011	0.25	0.041	8.5e-38	0.0012	0.00040
Individuals – Observations	9952	36960	8549	28781	5041	17293

**Duration of membership****First year**

Estimate – Standard error	-0.0025	(0.0048)	-0.0042	(0.0052)	0.00027	(0.0066)
Adj. R <sup>2</sup> – F p-value	-0.000017	0.60	0.040	1.1e-43	0.0015	0.0000037
Individuals – Observations	10826	38760	9334	30226	5238	17479

**Second year**

Estimate – Standard error	-0.0032	(0.0069)	-0.0043	(0.0077)	0.017	(0.011)
Adj. R <sup>2</sup> – F p-value	-0.000021	0.64	0.041	5.4e-39	0.0015	0.000019
Individuals – Observations	10414	36574	8961	28427	4997	16523

**Third year or more**

Estimate – Standard error	-0.0014	(0.0073)	-0.010	(0.0079)	-0.0044	(0.017)
Adj. R <sup>2</sup> – F p-value	-0.000023	0.85	0.038	2.1e-43	0.0011	0.00023
Individuals – Observations	10444	39418	9044	30923	4920	16747

**Period****1999-2004**

Estimate – Standard error	-0.00042	(0.0056)	-0.0028	(0.0061)	-0.0024	(0.011)
Adj. R <sup>2</sup> – F p-value	-0.000047	0.94	0.038	3.1e-40	-0.00051	0.84
Individuals – Observations	8277	21244	6540	16513	3151	7815

**2005-2011**

Estimate – Standard error	-0.0029	(0.0067)	-0.011	(0.0072)	0.0048	(0.0084)
Adj. R <sup>2</sup> – F p-value	-0.000024	0.67	0.041	1.2e-28	0.0030	0.00000025
Individuals – Observations	7385	23292	6475	18695	3711	10808

**Type of membership****Active**

Estimate – Standard error	-0.0045	(0.0065)	-0.0099	(0.0069)	0.0056	(0.010)
Adj. R <sup>2</sup> – F p-value	0.00000030	0.49	0.040	7.1e-43	0.0015	0.000012
Individuals – Observations	10501	38579	9081	30164	4986	16840

**Passive**

Estimate – Standard error	-0.00070	(0.0059)	-0.0054	(0.0064)	0.00053	(0.0081)
Adj. R <sup>2</sup> – F p-value	-0.000023	0.91	0.039	3.0e-44	0.0013	0.000038
Individuals – Observations	10654	41065	9209	32228	5146	17846

**Occupation****Full-time**

Estimate – Standard error	0.0041	(0.0065)	0.0019	(0.0069)	0.011	(0.0099)
Adj. R <sup>2</sup> – F p-value	0.00000037	0.53	0.043	7.5e-28	0.0014	0.0073
Individuals – Observations	7253	25124	6406	20403	3349	10572

**Part-time**

Estimate – Standard error	-0.013+	(0.0070)	-0.017*	(0.0074)	-0.013	(0.011)
Adj. R <sup>2</sup> – F p-value	0.00040	0.058	0.041	0.041	0.0022	0.000100
Individuals – Observations	5622	19226	4627	14733	2431	8022

**Sex****Man**

Estimate – Standard error	-0.0024	(0.0075)	-0.0047	(0.0081)	0.0018	(0.0095)
Adj. R <sup>2</sup> – F p-value	-0.000032	0.75	0.040	6.6e-17	0.0014	0.0013

Individuals – Observations	5193	21321	4597	17172	2542	9014
<b>Woman</b>						
Estimate – Standard error	-0.0054	(0.0067)	-0.0074	(0.0069)	0.0022	(0.012)
Adj. R <sup>2</sup> – F p-value	0.000034	0.42	0.041	0.041	0.0021	0.00015
Individuals – Observations	5685	23215	4855	18036	2711	9609
<b>Age</b>						
<b>16-30 years</b>						
Estimate – Standard error	0.0012	(0.010)	0.0034	(0.011)	-0.0066	(0.018)
Adj. R <sup>2</sup> – F p-value	-0.000089	0.91	0.052	9.7e-24	-0.0033	0.94
Individuals – Observations	4261	10923	3526	7972	1035	1944
<b>31-50 years</b>						
Estimate – Standard error	-0.0052	(0.0065)	-0.012+	(0.0067)	-0.0050	(0.010)
Adj. R <sup>2</sup> – F p-value	0.000033	0.42	0.039	4.8e-23	0.00098	0.032
Individuals – Observations	5635	22747	5031	18518	3368	11107
<b>51 years or more</b>						
Estimate – Standard error	-0.0011	(0.0099)	-0.0016	(0.010)	0.016	(0.011)
Adj. R <sup>2</sup> – F p-value	-0.000089	0.91	0.059	0.059	0.0033	0.0010
Individuals – Observations	3054	10865	2682	8718	1812	5572
<b>Education</b>						
<b>Compulsory education or less</b>						
Estimate – Standard error	0.013	(0.016)	0.014	(0.017)	0.0084	(0.018)
Adj. R <sup>2</sup> – F p-value	0.00018	0.42	0.052	0.052	-0.0010	0.43

Individuals – Observations	2881	7568	2174	5136	576	1845
<b>Secondary education</b>						
Estimate – Standard error	0.0035	(0.0067)	-0.00038	(0.0068)	-0.000012	(0.0092)
Adj. R <sup>2</sup> – F p-value	-0.0000070	0.60	0.043	1.2e-29	0.0012	0.0039
Individuals – Observations	6454	25831	5685	20756	3316	11568
<b>Tertiary education</b>						
Estimate – Standard error	-0.023**	(0.0090)	-0.020+	(0.0100)	0.0034	(0.015)
Adj. R <sup>2</sup> – F p-value	0.0014	0.0093	0.056	0.056	0.0018	0.037
Individuals – Observations	2581	11137	2336	9316	1478	5210
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	-0.0044	(0.0054)	-0.0077	(0.0058)	0.0028	(0.0077)
Adj. R <sup>2</sup> – F p-value	0.000023	0.42	0.042	2.1e-47	0.0016	0.000020
Individuals – Observations	9520	39549	8338	31439	4581	16466
<b>Foreign</b>						
Estimate – Standard error	0.0094	(0.013)	0.0019	(0.012)	-0.0043	(0.025)
Adj. R <sup>2</sup> – F p-value	0.000092	0.46	0.031	0.031	-0.0027	0.78
Individuals – Observations	1460	4983	1184	3769	706	2157
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.000065	(0.0064)	-0.0040	(0.0069)	-0.0046	(0.010)
Adj. R <sup>2</sup> – F p-value	-0.000032	0.99	0.035	4.1e-40	0.0023	0.0000042

Individuals – Observations	7706	31006	6644	24203	3654	12652
<b>French or Italian</b>						
Estimate – Standard error	-0.0069	(0.0077)	-0.011	(0.0082)	0.014+	(0.0081)
Adj. R <sup>2</sup> – F p-value	0.000074	0.37	0.053	0.053	0.0011	0.15
Individuals – Observations	3241	13530	2867	11005	1623	5971

**Sector****Private**

Estimate – Standard error	-0.00088	(0.0068)	-0.0038	(0.0070)	0.0059	(0.012)
Adj. R <sup>2</sup> – F p-value	-0.000038	0.90	0.039	0.039	0.00061	0.091
Individuals – Observations	7844	25207	6875	21237	3742	11031

**Public**

Estimate – Standard error	-0.0037	(0.0071)	-0.0089	(0.0077)	0.00064	(0.0089)
Adj. R <sup>2</sup> – F p-value	-0.000015	0.60	0.047	0.047	0.0044	0.000043
Individuals – Observations	4938	16059	4399	13724	2137	6273

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	0.0068	(0.013)	-0.0019	(0.013)	0.0083	(0.013)
Adj. R <sup>2</sup> – F p-value	-0.000060	0.60	0.065	0.065	0.00093	0.44
Individuals – Observations	2019	6282	1915	5627	1001	3020

**Basic services**

Estimate – Standard error	0.019	(0.012)	0.022+	(0.012)	0.0022	(0.021)
Adj. R <sup>2</sup> – F p-value	0.00080	0.11	0.033	2.3e-14	0.0019	0.033

Individuals – Observations	3516	10258	3349	9351	1482	4222
<b>Finance and other services</b>						
Estimate – Standard error	-0.0099	(0.016)	-0.011	(0.016)	0.017	(0.020)
Adj. R <sup>2</sup> – F p-value	-0.000016	0.55	0.079	8.0e-11	-0.0020	0.61
Individuals – Observations	2145	6646	2014	5919	1085	3292
<b>Public services</b>						
Estimate – Standard error	-0.012+	(0.0067)	-0.018*	(0.0071)	-0.0019	(0.0098)
Adj. R <sup>2</sup> – F p-value	0.00045	0.077	0.038	0.038	0.0025	0.0011
Individuals – Observations	4052	15372	3892	14311	1923	6582
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	-0.0074	(0.0065)	-0.015*	(0.0070)	-0.012	(0.013)
Adj. R <sup>2</sup> – F p-value	0.000083	0.25	0.049	1.3e-33	0.0024	0.00010
Individuals – Observations	7731	23514	6902	20258	3425	9418
<b>Large firms</b>						
Estimate – Standard error	0.0039	(0.0069)	0.0023	(0.0070)	0.014	(0.0085)
Adj. R <sup>2</sup> – F p-value	-0.000012	0.57	0.029	6.2e-21	0.0012	0.017
Individuals – Observations	5359	16643	4956	14950	2673	7611

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.15: Regression models estimating the effect of union membership on the vote for the Swiss People's Party*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	-0.033***	(0.0052)	-0.024***	(0.0055)	-0.0048	(0.0064)
Adj. R <sup>2</sup> – F p-value	0.002	2.9e-010	0.06	3.8e-139	0.0044	0.000000001
Individuals – Observations	10878	44536	9452	35208	5253	18623
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	-0.034***	(0.0057)	-0.027***	(0.0064)	-0.0035	(0.0093)
Adj. R <sup>2</sup> – F p-value	0.002	2.6e-009	0.059	1.4e-112	0.0035	0.0000019
Individuals – Observations	10711	37818	9157	29564	4559	15262
<b>Second episode or higher</b>						
Estimate – Standard error	-0.031**	(0.011)	-0.025*	(0.011)	-0.0066	(0.0082)
Adj. R <sup>2</sup> – F p-value	0.00045	0.0042	0.062	1.5e-126	0.0049	1.9e-010
Individuals – Observations	9952	36960	8549	28781	5041	17293



**Duration of membership****First year**

Estimate – Standard error	-0.022***	(0.0054)	-0.015**	(0.0059)	-0.0096+	(0.0058)
Adj. R <sup>2</sup> – F p-value	0.0004	0.000065	0.061	5.1e-123	0.0043	5.9e-009
Individuals – Observations	10826	38760	9334	30226	5238	17479

**Second year**

Estimate – Standard error	-0.045***	(0.0069)	-0.031***	(0.0074)	-0.0014	(0.012)
Adj. R <sup>2</sup> – F p-value	0.00079	8e-011	0.06	4.2e-125	0.0046	1.5e-009
Individuals – Observations	10414	36574	8961	28427	4997	16523

**Third year or more**

Estimate – Standard error	-0.039***	(0.0073)	-0.032***	(0.0078)	0.0026	(0.015)
Adj. R <sup>2</sup> – F p-value	0.0016	0.00000011	0.06	6.2e-129	0.0044	3.2e-009
Individuals – Observations	10444	39418	9044	30923	4920	16747

**Period****1999-2004**

Estimate – Standard error	-0.024***	(0.0059)	-0.022***	(0.0065)	0.0051	(0.0083)
Adj. R <sup>2</sup> – F p-value	0.0012	0.000051	0.05	1.2e-077	0.0021	0.0041
Individuals – Observations	8277	21244	6540	16513	3151	7815

**2005-2011**

Estimate – Standard error	-0.041***	(0.0068)	-0.026***	(0.0073)	-0.012	(0.0084)
Adj. R <sup>2</sup> – F p-value	0.0027	2.2e-009	0.066	7.8e-124	0.0061	0.000000015
Individuals – Observations	7385	23292	6475	18695	3711	10808

**Type of membership****Active**

Estimate – Standard error	-0.033***	(0.0071)	-0.031***	(0.0075)	-0.0042	(0.011)
Adj. R <sup>2</sup> – F p-value	0.00095	0.0000023	0.06	5.4e-128	0.0043	7.8e-009
Individuals – Observations	10501	38579	9081	30164	4986	16840

**Passive**

Estimate – Standard error	-0.033***	(0.0059)	-0.021***	(0.0062)	-0.005	(0.0069)
Adj. R <sup>2</sup> – F p-value	0.0014	0.000000029	0.061	3.9e-135	0.0045	1.6e-009
Individuals – Observations	10654	41065	9209	32228	5146	17846

