Instability and Change in Collective Bargaining: An Analysis of the Effects of Changing Institutional Structures

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Abstract: Previous studies on collective bargaining structures and macro-economic performance have largely ignored the role of the stable and instable institutional structures and the effects of institutional change itself. In this paper we posit that institutional stability of collective bargaining is of major importance for the moderation of unit labour costs growth. This hypothesis is tested on the basis of data which covers the period 1965 to 2012 and includes 28 countries. The results show that institutional change impairs the capacity to moderate unit labour cost growth significantly in the subsequent years following the change. This effect also holds for changes in both decentralization and centralization of institutions.

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1. Introduction

This article takes up a classical theme in economic and social sciences – the consequences of institutional change – by analysing the impact of changes to institutional structures of collective bargaining and the subsequent institutional instability on macro-economic performance. Changes to collective bargaining structures, i.e. in the level, domain and form of bargaining coordination 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 the institutional structures of collective bargaining have been changed on the basis of recommendations from the European Commission, the European Central Bank and the International Monetary Fund, the so called 'Troika' or 'creditor institutions' (Marginson 2015). However, the effects of these and other changes in collective bargaining structures on macro-economic performance are unclear. In part, this is due to the fact that the effects of institutional *change by itself* and the effects of *institutional instability* have largely been neglected in existing theoretical and empirical studies.

So far, the macro-level studies of the relationship between have attempted to assess the impact of particular bargaining structures on various outcome variables such as wage increases, (un)employment, inflation, (wage) inequality and competitiveness, in particular on (unit) labour costs (e.g. Baccaro and Simoni 2010; Brandl 2012; Calmfors and Driffill 1988; Iversen 1998; Johnston 2016; Kenworthy 2006; Soskice 1990). Other studies have focused on the change or resilience of institutions for collective bargaining facing changing socio-economic and technological conditions (e.g. Crouch 1993; Hall and Soskice 2001; Kochan *et*

al. 1994; Streeck 2009; Thelen 2014). The axis of contention in the former – often based on cross-sectional variance – 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 the macro-economic effects of institutional change itself has thus been largely ignored or assumed. For the former strand of studies, this omission is probably 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. Aumayr-Pintar *et al*. 2014), so that the focus on analysing the effects of the structure itself are 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 and Soskice 2001) or, alternatively, it is the direction and causes of change – rather than the effects themselves – that receive attention (e.g. Howell and Givan 2011; Streeck 2009; Thelen 2014).

In this article we explain and argue that, in some 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, i.e. in the few years after the change. Building on institutional economics, path dependency theory (e.g. Hall and Soskice 2001; North 1991; Pierson 2004) and theories of collective bargaining (e.g. Baccaro and Simoni, 2010; Calmfors and Driffill 1988; Hicks 1932; Knight 1992; Olson 1982; Traxler and Brandl 2012), we argue that institutional change and instability is costly due to a reduced ability for collective action under increased distributional power struggles between actors. Yet contrary to path dependency arguments, we actually observe frequent and significant changes to collective bargaining structures. While this seems to question the path dependency-logic in conventional neo-institutionalism, our analysis shows that the central

argument that change is costly holds, but that this has not prevented actors from changing institutions. There are studies which analyse the effects of an institutional change by comparing the effects of the 'new' and the 'old' institutional structure in specific countries (e.g. Daouli *et al*. 2013; Granqvist and Regnér 2008). These studies are focussed on single country studies and therefore do not permit generalization on the effects of institutional structures themselves and the possible 'transaction costs' of the institutional change itself. In contrast to these studies, this work differentiates explicitly between the effect of the old and new institutional structures and separates the effect of the change itself in a longitudinal and comparative cross-country methodological framework, i.e. a macro-theoretical framework. Moreover, this framework allows us to investigate the effects of the costs and benefits of institutional stability and instability of collective bargaining.

The article proceeds as follows. In the next section we develop the theoretical expectation that institutional change and stability reduce distributional power struggles between actors by creating mutual expectations about bargaining behaviour across and within bargaining areas. Mutual expectations, in turn, form the basis for wage moderation which is reflected in unit labour costs (ULC) growth. Then, we investigate and define the proposed relationship between institutional change and instability on nominal and real ULC theoretically and empirically in detail. We then present the modelling strategy and test the relationship using a distributed lag model regression analysis on the basis of yearly data from 1965 to 2012 of 28 industrialized countries. In the final section we conclude with the main findings of the analysis and discuss the implications of our findings for recent institutional reforms and institution building attempts.

2. Changing collective bargaining structures and wage moderation

In political and academic debates, the importance of 'stable' bargaining institutions is often seen as beneficial for the processes and outcomes of collective bargaining (e.g. Fashoyin 2004). Since the effects of stable or unstable collective bargaining institutions have never been investigated directly, the purpose of this article is to investigate what happens to performance when bargaining shifts from one institutional structure to another, i.e. when institutions change, as well as what the effects of stable and unstable institutional are. We do not propose to assess which institutional structure of collective bargaining is superior compared to others.

We posit that both the transition from one institutional structure to another and institutional instability – a sequence of institutional changes – entail higher ULC in the short-to-medium term. We concentrate on the institutional structure of collective bargaining, considering collective bargaining structures as one component of the institutional framework which exists in an economy. In our country comparative macro-analytical analysis, we observe macro-aggregates and concepts and the potential micro-mechanisms at play. Implicit assumptions about linkages between micro and macro are, however, needed to warrant our expectation about macro-level costs from institutional change and instability. In the following, we present three theoretical accounts to warrant our expectation.

The first account is based on transaction costs stemming from changes of institutional structures. While this argument is generally applicable to institutional change and instability it is too general for our analysis and needs further elaborations. For this reason, we propose a second, account according to which costs arise from distributional struggles that hamper collective action on wage moderation in collective bargaining. The third account argues that costs arise from conflicts when new bargaining parties' miscalculate each other's costs and benefits of a settlement. In general, we argue that institutional change and instability lead to

loss of information about the (potential) actions of other parties which in different ways renders exchanges between actors problematic and costly.

We focus on the institutional structures of collective bargaining and depart from the standard definition of North (1991: 97) that "*institutions are humanly devised constraints that structure political, economic and social interactions*". Since we are specifically interested in institutions of collective bargaining, we consider distinct procedural constraints which are shared among actors and define the process of bargaining as well as the connection between bargaining areas and levels together with sanctions for defection. In the words of Knight (1992: 17), institutions provide "*...two types of information: (1) the nature of sanctions for noncompliance and (2) the probable future actions of others*". Additionally, (3) institutions define who is bargaining on behalf of whom. Pierson (2004) argues that there is a lock-in effect of institutions on agency because creating institutions entail large fixed costs, learning effects, coordination effects and adaptive expectations. New bargaining structures require that new actors are given new roles and responsibilities which have high initial costs before the new institution 'works' in practice.

