The Effects of Institutional Instability in Collective Bargaining: A long-Term Analysis of Changing Collective Bargaining Actors and Structures

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Abstract

Previous studies on collective bargaining have focused on the effects of different institutional structures of coordination of bargaining on economic performance. Almost no attention has been paid to the effects of institutional change itself or the effects of institutional instability which is caused by a sequence of changes. In this paper we argue that institutional stability is of major importance for the efficacy of collective bargaining as it provides the necessary basis for trust amongst bargaining actors. Thus it is hypothesized that institutional change is associated with at least temporary negative effects on economic performance. The hypotheses are tested on the basis of yearly data from 1965 to 2010 of 33 countries. The underlying causal mechanism between institutional change, mutual trust, and macro-economic performance is discussed in detail through two case studies of institutional changes in the United Kingdom and Sweden.

Introduction

This article takes up a classical theme in comparative political economy – the consequences of institutional change – by analyzing the impact of changes to the institutional structures of collective bargaining on macro-economic performance. Changes to collective bargaining structures, i.e. in the level, domain and form of coordination of bargaining among different actors, have been pervasive across industrialized countries in recent decades. Not least since the advent of the current economic crisis where in many European countries collective bargaining has been changed on the basis of recommendations by the European Commission, the European Central Bank and the International Monetary Fund, the so called Troika (Marginson, 2014). However, the theoretical and empirical foundation for the effects of these and other changes in collective bargaining structures are unclear. In part, this is due to the fact that the effect of any change itself has largely been neglected in existing studies.

One strand of literature on the relationship between collective bargaining institutions and socio-economic aggregates has attempted to assess the impact of particular bargaining structures on various direct outcome variables of collective bargaining such as wage increases and labor costs, as well as on related macro-economic indicators or concepts such as competitiveness, (un)employment, inflation, and (wage) inequality (e.g., Baccaro & Simoni, 2010; Brandl, 2012; Calmfors & Driffill, 1988; Iversen, 1998; Johnston, 2012; Johnston & Hancké, 2009; Johnston, Hancké & Pant, 2014; Soskice, 1990; Traxler & Kittel, 2000). Another strand has focused on the change or resilience of institutions for collective bargaining facing changing socio-economic and technological conditions (e.g., Boyer, 2005; Crouch, 1993; Hall & Soskice, 2001; Kochan et al., 1994; Streeck, 2009; Thelen, 2014). The axis of contention in the former has thus been which institutional structures performed relatively better in terms of particular macro-economic goals, while the axis of the latter has

been the existence, direction and causes of institutional change. Somewhere in between the two, the issue of macro-economic impacts of institutional change itself has thus been largely ignored or assumed. For the first strand, this has probably been because after decades of theoretical and empirical debates there is still no widely agreed consensus on which institutional structure is associated with the comparatively "best" performance (e.g., Brandl, 2012), so that the focus on analyzing effects of the structure itself is still challenging and required. For the latter, the cost of change has been theoretically assumed by many scholars seeing path-dependence in bargaining structures (Hall & Soskice, 2001) or, alternatively, it is the direction and causes of change – rather than the effects – that receive attention (e.g., Baccaro & Howell, 2011; Streeck, 2009; Thelen, 2014).

In this article we explain and argue that in most countries collective bargaining structures have changed considerably over time and these changes have come with non-negligible macro-economic costs, at least in the short-to-medium term. Theoretically, we argue that these costs arise due to the disruption of mutual trust between the actors involved in collective bargaining. We argue further that mutual trust between actors is of vital importance for the efficacy of collective bargaining so any disruption of trust impairs their efficacy. Consequently the costs of the change are defined here as the impaired efficacy due to the change. We propose that institutional stability fosters trust between all actors involved in collective bargaining by creating mutual expectations about behavior which formis the basis for stable wage determination and the provision of an important public good, i.e. for wage moderation. Institutional change might therefore lead to short-to-medium term collective action problems (Farrell, 2009) and increased transaction costs in labor markets (North, 1990).

Empirically, we analyze the relationship between institutional change and macro-economic performance in two ways. Firstly, we test the relationship using a Time-Series-Cross-

Sectional regression analysis on the basis of yearly data from 1965 to 2010 of 33 countries on two key macro-economic indicators; inflation and the unemployment rate. The results show that institutional change in itself has a significant and non-negligible negative impact. This means that institutional reform of collective bargaining must consider that any positive effects which are expected from the reform are lessened or even overcompensated for in the short-to-medium term. Secondly, we illustrate the mechanism underlying the relationship between institutional change, the disruption of mutual trust and negative macro-economic outcome with two case studies of reforms of collective bargaining structures, that is, the United Kingdom (UK) in the 1970s-1980s and Sweden in 1980-1990s. The case selection is based on the principle of maximum-variation: the institutional structures, and the direction of change as well as the time periods differ significantly. As will be shown, the causal mechanism behind the institutional change remains the same and supports the general theoretical claim and the quantitative analysis.

The article is organized into four parts. Following this introduction, we review the relevant literature on collective bargaining structures and macro-economic performance and develop our theoretical arguments on how institutional change affects the efficacy of collective bargaining. Next, we present the methodological and empirical strategy for testing the hypotheses. After discussing the results and various robustness checks, we move on to the case-studies of the UK and Sweden to illustrate in detail the causal mechanism at play. Finally, we conclude the analysis and discuss the implications of our study in the context of current theoretical and empirical debates together with the implications for policy-makers attempting to reform labor markets institutions.

Impact of collective bargaining structures, institutional change and trust

One major economic goal for policy makers in industrialized economies is to maintain or even increase the "competitiveness" of their economies. In this economic policy context, one key function of collective bargaining institutions is ensuring that wages are aligned or even slightly below productivity increases, i.e. that they produce wage moderation. The idea behind wage moderation is that companies in the economies are able to maintain or even increase their competitiveness and in the end, from a macro-economic perspective, low inflation and high employment are ensured. Scholars disagree over the relationship between different collective bargaining structures and the desired macro-economic outcomes.

The standard theoretical argument − based on Mancur Olson (1965) − is that encompassing bargaining structures cannot externalize the negative consequences of pay increases, so they are forced to moderate them. There is, however, disagreement about what encompassment means procedurally and institutionally. One position relates to the level at which pay agreements are concluded, and thus equates encompassment with bargaining centralization. The original thesis associated with corporatist theory was that beneficial effects of collective bargaining institutions monotonically increase with the degree of encompassment (Bruno & Sachs, 1985; Cameron, 1984). The other position argues that economy-wide coordination of lower-level bargaining also ensures encompassment in a way analogous to centralized bargaining (Soskice, 1990). Both positions, however, concur in assigning superior capacity for internalizing pay externalities to the level of the peak associations of business and labor since their membership domains are most encompassing. The counter position presents a hump-shape argument which contends that extremes (i.e. centralized/coordinated and decentralized/uncoordinated structures) both outperform industry-level bargaining structures as the latter work as performance-inhibiting cartels (Calmfors & Driffill, 1988).

However, as stressed in subsequent debates, the effects of collective bargaining depend upon additional contextual factors such as the monetary policy regime, the organizational structure of actors and compliance between actors (e.g., Calmfors, 1993; Iversen, 1998; Johnston, 2012; Traxler & Brandl, 2012). Compliance problems horizontally between different actors and vertically between differing bargaining levels potentially increase the greater the distance of an agreement from the bargaining levels which the agreement claims to cover. Empirical analysis has found that peak-level agreements are highly effective in pay moderation only when they are vested with governability (i.e. institutional means of controlling lower-level pay-setting). Otherwise, they perform no better than any other bargaining structures (Traxler & Kittel, 2000).