**Occupation****Full-time**

Estimate – Standard error	-0.032***	(0.0075)	-0.026**	(0.0081)	-0.013	(0.0093)
Adj. R <sup>2</sup> – F p-value	0.0017	0.000016	0.067	4.6e-082	0.0066	0.00000091
Individuals – Observations	7253	25124	6406	20403	3349	10572

**Part-time**

Estimate – Standard error	-0.041***	(0.0057)	-0.026***	(0.0061)	0.0077	(0.0071)
Adj. R <sup>2</sup> – F p-value	0.0038	4.3e-013	0.045	0.045	0.0032	0.00046
Individuals – Observations	5622	19226	4627	14733	2431	8022

**Sex****Man**

Estimate – Standard error	-0.036***	(0.0083)	-0.033***	(0.0088)	-0.014	(0.010)
Adj. R <sup>2</sup> – F p-value	0.0021	0.000019	0.063	5.6e-060	0.0054	0.00055

Individuals – Observations	5193	21321	4597	17172	2542	9014
<b>Woman</b>						
Estimate – Standard error	-0.040***	(0.0059)	-0.017**	(0.0066)	0.0058	(0.0066)
Adj. R <sup>2</sup> – F p-value	0.0033	1.5e-011	0.053	0.053	0.0042	0.000013
Individuals – Observations	5685	23215	4855	18036	2711	9609
<b>Age</b>						
<b>16-30 years</b>						
Estimate – Standard error	0.012	(0.013)	0.0073	(0.014)	0.028	(0.021)
Adj. R <sup>2</sup> – F p-value	0.000052	0.36	0.076	4.7e-046	0.012	0.062
Individuals – Observations	4261	10923	3526	7972	1035	1944
<b>31-50 years</b>						
Estimate – Standard error	-0.028***	(0.0066)	-0.023***	(0.0067)	-0.0077	(0.0086)
Adj. R <sup>2</sup> – F p-value	0.0018	0.000024	0.059	4.5e-053	0.0037	0.000028
Individuals – Observations	5635	22747	5031	18518	3368	11107
<b>51 years or more</b>						
Estimate – Standard error	-0.053***	(0.0091)	-0.040***	(0.0098)	-0.0076	(0.0091)
Adj. R <sup>2</sup> – F p-value	0.0056	0.00000001	0.059	0.059	0.0051	0.0026
Individuals – Observations	3054	10865	2682	8718	1812	5572
<b>Education</b>						
<b>Compulsory education or less</b>						
Estimate – Standard error	-0.015	(0.018)	-0.015	(0.015)	-0.016	(0.015)
Adj. R <sup>2</sup> – F p-value	0.000095	0.39	0.083	0.083	0.0048	0.26

Individuals – Observations	2881	7568	2174	5136	576	1845
<b>Secondary education</b>						
Estimate – Standard error	-0.033***	(0.0075)	-0.030***	(0.0080)	-0.0043	(0.0087)
Adj. R <sup>2</sup> – F p-value	0.0017	0.000014	0.059	3.9e-082	0.0052	0.00000051
Individuals – Observations	6454	25831	5685	20756	3316	11568
<b>Tertiary education</b>						
Estimate – Standard error	-0.023***	(0.0064)	-0.016*	(0.0068)	-0.0028	(0.010)
Adj. R <sup>2</sup> – F p-value	0.0021	0.00036	0.028	0.028	0.0023	0.13
Individuals – Observations	2581	11137	2336	9316	1478	5210
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	-0.038***	(0.0057)	-0.026***	(0.0060)	-0.0065	(0.0070)
Adj. R <sup>2</sup> – F p-value	0.0026	2.1e-011	0.06	1.7e-133	0.0049	5.9e-010
Individuals – Observations	9520	39549	8338	31439	4581	16466
<b>Foreign</b>						
Estimate – Standard error	-0.0093	(0.0089)	-0.0059	(0.010)	0.0084	(0.0082)
Adj. R <sup>2</sup> – F p-value	0.00013	0.3	0.021	0.021	0.0052	0.14
Individuals – Observations	1460	4983	1184	3769	706	2157
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	-0.046***	(0.0068)	-0.036***	(0.0073)	-0.012	(0.0088)
Adj. R <sup>2</sup> – F p-value	0.0032	1.7e-011	0.059	2.3e-110	0.005	0.00000015

Individuals – Observations	7706	31006	6644	24203	3654	12652
<b>French or Italian</b>						
Estimate – Standard error	-0.003	(0.0071)	0.0015	(0.0071)	0.0085	(0.0073)
Adj. R <sup>2</sup> – F p-value	-0.000038	0.67	0.023	0.023	0.0047	0.0052
Individuals – Observations	3241	13530	2867	11005	1623	5971
<b><u>Sector</u></b>						
<b>Private</b>						
Estimate – Standard error	-0.017*	(0.0080)	-0.019*	(0.0080)	-0.00099	(0.0100)
Adj. R <sup>2</sup> – F p-value	0.00031	0.038	0.06	0.06	0.0063	0.00000012
Individuals – Observations	7844	25207	6875	21237	3742	11031
<b>Public</b>						
Estimate – Standard error	-0.036***	(0.0064)	-0.028***	(0.0074)	-0.0061	(0.0078)
Adj. R <sup>2</sup> – F p-value	0.0039	0.000000024	0.06	0.06	0.0018	0.16
Individuals – Observations	4938	16059	4399	13724	2137	6273
<b><u>NOGA sector</u></b>						
<b>Primary, manufacturing and construction sector</b>						
Estimate – Standard error	-0.035*	(0.018)	-0.031+	(0.017)	-0.021	(0.021)
Adj. R <sup>2</sup> – F p-value	0.0014	0.048	0.068	0.068	0.0067	0.032
Individuals – Observations	2019	6282	1915	5627	1001	3020
<b>Basic services</b>						
Estimate – Standard error	-0.032*	(0.013)	-0.030*	(0.013)	-0.0039	(0.014)
Adj. R <sup>2</sup> – F p-value	0.0012	0.016	0.059	1.1e-047	0.0067	0.0092

Individuals – Observations	3516	10258	3349	9351	1482	4222
<b>Finance and other services</b>						
Estimate – Standard error	0.002	(0.014)	-0.0067	(0.015)	0.026	(0.021)
Adj. R <sup>2</sup> – F p-value	-0.00015	0.89	0.049	3.7e-012	0.0083	0.038
Individuals – Observations	2145	6646	2014	5919	1085	3292
<b>Public services</b>						
Estimate – Standard error	-0.029***	(0.0059)	-0.024***	(0.0064)	-0.013	(0.0078)
Adj. R <sup>2</sup> – F p-value	0.0031	0.00000098	0.04	0.04	0.00051	0.14
Individuals – Observations	4052	15372	3892	14311	1923	6582
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	-0.038***	(0.0067)	-0.021**	(0.0073)	-0.0059	(0.0081)
Adj. R <sup>2</sup> – F p-value	0.0024	9.1e-009	0.067	5.2e-090	0.005	0.0000054
Individuals – Observations	7731	23514	6902	20258	3425	9418
<b>Large firms</b>						
Estimate – Standard error	-0.030***	(0.0072)	-0.026***	(0.0075)	-0.003	(0.0092)
Adj. R <sup>2</sup> – F p-value	0.002	0.000028	0.058	2.3e-044	0.0066	0.00013
Individuals – Observations	5359	16643	4956	14950	2673	7611

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.16: Regression models estimating the effect of union membership on the overall satisfaction with democracy*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.061+	(0.036)	0.0059	(0.038)	-0.0091	(0.054)
Adj. R <sup>2</sup> – F p-value	0.00015	0.091	0.057	2.2e-152	0.0059	3.6e-018
Individuals – Observations	10693	43419	9321	34430	5144	18017
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.059	(0.041)	0.0073	(0.044)	-0.044	(0.077)
Adj. R <sup>2</sup> – F p-value	0.00013	0.15	0.057	3.7e-130	0.0066	2.5e-016
Individuals – Observations	10515	36783	9019	28853	4457	14708
<b>Second episode or higher</b>						
Estimate – Standard error	0.16*	(0.064)	0.059	(0.066)	0.039	(0.070)
Adj. R <sup>2</sup> – F p-value	0.00031	0.013	0.06	3.7e-152	0.0059	1.2e-016
Individuals – Observations	9767	35929	8422	28069	4931	16704

**Duration of membership****First year**

Estimate – Standard error	-0.00075	(0.036)	0.028	(0.039)	-0.055	(0.046)
Adj. R <sup>2</sup> – F p-value	-0.000027	0.98	0.059	9.8e-142	0.006	5.8e-017
Individuals – Observations	10630	37690	9197	29486	5127	16883

**Second year**

Estimate – Standard error	0.051	(0.053)	-0.057	(0.060)	0.032	(0.084)
Adj. R <sup>2</sup> – F p-value	0.00000019	0.33	0.06	8.5e-155	0.0063	9.1e-017
Individuals – Observations	10228	35542	8832	27714	4885	15944

**Third year or more**

Estimate – Standard error	0.12*	(0.051)	-0.011	(0.054)	0.066	(0.13)
Adj. R <sup>2</sup> – F p-value	0.00034	0.023	0.06	5.6e-166	0.0058	2.4e-015
Individuals – Observations	10257	38373	8914	30202	4809	16168

**Period****1999-2004**

Estimate – Standard error	0.083+	(0.043)	0.056	(0.048)	-0.075	(0.071)
Adj. R <sup>2</sup> – F p-value	0.00028	0.055	0.051	2.6e-095	0.012	1.5e-017
Individuals – Observations	8118	20632	6437	16091	3077	7488

**2005-2011**

Estimate – Standard error	0.048	(0.045)	-0.047	(0.048)	0.041	(0.068)
Adj. R <sup>2</sup> – F p-value	0.000069	0.28	0.058	4.2e-074	0.0012	0.017
Individuals – Observations	7264	22787	6380	18339	3638	10529



**Type of membership****Active**

Estimate – Standard error	-0.024	(0.052)	-0.067	(0.054)	-0.1	(0.10)
Adj. R <sup>2</sup> – F p-value	-0.000013	0.64	0.058	9.6e-161	0.0063	2.1e-016
Individuals – Observations	10315	37532	8954	29440	4875	16261

**Passive**

Estimate – Standard error	0.11**	(0.039)	0.043	(0.042)	0.033	(0.056)
Adj. R <sup>2</sup> – F p-value	0.0004	0.0053	0.06	1.9e-159	0.0059	2.7e-017
Individuals – Observations	10465	39980	9075	31476	5037	17245

**Occupation****Full-time**

Estimate – Standard error	0.024	(0.047)	0.0066	(0.050)	-0.055	(0.070)
Adj. R <sup>2</sup> – F p-value	-0.000014	0.61	0.061	3.2e-100	0.005	0.0000001
Individuals – Observations	7127	24590	6308	20011	3282	10316

**Part-time**

Estimate – Standard error	0.11*	(0.051)	0.036	(0.053)	0.066	(0.083)
Adj. R <sup>2</sup> – F p-value	0.00053	0.032	0.061	0.061	0.0072	2.8e-009
Individuals – Observations	5507	18657	4558	14350	2368	7673

**Sex****Man**

Estimate – Standard error	-0.06	(0.052)	-0.032	(0.056)	-0.0071	(0.070)
Adj. R <sup>2</sup> – F p-value	0.00012	0.26	0.046	3.9e-049	0.005	0.00000016

Individuals – Observations	5124	21049	4544	16985	2516	8900
<b>Woman</b>						
Estimate – Standard error	0.14**	(0.048)	0.039	(0.050)	-0.011	(0.083)
Adj. R <sup>2</sup> – F p-value	0.00094	0.0023	0.064	0.064	0.0067	1.2e-009
Individuals – Observations	5569	22370	4777	17445	2628	9117

### Age

#### **16-30 years**

Estimate – Standard error	-0.056	(0.074)	-0.0062	(0.080)	-0.26+	(0.14)
Adj. R <sup>2</sup> – F p-value	-0.000005	0.45	0.051	1.8e-030	0.0065	0.19
Individuals – Observations	4125	10497	3437	7701	1004	1870

#### **31-50 years**

Estimate – Standard error	0.069	(0.047)	-0.023	(0.048)	0.0025	(0.072)
Adj. R <sup>2</sup> – F p-value	0.00021	0.14	0.068	3.7e-091	0.0064	1.2e-011
Individuals – Observations	5574	22236	4984	18146	3291	10712

#### **51 years or more**

Estimate – Standard error	0.17*	(0.068)	0.083	(0.073)	0.035	(0.086)
Adj. R <sup>2</sup> – F p-value	0.0014	0.014	0.058	0.058	0.0071	0.0000036
Individuals – Observations	3017	10685	2652	8583	1786	5435