In our first account, and building on Pierson (2004), transaction costs arise when institutions no longer provide mutual expectations about behaviour and these costs will often deter actors from changing the institutions altogether. However, when institutions are altered, changes and instability in collective bargaining structures should entail at least temporary increased transaction costs per exchange in labour markets. Zagelmeyer (2005) summarises how collective bargaining can reduce transaction costs per exchange in a number of ways: standardization of the terms and conditions of employment, providing a system of collective regulation for an internal labour market, supplementing incomplete individual labour contracts, or reducing uncertainty by providing for stable terms and conditions over the period of duration of a collective agreement. This is, of course, not the same as arguing that

all collective agreements are efficient. But it stresses how exchanges between employers and workers are facilitated by the collective agreement and the procedural arrangements for monitoring and enforcing it vis-à-vis individual contracts.

A key function of collective bargaining for employers is precisely that the price of labour is known for a foreseeable future which makes efficient personnel planning possible. Workers albeit generally more dependent on the exchange, will also hesitate to take work (and work hard), if their terms and conditions are uncertain. Indeed, Hicks (1932) wrote about the adjustment costs when shocks feed through the labour market and actors are uncertain about the price-setting of labour. If uncertainty becomes endemic, e.g. when institutions change multiple times in sequence, transaction costs will increase even further. Employers might hire at lower wages, but this might damage their future ability to attract good, productive workers. This means that complete decentralization might also lead to performance losses. Actors have become socialized into one set of institutions, have learnt how they work and have expectations about the actions of other actors.

The transaction cost-account is well-established in the literature and is for example central to the variety of capitalism literature (i.e. Hall and Soskice 2001). Nonetheless, it is too general for showing how change and instability of institutions lead to higher ULC. To connect this explanation with ULC, we need a way in which increasing transaction costs spill over into wage increases (at constant or lower productivity increases), decreases in productivity (at constant or lower wage decreases) or simultaneously wage increases and productivity decreases.

Our second account is built on the reduced ability for collective action under increased distributional power struggles between actors. In the majority of studies of the macro-economic performance of collective bargaining institutions, the key concern has been how different bargaining structures have produced wage developments aligned or even slightly

below productivity increases, i.e. that they moderate wages or ULC respectively (e.g. Baccaro and Simoni 2010; Calmfors and Driffill 1988). The idea behind wage moderation is that it enables companies to maintain or even increase their competitiveness and in the end, from a macro-economic perspective, low inflation and high employment are ensured. Scholars in this line of research have debated the relationship between specific collective bargaining structures and the desired macro-economic outcomes but the jury still seems to be out on the issue of wage moderation. What scholars do agree upon is that institutions of collective bargaining matter for wage moderation as an alternative to pure market-induced wage moderation (e.g. Ibsen 2016).

As opposed to market-induced wage moderation, wage moderation through collective bargaining is very often a public good due to its non-excludability. Olson (1982) argued that such public goods entail a risk of free-riding and defection from cooperation on wage moderation by opportunistic actors who can benefit from taking out higher wages that affect the relative wages and inflation levels of others, i.e. produce externalities. It has been convincingly demonstrated that collective action is possible under various conditions and that the central analysis of Olson depends on a host of factors including institutions (e.g. Ostrom 1990) that structure incentives for collective action. In collective bargaining, institutions make up the incentive structure for bargaining actors, as the price of defection lies in formal or informal power relations between actors. We can expect that actors will prefer to avoid a course of action that leads to sanctions, even if they would have preferred this course of action.

Echoing Knight (1992), recent research on the coordination of bargaining across industries and bargaining levels underscores the importance of power relations (Ibsen 2015; Traxler *et al.* 2008). In most bargaining structures, three main power relationships between actors in different areas and levels exist (Traxler and Brandl 2012). The ability to produce collective

goods and avoid non-trivial defection and free-riding depends upon these power relations. First, there is a power relationship between the two sides in the employment relationship, i.e. between employers and workers/unions within each bargaining unit. Second, there is a power relationship horizontally, i.e. across bargaining units at the same level. Third, a power relationship exists vertically between the bargaining units at different levels – ranging from single-employer, multi-employer to cross-sectoral bargaining structures. The rules and norms governing the interaction between actors in these three relationships can be very diverse in different institutional structures – all associated with differences in the ability of actors to take collective action.

Changes to collective bargaining structures imply a re-ordering of either vertical or horizontal power relations or of both dimensions simultaneously. Hereby, bargaining actors are re-ordered or substituted at different levels, domains and units which alters power relations and even changes the set of actors bargaining. In the short-to-medium term altered power relations can have two consequences: (i) They make sanctioning ambiguous (Streeck and Thelen 2005), and (ii) actors need to learn the new sanctions (Pierson 2004). It follows from the second point, that even when sanctions are very clear, they still have to be internalized or learned by actors which takes time. Ambiguity and learning time undermines Knight's second information function of institutions, i.e. what the probable future actions of others are. The consequence of this shift is that actors will focus more intensely on distributive concerns rather than integrative concerns which can undermine collective action (Knight 1992; Walton and McKersie 1965).

Horizontally across industries, institutional change might disrupt sanctions of sheltered sectors that fail to moderate wages in accordance with the exposed sector (Traxler and Brandl 2012). Workers are concerned about relative earnings (Elster 1989) which spurs unions in other industries to take out higher wages. This move creates a wage-inflation spiral with other

unions making compensatory claims. Moreover, wage increases in one industry produce increased costs for other industries. These dynamics are especially pertinent in the relationship between sectors exposed to international competition, e.g. manufacturing, and sheltered sectors, e.g. public sector and construction. Vertically, a change in bargaining institutions might also produce ambiguity about what to expect of bargaining at other levels, which in turn spurs a breakdown of the 'division of labour' between bargaining levels. This is likely both 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 for wage increases on top of centrally determined increases. Indeed, complete decentralization to spot-market exchanges could produce considerable wage hikes for high-to-medium skill workers, the wages of which were previously capped by collective agreements. By multiplying bargaining loci, wage drift is a likely consequence as higher level agreements are supplemented with additional increases at lower levels.