The proposition that peak-level arrangements compel the bargaining actors to internalize negative externalities fully applies to closed economies only (Calmfors & Driffill, 1988; Calmfors, 1993). In conditions of economic openness, especially in tandem with a fixed exchange rate, the incentive for pay moderation decreases under peak-level bargaining, as this economic situation creates the opportunity for sheltered sectors to externalize pay hikes. According to the advocates of the hump-shape thesis, the hump-shape becomes flatter under these circumstances, but will nevertheless hold. This is questioned by Traxler & Brandl (2012). They argue that economic openness transforms the calculus of peak-level bargaining from an economic into a political question: faced with the interest cleavage between the exposed sector (e.g. manufacturing) and the sheltered sector (e.g. construction or public sector), the peak-level trade union organization will unify these conflicting interests so that political support for its policy is maximized. This implies choosing a policy line which favors the "median affiliate", i.e. the trade union which provides the peak-level trade union with majority support. Since the position of the median affiliate in the divide between the sheltered and exposed sector is contingent on the membership composition of the peak-level trade

union, the performance of peak-level arrangements is argued to be indeterminate. The theoretical and empirical finding is that intermediate and decentralized structures if coordinated by the exposed sector – for example via pattern bargaining (Ibsen, 2013) – significantly outperform other arrangements (Traxler & Brandl, 2012).

The role of trust in collective bargaining

With the exception of a few studies emphasizing the (informal) politics of bargaining (e.g., Baccaro & Simoni, 2010; Ibsen, 2013; Traxler & Brandl, 2012), the link between macro-economic performance and the structures of collective bargaining revolves around formal coordination and compliance procedures among actors. Even though the importance of trust for cooperation and compliance is often highlighted, e.g. Ornston & Schulze-Cleven (2014), the underlying causal mechanisms are not discussed in much detail. By contrast, Farrell & Knight (2003) argue that mutual trust among actors can be a sufficient mechanism for coordination and compliance in order to ensure the production of collective goods, such as wage moderation. If compliance is neither existent nor effective however actors can never be entirely sure if other actors will not defect from wage moderation. Such a situation is typical in collective bargaining structures in which many actors are involved. Horizontal collective bargaining, for example, is rarely supported with formalized sanctions of non-compliance except in countries with strong centralized bargaining. As noted on the cleavage between exposed and sheltered sectors, this introduces an element of risk in the production of wage-moderation and actors in one industry will have to make a "leap of faith" when moderating their own wages since they cannot be sure that other industries will comply. This "leap of faith" rests completely on mutual trust. Thus mutual trust is focal for the efficacy of collective bargaining and consequently for the ability to achieve beneficial goals.

It is striking that countries with institutional structures of collective bargaining in which compliance rests almost entirely on such "leaps of faith", such as for example Austria, Denmark, Finland, Germany, Norway, and Sweden, usually perform above average economically (e.g., Baccaro & Simoni, 2010; Brandl, 2012; Johnston, Hancké & Pant, 2014; Soskice, 1990; Traxler & Kittel, 2000). So the existence of trust in collective bargaining can be considered as focal and a loss (or disruption) of trust can be expected to minder the efficacy of collective bargaining. While trust is often mentioned in studies of collective bargaining (e.g., Fashoyain, 2004; Fox, 1974; Walton & McKersie, 1965) its role in establishing and sustaining mutually beneficial outcomes, e.g. wage moderation, is usually not empirically addressed.

However, there exist various advanced theoretical discussions about the role of trust in public goods provision. Farrell (2005; 2009) and Farrell & Knight (2003) convincingly show that institutions actually promote trust and trustworthiness leading to production of collective goods. In the first step, this entails recognizing that institutions are not merely formally sanctioned rules that serve a well-specified function. Often rules are not entirely clear or do not fit the specific situation leaving room for interpretation by actors (Streeck & Thelen, 2005). Instead institutions convey information about the expected behavior of certain actors in certain situations (Beckert, 2013). Formally, we can state that A trusts B when actor B is expected to do X in situation Z. If B fails to do X, this will be visible to actor A and there can be material or normative sanctions. However, as long as B knows about the visibility of her actions, it is in her interest to do X. Thus, A (for example a union in manufacturing) can trust B (a union in construction) to do X (moderate wages) in situation Z (economic boom) because it is in B's interest to do so due to institutionalized procedures for wage bargaining. This is exactly what Hardin (2002) describes as "encapsulated interests", that is, A trusts B regarding Z, because in the matter Z, the interests of B encapsulates the interests of A.

Institutions furthermore convey information about what B's intentions are and what B is doing. This transparency makes it possible for A to follow B, enhancing the trustworthiness of B. In turn, B knows that A trusts B, making A trustworthy in relation to production of collective goods. Thus, mutual expectations about behavior are formed (Farrell, 2009).

All institutional structures of collective bargaining pertain to distinct procedural rules and norms which are shared among actors and define the process of bargaining as well as the connection between bargaining areas and bargaining levels. In each structure, three main trust relationships between actors in different areas and levels exist. The ability to build up trust along these three channels which are needed to produce collective goods differs however in different institutional structures. Firstly, there is a trust relationship between the two sides in the employment relationship, i.e. between employers and unions within each bargaining unit. The second trust relationship refers to bargaining units at different levels – ranging from single-employer, multi-employer to cross-sectoral bargaining structures (Clegg, 1976). On different levels, the rules and norms regarding coordination define further characteristics of the institutional structure. Thirdly, there is a trust relationship horizontally, i.e. across bargaining units on the same level. However, the rules and norms in the interaction between actors along the three relationships can be very different in different institutional structures – all associated with differences in their ability to enable actors to build up and maintain mutual trust. We expect that changes in any dimension, i.e. in the institutional structure, will disrupt trust between actors and thus erode the production of collective goods with possible negative macro-economic consequences (Farrell, 2009). Note that these issues are independent from the question of which institutional structure enables which degree of trust among actors and thus which structure results in which economic performance.

The costs of institutional change and the loss of mutual trust

We argued that mutual trust is of vital importance for the efficacy of collective bargaining and any disruption of trust impairs the efficacy of bargaining. On the basis of this, we defined the costs of the institutional change by the impaired efficacy due to the change. Theoretically, the costs of institutional change have been addressed in the literature in different ways and from different perspectives. For example, path-dependence theory based on increasing returns posits that actors will refrain from changing institutions due to large fixed costs, learning effects, coordination effects and adaptive expectations (Pierson, 2004). Whilst devised to explain institutional stability, the same mechanism of collective learning and adaptation applies in our account. As Pierson states (2004, p. 38): *"The point is not that learning never occurs… Rather, learning is very difficult and cannot be assumed to occur."* In other words, institutional change will have costs as actors scramble to re-adjust mutual expectations about behavior needed for collective action to occur. The difference compared to Pierson's account is that we are not trying to explain stability or change itself but rather want to know the effects of institutional change ex post.

Another perspective on the costs of institutional change comes from theories on institutional complementarity (Boyer, 2005). Most notably, Hall & Soskice's (2001) Varieties of Capitalism framework is built around institutional complementarity according to which configurations of institutional spheres produce synergies, i.e. enhance the performance effect of each other. A change in one sphere would therefore jeopardize complementarity and have negative macro-economic effects. The complementarity-thesis has been criticized for lacking empirical support (e.g., Deeg, 2007; Kenworthy, 2006). Without discussing this further, it suffices to note, that a trust-based explanation of costs from institutional change is not incompatible with the complementarity-thesis. Indeed, the trustworthiness of actors in one

institutional sphere might be disrupted by institutional change, leading actors in other institutional spheres to defect from collective action. This might lead to cumulative negative effects. As with increasing returns, however, the complementarity-thesis is devised primarily to explain stability rather than the effects of changes, although negative effects of change are inherent in the hypothesis.

As regards collective bargaining here in this work, the cost of change originates in the disruption of trust among actors due to the change. Because actors are not fully cognizant of the effects of new institutions due to the erosion of mutual expectations there will always be some costs of institutional change. Typically, changes to collective bargaining structures imply vertical and horizontal re-ordering of bargaining units and levels. Hereby, bargaining actors are substituted for others and there is little information about how new actors have acted in the past and therefore how they will act in the future. The consequence of these changes is that it might lead negotiators to focus on distributive concerns rather than integrative concerns that can undermine wage-restraint (Walton & McKersie, 1965). Horizontally across industries, institutional change might disrupt trust that sheltered sectors will moderate wages. If bargaining parties are concerned about relative earnings – which they typically are (Elster, 1989) – this might spur unions in other industries to take out higher wages. Vertically, a change in bargaining institutions might also spur ambiguity about what to expect of bargaining at other levels, which in turn spurs a breakdown of the "division of labor" between bargaining levels. This is particularly likely in processes of decentralization where more bargaining autonomy is delegated to the company level or vice-versa under centralization, when lower level actors continue to bargain wage increases on top of central increases.