### Education

#### **Compulsory education or less**

Estimate – Standard error	-0.031	(0.11)	-0.0095	(0.13)	0.22	(0.17)
Adj. R <sup>2</sup> – F p-value	-0.00012	0.78	0.058	0.058	0.0067	0.0025

Individuals – Observations	2747	7058	2086	4828	539	1668
<b>Secondary education</b>						
Estimate – Standard error	0.10*	(0.046)	0.028	(0.050)	-0.078	(0.072)
Adj. R <sup>2</sup> – F p-value	0.00047	0.026	0.047	5e-061	0.0057	3.7e-010
Individuals – Observations	6397	25328	5641	20364	3256	11211
<b>Tertiary education</b>						
Estimate – Standard error	-0.12+	(0.062)	-0.047	(0.062)	0.069	(0.087)
Adj. R <sup>2</sup> – F p-value	0.00082	0.061	0.052	0.052	0.011	0.000000013
Individuals – Observations	2570	11033	2324	9238	1464	5138
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	0.089*	(0.037)	0.011	(0.039)	-0.012	(0.057)
Adj. R <sup>2</sup> – F p-value	0.00037	0.017	0.061	4.1e-143	0.0067	6.2e-018
Individuals – Observations	9392	38790	8243	30904	4522	16080
<b>Foreign</b>						
Estimate – Standard error	-0.17	(0.12)	-0.12	(0.13)	0.012	(0.15)
Adj. R <sup>2</sup> – F p-value	0.00065	0.17	0.048	0.048	-0.0016	0.7
Individuals – Observations	1396	4625	1145	3526	655	1937
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.067+	(0.040)	-0.0027	(0.043)	-0.0035	(0.064)
Adj. R <sup>2</sup> – F p-value	0.0002	0.094	0.041	3.6e-078	0.0055	4e-011

Individuals – Observations	7575	30271	6555	23693	3581	12280
<b>French or Italian</b>						
Estimate – Standard error	0.05	(0.071)	0.032	(0.077)	-0.032	(0.095)
Adj. R <sup>2</sup> – F p-value	0.000025	0.48	0.05	0.05	0.011	2.5e-009
Individuals – Observations	3185	13148	2823	10737	1587	5737

**Sector****Private**

Estimate – Standard error	-0.014	(0.053)	-0.039	(0.055)	0.074	(0.067)
Adj. R <sup>2</sup> – F p-value	-0.000034	0.79	0.059	0.059	0.0076	3.5e-013
Individuals – Observations	7700	24486	6756	20687	3635	10609

**Public**

Estimate – Standard error	0.10*	(0.048)	0.052	(0.051)	-0.084	(0.080)
Adj. R <sup>2</sup> – F p-value	0.00062	0.032	0.058	0.058	0.006	0.000022
Individuals – Observations	4861	15781	4328	13505	2094	6130

**NOGA sector****Primary, manufacturing and construction sector**

Estimate – Standard error	0.069	(0.099)	0.019	(0.10)	-0.03	(0.13)
Adj. R <sup>2</sup> – F p-value	0.000017	0.48	0.072	0.072	0.0079	0.019
Individuals – Observations	1987	6110	1887	5478	980	2904

**Basic services**

Estimate – Standard error	0.038	(0.077)	-0.032	(0.081)	0.066	(0.11)
Adj. R <sup>2</sup> – F p-value	-0.00004	0.62	0.045	6.3e-024	0.0039	0.0049

Individuals – Observations	3443	9944	3282	9062	1435	4047
<b>Finance and other services</b>						
Estimate – Standard error	0.024	(0.099)	-0.0037	(0.097)	0.065	(0.14)
Adj. R <sup>2</sup> – F p-value	-0.00013	0.81	0.065	2.7e-040	0.01	0.00003
Individuals – Observations	2114	6516	1982	5806	1063	3207
<b>Public services</b>						
Estimate – Standard error	0.11*	(0.051)	0.027	(0.051)	-0.04	(0.082)
Adj. R <sup>2</sup> – F p-value	0.00076	0.029	0.057	0.057	0.004	0.0015
Individuals – Observations	3997	15114	3845	14084	1890	6430
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.092*	(0.047)	-0.0018	(0.049)	-0.022	(0.077)
Adj. R <sup>2</sup> – F p-value	0.00033	0.05	0.057	4.8e-087	0.0075	4.8e-010
Individuals – Observations	7588	22842	6777	19718	3339	9047
<b>Large firms</b>						
Estimate – Standard error	-0.0065	(0.051)	0.0064	(0.052)	-0.04	(0.066)
Adj. R <sup>2</sup> – F p-value	-0.000059	0.9	0.058	2.3e-056	0.0044	0.000018
Individuals – Observations	5302	16366	4908	14712	2620	7431

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

**Table 8.17: Regression models estimating the effect of union membership on the trust in the Federal Government**

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.052	(0.042)	-0.0089	(0.045)	-0.14**	(0.048)
Adj. R <sup>2</sup> – F p-value	0.000083	0.22	0.042	2.3e-127	0.014	7.7e-050
Individuals – Observations	10679	43485	9300	34490	5130	18067
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.078	(0.047)	-0.00049	(0.052)	-0.20**	(0.064)
Adj. R <sup>2</sup> – F p-value	0.0002	0.1	0.043	4.9e-108	0.015	1e-040
Individuals – Observations	10504	36835	8999	28898	4445	14753
<b>Second episode or higher</b>						
Estimate – Standard error	-0.0012	(0.077)	0.024	(0.081)	-0.074	(0.070)
Adj. R <sup>2</sup> – F p-value	-0.000028	0.99	0.038	1.5e-091	0.013	9.1e-043
Individuals – Observations	9756	35978	8401	28119	4920	16754

**Duration of membership****First year**

Estimate – Standard error	0.14***	(0.040)	0.061	(0.044)	-0.053	(0.046)
Adj. R <sup>2</sup> – F p-value	0.00035	0.00052	0.04	4.1e-102	0.013	1.2e-042
Individuals – Observations	10618	37748	9174	29541	5115	16933

**Second year**

Estimate – Standard error	0.067	(0.059)	-0.048	(0.065)	-0.16+	(0.083)
Adj. R <sup>2</sup> – F p-value	0.000012	0.25	0.04	5.5e-098	0.014	4.8e-043
Individuals – Observations	10214	35593	8810	27765	4874	15991

**Third year or more**

Estimate – Standard error	-0.025	(0.061)	-0.072	(0.065)	-0.35***	(0.10)
Adj. R <sup>2</sup> – F p-value	-0.000011	0.68	0.04	3e-106	0.015	2.1e-043
Individuals – Observations	10248	38430	8896	30260	4799	16217

**Period****1999-2004**

Estimate – Standard error	0.085+	(0.049)	0.044	(0.054)	-0.22***	(0.067)
Adj. R <sup>2</sup> – F p-value	0.00023	0.087	0.054	7.7e-095	0.012	2.9e-017
Individuals – Observations	8111	20677	6428	16135	3064	7538

**2005-2011**

Estimate – Standard error	0.015	(0.052)	-0.06	(0.057)	-0.083	(0.060)
Adj. R <sup>2</sup> – F p-value	-0.000035	0.78	0.034	1.3e-067	0.012	2e-018
Individuals – Observations	7255	22808	6371	18355	3638	10529

**Type of membership****Active**

Estimate – Standard error	0.018	(0.059)	-0.076	(0.063)	-0.18*	(0.079)
Adj. R <sup>2</sup> – F p-value	-0.000021	0.76	0.04	7.8e-100	0.013	3.3e-041
Individuals – Observations	10301	37585	8931	29492	4866	16308

**Passive**

Estimate – Standard error	0.072	(0.047)	0.025	(0.050)	-0.13*	(0.055)
Adj. R <sup>2</sup> – F p-value	0.00013	0.13	0.042	3.8e-116	0.014	1.3e-047
Individuals – Observations	10455	40043	9057	31536	5022	17296

**Occupation****Full-time**

Estimate – Standard error	0.045	(0.056)	-0.012	(0.059)	-0.20**	(0.064)
Adj. R <sup>2</sup> – F p-value	0.000039	0.41	0.047	5.4e-080	0.016	1.8e-029
Individuals – Observations	7124	24584	6300	20010	3270	10299

**Part-time**

Estimate – Standard error	0.071	(0.059)	0.016	(0.062)	-0.059	(0.071)
Adj. R <sup>2</sup> – F p-value	0.00014	0.23	0.044	0.044	0.013	3e-019
Individuals – Observations	5505	18730	4550	14413	2371	7741

**Sex****Man**

Estimate – Standard error	-0.013	(0.061)	-0.042	(0.067)	-0.14*	(0.069)
Adj. R <sup>2</sup> – F p-value	-0.000041	0.83	0.043	8.8e-055	0.017	9.7e-027



Individuals – Observations	5122	21024	4541	16963	2508	8870
<b>Woman</b>						
Estimate – Standard error	0.095+	(0.056)	0.0035	(0.058)	-0.15*	(0.067)
Adj. R <sup>2</sup> – F p-value	0.00029	0.091	0.048	0.048	0.013	4.4e-022
Individuals – Observations	5557	22461	4759	17527	2622	9197
<b><u>Age</u></b>						
<b>16-30 years</b>						
Estimate – Standard error	0.054	(0.083)	0.048	(0.088)	-0.28	(0.18)
Adj. R <sup>2</sup> – F p-value	-0.000027	0.52	0.05	1.4e-034	0.031	5.6e-009
Individuals – Observations	4132	10508	3429	7711	993	1852
<b>31-50 years</b>						
Estimate – Standard error	0.034	(0.055)	-0.063	(0.056)	-0.14*	(0.060)
Adj. R <sup>2</sup> – F p-value	0.0000048	0.54	0.048	5.9e-070	0.018	1.3e-033
Individuals – Observations	5556	22261	4968	18176	3285	10772
<b>51 years or more</b>						
Estimate – Standard error	0.12	(0.080)	0.056	(0.087)	-0.12	(0.085)
Adj. R <sup>2</sup> – F p-value	0.00048	0.14	0.05	0.05	0.0072	8.3e-009
Individuals – Observations	3032	10715	2663	8603	1787	5443
<b><u>Education</u></b>						
<b>Compulsory education or less</b>						
Estimate – Standard error	-0.034	(0.12)	-0.00077	(0.13)	-0.13	(0.17)
Adj. R <sup>2</sup> – F p-value	-0.00012	0.78	0.05	0.05	0.0061	0.038

Individuals – Observations	2740	7083	2080	4849	537	1682
<b>Secondary education</b>						
Estimate – Standard error	0.13*	(0.055)	0.033	(0.059)	-0.097	(0.064)
Adj. R <sup>2</sup> – F p-value	0.00062	0.019	0.042	5.3e-071	0.013	8.9e-030
Individuals – Observations	6399	25407	5637	20428	3252	11268
<b>Tertiary education</b>						
Estimate – Standard error	-0.19*	(0.074)	-0.13+	(0.075)	-0.23**	(0.081)
Adj. R <sup>2</sup> – F p-value	0.0018	0.012	0.05	0.05	0.034	3.5e-025
Individuals – Observations	2560	10995	2317	9213	1454	5117
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	0.085+	(0.044)	-0.00048	(0.047)	-0.14**	(0.051)
Adj. R <sup>2</sup> – F p-value	0.00027	0.056	0.046	4.8e-124	0.015	2.4e-045
Individuals – Observations	9402	38972	8248	31041	4529	16191
<b>Foreign</b>						
Estimate – Standard error	-0.25+	(0.13)	-0.15	(0.14)	-0.2	(0.16)
Adj. R <sup>2</sup> – F p-value	0.0015	0.053	0.045	0.045	0.011	0.0011
Individuals – Observations	1371	4509	1120	3449	633	1876
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.10*	(0.047)	0.016	(0.051)	-0.16**	(0.060)
Adj. R <sup>2</sup> – F p-value	0.00042	0.026	0.038	5.1e-090	0.017	1.9e-038

Individuals – Observations	7576	30345	6551	23766	3584	12302
<b>French or Italian</b>						
Estimate – Standard error	-0.064	(0.085)	-0.078	(0.090)	-0.12	(0.082)
Adj. R <sup>2</sup> – F p-value	0.00007	0.45	0.035	0.035	0.014	1.8e-016
Individuals – Observations	3171	13140	2807	10724	1570	5765

### Sector

#### **Private**

Estimate – Standard error	-0.042	(0.062)	-0.06	(0.065)	-0.091	(0.069)
Adj. R <sup>2</sup> – F p-value	0.0000085	0.5	0.036	0.036	0.013	2.1e-026
Individuals – Observations	7694	24544	6748	20749	3634	10650

#### **Public**

Estimate – Standard error	0.079	(0.056)	0.018	(0.058)	-0.19**	(0.065)
Adj. R <sup>2</sup> – F p-value	0.00027	0.16	0.058	0.058	0.023	1.3e-023
Individuals – Observations	4846	15783	4321	13504	2084	6134