Finally, the third account is built on bargaining parties' miscalculations of each other's costs and benefits of a settlement vis à vis engaging and prolonging in industrial action. As Hicks stated in his theory of strikes (1932: 146-7): "… *the majority of actual strikes are doubtless the result of faulty negotiation. . . Any means which enable either side to appreciate better the position of the other will always make a settlement easier; adequate knowledge will always make a settlement possible*". While the notion of fully informed actors has been challenged in a number of ways, it suffices here to say that when bargaining institutions change, it is more likely that the new bargaining parties with limited information will make miscalculations about the costs and benefits of a settlement for each other. For example, when the bargaining level changes, new actors will come together that have not bargained with each other before and the risk of miscalculations increases. New employer negotiators might not be aware of the strike funds available for trade unions or how 'valuable' the wage increase really is for

workers. New union negotiators might not be aware of the ability of firms to pay the wage demand and they might not be aware of the conflict support provided by employer associations. Conversely, stable bargaining relationships are characterized by information sharing about the state of the company, industry or the economy at large precisely to avoid these miscalculations (cf. Ibsen (2015a) on the Swedish and Danish bargaining systems).

Moreover, new bargaining actors will often want to prove themselves to their constituencies putting even more pressure on negotiations. Ashenfelter and Johnson (1969) on the one hand argued that the rank-and-file in unions often had higher wage demands than their leaders. Baccaro and Simoni (2010) on the other hand argued that the rank-and-file were more attuned to the realities on the shop floor and preferred wage moderation. While these positions are contradictory to a certain extent, both positions point to how institutional change and instability affect the efficacy of intra-organisational bargaining (Walton and McKersie 1965). This is because the expectations between a new leadership and the rank-and-file are likely to be misaligned. Thus, in both accounts, new bargaining parties make intra-organisational bargaining even harder, which increases the likelihood of miscalculations in inter-organisational bargaining. Miscalculations increase the likelihood of costly conflicts, e.g. strikes and lockouts, leading to deterioration of ULC developments. During centralization, on the one hand, a new lead negotiator might even go further than the rank-and-file to prove strength. During decentralization, on the other hand, the loci of potential miscalculations multiply as often inexperienced, local negotiators take over. Until the negotiators learn from experience, get to know their constituencies, and start making more accurate assessments of each other, the risk of conflicts increases. Institutional instability will only exacerbate these problems of miscalculation, since the information effects of institutions are permanently in flux.

The bottom line of the second and third account is that institutional change and instability will come with costs. In the second account, we propose that horizontal and vertical distributional struggles in connection with institutional change and instability lead to reduced capability for collective action as illustrated in Figure 1a and 1b. In the third account, we propose that institutional change and instability comes with new bargaining parties negotiating for new constituencies. Before learning from experience, these new parties miscalculate the costs and benefits of a settlement to each other leading to more costly conflicts as illustrated in Figure 1c.

- Figure 1 about here -

For policy making, i.e. for any institution building attempt, this implies that institutional change can be expected to have a short-to-medium term (net) negative effect on UCL regardless of prior performance and regardless of the expected and actual performance effect in the longer term. Independent of the magnitude and duration of the cost effect, it can also be assumed that the more changes, the more costs accumulate. Consequently, institutional instability – that is, multiple changes in sequence – is therefore associated with cumulative negative effects.

As these negative effects are expected to be of a temporary nature, any institutional change might, however, still lead to an improved performance. When actors adjust to a new institution, this negative effect of the change might be overcompensated for by the effect of the new institutional structure so that in the long term the net effect might be positive. However, we do not hypothesise that the effect will always be overcompensated for in the long run. Overcompensation depends on the efficacy of different collective bargaining structures which we explicitly do not analyse in detail here for reasons of space. It is thus in

the interim period between two institutional points (which is when the new 'logic of action' has fully established itself) that we expect a ubiquitous negative effect. The empirical question, however, is how costly and how long it takes to fully restore the efficacy of the new institutional structure. To be sure, the negative effect most likely varies across time and space as some bargaining systems adapt more quickly than others. Moreover, various other contextual factors influence the specific 'net effect' of institutional change on macro-economic outcomes. In this analysis, however, we are trying to arrive at the general effects of change and instability of bargaining structures, rather than specific dynamics in particular settings.

3. Institutional change and instability over time: data and operationalization

In order to analyse the effects of institutional change and instability we use a data set which covers 28 countries and spans a period from 1965 to 2012. This large sample enables us to cover countries with collective bargaining taking place traditionally at decentralised levels with uncoordinated interactions between different collective bargaining units such as, for example, in the UK and the US, as well as countries with very centralized and coordinated institutional structures of collective bargaining as, for example, in the Nordic countries. In addition, the sample covers countries in which collective bargaining structures evolved 'historically' over a long period of time as well as countries with institutional structures which were set up in a relatively short period of time as, for example, in many Central and Eastern European countries. Furthermore the sample includes countries of very different sizes, geographical locations, socio-political and economic environments in order to provide a comprehensive picture of the industrialized world for which we aim to generalize the results. In fact the sample covers all countries of well-known typologies, e.g. varieties of

capitalism (Hall and Soskice 2001), welfare typologies (Esping-Andersen 1990) and industrial relations and employment regimes (Crouch 1993). The sample, moreover, covers institutional *changes in various directions*: changes towards higher levels and more coordinated forms of collective bargaining and those towards lower levels and more uncoordinated institutional 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. See Table 1 which includes a full list of the countries and relevant descriptive statistics as well as further information on the sample selection in the notes.

- Table 1 about here -

In the following analysis we test the effect of an institutional change and of institutional instability on changes in nominal unit labour costs (NULC) and real unit labour costs (RULC) which express the relationship between actual compensation per employee and real labour productivity (for NULC) and nominal productivity (for RULC). Both measures are frequently used as an indicator of competitiveness. In the following analysis we will concentrate more on NULC as it is a more direct indicator of collective bargaining outcomes and has a higher salience in political debates about collective bargaining reforms as seen in the macro-economic imbalance procedure scoreboard in the EU (e.g. Aumayr-Pintar *et al*. 2014; Marginson 2015). If results or concepts hold for NULC and RULC we will refer in discussions to ULC in general.

We are interested in the effects of change and instability of institutional structures of collective bargaining and not primarily in the effects of the different institutional structures themselves. Thus the focal explanatory variable in this study is a measure of institutional

change and instability. We base our main measure on the basis of changes in the categorization of collective bargaining coordination developed by Kenworthy (2001) and provided by Visser (2015), i.e. on variable 'coordination structure'. The categorization is based on variations in the level at which collective bargaining takes place, the actors involved and the extent of coordination between actors within a particular institutional framework. Thus this measure captures within its categories both the horizontal and vertical relationships between bargaining units. 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. Although both horizontal and vertical relations are basically captured by this measure we use and test a second variable which classifies collective bargaining institutions on the basis of the predominant level at which bargaining takes place. The data for this variable, i.e. bargaining level, is also provided by Visser (2015) which classifies five different levels at which collective bargaining takes place predominantly: on (i) local/company level; (ii) sectoral/industry level with additional local/company level bargaining; (iii) sectoral/industry level; (iv) national/central level with additional sector/industry level bargaining; and (v) national/central level.