The sources for disruption of trust are thus multiple and pertain to both moves to centralize and decentralize. Firstly, as noted, unions concerned about relative earnings will take out a

risk-premium of higher wages to prevent falling behind. In turn, this might spur a wage-inflation spiral with other unions making compensatory claims. Secondly, employers unsure about the consequences of institutional change might be cautious about hiring until the effects of changes are known. A key function of collective bargaining for employers is precisely that the price of labor is known for a foreseeable future which makes personnel planning possible (Sisson, 1987; Swenson, 2002). So, even institutional change that favors employers might have negative employment effects, because companies will delay employing until the price of labor is clearly known in order to reduce opportunity costs. This means that complete decentralization might also lead to performance losses – contrary to neo-classical assumptions. Moreover, complete decentralization could spur a higher level of industrial conflict also leading to performance loss. As a corollary, even supposedly performance-enhancing institutional change, for example from low compliance horizontal bargaining coordination to high compliance bargaining coordination, might – ceteris paribus – lead to performance losses.

There are, therefore, multiple reasons why change in collective bargaining structures, all other things being equal, is costly. Trust, moreover, has an important and strong temporal dimension. The question is how costly and how long it takes to fully restore the efficacy of the new institutional structure. Independent of the magnitude and duration of the cost effect, it can be assumed that the more changes the more costs accumulate. Consequently, institutional instability – that is, multiple changes – are associated with negative effects. Arguably, these negative effects of institutional change and instability will most often be temporary as actors readjust agency to new institutions, build up new mutual expectations of behavior and foster trust again. However, as the literature on trust has established, trust takes considerably longer to build up than to break down (Braithwaite & Levi, 1998; Farrell, 2009). In contrast to previous studies focusing on the effects of different institutional configurations

on macro-economic performance, we therefore expect considerable initial costs from institutional changes when trust based on mutual expectations about behavior breaks down.

Data, modelling strategy and empirical analysis

In order to test our hypothesis of the effects of institutional change and instability we use a data set which covers 33 countries and spans a period from 1965 to 2010. Our sample differs from those used in other studies of the effects of different institutional collective bargaining coordination structures (e.g., Calmfors & Driffill, 1988; Soskice, 1990; Traxler & Kittel, 2000; Brandl, 2012) as it considers a significantly higher number of countries and a longer time period. Table 1 documents the data on the predominant structure and the institutional instability of the structures for the 33 countries.

- Table 1 about here -

The large number of countries covers a wide range of very different institutional structures and contextual factors in which collective bargaining takes place. The sample, moreover, covers changes in various directions: changes towards higher levels and more coordinated forms of collective bargaining structures and towards lower levels and more uncoordinated structures. As regards the context of collective bargaining, the long time period has the advantage that it covers different phases in the economic development of countries and their business cycles; both periods of economic up- and downturns are considered. Taken together, the sample thus allows a high degree of generalization of the results. In the following analysis we test the effect of the institutional *instability* variable on inflation and unemployment rates using time-series-cross-sectional regression models. Both dependent variables are derived

from literature and have become standard indicators for the performance of collective bargaining structures in comparative literature. Arguably, other indicators such as for example labor costs and income equality are important but we concentrate on indicators directly related to predominant debates (e.g., Calmfors & Driffill, 1988).

We are interested in the effects of instability of the institutional structure of collective bargaining and not primarily in the effects of the different institutional structures. Thus the focal explanatory variable in this study is a measure of institutional instability. We base our measure of instability on basis of changes in the categorization of collective bargaining coordination by Visser (2014). The categorization is based on variations in the level on which collective bargaining takes place, the actors involved and the extent of coordination among actors within a particular institutional framework. The categories are: (i) company wide and uncoordinated bargaining; (ii) company wide, but weakly coordinated bargaining; (iii) industry wide but uncoordinated bargaining; (iv) industry wide and coordinated bargaining; (v) economy wide bargaining. See the appendix for details on the categories.

According to the above theoretical reasoning, any change in a country from one of the above institutional structures to another implies negative effects on the efficacy of collective bargaining. As differences between the categories are significant, a change from one category to another is also a significant change. However, minor changes as well as changes in the qualitative nature of processes might not be considered. Thus the empirical analysis might underestimate the effects of change. In any case, the more changes in the institutional structure, i.e. the higher the institutional instability, the more hindered is the efficacy. Vice-versa the more stable the institutional structure the better the outcomes of collective bargaining.

Any change from one category to another in one year to another implies that different actors, on different levels and with different relationships, are involved in collective bargaining.

Consequently we operationalize our instability measure by defining a change in a country from one year to another from a particular institutional structure to another as one change which is numerically expressed by 1. We moreover, hypothesize that neither the direction of change (e.g. change to higher or lower levels) nor the magnitude of change (i.e., overleap of categories) is important. What matters is that the institutional structures and the relevant trust relationships have changed. Neglecting the direction of change theoretically might seem controversial, but as explained, the efficacy of collective bargaining in any institutional structure rests on mutual trust between actors and the trust relationship is disrupted independently of the direction of change.

As building up trust takes time, i.e. will take some years, it is likely that the effect of the institutional change continues to have an effect in the following years. It is also reasonable to expect that the effect of the change continuously fades over time as actors start to restore and build up trust again from year to year. In other words it is likely that actors will align their expectations to the new rules of the game in the new institutional structure over time. Thus the past casts a shadow over the efficacy of collective bargaining in the years following the change but the negative effect weakens over the years. However, there are no theoretical or empirical evidences available regarding the length of the shadow of the past. Therefore we consider and test in our analysis alternative operationalizations of such a shadow of the past. We concentrate here on three versions: in the first we suppose that trust is restored in the year following the change so that there is just a one year "shock" following the change. In version two however we suppose that trust is gradually restored two years after the institutional change. Thus the instability variable is defined by considering the impact of institutional change by 1 in the year the change occurred ($t_0 = 1$) and in the following two years. But, in the following year (t_1) the effect of the change is weaker. The weaker effect is numerically expressed and measured by 0.8 ($t_1 = 0.8$). In the second year after the change the effect shrank

to 0.4 (t_2=0.4). In the third year after the institutional change there is no effect (t_3=0) as it is assumed that trust has been fully built up again. Building up trust in two years is an optimistic perspective of the effect of institutional change on collective bargaining coordination. Therefore, in version three we assume that building-up trust takes longer, i.e. there is a four year shadow of the past and the effect declines at a constant rate in the four year period after the institutional change: t_0=1, t_1=0.8, t_2=0.6, t_3=0.4, t_4=0.2, t_5=0. In Figure 1 the operationalization and the respective gradual decrease of the effect is illustrated.

- insert Figure 1 about here -

Repeated changes increase the institutional instability further as the effect of change accumulates. While the operationalization of version one corresponds with a "simple" dummy variable approach, the variable for the shadow of the past of 2 and 4 years leads to variables with a relative high variance over time. This is because, in our sample, there are countries in which the institutional structure changed repeatedly over time. Our institutional instability measure considers all institutional changes by adding the effect of any new changes to the previous changes. In some countries there was a return to the previous institutional structure after a few years so that the "old" situation was restored. In such a situation we argue that the negative effect is not cleared. This is because we do not expect "restoration" changes back to the previous institutional structure to restore trust among actors immediately as uncertainty was induced by the change and the efficacy hindered.

In addition to the focal explanatory variable, several more variables enter the models in order to control for other possible factors affecting the dependent variables. We group the comprehensive set of control variables into four categories.

The first category relates to the economic context and includes yearly (i) *economic* (GDP) *growth*, (ii) change of the *exchange rate*s (to US Dollar), (iii) change in the *terms of trade*, (iv) change in the *openness* of the economies defined by countries' imports and exports, and (v) *inflation* for explaining the unemployment rate and vice versa the *unemployment rate* for inflation. All these variables aim to control for different economic situations, e.g. phases in the business cycle and differing exposures to international competition, in which collective bargaining and institutional change takes place.