### NOGA sector

#### **Primary, manufacturing and construction sector**

Estimate – Standard error	0.006	(0.12)	-0.033	(0.12)	-0.27*	(0.13)
Adj. R <sup>2</sup> – F p-value	-0.00016	0.96	0.052	0.052	0.0093	0.00002
Individuals – Observations	1979	6118	1882	5485	977	2903

#### **Basic services**

Estimate – Standard error	0.019	(0.090)	-0.03	(0.094)	-0.12	(0.12)
Adj. R <sup>2</sup> – F p-value	-0.000089	0.84	0.026	1.5e-018	0.013	5.7e-009

Individuals – Observations	3433	9964	3271	9081	1435	4067
<b>Finance and other services</b>						
Estimate – Standard error	0.063	(0.11)	0.08	(0.11)	0.0029	(0.13)
Adj. R <sup>2</sup> – F p-value	-0.000046	0.57	0.055	4.5e-023	0.015	6.4e-009
Individuals – Observations	2119	6542	1989	5832	1067	3238
<b>Public services</b>						
Estimate – Standard error	0.09	(0.060)	-0.023	(0.060)	-0.14*	(0.065)
Adj. R <sup>2</sup> – F p-value	0.00038	0.13	0.055	0.055	0.023	1.6e-024
Individuals – Observations	3992	15115	3837	14092	1886	6435
<b>Company size</b>						
<b>Small firms</b>						
Estimate – Standard error	0.098+	(0.056)	-0.028	(0.059)	-0.13+	(0.067)
Adj. R <sup>2</sup> – F p-value	0.0003	0.077	0.042	2.1e-068	0.013	1.4e-020
Individuals – Observations	7577	22924	6764	19781	3338	9106
<b>Large firms</b>						
Estimate – Standard error	-0.0057	(0.059)	0.0016	(0.061)	-0.17*	(0.066)
Adj. R <sup>2</sup> – F p-value	-0.00006	0.92	0.046	1.7e-054	0.019	1.4e-025
Individuals – Observations	5292	16361	4895	14709	2604	7423

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.18: Regression models estimating the effect of union membership on the opinion on social expenses*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.14***	(0.015)	0.10***	(0.015)	0.033+	(0.019)
Adj. R <sup>2</sup> – F p-value	0.0058	1.6e-021	0.081	6.9e-243	0.0055	1e-014
Individuals – Observations	10530	42111	9173	33511	5009	17221
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.14***	(0.017)	0.099***	(0.017)	0.043	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0054	4.5e-017	0.081	4e-208	0.0061	2.1e-014
Individuals – Observations	10340	35619	8868	28042	4329	14060
<b>Second episode or higher</b>						
Estimate – Standard error	0.16***	(0.026)	0.15***	(0.026)	0.027	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0022	3.5e-010	0.076	1.5e-218	0.0054	4.4e-013
Individuals – Observations	9602	34755	8273	27260	4800	15955
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.10***	(0.014)	0.073***	(0.015)	0.021	(0.020)
Adj. R <sup>2</sup> – F p-value	0.0016	4.8e-013	0.075	6.8e-218	0.0056	2.9e-014

Individuals – Observations	10459	36483	9038	28652	4993	16133
<b>Second year</b>						
Estimate – Standard error	0.19***	(0.020)	0.12***	(0.022)	0.048	(0.032)
Adj. R <sup>2</sup> – F p-value	0.0023	1.3e-020	0.076	5.4e-236	0.0055	6.6e-013
Individuals – Observations	10052	34370	8673	26910	4754	15229
<b>Third year or more</b>						
Estimate – Standard error	0.16***	(0.021)	0.13***	(0.021)	0.051	(0.038)
Adj. R <sup>2</sup> – F p-value	0.0041	2.2e-013	0.079	3.4e-221	0.0054	5.2e-013
Individuals – Observations	10092	37160	8768	29361	4683	15445
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.12***	(0.017)	0.087***	(0.017)	0.060*	(0.028)
Adj. R <sup>2</sup> – F p-value	0.0046	3.1e-013	0.084	2.5e-164	0.0061	2.5e-009
Individuals – Observations	7997	20236	6351	15843	3017	7303
<b>2005-2011</b>						
Estimate – Standard error	0.16***	(0.019)	0.12***	(0.020)	0.014	(0.024)
Adj. R <sup>2</sup> – F p-value	0.0065	1.6e-016	0.076	2e-120	0.0049	0.0000026
Individuals – Observations	7118	21875	6250	17668	3502	9918
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	0.15***	(0.020)	0.11***	(0.020)	0.044	(0.031)
Adj. R <sup>2</sup> – F p-value	0.0031	5.5e-013	0.077	5.4e-243	0.0055	1.5e-013

Individuals – Observations	10143	36336	8793	28615	4748	15536
<b>Passive</b>						
Estimate – Standard error	0.14***	(0.016)	0.10***	(0.017)	0.029	(0.021)
Adj. R <sup>2</sup> – F p-value	0.004	6.1e-017	0.079	7.1e-220	0.0054	8.7e-014
Individuals – Observations	10302	38726	8932	30602	4900	16478

### Occupation

#### **Full-time**

Estimate – Standard error	0.13***	(0.019)	0.086***	(0.019)	0.024	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0046	7.5e-011	0.078	1.6e-132	0.0059	3.2e-009
Individuals – Observations	6994	23847	6193	19473	3200	9872

#### **Part-time**

Estimate – Standard error	0.19***	(0.020)	0.13***	(0.021)	0.048+	(0.029)
Adj. R <sup>2</sup> – F p-value	0.01	2e-020	0.081	0.081	0.0043	0.00025
Individuals – Observations	5399	18105	4468	13975	2281	7321

### Sex

#### **Man**

Estimate – Standard error	0.15***	(0.021)	0.11***	(0.020)	-0.00063	(0.028)
Adj. R <sup>2</sup> – F p-value	0.007	4.4e-013	0.086	2.4e-120	0.0075	2.1e-009
Individuals – Observations	5073	20500	4497	16575	2466	8552

#### **Woman**

Estimate – Standard error	0.16***	(0.021)	0.088***	(0.021)	0.072**	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0067	2.1e-014	0.07	0.07	0.0042	0.000018

Individuals – Observations	5457	21611	4676	16936	2543	8669
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**Age****16-30 years**

Estimate – Standard error	0.056	(0.035)	0.029	(0.036)	-0.026	(0.071)
Adj. R <sup>2</sup> – F p-value	0.00041	0.11	0.072	1.2e-049	0.000072	0.41
Individuals – Observations	4016	9968	3345	7371	965	1765

**31-50 years**

Estimate – Standard error	0.12***	(0.019)	0.084***	(0.019)	0.041+	(0.024)
Adj. R <sup>2</sup> – F p-value	0.0044	6.5e-010	0.087	5.3e-270	0.0062	9.7e-011
Individuals – Observations	5511	21702	4928	17742	3209	10269

**51 years or more**

Estimate – Standard error	0.20***	(0.026)	0.19***	(0.026)	0.032	(0.035)
Adj. R <sup>2</sup> – F p-value	0.014	5.4e-015	0.082	0.082	0.0048	0.0054
Individuals – Observations	3002	10440	2632	8398	1735	5187

**Education****Compulsory education or less**

Estimate – Standard error	0.11*	(0.042)	0.098*	(0.044)	0.17*	(0.076)
Adj. R <sup>2</sup> – F p-value	0.0018	0.011	0.051	0.051	-0.0006	0.75
Individuals – Observations	2648	6667	2006	4605	519	1588

**Secondary education**

Estimate – Standard error	0.11***	(0.020)	0.086***	(0.020)	0.023	(0.025)
Adj. R <sup>2</sup> – F p-value	0.0035	0.000000018	0.074	2.4e-125	0.0062	3.5e-010



Individuals – Observations	6309	24636	5558	19840	3169	10655
<b>Tertiary education</b>						
Estimate – Standard error	0.19***	(0.026)	0.12***	(0.024)	0.022	(0.032)
Adj. R <sup>2</sup> – F p-value	0.014	8.1e-014	0.14	0.14	0.0078	0.000036
Individuals – Observations	2546	10808	2305	9066	1431	4978
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	0.15***	(0.016)	0.11***	(0.016)	0.035+	(0.020)
Adj. R <sup>2</sup> – F p-value	0.0065	2.3e-021	0.084	1.3e-218	0.0059	1.3e-013
Individuals – Observations	9270	37706	8131	30129	4419	15403
<b>Foreign</b>						
Estimate – Standard error	0.11**	(0.044)	0.074+	(0.043)	0.025	(0.069)
Adj. R <sup>2</sup> – F p-value	0.0028	0.0093	0.081	3.4e-023	0.0024	0.098
Individuals – Observations	1354	4401	1108	3382	620	1818
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.14***	(0.017)	0.12***	(0.018)	0.026	(0.025)
Adj. R <sup>2</sup> – F p-value	0.0057	4.4e-015	0.058	7.6e-105	0.0068	2.3e-012
Individuals – Observations	7449	29252	6447	22986	3473	11655
<b>French or Italian</b>						
Estimate – Standard error	0.15***	(0.025)	0.074**	(0.026)	0.050+	(0.028)
Adj. R <sup>2</sup> – F p-value	0.0064	2.3e-009	0.056	0.056	0.0043	0.0013

Individuals – Observations	3147	12859	2782	10525	1557	5566
<b><u>Sector</u></b>						
<b>Private</b>						
Estimate – Standard error	0.11***	(0.020)	0.12***	(0.020)	0.0059	(0.028)
Adj. R <sup>2</sup> – F p-value	0.0028	8.4e-009	0.072	0.072	0.0058	0.000000015
Individuals – Observations	7580	23763	6649	20126	3542	10145
<b>Public</b>						
Estimate – Standard error	0.11***	(0.020)	0.089***	(0.020)	0.060*	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0045	0.00000013	0.088	0.088	0.0062	0.000068
Individuals – Observations	4743	15328	4239	13164	2038	5863
<b><u>NOGA sector</u></b>						
<b>Primary, manufacturing and construction sector</b>						
Estimate – Standard error	0.14***	(0.039)	0.14***	(0.039)	0.0025	(0.055)
Adj. R <sup>2</sup> – F p-value	0.0046	0.00036	0.059	0.059	0.0082	0.00017
Individuals – Observations	1955	5930	1854	5312	946	2759
<b>Basic services</b>						
Estimate – Standard error	0.15***	(0.029)	0.11***	(0.029)	0.044	(0.050)
Adj. R <sup>2</sup> – F p-value	0.0053	0.00000053	0.061	6.3e-046	0.0018	0.14
Individuals – Observations	3383	9672	3227	8817	1392	3864
<b>Finance and other services</b>						
Estimate – Standard error	0.059	(0.038)	0.069+	(0.036)	-0.063	(0.052)
Adj. R <sup>2</sup> – F p-value	0.00055	0.12	0.082	7.1e-038	0.012	0.000084

Individuals – Observations	2086	6346	1959	5663	1037	3078
<b>Public services</b>						
Estimate – Standard error	0.11***	(0.022)	0.10***	(0.021)	0.059*	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0046	0.00000061	0.078	0.078	0.0039	0.00063
Individuals – Observations	3910	14695	3761	13719	1842	6163
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.15***	(0.019)	0.12***	(0.019)	0.039	(0.027)
Adj. R <sup>2</sup> – F p-value	0.006	6e-015	0.074	1e-140	0.0062	0.000000061
Individuals – Observations	7459	22132	6658	19149	3231	8628
<b>Large firms</b>						
Estimate – Standard error	0.12***	(0.020)	0.090***	(0.020)	0.034	(0.028)
Adj. R <sup>2</sup> – F p-value	0.0051	1.4e-009	0.094	7.2e-116	0.005	0.00011
Individuals – Observations	5275	16196	4875	14557	2597	7274

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.19: Regression models estimating the effect of union membership on the opinion on taxes on high income*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.12***	(0.0100)	0.091***	(0.011)	0.02	(0.018)
Adj. R <sup>2</sup> – F p-value	0.0061	4.3e-033	0.04	1.1e-103	0.0048	3.6e-015
Individuals – Observations	10657	42988	9280	34143	5133	17714
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.13***	(0.011)	0.095***	(0.012)	0.028	(0.025)
Adj. R <sup>2</sup> – F p-value	0.0063	9.3e-029	0.039	2.1e-088	0.0041	5.7e-011
Individuals – Observations	10471	36414	8973	28609	4447	14485
<b>Second episode or higher</b>						
Estimate – Standard error	0.11***	(0.018)	0.065***	(0.019)	0.012	(0.024)
Adj. R <sup>2</sup> – F p-value	0.0015	5.6e-010	0.035	1.2e-069	0.005	1.5e-014
Individuals – Observations	9727	35572	8376	27847	4922	16445