Both measures of institutional structures of collective bargaining and thus of institutional change aim to categorize and describe different institutional structures on the basis of different criteria and concepts. However, both concepts are not independent of each other since they describe and categorize similar institutional structures. We will concentrate our analysis and discussion on variable coordination structure as it captures relevant institutional changes in a more fine-grained way compared to variable bargaining level but looking also on the level variable allows us to test the robustness of our analyses and results on the basis of two concepts both of which have advantages and disadvantages.

However, for both measures, 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 define and operationalize our measure of institutional change as a change from one category to another in a country from t_0 to t_1 as one change (numerically expressed by 1). We moreover, hypothesize that neither the direction of change nor the specific category to which the structure is changed is important in having an effect on the efficacy. What matters for the change and instability variable is that the institutional structures have changed. Needless to say, the new institutional structure has a different effect on ULC than the old structure. However, this effect from the institutional structure itself is different to the effect of the change itself and thus we separate both effects. Nonetheless, neglecting the direction of change is controversial we explicitly test the effect of changes in different directions separately; we are not expecting any differences.

We construct two focal kinds of variables to measure the distinct effect of a change in the institutional structure of collective bargaining as well as for the resulting institutional instability. Variable *change* captures institutional changes simply by indicating that in a specific year a change in the institutional structure occurred, whereas the *instability* variable adds a magnitude dimension to (repeated) institutional change. The variable *change* also measures and expresses the frequency of institutional change. However, according to our theoretical considerations, we expect that an institutional change affects the efficacy of collective bargaining not only in the year of the change itself but also in subsequent years. Thus we expect that an institutional change casts a *shadow of the past* in subsequent years. We also expect that this effect weakens over time. However, there are no theoretical or empirical evidences available regarding the number of subsequent years in which an effect can be expected. Therefore we consider and test in our analysis alternative operationalisations of any effects in subsequent years, i.e. of different functional forms of a shadow of the past

which an institutional change is likely to have. We concentrate in the following on two versions. In the first we suppose that the efficacy of collective bargaining 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 expected to be 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 shrinks to 0.4 (t_2=0.4). In the third year after the institutional change, there is no effect (t_3=0). Restoring the institutional functioning in two years is, however, an optimistic perspective on the effect of institutional change on collective bargaining. Therefore, in a second version we assume that the restoration of the efficacy takes longer, i.e. there is a four year shadow of the past and the effect declines at a constant rate over 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. We denote the variables with a shadow of the past of two years by *instability(t+2)* and with a shadow of the past of four years *instability(t+4)*. In the analysis, we also estimate and test various functional forms (linear and nonlinear functions) of a shadow of the past. In Figure 2 the operationalization and respective gradual decline of the effect is illustrated.

- Figure 2 about here -

If the institutional structure changed repeatedly over time and if the restoration of the functioning of the new institutional structures takes time, a 'simple' frequency measure underestimates the impact of institutional change on the efficacy of collective bargaining over a long period of time (e.g. Campos and Nugent 2002). The variable *instability* captures the magnitude of institutional instability caused by a series of changes. If the institutional structure is changed repeatedly, the instability variables might lead to a relatively high

variance over time and capture the magnitude of institutional stability better than the *change* variable can do.

Institutional change and economic performance: What causes what?

In Table 1 the number of changes to the institutional structure of collective bargaining for both variables, i.e. coordination structure and bargaining level, is shown for each of the countries under consideration. Table 1 shows the absolute number of changes since data is available and in percentages, i.e. weighted by the number of years for which data is available. A correlation analysis shows that there is a significant correlation of more than 60 percent between change in variables coordination structure and bargaining level which confirms that both categorizations of institutional structures do express similar concepts.

There is also a significant correlation of more than 45 percent between the frequency of institutional change and the average yearly change of NULC and RULC. This means that the more institutional changes, the higher average changes in ULC. However, if different institutional structures of collective bargaining result are associated with different ULC, it is also reasonable to argue that changes in the institutional structure of collective bargaining are motivated by the need to improve the competitiveness of countries, i.e. the institutional structure of collective bargaining is changed with the expectation that the new structure dampens ULC growth. Methodologically this raises concerns about reverse causality. As both causal directions are reasonable we address this issue of reverse causality explicitly and in various ways.

We started to investigate the issue of the direction of causality by applying a *Granger causality test* (Granger 1969) which provides *empirical* evidence of whether the causality is two-directional or uni-directional. The detailed test results are available upon request.

Various tests on NULC and RULC with different time lags ranging from 2 to 10 years were undertaken. The investigation of different lag lengths allowed us to derive robust conclusions as regards the direction of causation between ULC on the one hand and on the other, institutional change and instability expressed of either the coordination structure or the bargaining level.

All the tests we made did not allow us to draw fully consistent conclusions about the direction of causation, as significant estimates were found only for the coordination structure on the basis of variable *change* with a lag of 2 years and for both *instability* variables at a lag length of 6 and 8 years. For change and instability in the bargaining level no significant test results were found. The bottom line of all the tests is that there is some empirical support for the hypothesis that institutional change causes a change in ULC, while there is no significant estimate at all for a relationship in the other direction, i.e. that a change in ULC causes institutional change. Although this result is not fully conclusive on the direction of causation, it supports the hypothesis that the causality runs only one-way from institutional change/instability to a change in ULC and not the other way!

This result does not rule out the possibility that the explicit intention behind some of the reforms, i.e. changes in the collective bargaining structure, are directly motivated by policy makers' wish to dampen the growth of ULC in the country. The test results show, however, that the number of such reforms is either relatively small and/or not systematically undertaken in times with high growth rates of ULC.

4. Modelling and empirical strategy and empirical results

In order to test our hypotheses we apply an econometric analysis of the relationship between institutional change and instability with ULC. For the empirical tests we have to address

some estimation challenges that arise from the dynamic panel structure of our data. In particular we have to consider the modelling constraint that the inclusion of the lagged dependent variable in the model specification leads to inconsistent and biased estimates. For this reason we use a *distributed lag modelling approach* which is suggested to be appropriate for our data structure, i.e. a panel of 28 countries with an unbalanced time dimension of up to around 40 years (e.g. Kiviet 1995). Even though the results from the Granger tests suggest that it is more likely that the effect runs from institutional change to a change in ULC and not the other way, we will control for a possible endogeneity in our model by using an instrumental variable approach. In particular we use the Arellano and Bond (1991) *generalized method of moments* (GMM) approach in which we include all the explanatory variables lagged by one period and the twice-lagged dependent variable for the regular instruments (as suggested by Arellano 1989).