The second category of control variables relates to other aspects of the industrial relations system and includes typical variables such as (i) trade *union density*, (ii) the *fragmentation* of the union system, and (iii) the existence and relevance of *extension* practices in collective bargaining. All these industrial relations variables capture other key aspects of countries' industrial relations systems in which the institutional structure of collective bargaining is embedded.

Closely related to the second category is the third category which relates to the institutional structure of collective bargaining coordination and includes, besides the focal *instability* variable, the *coordination structure* and collective bargaining *coverage*. The variable coordination structure controls for the effect of the institutional structure itself. As collective bargaining coverage differs between countries and changed over time, variable coverage captures the effect of the changing relevance of collective bargaining. Controlling for the latter two variables enables us to separate the effect of the institutional change which is our focal variable of interest and thus explicitly tested. We explicitly report the tests of three different versions of the instability variable: the instability variable with no shadow of the past, and a shadow of 2 and 4 years. Tests of other versions, e.g. longer shadows and non-linear versions, confirm the results of the explicitly reported tests.

The fourth category of variables includes the remaining controls for other relevant factors. Besides a *constant* it includes lags of the dependent variables (Y_{t-n}) in order to control for serial-correlations, and a dummy variable for the structural break in *Germany* due to the unification. In addition, the Hausman-test suggests the consideration of *fixed-effects* (FE) so that in all models a full set of country dummies enter the models. The necessity of including country FE implies that the effects of the different institutional structures of collective bargaining coordination cannot be modelled by using dummies for each of the category. Given that the focus here is the test of the effect of the institutional instability, this trade-off is of minor concern as long as the effect of the institutional structure is captured in the model, which it is in our modelling approach. This is done firstly and directly by the inclusion of the collective bargaining structure variable and secondly, indirectly by the consideration of country fixed-effects. In order to test the robustness of the models, different lag structures of the independent variables were tested and further control variables were included and excluded. In addition, we tested whether or not the effect of the collective bargaining structure is non-linear. Further tests were made on the timings of change, i.e. in which exact year the collective bargaining structure is different. All robustness checks support the results shown.

The models certainly raise concerns about endogeneity, i.e. reverse causality, with respect to the focal instability variable. Theoretically, it seems intuitive that the change in the institutional structure of collective bargaining is induced by a weak economic performance, i.e. high unemployment and inflation. To control for this, we apply a Two-Stage-Least-Square (TSLS) estimation approach and use a change in *union authority* as an instrumental variable. A change in union authority is likely to affect our key independent variable, i.e. the change in the coordination structure of collective bargaining but does not directly affect

inflation and unemployment. Table 2 documents the results of the TSLS estimation for all versions of the model for both dependent variables.

- Table 2 about here -

Beginning with the effect of institutional instability, Table 2 shows that, for both dependent variables and in all model variations, the hypotheses are confirmed. The more often the institutional structure of collective bargaining is changed and thus the higher the institutional instability, the higher the unemployment rate and the higher inflation. As this effect holds for all models and for both dependent variables, the conclusion can be drawn that institutional change in collective bargaining is costly and causes negative economic effects which should be considered in any attempt to reform collective bargaining. At least in the short run, i.e. up to 4 years after the institutional change, it likely that the clear negative effect of the instability is *not* compensated for by the new institutional structure.

The general effect of the institutional bargaining structure is less clearly supported. The evidence shows that only the unemployment rate is effected by the institutional structure. In models (1) to (3) a significant negative coefficient can be observed which shows that the more coordinated collective bargaining is, the lower unemployment is. This supports previous literature on the positive effects of coordinated collective bargaining structures on economic aggregates (e.g. Baccaro & Simoni, 2010; Brandl, 2012; Johnston, 2012; Johnston, Hancké & Pant, 2014; Traxler & Kittel, 2000). For inflation, no such significant effect of the degree of coordination of collective bargaining can be observed. However, this mixed empirical support for the relevance of the institutional structures of collective bargaining might be explained by the fact that much of the explanatory power of these effects is captured by the country fixed-effects. An in-depth investigation of both the country dummies and the

coordination structure would be needed in order draw conclusions on the effects of different categories of bargaining coordination. This would be beyond the scope and aims of this research. Regarding the other controls, we see that most other industrial relations variables do not appear to have an impact on both dependent variables; only for the unemployment rate is there an effect of union density. Turning to the economic controls, we see that economic growth is significant. The results confirm standard reasoning that higher economic growth is associated with lower unemployment rate and with higher inflation. Furthermore, the terms of trade affect the unemployment rate and the unemployment rate affects inflation. In sum, the effects of the control variables confirm standard expectations. It is notable that relatively few coefficients of the control variables show significant estimates. However, it is not the main purpose of the work to address this in detail as these variables just need to cover all other factors which explain the dependent variables.

We argued that a change in any direction, e.g. towards a more centralized or decentralized institutional structure, leads to a negative effect on economic performance, as in either direction trust relationships among actors are disrupted. As this might be considered controversial, we tested the effects of different directions of change separately. The estimation results are shown in Table 3 for both unemployment and inflation, albeit with only the industrial relations and collective bargaining structure variables shown for reasons of space. We report only the dummy variable approach because if this approach shows that there is no effect on the direction of change, then any test of a shadow of the past is unnecessary because if there is no effect in the year after the change, there is no reason for any effect later.

- Table 3 about here -

As can be seen in Table 3, there is the same sign of the direction of the effect of institutional change in all four specifications. A change in the institutional structure of collective bargaining increases both unemployment and inflation independently of whether the change was towards a lower level of coordination, i.e. (1a) and (4a), or towards a higher level of coordination, i.e. (1b) and (4b). As might be expected, the effects of the other industrial relations variables are similar to Table 2, with the exception of the control variable for the coordination structure for inflation. Without discussing the magnitude of the effects in further detail, there is some evidence that changes towards more decentralized levels do have an even higher (negative) effect on unemployment compared to the effect in the other direction. Such an effect is plausible as trust and the functioning of social dialogue can be build up more quickly if fewer actors are involved - which is the case in the case of change towards more coordinated institutional structures.

Returning to the focal research question, the upshot of the empirical analyses so far is that institutional instability has a clear negative effect on unemployment and inflation and this effect is maintained regardless of whether the instability results from a change in the institutional structure towards more coordination or less. We argued that the reason for this effect is found in collective action problems and increased transaction costs in labor markets mainly caused due by a loss of trust amongst actors. Given the design of the analysis so far, our hypotheses that change of the institutional structures of collective bargaining causes short-to-medium term costs, or economic inefficiencies, is confirmed on a very general basis. Against this background, we now investigate the causal mechanism in two illustrator case studies of changes and instability of collective bargaining structures in the UK and Sweden.

Collective bargaining, institutional change and loss of trust in UK and Sweden

In this section, we take a close and in-depth view on the mechanisms behind the relationship between institutional instability and macro-economic performance because of the loss of mutual trust amongst actors in the UK from the 1970s to the 1980s and in Sweden from the 1980s to the 1990s. The selection of the two countries is based on the principle of maximum-variation case selection. In both the UK and Sweden the collective bargaining structures have changed in recent decades, however, the direction and nature of institutional change are quite different (Baccaro & Howell, 2011). In the former, collective bargaining decentralized from multi-employer bargaining to uncoordinated company-level bargaining while in the latter, coordination of multi-employer bargaining was restored after the peak level employer association withdrew from bargaining. While the countries therefore differ in the direction of institutional change, in both states institutional instability included oscillation between different bargaining levels and with different actors involved leading to a loss of mutual trust.