**Duration of membership****First year**

Estimate – Standard error	0.073***	(0.011)	0.057***	(0.012)	0.018	(0.017)
Adj. R <sup>2</sup> – F p-value	0.0011	7.5e-011	0.034	2.2e-072	0.0049	1.5e-014
Individuals – Observations	10588	37310	9148	29242	5116	16609

**Second year**

Estimate – Standard error	0.087***	(0.016)	0.060***	(0.017)	-0.0016	(0.026)
Adj. R <sup>2</sup> – F p-value	0.00069	0.000000022	0.034	4.4e-065	0.0051	2.2e-014
Individuals – Observations	10191	35199	8787	27503	4879	15705

**Third year or more**

Estimate – Standard error	0.17***	(0.013)	0.13***	(0.014)	0.039	(0.041)
Adj. R <sup>2</sup> – F p-value	0.0071	1.3e-039	0.041	1.2e-099	0.0049	2e-014
Individuals – Observations	10221	37997	8873	29964	4810	15920

**Period****1999-2004**

Estimate – Standard error	0.11***	(0.013)	0.086***	(0.014)	-0.0011	(0.023)
Adj. R <sup>2</sup> – F p-value	0.0053	3e-018	0.039	6.7e-081	0.002	0.0022
Individuals – Observations	8084	20529	6396	16021	3071	7435

**2005-2011**

Estimate – Standard error	0.13***	(0.012)	0.096***	(0.014)	0.035	(0.022)
Adj. R <sup>2</sup> – F p-value	0.007	2.5e-025	0.042	7.8e-192	0.0077	3.5e-015
Individuals – Observations	7234	22459	6358	18122	3617	10279

**Type of membership****Active**

Estimate – Standard error	0.12***	(0.014)	0.096***	(0.014)	0.042	(0.031)
Adj. R <sup>2</sup> – F p-value	0.0028	4.2e-017	0.036	7e-079	0.005	2.3e-014
Individuals – Observations	10274	37169	8907	29211	4865	16011

**Passive**

Estimate – Standard error	0.12***	(0.011)	0.088***	(0.012)	0.01	(0.018)
Adj. R <sup>2</sup> – F p-value	0.0045	1.6e-027	0.038	4.6e-092	0.005	7.9e-015
Individuals – Observations	10429	39578	9035	31215	5030	16963

**Occupation****Full-time**

Estimate – Standard error	0.14***	(0.013)	0.10***	(0.014)	0.015	(0.024)
Adj. R <sup>2</sup> – F p-value	0.0074	9.5e-024	0.042	4.9e-061	0.0065	4.7e-010
Individuals – Observations	7104	24363	6278	19847	3269	10130

**Part-time**

Estimate – Standard error	0.11***	(0.013)	0.068***	(0.014)	0.029	(0.024)
Adj. R <sup>2</sup> – F p-value	0.0056	6.2e-017	0.028	0.028	0.0023	0.00082
Individuals – Observations	5472	18461	4529	14227	2355	7558

**Sex****Man**

Estimate – Standard error	0.14***	(0.015)	0.12***	(0.015)	0.006	(0.024)
Adj. R <sup>2</sup> – F p-value	0.0089	4.7e-022	0.049	4.3e-063	0.0077	5.2e-012

Individuals – Observations	5118	20778	4530	16774	2495	8674
<b>Woman</b>						
Estimate – Standard error	0.11***	(0.013)	0.058***	(0.014)	0.039	(0.025)
Adj. R <sup>2</sup> – F p-value	0.005	4.1e-017	0.031	0.031	0.0024	0.0019
Individuals – Observations	5539	22210	4750	17369	2638	9040
<b>Age</b>						
<b>16-30 years</b>						
Estimate – Standard error	0.14***	(0.022)	0.096***	(0.024)	0.053	(0.057)
Adj. R <sup>2</sup> – F p-value	0.004	1.1e-009	0.04	1.2e-036	0.002	0.24
Individuals – Observations	4094	10337	3402	7623	1001	1855
<b>31-50 years</b>						
Estimate – Standard error	0.11***	(0.013)	0.074***	(0.014)	0.0044	(0.019)
Adj. R <sup>2</sup> – F p-value	0.0057	1.5e-016	0.045	5e-053	0.0035	0.0000044
Individuals – Observations	5564	22095	4970	18033	3284	10604
<b>51 years or more</b>						
Estimate – Standard error	0.12***	(0.018)	0.14***	(0.020)	0.038	(0.038)
Adj. R <sup>2</sup> – F p-value	0.0069	3.2e-010	0.062	0.062	0.0086	0.000000011
Individuals – Observations	3024	10555	2655	8487	1760	5255
<b>Education</b>						
<b>Compulsory education or less</b>						
Estimate – Standard error	0.091**	(0.032)	0.034	(0.037)	0.055	(0.073)
Adj. R <sup>2</sup> – F p-value	0.0015	0.0046	0.033	0.033	0.0024	0.053

Individuals – Observations	2721	7008	2062	4811	555	1714
<b>Secondary education</b>						
Estimate – Standard error	0.099***	(0.012)	0.087***	(0.012)	0.015	(0.025)
Adj. R <sup>2</sup> – F p-value	0.0048	2.9e-017	0.029	6e-038	0.0029	0.000045
Individuals – Observations	6376	25144	5621	20247	3254	11035
<b>Tertiary education</b>						
Estimate – Standard error	0.16***	(0.021)	0.097***	(0.021)	0.019	(0.023)
Adj. R <sup>2</sup> – F p-value	0.013	9.4e-015	0.075	0.075	0.012	8.2e-010
Individuals – Observations	2556	10836	2313	9085	1434	4965
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	0.12***	(0.010)	0.097***	(0.011)	0.016	(0.018)
Adj. R <sup>2</sup> – F p-value	0.0066	1.2e-030	0.041	8.8e-090	0.0052	6.8e-014
Individuals – Observations	9357	38334	8210	30591	4501	15764
<b>Foreign</b>						
Estimate – Standard error	0.076*	(0.034)	0.045	(0.036)	0.059	(0.058)
Adj. R <sup>2</sup> – F p-value	0.0013	0.025	0.039	0.039	0.0014	0.1
Individuals – Observations	1394	4650	1137	3552	664	1950
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.12***	(0.011)	0.10***	(0.012)	0.045*	(0.022)
Adj. R <sup>2</sup> – F p-value	0.0063	4.7e-025	0.043	2.7e-076	0.0063	4e-014



Individuals – Observations	7562	30053	6533	23556	3583	12119
<b>French or Italian</b>						
Estimate – Standard error	0.13***	(0.020)	0.074***	(0.021)	-0.03	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0058	4.4e-010	0.045	0.045	0.0046	0.0019
Individuals – Observations	3163	12935	2803	10587	1572	5595
<b><u>Sector</u></b>						
<b>Private</b>						
Estimate – Standard error	0.095***	(0.015)	0.10***	(0.016)	0.028	(0.028)
Adj. R <sup>2</sup> – F p-value	0.0027	4.9e-010	0.039	0.039	0.0053	8.4e-010
Individuals – Observations	7681	24327	6737	20566	3646	10498
<b>Public</b>						
Estimate – Standard error	0.11***	(0.013)	0.078***	(0.013)	0.013	(0.022)
Adj. R <sup>2</sup> – F p-value	0.0071	1.2e-016	0.042	0.042	0.0049	0.00024
Individuals – Observations	4821	15564	4298	13347	2077	5969
<b><u>NOGA sector</u></b>						
<b>Primary, manufacturing and construction sector</b>						
Estimate – Standard error	0.072*	(0.028)	0.076*	(0.030)	0.083	(0.069)
Adj. R <sup>2</sup> – F p-value	0.0017	0.011	0.039	0.039	0.0086	0.00043
Individuals – Observations	1980	6072	1876	5438	979	2870
<b>Basic services</b>						
Estimate – Standard error	0.10***	(0.021)	0.086***	(0.021)	-0.022	(0.030)
Adj. R <sup>2</sup> – F p-value	0.0041	0.00000075	0.034	1.5e-022	0.0018	0.093

Individuals – Observations	3433	9945	3274	9071	1443	4044
<b>Finance and other services</b>						
Estimate – Standard error	0.11**	(0.035)	0.11***	(0.033)	0.013	(0.066)
Adj. R <sup>2</sup> – F p-value	0.0028	0.0013	0.062	2.5e-088	0.0072	4.4e-318
Individuals – Observations	2116	6449	1985	5742	1072	3148
<b>Public services</b>						
Estimate – Standard error	0.10***	(0.013)	0.087***	(0.013)	0.016	(0.021)
Adj. R <sup>2</sup> – F p-value	0.0069	1.3e-014	0.031	0.031	0.0055	0.000043
Individuals – Observations	3959	14886	3805	13892	1869	6250
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.13***	(0.013)	0.095***	(0.014)	0.011	(0.022)
Adj. R <sup>2</sup> – F p-value	0.0065	5.3e-024	0.036	1.5e-055	0.0045	0.0000049
Individuals – Observations	7556	22658	6751	19586	3333	8936
<b>Large firms</b>						
Estimate – Standard error	0.12***	(0.015)	0.088***	(0.015)	0.022	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0064	3.4e-015	0.051	5.3e-052	0.0062	0.00000016
Individuals – Observations	5275	16196	4875	14557	2597	7274

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.20: Regression models estimating the effect of union membership on the opinion on foreigners' rights*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.14***	(0.017)	0.093***	(0.018)	-0.011	(0.025)
Adj. R <sup>2</sup> – F p-value	0.0041	4.3e-016	0.067	7.1e-211	0.0033	7.1e-010
Individuals – Observations	10711	43194	9331	34236	5136	17663
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.14***	(0.019)	0.097***	(0.021)	-0.048	(0.032)
Adj. R <sup>2</sup> – F p-value	0.0039	5.6e-013	0.069	2.2e-181	0.0035	0.000000043
Individuals – Observations	10526	36656	9022	28735	4457	14470
<b>Second episode or higher</b>						
Estimate – Standard error	0.18***	(0.030)	0.11***	(0.031)	0.029	(0.038)
Adj. R <sup>2</sup> – F p-value	0.0019	0.000000003	0.063	3.6e-272	0.0029	0.000000061
Individuals – Observations	9786	35792	8429	27953	4925	16383
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.052**	(0.017)	0.034+	(0.018)	-0.036+	(0.022)
Adj. R <sup>2</sup> – F p-value	0.00027	0.0017	0.064	1.6e-174	0.0035	9.1e-010

Individuals – Observations	10643	37548	9201	29366	5118	16567
<b>Second year</b>						
Estimate – Standard error	0.16***	(0.024)	0.093***	(0.026)	-0.026	(0.039)
Adj. R <sup>2</sup> – F p-value	0.0011	4.2e-011	0.064	2e-234	0.0028	0.00000016
Individuals – Observations	10237	35411	8834	27605	4883	15652
<b>Third year or more</b>						
Estimate – Standard error	0.21***	(0.024)	0.15***	(0.026)	0.055	(0.057)
Adj. R <sup>2</sup> – F p-value	0.0053	1.5e-017	0.067	1.6e-233	0.0029	0.00000017
Individuals – Observations	10274	38209	8920	30059	4806	15864
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.15***	(0.020)	0.11***	(0.021)	0.0077	(0.033)
Adj. R <sup>2</sup> – F p-value	0.0046	1.1e-013	0.076	1.8e-171	0.0047	0.00000012
Individuals – Observations	8123	20564	6424	16022	3060	7375
<b>2005-2011</b>						
Estimate – Standard error	0.13***	(0.021)	0.080***	(0.023)	-0.026	(0.030)
Adj. R <sup>2</sup> – F p-value	0.0037	3.3e-010	0.061	1.1e-102	0.0016	0.00015
Individuals – Observations	7268	22630	6387	18214	3606	10288
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	0.12***	(0.025)	0.097***	(0.025)	0.0062	(0.041)
Adj. R <sup>2</sup> – F p-value	0.0014	0.0000027	0.066	4e-229	0.0032	0.000000013

Individuals – Observations	10328	37384	8957	29318	4873	15954
<b>Passive</b>						
Estimate – Standard error	0.15***	(0.019)	0.097***	(0.020)	-0.019	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0037	4.6e-016	0.065	2.2e-184	0.003	0.000000014
Individuals – Observations	10486	39797	9089	31315	5027	16919

### Occupation

#### **Full-time**

Estimate – Standard error	0.075***	(0.022)	0.058*	(0.023)	-0.021	(0.030)
Adj. R <sup>2</sup> – F p-value	0.0012	0.00079	0.06	2.8e-108	0.0037	0.0000069
Individuals – Observations	7147	24485	6323	19916	3271	10074

#### **Part-time**

Estimate – Standard error	0.24***	(0.022)	0.16***	(0.025)	0.0046	(0.041)
Adj. R <sup>2</sup> – F p-value	0.012	7.5e-027	0.088	0.088	0.0031	0.0015
Individuals – Observations	5503	18533	4548	14248	2358	7562