In the tested specifications, the logarithmic yearly changes of ULC are modelled as a linear function of lagged independent variables. Our focal independent variables are the variables *instability(t+2)*, *instability(t+4)*, and *change* based alternatively on variables coordination structure and bargaining level, which are all included in separate specifications. In each of the specifications, a set of control variables are also used. In the following analysis we show and report the results of a parsimonious specification which includes the 'key' determinants of the development of ULC identified in previous studies (e.g. Ark *et al*. 2005): (logarithmic yearly) GDP growth (i.e. economic growth), inflation and the unemployment rate. In addition to this we also include collective bargaining coverage to control for the share of employees who fall under a collective agreement relative to the total number of employees in the country. As we expect that the new coordination structure and level of collective bargaining have an effect on ULC themselves, we control for this effect by including either variable coordination structure and bargaining level in the specification. In order to control for any period and country

specific effects, a full set of country-section fixed (first differences) and period fixed (dummy variables) effects are included. Various robustness tests were applied to this specification including a larger set of control variables for the economic situation as well as other industrial relations variables. These robustness tests confirm the results of the parsimonious specification.

In order to reduce the number of parameters in the distributed lag model, we restrict the number of lagged values to five, and use a polynominal distributed lag to impose a smoothness condition on the lag coefficients. We are using a so called 'Almon lag' because it has the advantage that numerical problems that arise from collinearity, which is a problem of the distributed lag approach *per se*, can be avoided (e.g. McDowell 2004). In the following analysis, we show the estimation results for all non-categorical variables which all start entering the specification with a lag of *t*-1. For details on the estimation see Brückner (2012). Both the lag length and the degree of the polynominal are tested on their robustness and confirm the results. The results of the above empirical strategy are shown in Table 2 for institutional change in the coordination of collective bargaining, in Table 3 for institutional change in the level of collective bargaining, and in Table 4 for institutional instability on ULC. For our preferred specification, which is on NULC and by considering all changes, we report the estimates of each lag and the sum of the distributed lag coefficients (SoC). Given that the SoC results are more interesting than the estimates of each individual lag, we report the SoC for RULC alone as well as for the analyses of changes towards more/less coordination or more decentralised/centralised levels of collective bargaining in Tables 2 and 3. In Table 4 on institutional stability we concentrate on the SoC estimates only.

- Table 2 about here -

Table 2 shows the results for all changes, changes only towards a less, and towards a more coordinated institutional structure of collective bargaining on both NULC and RULC. As regards the estimates of the individual lag effects, it can be seen that for our focal independent variable, i.e. change, the sign of the coefficient and the significance of the estimates varies over the lags. This is similar for the control variables and is a typical symptom of high collinearity among the regressors. However, the summative effect of all the lags, which is the more adequate measure for inference (e.g. Brückner 2012), for the change variable shows that institutional change leads to an increase in both NULC and RULC over a period of five years after the institutional change. Even though the effect is higher on NULC compared to RULC, the effect is very similar in its scale regardless of whether the institutional change was towards a more or less coordinated institutional structure, which supports our hypothesis on the effect of institutional change. In Table 3 we report the results by applying the same estimation and modelling strategy on the same dependent variables but use change in the level of collective bargaining as an indicator of institutional change.

- Table 3 about here -

As can be seen, the results in Table 3 mimic the previous results to a large extent. Again, the estimates for the individual lags differ for each individual lag but are robust for SoC in different versions of the estimation. Most importantly the results clearly show that change in the level of collective bargaining induces an increase in both NULC and RULC. Also similarly, this increase is observable independent of the direction of change.

We now turn to the effect of institutional instability, i.e. the effects of a sequence of changes. The results of these tests are presented in Table 4 showing the results for institutional instability with a shadow of the past of two and four years for both NULC and RULC.

- Table 4 about here -

As can be seen in Table 4, both versions of the institutional instability variables show a significant effect on NULC. As regards RULC, the effect is positive in both versions but only significant if we assume that an institutional change comes with a shadow of the past of two years. In any case, the results clearly show that the efficacy of collective bargaining is not fully restored after one year. The interpretation of the results in Table 4 is that the higher the institutional instability, the higher the growth of ULC, in particular of NULC. This effect particularly holds for the version with a shadow of the past of two years, the effect is stronger than the 'simple' change effects (Table 2 and 3) as well as the effect of instability under the assumption of a shadow of the past of four years for NULC. The bottom line is that, first, repeated institutional change increases instability and leads to an additional effect in the development of ULC, and second, the effect gradually weakens over time.

The implication of these results is that any 'long-term' effects of an institutional change have to be balanced against the 'short term' effect of the institutional change itself. It is important to note that this result holds for different operationalisations of institutional change, i.e. by using change in the coordination structure or level of collective bargaining as an indicator. In fact, further robustness tests with alternative indicators of change of collective bargaining, like for example the Traxler and Brandl (2012) classification, were made which confirm the effect. However it is also important to note that the effects of institutional change reported and discussed before are an average effect and this does not, of course, imply that the magnitude of the effect varies for different institutional structures, as well as for different periods and different countries. This average effect certainly does not rule out that some very targeted and well prepared 'reforms' of collective bargaining institutions in some countries

did not cause increases in ULC. Indeed, as tests of the effect in sub-periods of our sample showed, there is some evidence that, for example, reforms made in European countries in the 1990s, i.e. when it was necessary for some countries to bring macroeconomic aggregates in line with the Maastricht criteria, the effect on ULC was not significant. On the other hand however, this means that in other periods the effect of institutional changes on ULC was even higher.

However, by looking at the results of both institutional change and instability, the upshot of the analyses is that institutional change has a clear effect on the development of ULC. Institutional change causes an increase in ULC growth and the more frequently the institutional structure is changed, i.e. the greater the institutional instability, the higher the ULC growth. Thus institutional change and institutional instability in collective bargaining comes with significant 'costs'.

5. Conclusions and policy perspectives

In this article, we hypothesized that change to collective bargaining institutions is costly because it leads to a disruption of the 'rules of the game' between the actors involved in collective bargaining. It was explained that institutional stability is of focal importance for the provision of public goods, such as wage moderation, and for avoiding costly conflicts due to miscalculations by bargaining parties. When institutions change, the efficacy of collective bargaining suffers until a new institutional order is fully in place which provides information about the likely behaviour of other actors.