UK

While some scholars – for good reasons – have focused on the spectacular advent of "Thatcherism" in 1979 and how this changed UK industrial relations permanently (Edwards, 2003), for our purposes, the institutional changes preceding "Thatcherism" are just as interesting. During the period 1969-1981, collective bargaining structures in the UK changed six times (see Figure 2), resulting in both great social upheaval and macro-economic problems (Crouch, 1993; Edwards, Hall, Hyman, Marginson, Sisson, Waddington & Winchester, 1998). While the latter evidently cannot be fully ascribed to institutional instability in collective bargaining – this was a period of oil crisis and stagflation in most

advanced economies – closer inspection into the changes to collective bargaining clearly slows that mutual trust deteriorated during the period. In a series of attempts to combat inflation, British governments experimented with income policies throughout the 1970s which fundamentally challenged the principle of UK voluntarism and further deteriorated trust in wage bargaining institutions. Income policies trying to curb nominal wage inflation were already well under way during the late 1960s. Various historical analyses highlight how trust between the government and unions gradually dwindled and ultimately disappeared, undermining the goals of wage bargaining coordination (Castle, 1990; Dorey, 2006; Purdy, 2006; Rogers, 2009). Under the Wilson government, a 3.5% average wage increase ceiling was introduced for 1968-69 but with no ceiling in cases of significantly improved productivity, labor mobility and re-allocation, eradicating low pay and erosion of comparability vis-à-vis workers performing similar tasks. The attempt to instill exceptions centrally was an invitation to use wage-comparisons to break the ceiling and urges to introduce compliance mechanisms locally were thwarted (Dorey, 2006, p. 87) on the grounds that this would be impossible to control centrally by civil servants; shop stewards were also neither willing, nor capable of enforcing wage-controls (Castle, 1990, p. 195).

Significantly for our theoretical claim, UK trade unions at this time were increasingly losing trust in the government regarding the temporary nature of incomes policies: if repeated enough times, they would strip unions of their stake in wage bargaining (Rogers, 2009). Wage moderation by statutory decree created a growing gulf between, on the one hand, the rank-and-file and on the other, trade union leaders who had agreed to incomes policies with the Government Ministers. This contributed to wage-militancy by shop stewards on the shop-floor who were reluctant to bear the cost of economic problems which in their opinion had been caused by "capitalism" (Dorey, 2006, p. 86).

- insert Figure 2 about here -

In 1970 and 1971, no incomes policy was agreed upon or attempted and the incoming Conservative Heath-government initially wanted to dismiss any formal pay policy altogether (Purdy, 2006, p. 4). The so-called $N - 1$ policy was, however, in effect as an informal pressure on public sector wage bargaining, while wage bargaining in the private sector was characterized by a fragmented mixture of industry-wide agreements and company level bargaining. As Pendleton (1997) observes, the mixture of public sector wage moderation by the Heath government and the relinquishing of private sector incomes policies, led to an upsurge in conflict in the nationalized industries – most notably the coal-mining strike in 1972 – which dealt a serious blow to the Heath-government and spurred a return to incomes policies with the Trades Union Congress (TUC) in 1972. In the meantime, however, the Conservative government had passed the Industrial Relations Act of 1971 which, among other things, restricted immunities for strike action and made unions liable to penalties if judged responsible for so called "unfair industrial practices". Seeing this as a direct attack on unions, the TUC was not inclined to control wage moderation, even though the Heath government introduced a compulsory wage freeze in 1972-1973, and the mutual trust between the actors was at a low (Purdy, 2006; Rogers, 2009).

The archival work by Rogers (2009) shows how the Labour Party and TUC-leaders tried to restore mutual trust at the beginning of 1972, including attempts to restore the economy without statutory incomes policies, a problem which had plagued Labour party-TUC relations during the former Wilson-government. When Labour took over in 1974, they did so with the so-called Social Contract which called for price controls, expansion of subsidies for house building and public transportation and redistribution of incomes and wealth, together with a

return to voluntary collective bargaining, hereby restoring trade union influence on pay-setting (Rogers, 2009).

Interestingly, the Social Contract did not include a commitment by the TUC to incomes policy (Tarling & Wilkinson, 1977, p. 395) and up until the election of 1974, the TUC would only urge its affiliated unions to take into account wage moderation, provided the Labour government delivered on the commitments in the Social Contract (Purdy, 2006, p. 13).

Nevertheless, the Wilson-government soon shifted focus to the balance-of-payments problem and pressure on the Sterling rate which required tackling of inflation – and incomes policy was back on the table. Rogers (2009) calls this the "Social Contrick" referring to how unions were promised one thing in the Social Contract and got incomes policies instead. The TUC agreed to a flat-rate pay limit of £6 per week for low-wage earners in 1975. This was followed up by a wage increase limit of 5% in 1976-77 under the Callaghan-government and while inflation did fall from staggering 24.2% in 1975 to 8.3% in 1978, most trade unions had lost trust in Labour. Similarly, Labour was increasingly losing trust in the unions to deliver on wage-restraint as shop-floor militancy increased, culminating in the Winter of Discontent in 1979 (Hyman, 2003). This ultimately led to the advent of Thatcher and a return to decentralized bargaining but in addition, with the crucial shift to Monetarist economic policy, of low inflation and an explosion in unemployment (Scharpf, 1997).

Sweden

Importantly for our theoretical claim, Sweden is a case in which institutional instability is based on a series of changes, i.e. of accumulated effects because of repeated change, as the involved actors struggled to define the "rules of the game" over a longer period of time. Altogether, this hindered the ability of actors to build up mutual trust and therefore their

ability to agree on outcomes which are in their mutual interest, i.e. to produce wage moderation. During the period 1983-1997, Swedish collective bargaining structures changed seven times (see Figure 3).

While most scholars consider 1990 as the end of centralized wage bargaining in Sweden when Svenska Arbetsgivareföreningen (SAF – *Swedish Employers' Confederation*) pulled out of wage negotiations with Landsorganisationen (LO – *Swedish Trades Union Congress*), the institutions had actually changed already in 1983 when industry-level bargaining prevailed for the first time (Swenson & Pontusson, 2000; Wallerstein & Golden, 1997).

It is important to bear in mind that even in the heyday of centralized bargaining, the Swedish peak level confederations only negotiated recommendations for the affiliates. Compliance with wage moderation was therefore always a matter of trust between affiliates even though confederations had considerable powers to hold their members in line. During the 1970s, the centralized system began to crack with wage-rivalry between salaried workers in Privattjänstemannakartellen (PTK – *Private Salaried Employees Cartel*) vs. manual workers in LO, public vs. private workers and finally, sheltered in transport and construction vs. exposed workers in manufacturing (De Geer, 1992; Elvander, 1988). This was a time of low compliance, resulting in wage drift, but with formal institutional stability. As such, it could be regarded as institutional change in the function of institutions (Baccaro & Howell, 2011).

- insert Figure 3 about here -

In 1983, the metalworking parties, Verkstadsföreningen (VF – *The Metal Trades Employers' Association*) and Metall (*Swedish Metalworkers' Union*) struck a deal at industry-level with the explicit aim of weakening the centralized bargaining level (Ahlén, 1989; Elvander, 1988). VF paved the way for this move by creating its own strike-fund and by changing SAF

approval procedure for affiliate agreements (De Geer, 1992). This was crucial for industry-level bargaining in other sectors. Thus, while SAF/LO did manage to reach agreement for their remaining affiliates, the door to industry-level bargaining was opened and therefore also the disruption of mutual expectations between bargaining levels and across bargaining units. Indeed, the 1983-agreements for construction and the forest-industry did not include the general construction for indexed wage increases which was established to guarantee wages but also control them in line with inflation (Elvander, 1988, p. 94). The knock-on effect of the change was a further weakening of the confederate-coordination between LO and PTK, whereby the latter struck longer deals (three years) with SAF than the LO-unions (one year). However, also within PTK, centralization broke down as its affiliates in manufacturing struck industry-level agreements separately and only for 18 months. Coordination of wages suffers under varying agreement periods as economic and political conditions can change significantly between bargaining rounds (Ibsen, 2013), further undermining the foundation of mutual expectations of bargaining behavior.

Bargaining hereafter oscillated between pure industry-level bargaining and industry-level bargaining, with some peak level coordination in the form of framework agreements for subsequent bargaining at industry level. The 1980s were thus wrought with diverging agreement periods, industrial action, increasing wage drift and compensatory wage claims by unions whose members were lagging behind in the wage-inflation spiral (Ahlén, 1989; Stokke, 1998). Numerous attempts to control wage developments by LO, the government and to some extent SAF – the latter being increasingly disillusioned with coordination attempts – were unsuccessful, as affiliates either upfront rejected coordination or introduced re-negotiation clauses in the event of real wage losses – as happened for example in 1989 (Stokke, 1998, p. 499). In other words, the mutual trust in wage moderation had vanished causing severe inflation-problems and real wage stagnation.