### Sex

#### **Man**

Estimate – Standard error	0.039	(0.024)	0.044+	(0.025)	-0.001	(0.033)
Adj. R <sup>2</sup> – F p-value	0.00032	0.11	0.061	4.3e-087	0.0032	0.000081
Individuals – Observations	5125	20820	4543	16787	2501	8647

#### **Woman**

Estimate – Standard error	0.24***	(0.023)	0.14***	(0.025)	-0.023	(0.039)
Adj. R <sup>2</sup> – F p-value	0.011	1e-025	0.076	0.076	0.0044	0.0000024

Individuals – Observations	5586	22374	4788	17449	2635	9016
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**Age****16-30 years**

Estimate – Standard error	-0.058	(0.038)	-0.038	(0.040)	-0.079	(0.095)
Adj. R <sup>2</sup> – F p-value	0.00034	0.12	0.061	2.3e-052	0.0035	0.14
Individuals – Observations	4151	10573	3450	7746	1010	1865

**31-50 years**

Estimate – Standard error	0.15***	(0.022)	0.099***	(0.023)	0.01	(0.031)
Adj. R <sup>2</sup> – F p-value	0.0053	1.3e-011	0.074	1.5e-097	0.0026	0.00054
Individuals – Observations	5576	22112	4984	18040	3281	10554

**51 years or more**

Estimate – Standard error	0.21***	(0.030)	0.14***	(0.031)	-0.034	(0.043)
Adj. R <sup>2</sup> – F p-value	0.011	7.9e-013	0.08	0.08	0.0038	0.00034
Individuals – Observations	3024	10508	2655	8450	1771	5244

**Education****Compulsory education or less**

Estimate – Standard error	0.12**	(0.047)	0.14**	(0.052)	0.024	(0.10)
Adj. R <sup>2</sup> – F p-value	0.0016	0.0098	0.058	0.058	0.006	0.028
Individuals – Observations	2779	7217	2109	4924	552	1717

**Secondary education**

Estimate – Standard error	0.13***	(0.023)	0.12***	(0.024)	0.015	(0.034)
Adj. R <sup>2</sup> – F p-value	0.0035	0.000000019	0.039	1e-067	0.0042	0.00000027

Individuals – Observations	6391	25083	5635	20198	3246	10926
<b>Tertiary education</b>						
Estimate – Standard error	0.065*	(0.026)	0.027	(0.027)	-0.067+	(0.037)
Adj. R <sup>2</sup> – F p-value	0.0015	0.012	0.035	0.035	0.0032	0.0055
Individuals – Observations	2561	10894	2320	9114	1448	5020
<b><u>Nationality</u></b>						
<b>Swiss</b>						
Estimate – Standard error	0.15***	(0.018)	0.095***	(0.019)	-0.013	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0051	4.7e-017	0.064	7.5e-176	0.0036	0.000000004
Individuals – Observations	9392	38414	8242	30610	4486	15639
<b>Foreign</b>						
Estimate – Standard error	0.085*	(0.033)	0.051	(0.036)	0.0056	(0.066)
Adj. R <sup>2</sup> – F p-value	0.0016	0.011	0.044	0.044	0.0033	0.034
Individuals – Observations	1419	4776	1158	3626	679	2024
<b><u>Region</u></b>						
<b>German</b>						
Estimate – Standard error	0.15***	(0.021)	0.11***	(0.022)	-0.02	(0.031)
Adj. R <sup>2</sup> – F p-value	0.0044	1.6e-012	0.065	1.5e-137	0.0025	0.000026
Individuals – Observations	7587	30068	6560	23537	3577	12002
<b>French or Italian</b>						
Estimate – Standard error	0.12***	(0.030)	0.061*	(0.031)	0.0076	(0.043)
Adj. R <sup>2</sup> – F p-value	0.0033	0.000051	0.066	0.066	0.0078	0.0000016

Individuals – Observations	3193	13126	2830	10699	1583	5661
<b><u>Sector</u></b>						
<b>Private</b>						
Estimate – Standard error	0.091***	(0.024)	0.063**	(0.024)	-0.05	(0.033)
Adj. R <sup>2</sup> – F p-value	0.0013	0.00012	0.054	0.054	0.0035	0.0000031
Individuals – Observations	7744	24510	6786	20673	3638	10470
<b>Public</b>						
Estimate – Standard error	0.14***	(0.023)	0.12***	(0.024)	0.02	(0.037)
Adj. R <sup>2</sup> – F p-value	0.0061	3.7e-010	0.091	0.091	0.0034	0.0014
Individuals – Observations	4836	15561	4318	13327	2083	5957
<b><u>NOGA sector</u></b>						
<b>Primary, manufacturing and construction sector</b>						
Estimate – Standard error	0.14**	(0.046)	0.100*	(0.046)	-0.033	(0.063)
Adj. R <sup>2</sup> – F p-value	0.0032	0.003	0.053	0.053	0.0011	0.3
Individuals – Observations	1982	6094	1877	5461	976	2863
<b>Basic services</b>						
Estimate – Standard error	0.081*	(0.038)	0.031	(0.039)	0.0067	(0.053)
Adj. R <sup>2</sup> – F p-value	0.0011	0.034	0.049	8.9e-032	0.0044	0.0067
Individuals – Observations	3468	9991	3306	9119	1452	4026
<b>Finance and other services</b>						
Estimate – Standard error	0.024	(0.047)	0.028	(0.046)	-0.058	(0.059)
Adj. R <sup>2</sup> – F p-value	-0.000071	0.62	0.052	2.8e-017	0.0033	0.054



Individuals – Observations	2121	6462	1990	5756	1063	3115
<b>Public services</b>						
Estimate – Standard error	0.16***	(0.024)	0.13***	(0.024)	0.007	(0.037)
Adj. R <sup>2</sup> – F p-value	0.0079	1.4e-011	0.065	0.065	0.0057	0.000027
Individuals – Observations	3977	14906	3827	13900	1868	6237
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.18***	(0.023)	0.12***	(0.024)	0.013	(0.040)
Adj. R <sup>2</sup> – F p-value	0.0063	6.8e-016	0.072	1.3e-139	0.0031	0.000057
Individuals – Observations	7613	22793	6788	19652	3316	8919
<b>Large firms</b>						
Estimate – Standard error	0.074**	(0.023)	0.066**	(0.024)	-0.037	(0.030)
Adj. R <sup>2</sup> – F p-value	0.0014	0.0014	0.06	1.4e-073	0.004	0.00016
Individuals – Observations	5291	16226	4898	14584	2601	7251

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)

*Table 8.21: Regression models estimating the effect of union membership on volunteer work*

	Pooled OLS without control variables		Pooled OLS with control variables		OLS on differenced data with control variables	
<b><u>Main effect</u></b>						
Estimate – Standard error	0.060***	(0.011)	0.021*	(0.011)	0.0078	(0.019)
Adj. R <sup>2</sup> – F p-value	0.0026	0.000000014	0.12	0	0.0019	0.004
Individuals – Observations	9199	27545	8024	22207	2816	8452
<b><u>Episode of membership</u></b>						
<b>First episode</b>						
Estimate – Standard error	0.077***	(0.012)	0.035**	(0.012)	-0.0015	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0041	7e-011	0.12	0	0.0018	0.021
Individuals – Observations	8890	23311	7617	18583	2383	6790
<b>Second episode or higher</b>						
Estimate – Standard error	0.054*	(0.022)	-0.00031	(0.021)	0.019	(0.024)
Adj. R <sup>2</sup> – F p-value	0.00053	0.014	0.12	0	0.0017	0.0087
Individuals – Observations	8246	22442	7103	17810	2686	7823
<b><u>Duration of membership</u></b>						
<b>First year</b>						
Estimate – Standard error	0.011	(0.011)	0.036**	(0.012)	-0.00039	(0.018)
Adj. R <sup>2</sup> – F p-value	0.00000059	0.34	0.12	0	0.0017	0.0083

Individuals – Observations	9041	23813	7812	18934	2784	7929
<b>Second year</b>						
Estimate – Standard error	0.12***	(0.017)	0.0075	(0.019)	-0.016	(0.031)
Adj. R <sup>2</sup> – F p-value	0.0021	1.6e-012	0.13	0	0.0013	0.028
Individuals – Observations	8451	22127	7259	17501	2623	7446
<b>Third year or more</b>						
Estimate – Standard error	0.087***	(0.015)	0.0093	(0.015)	0.046	(0.038)
Adj. R <sup>2</sup> – F p-value	0.0032	6.9e-009	0.12	0	0.0018	0.013
Individuals – Observations	8673	24211	7527	19364	2604	7577
<b>Period</b>						
<b>1999-2004</b>						
Estimate – Standard error	0.068***	(0.013)	0.029*	(0.014)	0.02	(0.027)
Adj. R <sup>2</sup> – F p-value	0.0034	0.0000001	0.13	0	0.002	0.039
Individuals – Observations	6404	13155	5104	10359	1619	3502
<b>2005-2011</b>						
Estimate – Standard error	0.054***	(0.014)	0.014	(0.014)	-0.0023	(0.022)
Adj. R <sup>2</sup> – F p-value	0.002	0.000084	0.12	5.2e-257	0.00062	0.15
Individuals – Observations	6008	14390	5337	11848	1952	4950
<b>Type of membership</b>						
<b>Active</b>						
Estimate – Standard error	0.075***	(0.015)	0.037*	(0.015)	-0.021	(0.032)
Adj. R <sup>2</sup> – F p-value	0.0021	0.00000041	0.12	0	0.0016	0.0086

Individuals – Observations	8706	23779	7539	18955	2653	7648
<b>Passive</b>						
Estimate – Standard error	0.051***	(0.012)	0.01	(0.012)	0.023	(0.019)
Adj. R <sup>2</sup> – F p-value	0.0013	0.000031	0.12	0	0.0019	0.0083
Individuals – Observations	8898	25069	7704	20048	2738	8054

**Occupation****Full-time**

Estimate – Standard error	0.069***	(0.013)	0.027*	(0.013)	-0.016	(0.023)
Adj. R <sup>2</sup> – F p-value	0.0036	0.00000024	0.14	1.3e-310	0.0014	0.079
Individuals – Observations	5846	15421	5191	12710	1731	4779

**Part-time**

Estimate – Standard error	0.051**	(0.016)	0.022	(0.017)	0.051	(0.032)
Adj. R <sup>2</sup> – F p-value	0.0016	0.0019	0.11	0.11	0.0023	0.13
Individuals – Observations	4559	11998	3787	9453	1293	3658

**Sex****Man**

Estimate – Standard error	0.070***	(0.014)	0.044**	(0.014)	0.0061	(0.022)
Adj. R <sup>2</sup> – F p-value	0.0039	0.00000036	0.11	2.6e-195	0.0013	0.16
Individuals – Observations	4506	14214	4006	11571	1538	4580

**Woman**

Estimate – Standard error	0.036*	(0.017)	-0.0031	(0.017)	0.0082	(0.034)
Adj. R <sup>2</sup> – F p-value	0.00072	0.035	0.13	0.13	0.0024	0.042

Individuals – Observations	4693	13331	4018	10636	1278	3872
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### Age

#### **16-30 years**

Estimate – Standard error	0.080***	(0.023)	0.059*	(0.023)	-0.07	(0.061)
Adj. R <sup>2</sup> – F p-value	0.0027	0.00039	0.13	2.9e-119	0.011	0.086
Individuals – Observations	3348	6623	2743	4890	470	790

#### **31-50 years**

Estimate – Standard error	0.054***	(0.014)	0.026+	(0.014)	0.0034	(0.023)
Adj. R <sup>2</sup> – F p-value	0.0023	0.000096	0.12	0	0.002	0.023
Individuals – Observations	4766	13890	4259	11569	1768	4979

#### **51 years or more**

Estimate – Standard error	0.017	(0.019)	-0.015	(0.019)	0.036	(0.032)
Adj. R <sup>2</sup> – F p-value	0.00011	0.37	0.1	0.1	0.0029	0.13
Individuals – Observations	2622	7031	2321	5748	1023	2683

### Education

#### **Compulsory education or less**

Estimate – Standard error	0.071*	(0.032)	0.047	(0.034)	-0.006	(0.075)
Adj. R <sup>2</sup> – F p-value	0.002	0.027	0.15	0.15	0.022	0.014
Individuals – Observations	2189	4311	1650	2972	237	601

#### **Secondary education**

Estimate – Standard error	0.046***	(0.014)	0.011	(0.014)	-0.018	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0015	0.00085	0.11	6.2e-235	0.0016	0.024

Individuals – Observations	5440	16086	4812	13158	1793	5337
<b>Tertiary education</b>						
Estimate – Standard error	0.057**	(0.019)	0.037+	(0.019)	0.061*	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0026	0.0029	0.12	0.12	0.001	0.001
Individuals – Observations	2259	7148	2052	6077	838	2514