Using data for 28 countries during the period 1965 to 2012, we tested the effect of change and instability of the institutional structure of collective bargaining by focusing both on changes in the coordination structure and the level of collective bargaining on nominal and

real unit labour costs development. The findings show that unit labour costs tend to increase following institutional change and repeated change, i.e. unstable institutional structures are associated with higher growth rates of unit labour costs. Thus changes in collective bargaining institutions are costly in achieving the goal of competitiveness. The results also show that institutional change towards an institutional structure which is associated with a more beneficial economic outcome than the previous one, does not necessarily lead to better economic outcomes *per se*! This is because any overall effect from a 'better' performing institutional structure is likely to be dampened by the cost of the change itself – at least in the short-to-medium term.

Future research should try to investigate the micro-mechanisms driving the relationship between institutional change and the increases in unit labour costs. This could entail more case-oriented research of bargaining processes and how mutual expectations, power and miscalculations influence the ability of parties to moderate wages and contain conflicts (e.g. Due *et al.* 1994; Elster 1989; Ibsen 2015; Traxler *et al.* 2008). Of course experimental research has long since demonstrated that information sharing improves bargaining efficiency (Ostrom 1990). In any case, the results of our analysis shed new light on the effects of current institutional reforms of collective bargaining systems. In particular on current processes of dismantling bargaining structures which are often used as a standard recipe for reducing unit labour cost growth (e.g. Marginson 2015). This point leads us to the policy implications of our study.

Specifically, we want to draw attention to some policy maker's ambitions to increase the competitiveness of some countries by reforming the institutional structure of collective bargaining. We aim here to contribute another aspect to this discourse. In various European countries which have made bilateral agreements with the 'Troika' or 'creditor institutions', changes in the institutional structure of collective bargaining were demanded and

implemented on a national basis. However, in many countries, these reforms were not only accompanied by social unrest and mistrust among actors, as espoused by the third account, which in themselves lead to economic 'inefficiencies', but the success of the reforms is also questionable, as many economic indicators of success have not developed as expected (e.g. Jaumotte and Buitron 2015). Our results suggest two shortcomings in the reform agenda.

The first shortcoming has to do with the neglect of the short-to-medium term costs of changing institutions. The 'knowledge-reservoir' on the effects of different institutional structures of collective bargaining has - until now - focused almost entirely on the effects of the institutional structures themselves. Although 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. While the results reported here do not exclude the possibility that the reforms were the correct policies to help these countries recover and prosper economically in the long-run, they might explain how the short-to-medium term negative effects of change itself have dulled the positive effects of the reform. In fact, if the negative short-term effect is stronger than the expected positive effect of reform, the results may explain why many negative indicators in these countries even increase.

The second shortcoming in the reform agenda has to do with relying upon and justifying reforms primarily on the basis of unit labour cost considerations. Our empirical analyses reject the notion that changes in the collective bargaining institutions are systematically caused by the 'objective' development of unit labour costs. Of course, this does not exclude the possibility that the intention of some changes in the institutional structure of collective bargaining, i.e. some reforms in some countries, are in fact based on the commendable goal of improving the economic performance of a country by targeting the development of unit

labour costs. This intention behind the reforms is especially observable in the 'Troika countries' for which the Memoranda of Understanding explicitly motivates reforms of collective bargaining structures with reference to the cost competitiveness of countries (Schulten and Müller 2014). Our results rather suggest that the majority of reforms since the mid-1960s were motivated by something else, such as for example 'financialization or 'neoliberal ideas'. Without being able to investigate this further, it appears that the majority of institutional changes of collective bargaining structures since the mid-1960s were driven by changing power relations and a political-economic *Zeitgeist* – which produced a higher degree of coordination and centralization of collective bargaining in the 1960s and decentralization since the 1990s – rather than by objective measures such as unit labour costs. This argument is supported by the fact that it is not yet definitively clear for important policy makers which institutional structures of collective bargaining lead to which economic outcomes (e.g. Aumayr-Pintar *et al*. 2014; European Commission 2015b).

In other words, when it comes to the motivation for institutional reforms, the treatment might have been chosen before the illness has been diagnosed. Indeed, if we factor in how reforms are depressing private consumption in many countries, institutional changes that were supposed to increase exports through wage moderation (but were unsuccessful due to the reasons we suggest), might have double-negative impacts in wage-led growth economies (e.g. Baccaro and Pontusson 2016; Lavoie and Stockhammer 2012).

In addition, it is likely that in a situation of economic uncertainty and social turbulence, the process of institution-rebuilding 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 this study for policy makers 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-term, it may be important for them to consider the timing

of their decision in the short-term. They might have to balance a dilemma between, the sooner the reform, the sooner the long term positive effects *vs.* the situation becoming 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 thus suggests that well-functioning collective bargaining institutions rest heavily upon a stable institutional environment and stable relationships among actors.

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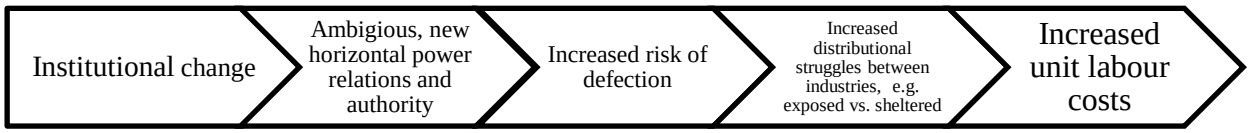
Figures and Tables