In 1990, SAF decided to withdraw from any wage bargaining activity by simply shutting down its bargaining offices. At the same time, wages were estimated to increase by 10%– twice as high as the OECD average (Elvander, 2002). This prompted a short recentralization as the government first proposed a wage and strike freeze to curb wage-inflation. While this proposal was defeated, the so called Rehnberg Group was put in charge of negotiating and mediating the 1991-agreement which successfully brought down labor cost increases to 3% per year. This success was, however, short-lived: the 1995 bargaining round resulted in major industrial action and wage increases exceeding the averages in EU countries despite an unemployment rate of 12% (Elvander, 2002). With no stable bargaining structure in place – the Rehnberg Group had run its course – the bargaining actors fell back into low-trust bargaining with scant possibilities of wage moderation. What finally broke this situation was the so-called Industrial Agreement of 1997 which promised a long-term institutional design for industry-level bargaining based on pattern bargaining with manufacturing setting the wage norm (Elvander, 2002). The competencies between actors at different bargaining levels and a new public mediation institution in 2000 committed to pattern bargaining were then clear. With these clear rules of the game, i.e. established and defined structures and relationships between actors, mutual trust in wage moderation was eventually placed back into the Swedish bargaining model (Ibsen, 2013).

Conclusions

The literature on the effects of different institutional structures of collective bargaining has until now focused almost entirely on the effects of the institutional structures themselves. Even though there is no widely accepted agreement upon which institutional structure is associated with the "best" performance, some of these studies have inspired policy makers in

different countries to reform their national institutions of collective bargaining in order to achieve beneficial economic outcomes. However, the theoretical and empirical foundations for expecting positive macro-economic results from these changes are not convincing. In part, this is due to the fact that the macro-economic effect of change itself has largely been neglected in existing studies. In this article, we argued that change to collective bargaining institutions is costly because it leads to a disruption of mutual trust between the actors involved in collective bargaining. It was explained that trust is of focal importance for the efficacy of collective bargaining as trust is needed for the provision of public goods, such as wage moderation. For this reason, any glitch in the various trust relationships between the actors involved is thus likely to lead to inefficient outcomes.

Using data for 33 countries during the period 1965 to 2010, we tested this hypothesis on the effect of institutional change, or institutional instability respectively, of collective bargaining on two "classical" indicators in the field: unemployment and inflation rate. The findings show that institutional instability is associated with negative effects. The analysis thus suggests that changes in collective bargaining institutions are costly. This effect is strong and robust for both inflation and unemployment. These findings imply that standard reasoning on the need for institutional reform of social dialogue clearly underestimates the costs of the reform itself. The results in this work also show that institutional change in the "better" direction does not necessarily lead to better economic outcomes per se! Any positive effect from a better performing institutional structure is likely to be dampened by the cost of the change – at least in the short-to-medium run (i.e. up to four years after the change).

To illustrate the causal mechanism producing the relationship between institutional change, loss of mutual trust and negative macro-economic impact, we conducted case studies of reforms of collective bargaining in the UK and Sweden. Despite involving institutional change in different ways and directions, both countries experienced a loss of mutual trust

between bargaining parties which undermined the efforts to moderate wages. In both countries, trust was lost both horizontally across bargaining units and vertically between bargaining levels because the institutions that usually conveyed information about the expected behavior of certain actors in certain situations were changed. This gives support to the importance of mutual trust for the efficacy of collective bargaining. Moreover, the case studies show how a series of institutional changes can accumulate to cause loss of trust and thus the negative impacts.

As the negative effect of change is of a temporary nature – since mutual trust about expected behavior can be rebuilt – the results of this study do not support any deadlock in institutional reform. The same argument holds also for institution building. The results instead suggest that any new institutions of collective bargaining need time to establish their functioning. The actors involved in a new institutional structure need to learn the rules of the game, i.e. have to build up trust before full efficacy is achieved. It is likely that in completely new and innovative institutional environments this process takes even longer to occur than in a change from one "old" structure to a new one. A good example for such a new institutional environment is the European (Sectoral) Social Dialogue where the functioning of meetings in the first years is usually considered "inefficient" (Pochet, 2006). The upshot of this is that patience in the functioning of new institutions of collective bargaining is necessary.

Looking beyond the time period studied in this analysis, the results are also able to shed new light on discussions of the success of recent changes and reforms in collective bargaining since the advent of the economic crisis. In various European countries which have made bilateral agreements with the "Troika", changes were demanded in collective bargaining and implemented on a national basis. However, in all these countries, the reforms were not only accompanied by social unrest, which in itself lead to economic "inefficiencies", but the success of the reforms is also questioned, as economic indicators of "success" have not

developed as expected. The results reported here do not exclude the possibility that the reforms were the correct policies to help these countries to recover and prosper economically in the long-run. However, they might explain how even if the reforms materialize and achieve the desired results in the long-run, it is unrealistic to expect observable positive effects in the short-to-medium term. This is because the inevitable negative effects of the change itself have dulled the positive effects of the reform so far. In fact, if the negative short-term effect is stronger than the expected positive effect of reform, the results may explain why many indicators in these countries, such as unemployment in particular, are even increasing. In addition, it might be likely that in a situation of economic uncertainty and social turbulence, the process of trust-building is more difficult so the negative effect prevails even longer, thus delaying any recovery in these countries further (e.g., Rychly, 2009). Accordingly, one important implication of the study for policy making is that the timing of institutional reforms is crucial. Even if policy makers are sure, (if this is possible), that the reform will prove to be successful in the long-run, it may be important for them to consider the situation in the short-run for the timing of their decision. They might have to balance a dilemma between, the sooner the reform, the sooner the long run positive effects *vs.* the situation getting even worse due to the short-to-medium negative effects.

Nonetheless, the results of this study clearly show that policy-makers should avoid changing collective bargaining institutions very often; institutional instability due to a series of changes leads to even higher costs. Our analysis shows that well-functioning collective bargaining institutions rest heavily on a stable institutional environment and stable relationships among actors. For this reason, it is no mere coincidence that countries with stable institutions of collective bargaining do better economically than countries with a history of many reforms. This result holds for the long time period which is analyzed in this work but also confirms other research which conclude that those countries with resilient institutional systems of

collective bargaining have weathered the crisis relatively well (Johnston, Hancké & Pant, 2014, p. 1773).

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Appendix

Variable	Description and Sources
Dependent variables:[+]	
Inflation	Annual change of Consumer Price Index (Source: European Commission AMECO 2013 database)
Unemployment rate	Unemployment rate, total (percentage of civilian labour force) definition Eurostat (Source: European Commission AMECO 2013 database)
Independent variables:	
Collective bargaining variables	
Coordination structure	Differentiation of five levels of coordination of collective wage bargaining: Decentralized and fragmented bargaining, mostly at company level (= 1; *company wide/uncoordinated*). Mixed or alternating industry- and firm level bargaining, with weak enforceability of industry agreements (= 2; *company wide/coordinated*). Industry bargaining with no or irregular pattern setting, limited involvement of central organizations, and limited freedoms for company bargaining (= 3; *industry wide/uncoordinated*). Mixed industry and economy-wide bargaining: a) central organizations negotiate non-enforceable central agreements (guidelines) and/or b) key unions and employers associations set pattern for the entire economy (= 4; *industry wide/coordinated*). Economy-wide bargaining, based on a) enforceable agreements between

	the central organizations of unions and employers affecting the entire economy or entire private sector, or on b) government imposition of a wage schedule, freeze, or ceiling (= 5; *economy wide/coordinated*). (Source: Visser, 2014).
Coverage	Percentage share of employees covered by any sort of collective wage bargaining agreement of the total number of wage and salary earners in employment with the right to bargaining,. (Source: Visser, 2014) [+].
Instability	Defined as a change in the variable coordination structure. See Figure 1 for details.
Further variables	
Economic growth	Annual logarithmic change of real Gross Domestic Product (Source: European Commission AMECO 2013 database)
Exchange rate	Annual change of exchange rates to Euro/Ecu (Source: European Commission AMECO 2013 database)
Extension	Mandatory extension of collective agreements by public law to non-organized firms (Source: Visser, 2014)
Fragmentation	Number of union confederations (Source: Visser, 2014)
Germany	Dummy variable for German unification (Source: own)
Openness	Annual change of average share of imports and exports of goods in world trade (Source: European Commission AMECO 2013 database)
Terms of trade	Annual change of terms of trade goods and services 1995 = 100); Ratio between export price index and import price. (Source: European Commission AMECO 2013 database)

Union authority	Formal authority of unions regarding wage setting at peak and sectoral level (Source: Visser, 2014) [+].
Union density	Trade union density, i.e. net union membership as a proportion wage and salary earners in employment (Source: Visser, 2014) [+].