**Nationality****Swiss**

Estimate – Standard error	0.053***	(0.011)	0.017	(0.011)	0.021	(0.019)
Adj. R <sup>2</sup> – F p-value	0.002	0.0000019	0.11	0	0.0013	0.032
Individuals – Observations	8199	25281	7184	20450	2588	7914

**Foreign**

Estimate – Standard error	0.12**	(0.040)	0.079*	(0.034)	-0.21**	(0.080)
Adj. R <sup>2</sup> – F p-value	0.0089	0.0019	0.2	0.2	0.048	0.0000047
Individuals – Observations	1053	2260	876	1757	237	538

**Region****German**

Estimate – Standard error	0.066***	(0.012)	0.026*	(0.013)	-0.022	(0.022)
Adj. R <sup>2</sup> – F p-value	0.0032	0.000000043	0.1	0	0.0015	0.055
Individuals – Observations	6604	19922	5709	15894	2038	6097

**French or Italian**

Estimate – Standard error	0.050*	(0.020)	0.012	(0.021)	0.079*	(0.034)
Adj. R <sup>2</sup> – F p-value	0.0016	0.014	0.095	0.095	0.0034	0.07

Individuals – Observations	2637	7623	2347	6313	786	2355
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**Sector**

**Private**

Estimate – Standard error	0.069***	(0.016)	0.044**	(0.015)	-0.015	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0025	0.0000086	0.13	0.13	0.0013	0.11
Individuals – Observations	6330	15389	5590	13135	1901	4889

**Public**

Estimate – Standard error	0.037*	(0.015)	-0.0016	(0.015)	0.026	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0012	0.01	0.11	0.11	0.0047	0.029
Individuals – Observations	3903	10308	3500	8916	1131	2980

**NOGA sector**

**Primary, manufacturing and construction sector**

Estimate – Standard error	0.094**	(0.030)	0.075*	(0.029)	-0.022	(0.039)
Adj. R <sup>2</sup> – F p-value	0.0054	0.0018	0.12	2e-069	-0.0048	0.89
Individuals – Observations	1638	3954	1581	3614	542	1387

**Basic services**

Estimate – Standard error	0.060**	(0.021)	0.017	(0.021)	0.037	(0.031)
Adj. R <sup>2</sup> – F p-value	0.0023	0.0052	0.16	1.4e-173	-0.00067	-0.00067
Individuals – Observations	2733	6001	2605	5517	714	1761

**Finance and other services**

Estimate – Standard error	0.036	(0.030)	0.008	(0.030)	0.04	(0.048)
Adj. R <sup>2</sup> – F p-value	0.00037	0.24	0.11	1.4e-067	0.004	0.004

Individuals – Observations	1746	4160	1637	3738	586	1518
<b>Public services</b>						
Estimate – Standard error	0.053***	(0.016)	0.011	(0.015)	0.0083	(0.029)
Adj. R <sup>2</sup> – F p-value	0.0024	0.00081	0.11	7.2e-155	0.00046	0.29
Individuals – Observations	3435	9995	3289	9338	1069	3148
<b><u>Company size</u></b>						
<b>Small firms</b>						
Estimate – Standard error	0.078***	(0.014)	0.029*	(0.014)	0.028	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0041	0.000000009	0.12	0	0.0022	0.045
Individuals – Observations	6152	14801	5527	12943	1785	4428
<b>Large firms</b>						
Estimate – Standard error	0.050**	(0.015)	0.016	(0.016)	-0.019	(0.026)
Adj. R <sup>2</sup> – F p-value	0.0019	0.0012	0.12	7e-192	0.00093	0.18
Individuals – Observations	4276	10239	3992	9264	1371	3334

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Level of statistical significance : \*\*\* < 0.001, \*\* < 0.01, \* < 0.05, + < 0.10

Source: Swiss Household Panel (SHP)



## 9. REFERENCES

- Afonso, Alexandre. 2010. "Policy Concertation, Europeanization and New Political Cleavages: The Case of Switzerland." *European Journal of Industrial Relations* 16(1):57–72.
- Ahlquist, John S. and Margaret Levi. 2013. *In the Interest of Others: Organizations and Social Activism*. Princeton: Princeton University Press.
- Akerlof, George, Andrew Rose, and Janet Yellen. 1988. "Job Switching and Job Satisfaction in the U.S. Labor Market." *Brookings Papers on Economic Activity* 19(2):495–594.
- Allen, Steven G. 1984. "Trade Unions, Absenteeism, and Exit-Voice." *Industrial & Labor Relations Review* 37(3):331–45.
- Al-Zoubi, Marwan T. 2012. "The Shape of the Relationship between Salary and Job Satisfaction: A Field Study." *Far East Journal of Psychology and Business* 7(1):1–12.
- Andreß, Hans-Jürgen, Katrin Golsch, and Alexander W. Schmidt. 2013. *Applied Panel Data Analysis for Economic and Social Surveys*. Heidelberg: Springer.
- Angrist, Joshua D. 2011. *Instrumental Variables in Action: Sometimes You Get What You Need*. Retrieved March 15, 2015 ([http://www.cedlas-er.org/sites/default/files/aux\\_files/ivhandout\\_may2011b.pdf](http://www.cedlas-er.org/sites/default/files/aux_files/ivhandout_may2011b.pdf)).
- Angrist, Joshua D. and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press.
- Armington, Klaus. 2000. "Schweizer Gewerkschaften im Internationalen Vergleich: Gemeinsamkeiten und Unterschiede." Pp. 391–407 in *Gewerkschaften in der Schweiz: Herausforderungen und Optionen*, edited by K. Armington and S. Geissbühler. Zurich: Seismo.
- Artz, Benjamin. 2010. "The Impact of Union Experience on Job Satisfaction." *Industrial Relations: A Journal of Economy and Society* 49(3):387–405.
- Avdagic, Sabina and Lucio Baccaro. 2014. "The Future of Employment Relations in Advanced Capitalism: Inexorable Decline?" Pp. 701–25 in *The Oxford Handbook of Employment Relations*, edited by A. Wilkinson, G. Wood, and R. Deeg. New York: Oxford University Press.

- Baccaro, Lucio, Kerstin Hamann, and Lowell Turner. 2003. "The Politics of Labour Movement Revitalization: The Need for a Revitalized Perspective." *European Journal of Industrial Relations* 9(1):119–33.
- Bender, Keith A. and Peter J. Sloane. 1998. "Job Satisfaction, Trade Unions, and Exit-Voice Revisited." *Industrial and Labor Relations Review* 51(2):222–40.
- Berger, Chris J., Craig A. Olson, and John W. Boudreau. 1983. "Effects of Unions on Job Satisfaction: The Role of Work-Related Values and Perceived Rewards." *Organizational Behavior and Human Performance* 32(3):289–324.
- Boris, Monica Bielski and Robert Bruno. 2010. "Not Ready to Make Nice? The Politics of Identity and Why Union Voters Wanted a Class Champion in 2008." *Labor Studies Journal* 35(1):94–115.
- Borjas, George J. 1979. "Job Satisfaction, Wages, and Unions." *Journal of Human Resources* 14(1):21–40.
- Brochu, Pierre and Louis-Philippe Morin. 2012. "Union Membership and Perceived Job Insecurity: Thirty Years of Evidence from the American General Social Survey." *Industrial & Labor Relations Review* 65(2):263–85.
- Bruno, Robert. 2010. "Unions, the Working Class, and Politics." *Labor Studies Journal* 35(1):5–7.
- Bryson, Alex, Lorenzo Cappellari, and Claudio Lucifora. 2004. "Does Union Membership Really Reduce Job Satisfaction?" *British Journal of Industrial Relations* 42(3):439–59.
- Checchi, Daniele, Jelle Visser, and Herman G. Van De Werfhorst. 2010. "Inequality and Union Membership: The Influence of Relative Earnings and Inequality Attitudes." *British Journal of Industrial Relations* 48(1):84–108.
- Clawson, Dan and Mary Ann Clawson. 1999. "What Has Happened to the US Labor Movement? Union Decline and Renewal." *Annual Review of Sociology* 25:95–119.
- Corneo, Giacomo and Hans Peter Grüner. 2002. "Individual Preferences for Political Redistribution." *Journal of Public Economics* 83(1):83–107.
- Crouch, Colin and Franz Traxler, eds. 1995. *Organized Industrial Relations in Europe: What Future?* Brookfield: Avebury.
- Degen, Bernard. 2000. "Starre Strukturen im wirtschaftlichen und sozialen Wandel: Die schweizerische Gewerkschaftsbewegung in der zweiten Hälfte des 20. Jahrhunderts." Pp. 11–38 in *Gewerkschaften in der Schweiz: Herausforderungen und Optionen*, edited by K. Armingeon and S. Geissbühler. Zurich: Seismo.

Degen, Bernard. 2011. "Gewerkschaften." *Historischen Lexikon der Schweiz - Geschichte*. Retrieved February 7, 2015 (<http://www.hls-dhs-dss.ch/textes/d/D16481.php>).

DuMouchel, William H. and Greg J. Duncan. 1983. "Using Sample Survey Weights in Multiple Regression Analyses of Stratified Samples." *Journal of the American Statistical Association* 78(383):535–43.

Ebbinghaus, Bernhard. 2000. "Switzerland." Pp. 657–704 in *Trade Unions in Western Europe Since 1945*, edited by B. Ebbinghaus and J. Visser. New York: Palgrave Macmillan.

Fischer, Alex. 2002. "Sector of Economy, Strength of Unions and the Opposition of Interest among Employers: The Case of the Flanking Measures Concerning the Treaty on the Free Movement of Persons." *Swiss Political Science Review* 8(3-4):85–100.

Fischer, Alex. 2003. "Vetospiele und die Durchsetzbarkeit von Side-Payments." *Swiss Political Science Review* 9(2):27–58.

Forester, Amy. 2004. "Race, Identity, and Belonging: 'Blackness' and the Struggle for Solidarity in a Multiethnic Labor Union." *Social Problems* 51(3):386–409.

Freeman, Richard B. 1978. "Job Satisfaction as an Economic Variable." *The American Economic Review* 68(2):135–41.

Freeman, Richard B. 1980. "The Exit-Voice Tradeoff in the Labor Market: Unionism, Job Tenure, Quits, and Separations." *Quarterly Journal of Economics* 94(4):643–73.

Freeman, Richard B. 2003. *What Do Unions Do...to Voting?* Retrieved April 4, 2015 (<http://www.nber.org/papers/w9992>).

Freeman, Richard B. and James L. Medoff. 1984. *What Do Unions Do?*. New York: Basic Books.

Gomez, Rafael and Morley Gunderson. 2004. "The Experience Good Model of Trade Union Membership." Pp. 92–112 in *The Changing Role of Unions: New Forms of Representation*, edited by P. V. Wunnava. New York: Routledge.

Gordon, Michael E. and Angelo S. Denisi. 1995. "A Re-Examination of the Relationship between Union Membership and Job Satisfaction." *Industrial and Labor Relations Review* 48(2):222–36.

Gray, Mark and Miki Caul. 2000. "Declining Voter Turnout in Advanced Industrial Democracies, 1950 to 1997 The Effects of Declining Group Mobilization." *Comparative Political Studies* 33(9):1091–1122.

Hammer, Tove Helland and Ariel Avgar. 2005. "The Impact of Unions on Job Satisfaction, Organizational Commitment, and Turnover." *Journal of Labor Research* 26(2):241–66.

- Häusermann, Silja. 2010. "Solidarity with Whom? Why Organised Labour Is Losing Ground in Continental Pension Politics." *European Journal of Political Research* 49(2):223–56.
- Häusermann, Silja, André Mach, and Yannis Papadopoulos. 2004. "From Corporatism to Partisan Politics: Social Policy Making under Strain in Switzerland." *Swiss Political Science Review* 10(2):33–59.
- Hersch, Joni and Joe A. Stone. 1990. "Is Union Job Dissatisfaction Real?" *The Journal of Human Resources* 25(4):736–51.
- Heywood, John S., W. S. Siebert, and Xiangdong Wei. 2002. "Worker Sorting and Job Satisfaction: The Case of Union and Government Jobs." *Industrial and Labor Relations Review* 55(4):595–609.
- Hirschman, Albert O. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Cambridge, Massachusetts: Harvard University Press.
- Holland, Paul W. 1986. "Statistics and Causal Inference." *Journal of the American Statistical Association* 81(396):945–60.
- Hoyle, Rick H., ed. 2014. *Handbook of Structural Equation Modeling*. New York: The Guilford Press.
- Hulin, Charles L., Mary Roznowski, and Donna Hachiya. 1985. "Alternative Opportunities and Withdrawal Decisions: Empirical and Theoretical Discrepancies and an Integration." *Psychological Bulletin* 97(2):233–50.
- Imbens, Guido W. and Joshua D. Angrist. 1994. "Identification and Estimation of Local Average Treatment Effects." *Econometrica* 62(2):467–75.
- Juravich, Tom and Peter R. Shergold. 1988. "The Impact of Unions on the Voting Behavior of Their Members." *Industrial and Labor Relations Review* 41(3):374–85.
- Keddie, Vincent. 1980. "Class Identification and Party Preference among Manual Workers: The Influence of Community, Union Membership and Kinship." *Canadian Review of Sociology/Revue canadienne de sociologie* 17(1):24–36.
- Kelman. 1958. "Compliance, Identification, and Internalization: Three Processes of Attitude Change." *Journal of Conflict Resolution* 2(1):51–60.
- Kerisssey, Jasmine and Evan Schofer. 2013. "Union Membership and Political Participation in the United States." *Social Forces* 91(3):1–34.
- King, Gary, Robert O. Keohane, and Sidney Verba. 1994. *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton: Princeton University Press.
- Kochan, Thomas A. and David E. Helfman. 1981. "The Effects of Collective Bargaining on Economic and Behavioral Job Outcomes." Pp.