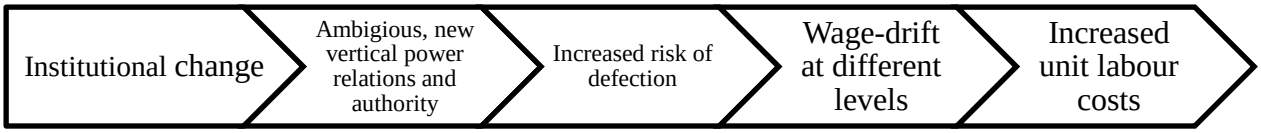
FIGURE 1

The relationship between institutional change and unit labour cost change

(a) Horizontal distributional struggles



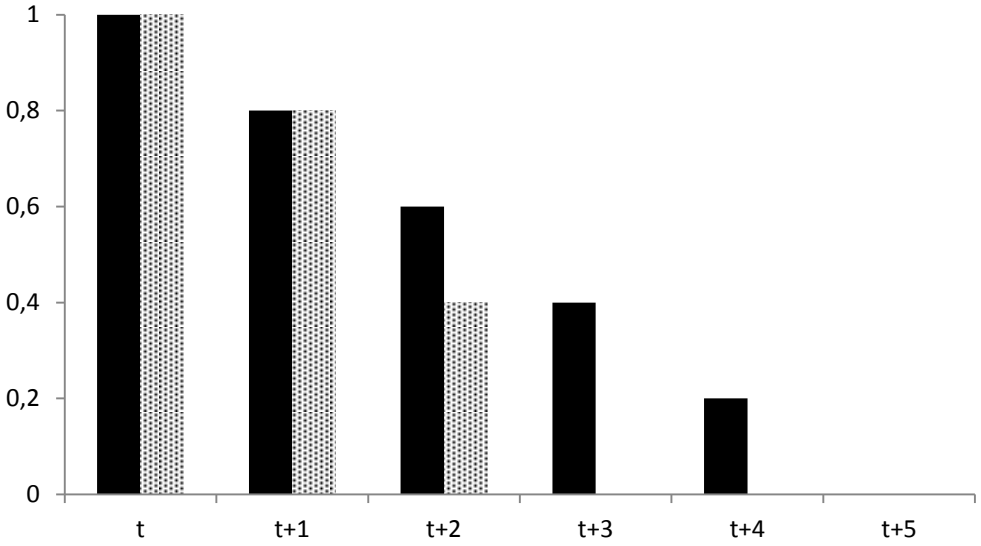
(b) Low vertical governability



(c) Increased level of conflict

FIGURE 2

Illustration of the operationalization of institutional change and instability



Note: Black bars illustrate the declining duration of the effect of the change with a shadow of the past of four years and describes the operationalization of variable *instability(t+4)*. Grey dotted bars the effect with the assumption of a shadow of the past of two years and describes variable *instability(t+2)*. Bars at time *t* illustrate variable *change*.

TABLE 1

Institutional change and instability of collective bargaining

		(a) Coordination structure		(b) Bargaining level	
Country	**Since**[1]	**# changes**[2]	**% change**[3]	**# changes**[2]	**% change**[3]
Australia	1965	6	87 %	3	94 %
Austria	1965	1	98 %	1	98 %
Belgium	1965	8	83 %	21	55 %
Bulgaria	1992	3	84 %	11	45 %
Canada	1965	2	96 %	0	100 %
Cyprus	1990	0	100 %	0	100 %
Denmark	1965	13	72 %	7	85 %
Finland	1965	18	61 %	38	19 %
France	1965	4	91 %	0	100 %
Germany	1965	0	100 %	0	100 %
Greece	1975	0	100 %	21	43 %
Hungary	1990	0	100 %	1	95 %
Ireland	1965	9	80 %	8	83 %
Italy	1965	5	89 %	6	87 %
Korea	1965	1	92 %	0	100 %
Luxembourg	1965	4	91 %	0	100 %
Malta	1990	0	100 %	0	100 %
Netherlands	1965	11	76 %	15	68 %
New Zealand	1965	7	85 %	2	96 %
Poland	1990	0	100 %	0	100 %
Portugal	1978	13	61 %	8	76 %
Slovakia	1990	4	81 %	1	95 %
Slovenia	1990	4	81 %	10	55 %
Spain	1977	7	79 %	6	83 %
Sweden	1965	7	85 %	5	89 %
Switzerland	1965	1	98 %	0	100 %
UK	1965	7	85 %	6	87 %
USA	1965	2	96 %	2	96 %

Note: [1] Shows the year since when data is available. [2] Shows how often the structure of coordination or the predominant level of collective bargaining was changed. [3] Shows in percentages in how many years there was *no* change of collective bargaining coordination including a consideration of missing values. Some countries were excluded in the analyses as either the number of observations (over time) is too small (e.g. for some Asian countries), or for some countries relevant some variables include outliers in data (e.g. Baltic countries), and for some countries as the Visser (2015) classification does not reflect the stability of the institutional structure (e.g. Norway).

TABLE 2

The effects of institutional change in the coordination of collective bargaining on unit labour costs

	Nominal unit labour costs (NULC)									*Real unit labour costs (RULC)*		
	All changes							**Less coordination**	**More coordination**	**All changes**	**Less coordination**	**More coordination**
	Distributed Lag Effects						*SoC*	*SoC*	*SoC*	*SoC*	*SoC*	*SoC*
	Lag (t)	*Lag (t-1)*	*Lag(t-2)*	*Lag (t-3)*	*Lag (t-4)*	*Lag (t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*
Change[+]	0.1377***	0.0028*	-0.0018	0.7695***	-0.2093**	-0.0003	0.6986**	0.6960**	0.6978**	0.32197***	0.32603***	0.32458***
	(3.4068)	(0.1694)	(-0.0578)	(12.4749)	(-2.2462)	(-0.0022)	(2.2431)	(2.228)	(2.2400)	(2.6326)	(2.6641)	(2.6552)
Structure[+]	0.0542	0.0690***	0.0376	0.0426	0.0391	0.0595	0.3020***	0.3026***	0.3012***	0.4082***	0.4153***	0.4125***
	(1.3647)	(3.8234)	(1.1802)	(0.7059)	(0.4315)	(0.4904)	(3.6102)	(3.6054)	(3.6137)	(3.6498)	(3.7090)	(3.6896)
Bargaining	0.0372	0.0536	0.0410	0.0606	0.0557	0.0195	0.2677***	0.2678***	0.2677***	0.2119**	0.2091**	0.2109**
coverage	(0.9075)	(3.1063)	(1.3511)	(1.0177)	(0.6155)	(0.1604)	(2.6399)	(2.6342)	(2.6381)	(2.1732)	(2.1431)	(2.1637)
Economic	0.0398	0.0868***	0.1014***	0.0477	0.0720	0.0364	0.3840	0.3839	0.3844	0.1332	0.1499*	0.1435*
growth	(1.0498)	(4.8667)	(3.5692)	(0.8845)	(0.8858)	(0.3339)	(1.0636)	(1.0527)	(1.0661)	(1.5983)	(1.8074)	(1.7328)
Inflation	0.0746*	0.0693***	0.0662**	0.0667	0.0683	0.1681	0.5131	0.5143	0.5122	0.3144**	0.3205***	0.3174***
	(1.8815)	(4.2441)	(2.2350)	(1.1431)	(0.7711)	(1.4107)	(1.0892)	(1.0837)	(1.0914)	(2.5917)	(2.6396)	(2.6178)
Unemployment	0.1421***	0.0846***	0.0630***	0.0819*	0.0422	-0.0052	0.4086	0.4064	0.4083	0.0122	0.0240	0.0199
rate	(3.6395)	(4.7462)	(2.6919)	(1.7415)	(0.5787)	(-0.0524)	(0.7042)	(0.6989)	(0.7063)	(0.1807)	(0.3585)	(0.2966)
N x T:							801	801	801	801	801	801
S.E.regression:							0.0670	0.0670	0.0670	0.0239	0.0239	0.0239

Note: [+] Variables structure and change refer to the *coordination* of collective bargaining. Less coordination considers only changes towards institutional structures with less coordination (decentralization); More coordination changes towards more coordination (centralization); All changes considers both directions of change. SoC = Sum of the distributed lag Coefficients. In all specifications a full set of period and country fixed effects dummies is included. Panel Generalized Method of Moments. First difference transformation. Panel corrected standard errors and covariances. t-Statistic in brackets. * Significantly different from zero at 90 % confidence, ** 95 % confidence, *** 99 % confidence. *N* = Number of countries, *T* = Number of years, *N x T*: number of observations. Data sources: European Commission (2015a) for Economic growth, Inflation, NULC, RULC, and Unemployment rate. Visser (2015) for Bargaining Coverage, Change, and Structure.