Note: [+] Missing values replaced by previous year(s) values.

Figures and Tables
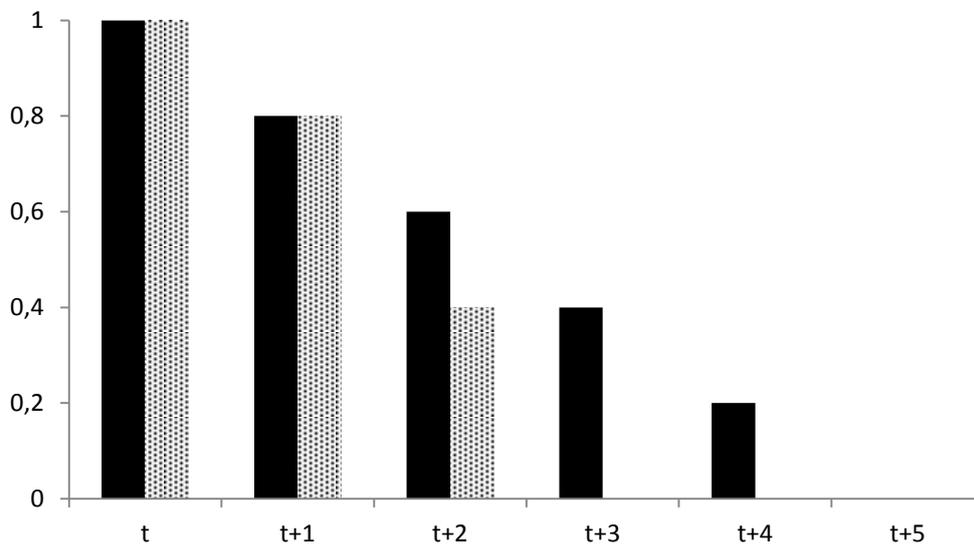
Figure 1. Illustration of the operationalization of institutional change

Note: Black bars illustrate the declining duration of the effect of the change with a shadow of

the past of four years. Grey dotted bars the effect with the assumption of a shadow of the past

of two years.
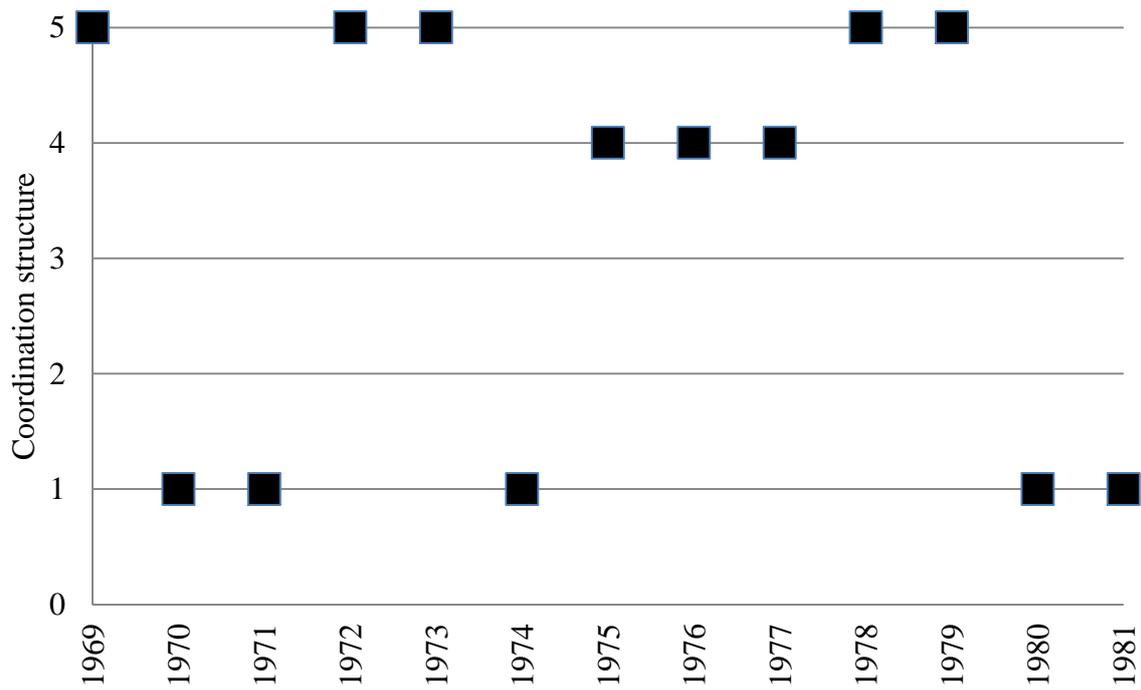
Figure 2. Change in the coordination structure in the United Kingdom from 1969 to 1981

Note: Coordination structure categories: 1= company wide/uncoordinated; 2 = company wide/coordinated; 3 = industry wide/uncoordinated; 4 = industry wide/coordinated; 5 = economy wide/coordinated. See the appendix for a detailed definition of the categories.
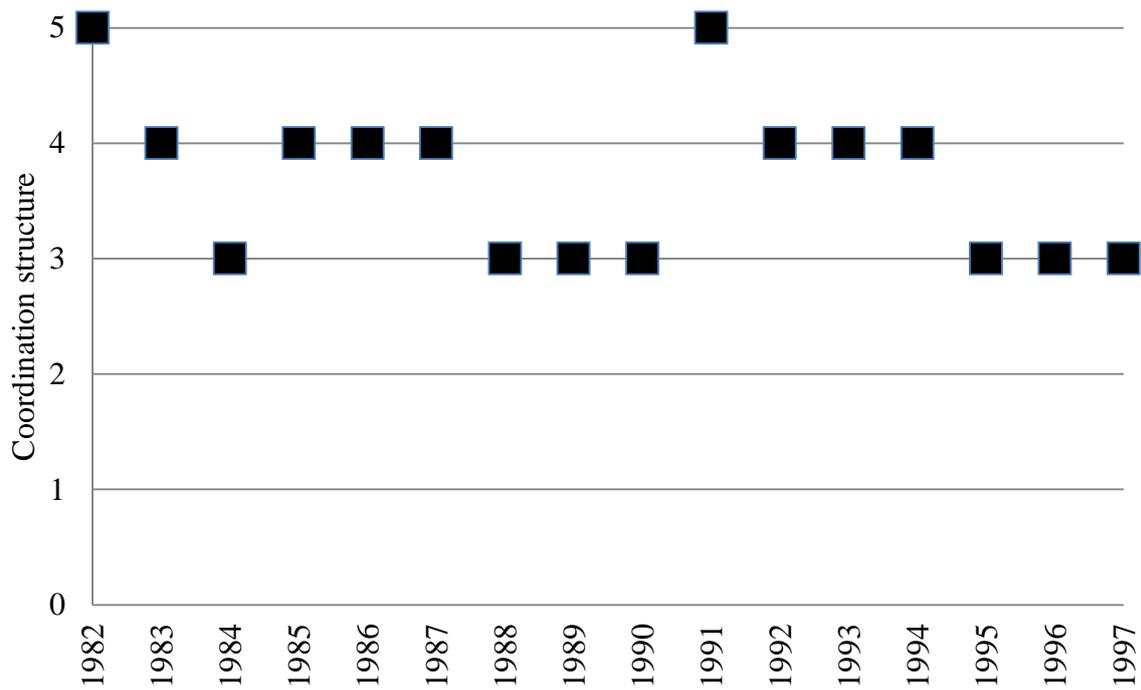
**Figure 3.** Change in the coordination structure in Sweden from 1982 to 1997

Note: Coordination structure categories: 1= company wide/uncoordinated; 2 = company wide/coordinated; 3 = industry wide/uncoordinated; 4 = industry wide/coordinated; 5 = economy wide/coordinated. See the appendix for a detailed definition of the categories.