321–65 in *Research in Labor Economics*, vol. 4, edited by R. G. Ehrenberg. Greenwich, Connecticut: JAI Press.

Leigh, Andrew. 2006. "How Do Unionists Vote? Estimating the Causal Impact of Union Membership on Voting Behaviour from 1966 to 2004." *Australian Journal of Political Science* 41(4):537–52.

Leigh, Duane E. 1986. "Union Preferences, Job Satisfaction, and the Union-Voice Hypothesis." *Industrial Relations* 25(1):65–71.

Leighley, Jan E. and Jonathan Nagler. 2007. "Unions, Voter Turnout, and Class Bias in the U.S. Electorate, 1964–2004." *The Journal of Politics* 69(02):430–41.

Lincoln, James R. and Joan N. Boothe. 1993. "Unions and Work Attitudes in the United States and Japan." *Industrial Relations* 32(2):159–87.

Lipps, Oliver. 2007. "Attrition in the Swiss Household Panel." *Methoden – Daten – Analysen* 1(1):45–68.

Lucio, Miguel Martínez and Robert Perrett. 2009. "The Diversity and Politics of Trade Unions' Responses to Minority Ethnic and Migrant Workers: The Context of the UK." *Economic and Industrial Democracy* 30(3):324–47.

Mach, André. 2000. "Les relations industrielles en Suisse dans les années 90: une lente évolution vers le 'modèle anglo-saxon'?" Pp. 153–90 in *Gewerkschaften in der Schweiz: Herausforderungen und Optionen*, edited by K. Armingeon and S. Geissbühler. Zurich: Seismo.

Mach, André and Daniel Oesch. 2003. "Collective Bargaining between Decentralization and Stability: A Sectoral Model Explaining the Swiss Experience during the 1990s." *Industrielle Beziehungen / The German Journal of Industrial Relations* 10(1):160–82.

Mangione, Thomas W. and Robert P. Quinn. 1975. "Job Satisfaction, Counterproductive Behavior, and Drug Use at Work." *Journal of Applied Psychology* 60(1):114–16.

Manza, Jeff and Clem Brooks. 2010. "Class and Politics." Pp. 201–32 in *Social Class: How Does It Work?*, edited by A. Lareau and D. Conley. New York: Russell Sage Foundation Publications.

Masters, Marick F. and John Thomas Delaney. 1987. "Union Political Activities: A Review of the Empirical Literature." *Industrial and Labor Relations Review* 40(3):336–53.

McEvoy, Glenn M. and Wayne F. Cascio. 1985. "Strategies for Reducing Employee Turnover: A Meta-Analysis." *Journal of Applied Psychology* 70(2):342–53.

Meltzer, Allan H. and Scott F. Richard. 1981. "A Rational Theory of the Size of Government." *Journal of Political Economy* 89(5):914–27.

Meng, Ronald. 1990. "The Relationship between Unions and Job Satisfaction." *Applied Economics* 22(12):1635–48.

- Miller, Paul W. 1990. "Trade Unions and Job Satisfaction\*." *Australian Economic Papers* 29(55):226–48.
- Mills, Melinda. 2011. *Introducing Survival and Event History Analysis*. Los Angeles: SAGE Publications.
- Mosimann, Nadia and Jonas Pontusson. 2014. *Bounded Communities of Solidarity: Union Membership and Support for Redistribution in Contemporary Europe*. Retrieved April 1, 2015([www.unige.ch/sciences-societe/speri/files/3514/0325/7198/2014\\_Mosimann\\_and\\_Pontusson.pdf](http://www.unige.ch/sciences-societe/speri/files/3514/0325/7198/2014_Mosimann_and_Pontusson.pdf)).
- Nissen, Bruce. 2010. "Political Activism as Part of a Broader Civic Engagement." *Labor Studies Journal* 35(1):51–72.
- Oesch, Daniel. 2006. *Organisationen im Umbruch: Die Gewerkschaften in der Schweiz von 1990 bis 2006*. Bern: Schweizerische Gewerkschaftsbund.
- Oesch, Daniel. 2007. "Weniger Koordination, mehr Markt? Kollektive Arbeitsbeziehungen und Neokorporatismus in der Schweiz seit 1990." *Swiss Political Science Review* 13(3):337–68.
- Oesch, Daniel. 2011. "Swiss Trade Unions and Industrial Relations after 1990: A History of Decline and Renewal." Pp. 82–102 in *Switzerland in Europe: Continuity and Change in the Swiss Political Economy*, edited by C. Trampusch and A. Mach. New York: Routledge.
- Oesch, Daniel. 2012. "Recruitment, Retention and Exit from Union Membership. An Analysis of Member Flows in Swiss Union Locals." *British Journal of Industrial Relations* 50(2):287–307.
- Owens, Lindsay A. and David S. Pedulla. 2014. "Material Welfare and Changing Political Preferences: The Case of Support for Redistributive Social Policies." *Social Forces* 92(3):1087–1113.
- Pencavel, John. 2009. "How Successful Have Trade Unions Been? A Utility-Based Indicator of Union Well-Being." *Industrial and Labor Relations Review* 62(2):147–56.
- Petersen, Mitchell A. 2009. "Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches." *Review of Financial Studies* 22(1):435–80.
- Pfeffer, Jeffrey and Alison Davis-Blake. 1990. "Unions and Job Satisfaction: An Alternative View." *Work and Occupations* 17(3):259–83.
- Powdthavee, Nattavudh. 2011. "Anticipation, Free-Rider Problems, and Adaptation to Trade Unions: Re-Examining the Curious Case of Dissatisfied Union Members." *Industrial & Labor Relations Review* 64(5):1000–1019.
- Radcliff, Benjamin. 2001. "Organized Labor and Electoral Participation in American National Elections." *Journal of Labor Research* 22(2):405–14.

- Radcliff, Benjamin and Patricia Davis. 2000. "Labor Organization and Electoral Participation in Industrial Democracies." *American Journal of Political Science* 44(1):132–41.
- Rees, Daniel I. 1991. "Grievance Procedure Strength and Teacher Quits." *Industrial & Labor Relations Review* 45(1):31–43.
- Renaud, Stephane. 2002. "Rethinking the Union Membership/job Satisfaction Relationship." *International Journal of Manpower* 23(2):137–50.
- Rosenfeld, Jake. 2010. "Economic Determinants of Voting in an Era of Union Decline." *Social Science Quarterly* 91(2):379–95.
- Rosenfeld, Jake. 2014. *What Unions No Longer Do* Cambridge, Massachusetts: Harvard University Press.
- Schwochau, Susan. 1987. "Union Effects on Job Attitudes." *Industrial & Labor Relations Review* 40(2):209–24.
- Soderbom, Mans. 2011. Lecture 5: Instrumental Variables Part II. Retrieved March 16, 2015 (<http://www.soderbom.net/matrix2/lec5.pdf>).
- Sousa, David J. 1993. "Organized Labor in the Electorate, 1960-1988." *Political Research Quarterly* 46(4):741–58.
- Stock, James H. and Mark W. Watson. 2010. *Introduction to Econometrics*. Boston: Addison-Wesley.
- Streeck, Wolfgang and Anke Hassel. 2003. "Trade Unions as Political Actors." Pp. 335–65 in *International Handbook of Trade Unions*, edited by J. T. Addison and C. Schnabel. Northampton, Massachusetts: Edward Elgar Publishing.
- Swiss Federal Statistical Office. 2012. *L'enquête Suisse sur la Population Active dès 2010: Concepts - Bases méthodologiques - Considérations pratiques*. Retrieved August 5, 2015 ([http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/erhebungen\\_quellen/blank/blank/enquete\\_suisse\\_sur/anhang.Document.165231.pdf](http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/erhebungen_quellen/blank/blank/enquete_suisse_sur/anhang.Document.165231.pdf)).
- Swiss Federal Statistical Office. 2014. *NOGA General Classification of Economic Activities: Overview*. Retrieved May 8, 2015 ([http://www.bfs.admin.ch/bfs/portal/en/index/infothek/nomenklaturen/blank/blank/noga0/vue\\_d\\_ensemble.html](http://www.bfs.admin.ch/bfs/portal/en/index/infothek/nomenklaturen/blank/blank/noga0/vue_d_ensemble.html)).
- Trampusch, Christine. 2008. "Von Einem Liberalen Zu Einem Post-Liberalen Wohlfahrtsstaat: Der Wandel Der Gewerkschaftlichen Sozialpolitik in Der Schweiz." *Swiss Political Science Review* 14(1):49–84.
- Voorpostel, Marieke. 2009. *Attrition in the Swiss Household Panel by Demographic Characteristics and Levels of Social Involvement*. SHP Working Paper 1-09. Lausanne: Swiss Household Panel.
- Voorpostel, Marieke. 2010. "Attrition Patterns in the Swiss Household Panel: An Analysis of Demographic Characteristics and Social Involvement." *Swiss Journal of Sociology* 36(2):359–77.

Voorpostel, Marieke et al. 2014. Swiss Household Panel: User Guide (1999 - 2013). Lausanne: Swiss Household Panel.

Weaver, Bryce. 2010. Attrition and Bias in the Personal Files of the Swiss Household Panel. SHP Working Paper 1-10. Lausanne: Swiss Household Panel.

Widmer, Frédéric. 2007. "Stratégies Syndicales et Renouveau Des Élités: Le Syndicat FTMH Face À La Crise Des Années 1990." *Swiss Political Science Review* 13(3):395–431.

Wilson, Jake B. 2008. "The Racialized Picket Line: White Workers and Racism in the Southern California Supermarket Strike." *Critical Sociology* 34(3):349–67.

Winship, Christopher and Stephen L. Morgan. 1999. "The Estimation of Causal Effects from Observational Data." *Annual Review of Sociology* 25:659–706.

Wolfebaek, Dag and Per Selle. 2002. "Does Participation in Voluntary Associations Contribute to Social Capital? The Impact of Intensity, Scope, and Type." *Nonprofit and Voluntary Sector Quarterly* 31(1):32–61.

Wooldridge, Jeffrey M. 2010. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Massachusetts: The MIT Press.

Wooldridge, Jeffrey M. 2013. *Introductory Econometrics*. Andover: Cengage Learning.

Worrall, John D. and Richard J. Butler. 1983. "Health Conditions and Job Hazards: Union and Nonunion Jobs." *Journal of Labor Research* 4(4):339–47.

Zerubavel, Eviatar. 1999. *Social Mindscapes: An Invitation to Cognitive Sociology*. Cambridge, Massachusetts: Harvard University Press.

Ziltener, Patrick. 2000. "Zwischen Interaktion und Integration: Das europäische Mehrebenensystem als Handlungsfeld der Schweizer Gewerkschaften." Pp. 99–114 in *Gewerkschaften in der Schweiz: Herausforderungen und Optionen*, edited by K. Armingeon and S. Geissbühler. Zurich: Seismo.







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Every gesture of the daily life of an individual is structured by a series of social constraints leading it to conform to an existing social order. This Socio-graph examines how the most intimate of these aspects, the way an individual thinks, is socially framed. Using the data of the Swiss Household Panel, the work analyzes to what extent the fact of becoming a union member is capable of influencing a series of job, political and social attitudes. After a brief characterization of the Swiss union landscape and an analysis of the declining trend of union density in Switzerland, the reader is led to consider the methodological issues to take into account when trying to tease out causal effects from observational data. By exploiting the advantages of a panel data approach, the results reveal whether the attitudinal differences existing between union members and non-members can be traced back to a causal effect of union membership or whether they are to be attributed to pre-existing differences between the two groups. If a causal effect of union membership is indeed there, it is shown that the nature of the mechanisms explaining its appearance varies according to the sector of activity, to the profile of the individual and to the attitude taken into account.

Sinisa Hadziabdic is a PhD student at the University of Geneva. His main research interests revolve around the way the behavior and the thinking pattern of an individual are structured by the objective and social constraints he is confronted with.