TABLE 3

The effects of institutional change in the level of collective bargaining on unit labour costs

	Nominal unit labour costs (NULC)									*Real unit labour costs (RULC)*		
	All changes							**Lower level**	**Higher level**	**All changes**	**Lower level**	**Higher level**
	Distributed Lag Effects						*SoC*	*SoC*	*SoC*	*SoC*	*SoC*	*SoC*
	Lag (t)	*Lag (t-1)*	*Lag(t-2)*	*Lag (t-3)*	*Lag (t-4)*	*Lag (t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*	*(t to t-5)*
Change^{+}	0.1382***	0.0028	-0.0018	0.7685***	-0.2064**	-0.0003	0.7010**	0.7014**	0.7018**	0.3404***	0.3420***	0.3393***
	(3.3824)	(0.1681)	(-0.0569)	(12.2937)	(-2.1857)	(-0.0021)	(2.2106)	(2.2069)	(2.2123)	(2.7654)	(2.7805)	(2.7595)
Structure^{+}	0.0539	0.0699***	0.0386	0.0441	0.0414	0.0611	0.3089***	0.3093***	0.3096***	0.4283***	0.4293***	0.4261***
	(1.3503)	(3.8615)	(1.2069)	(0.7270)	(0.4549)	(0.5009)	(3.6120)	(3.6114)	(3.6158)	(3.8204)	(3.8309)	(3.8048)
Bargaining coverage	0.0369	0.0524***	0.0398	0.0587	0.0549	0.0187	0.2615***	0.2612***	0.2614***	0.2077**	0.2154**	0.2073**
	(0.8939)	(2.9957)	(1.3066)	(0.9827)	(0.6056)	(0.1536)	(2.6596)	(2.6530)	(2.6645)	(2.1296)	(2.2090)	(2.1249)
Economic growth	0.0369	0.0854***	0.1009***	0.0473	0.0735	0.0370	0.3811	0.3804	0.3803	0.1437*	0.1476*	0.1416*
	(0.9712)	(4.7887)	(3.5317)	(0.8722)	(0.8987)	(0.3373)	(1.1690)	(1.1683)	(1.1800)	(1.7280)	(1.7800)	(1.7053)
Inflation	0.0752*	0.0695***	0.0660**	0.0670	0.0690	0.1680	0.5146	0.5161	0.5171	0.3322***	0.3346***	0.3309***
	(1.8738)	(4.2389)	(2.2105)	(1.1352)	(0.7696)	(1.3933)	(1.1015)	(1.1000)	(1.1039)	(2.7319)	(2.7526)	(2.7238)
Unemployment rate	0.1454***	0.0911***	0.0668***	0.0834*	0.0413	-0.0086	0.4195	0.4191	0.4196	0.0149	0.0161	0.0131
	(3.7118)	(5.1065)	(2.8450)	(1.7632)	(0.5640)	(-0.0857)	(0.7001)	(0.7028)	(0.7066)	(0.2210)	(0.2404)	(0.1954)
N x T:							801	801	801	801	801	801
S.E.regression:							0.0671	0.0671	0.0671	0.0239	0.0239	0.0239

Note: $^{+}$ Variables structure and change refer to the *level* of collective bargaining. Higher level considers only changes towards institutional structures at a higher level (centralization); Lower level considers changes towards lower levels (decentralization); All changes considers both directions of change. SoC = Sum of the distributed lag Coefficients. In all specifications a full set of period and country fixed effects dummies is included. Panel Generalized Method of Moments. First difference transformation. Panel corrected standard errors and covariances. t-Statistic in brackets. * Significantly different from zero at 90 % confidence, ** 95 % confidence, *** 99 % confidence. *N* = Number of countries, *T* = Number of years, *N x T*: number of observations. For information about data sources, see notes in Table 2.

TABLE 4

The effects of institutional stability in the coordination of collective bargaining on unit labour costs

	Nominal unit labour costs (NULC)		*Real unit labour costs (RULC)*	
	SoC (*t* to *t-5*)	**SoC (*t* to *t-5*)**	**SoC (*t* to *t-5*)**	**SoC (*t* to *t-5*)**
Shadow of the past	**2 years** ***Instability (t+2)***	**4 years** ***Instability (t+4)***	**2 years** ***Instability (t+2)***	**4 years** ***Instability (t+4)***
Instability	1.0713***	0.5815**	0.2766**	0.1565
	(3.8618)	(2.2135)	(2.2686)	(1.3088)
Structure	0.2426	0.5299*	0.3182***	0.2697**
	(0.9371)	(1.9045)	(2.7158)	(2.3405)
Bargaining coverage	0.9277***	0.1715	0.4144***	0.2454**
	(3.4942)	(0.6682)	(3.9355)	(2.2346)
Economic growth	0.6229**	0.8249***	0.2112**	0.3139***
	(2.5116)	(3.2876)	(2.4140)	(3.3599)
Inflation	0.5837**	1.0256***	0.3245***	0.2306*
	(2.1084)	(3.6548)	(2.7071)	(1.9340)
Unemployment rate	0.1555	0.4955	0.1335	0.0860
	(0.7770)	(2.3785)	(2.0043)	(1.2589)
N x T:	774	746	774	746
S.E.regression:	0.0674	0.0684	0.0241	0.0241

Note: [+] Variables structure and instability refer to the *coordination* of collective bargaining. See Figure 2 for details on instability and the shadow of the past. Estimations are based on a distributed lag model analogous to the results in Tables 2 and 3. For reasons of space only SoC (= Sum of the distributed lag Coefficients) are reported. In all specifications a full set of period and country fixed effects dummies is included. Panel Generalized Method of Moments. First difference transformation. Panel corrected standard errors and covariances. t-Statistic in brackets. * Significantly different from zero at 90 % confidence, ** 95 % confidence, *** 99 % confidence. *N* = Number of countries, *T* = Number of years, *N x T*: number of observations. For information about data sources, see notes in Table 2..