Table 1. The institutional stability/instability of collective bargaining coordination in 33 countries; 1960-2010

Country	Number of changes[1]	Since when[2]	Percentage of years with no change[3]	Predominant level[4]
Austria	1	1965	98%	industry wide/coordinated
Belgium	8	1965	83%	industry wide/coordinated
Bulgaria	3	1992	84%	company wide/coordinated
Cyprus	0	1990	100%	company wide/coordinated
Czech Republic	2	1990	90%	company wide/coordinated
Denmark	13	1965	72%	industry wide/uncoordinated
Estonia	0	1991	100%	company wide/uncoordinated
Finland	18	1965	61%	industry wide/coordinated
France	4	1965	91%	company wide/coordinated
Germany	0	1965	100%	industry wide/coordinated
Greece	0	1975	100%	industry wide/coordinated
Hungary	0	1990	100%	company wide/coordinated
Ireland	9	1965	80%	industry wide/coordinated
Italy	5	1965	89%	company wide/coordinated
Latvia	0	1993	100%	company wide/uncoordinated
Lithuania	0	1993	100%	company wide/uncoordinated
Luxembourg	4	1965	91%	company wide/coordinated
Malta	0	1990	100%	company wide/uncoordinated
Netherlands	11	1965	76%	industry wide/coordinated
Poland	0	1990	100%	company wide/uncoordinated
Portugal	13	1978	61%	industry wide/uncoordinated
Romania	6	1993	67%	company wide/coordinated
Slovakia	4	1990	81%	industry wide/uncoordinated
Slovenia	4	1990	81%	industry wide/coordinated
Spain	7	1977	79%	industry wide/uncoordinated
Sweden	7	1965	85%	industry wide/uncoordinated
UK	7	1965	85%	company wide/uncoordinated
USA	2	1965	96%	company wide/uncoordinated
Australia	6	1965	87%	company wide/coordinated
Canada	2	1965	96%	company wide/uncoordinated
Japan	2	1965	96%	industry wide/coordinated
Norway	22	1965	52%	industry wide/coordinated
Switzerland	1	1965	98%	industry wide/coordinated

Note: [1] Shows how often the structure of coordination of collective bargaining was changed. [2] Shows since when data is available. [3] Shows the time (in percentages) in which there was no change of collective bargaining coordination (i.e. indicates the stability of collective bargaining coordination over years). [4] Shows the most frequent coordination structure during the period of analysis. See the appendix for details on the coordination structure.

Table 2. The effects of institutional stability on inflation and unemployment, 33 countries, 1965-2010

Dependent variable:	Unemployment rate			Inflation		
Shadow of the past:	**No**	**2 years**	**4 years**	**No**	**2 years**	**4 years**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Collective bargaining:						
Instability	4.5769***	2.9981***	2.7790***	3.8171**	2.5782**	1.8615*
	(1.4864)	(0.9628)	(0.9073)	(1.8667)	(1.2952)	(1.1218)
Coordination structure	-0.1796**	-0.1714**	-0.1447*	-0.1369	-0.1278	-0.0865
	(0.0858)	(0.0797)	(0.0810)	(0.0872)	(0.0832)	(0.0695)
Coverage	-0.0020	-0.0075	-0.0134	-0.0023	-0.0073	-0.0075
	(0.0099)	(0.0100)	(0.0119)	(0.0088)	(0.0100)	(0.0113)
Industrial relations:						
Union density	0.0740*	0.0771*	0.1132**	0.0499	0.0504	0.0677
	(0.0404)	(0.0427)	(0.0480)	(0.0382)	(0.0431)	(0.0503)
Fragmentation	0.0425	0.0772	0.1162	0.1057	0.1273	0.1276
	(0.0875)	(0.0884)	(0.1035)	(0.0864)	(0.0917)	(0.0957)
Extension	0.1455	0.2370	0.1748	0.3174	0.3961	0.2705
	(0.2626)	(0.2408)	(0.2519)	(0.2528)	(0.2580)	(0.2461)
Economic:						
Inflation	0.0746	0.0062	-0.0119	-	-	-
	(0.0507)	(0.0654)	(0.0772)			
Unemployment rate	-	-	-	-0.1792**	-0.1860**	-0.2049**
				(0.0882)	(0.0921)	(0.0973)
Terms of trade	-0.0253*	-0.0282*	-0.0263*	-0.0119	-0.0151	-0.0130
	(0.0148)	(0.0148)	(0.0158)	(0.0152)	(0.0156)	(0.0146)
Openness	0.1008	0.0737	0.0073	-0.1208	-0.1417	-0.2535
	(0.1933)	(0.1882)	(0.1993)	(0.1958)	(0.1916)	(0.1731)
Exchange rate	-0.0128	-0.0087	-0.0086	0.0134	0.0165	0.0162

	(0.0082)	(0.0091)	(0.0095)	(0.0120)	(0.0127)	(0.0122)
Economic growth	-0.1855***	-0.1866***	-0.1863***	0.0846***	0.0834***	0.0914***
	(0.0249)	(0.0241)	(0.0256)	(0.0286)	(0.0297)	(0.0291)
Others:						
Germany	0.4731*	0.4348	0.3821	0.0540	0.0098	-0.0088
	(0.2757)	(0.2791)	(0.2939)	(0.2075)	(0.2133)	(0.2219)
Constant	1.0928*	1.1272**	1.1364*	0.1755	0.2269	0.1937
	(0.5920)	(0.5597)	(0.6092)	(0.5407)	(0.5288)	(0.4995)
Y_{t-1}	0.8659***	0.8642***	0.8674***	0.5918***	0.5292***	0.5421***
	(0.0259)	(0.0248)	(0.0267)	(0.0597)	(0.0854)	(0.0929)
N x T	1003	999	976	1003	999	976
R-squared	0.8054	0.8151	0.7872	0.1933	0.1911	0.3092
Adj. R-squared	0.7963	0.8064	0.7769	0.1554	0.1529	0.2758

Note: Pooled time-series cross-section analysis, Two-Stage Least Squares (with variable union authority as instrument) with panel-corrected standard errors in parentheses. All variables are lagged by one year. In all the models a full set of country dummies is used; fixed effects (FE). ***$\alpha \leq .01$; ** $\alpha \leq .05$, * $\alpha \leq .1$. *N x T*: number of observations. For abbreviations and variable definitions, see the appendix.

Table 3. The effects of a change towards higher and lower structures of coordination on inflation and unemployment, 33 countries, 1965-2010

Dependent variable:	Unemployment rate		Inflation	
Direction	**Lower**	**Higher**	**Lower**	**Higher**
	(1a)	**(1b)**	**(4a)**	**(4b)**
Collective bargaining:				
Instability	13.1034**	2.1550**	2.3414**	3.2719**
	(5.8318)	(1.0026)	(1.1126)	(1.2887)
Coordination structure	-1.0144**	-0.2660**	-0.2911**	-0.3610**
	(0.4969)	(0.1109)	(0.1375)	(0.1439)
Coverage	-0.0294	0.0086	0.0061	0.0067
	(0.0253)	(0.0051)	(0.0130)	(0.0073)
Industrial relations:				
Union density	0.1031	0.0312	0.0115	0.0247
	(0.0755)	(0.0276)	(0.0270)	(0.0282)
Fragmentation	-0.0173	-0.0470	0.0785	0.0696
	(0.1702)	(0.0430)	(0.0631)	(0.0675)
Extension	-0.1737	0.1301	0.2135	0.3568
	(0.5396)	(0.1495)	(0.2710)	(0.2267)

Note: For details on estimations strategy and details see notes in Table 2. Estimated models/specifications correspond exactly with specifications (1) for unemployment and (2) for inflation in Table 2. Models differ that for (1a) and (4a) instead of all changes only changes towards lower structures of coordination and for (1b) and 4(b) only changes toward higher structures of coordination are considered. Estimation results for other variables are not shown but considered in the estimation.