The Global Union Research Network (GURN) is a cooperating project of the International Trade Union Confederation (ITUC), the Trade Union Advisory Committee to the OECD (TUAC), the ILO's International Institute for Labour Studies (IILS) and the Bureau for Workers' Activities (ACTRAV) of the ILO. The aim of the research network is to give union organizations better access to research carried out within trade unions and allied institutions.

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The Economic Effects of Collective Bargaining Coverage: A Cross-National Analysis

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1. INTRODUCTION

Collective bargaining is a cornerstone of industrial democracy. It gives the employees a collective voice vis-à-vis the employers who always represent collective entities (i.e. the companies). The quantitative importance of collective bargaining as a means of regulating the employment terms generally increases with its coverage, i.e. the number of employees under its purview. Since the employees account for the vast majority of the population, the terms of employment are of macroeconomic relevance and relate to broader developments of economy and society. Hence, collective bargaining is a matter of not only industrial democracy, but also of socio-economic governance.

This raises the question of whether and how collective bargaining actually affects the employment terms and other socio-economic conditions, as compared to a situation where collective bargaining is absent. This study addresses this question by analyzing the economic effects of collective bargaining coverage on the basis of a cross-national comparison of 18 countries for the period from 1980 to 2000. The structure of this study is as follows:

- The first section summarizes the main lines of theoretical reasoning on the performance of collective bargaining.
- The next section relates this theoretical reasoning to collective bargaining coverage. In terms of bargaining structures, this means discussing how bargaining coverage interacts with bargaining centralization. This results in specifying the hypotheses on the socio-economic effects of coverage and centralization. On this basis, the modelling strategy for the empirical analysis is presented.
- The study then proceeds to explain the measures of collective bargaining and bargaining centralization.
- The following section gives an overview of the dependent variables which cover five major areas of possible economic effects: The employment terms; employment; important macroeconomic aggregates which include inflation, economic growth, aggregate demand and final domestic consumption; public expenditures; and the distribution of income.
- The empirical analysis of the impact of collective bargaining is differentiated by these five areas of economic effects.
- The study concludes by summarizing its main findings.

2. THEORETICAL PERSPECTIVES ON COLLECTIVE BARGAINING AND ECONOMIC PERFORMANCE

As is the case of other subjects, the theoretical debate on the presumptive socio-economic effects of collective bargaining has been controversial. One can distinguish between two main camps. First, there neoclassical economics which dismisses not only the relevance of collective bargaining, but also any importance of (non)market institutions in general. According to neoclassical orthodoxy institutions do not matter because perfect markets – through their informational feedbacks – ensure that efficient solutions can be achieved. While the perfect market assumption enables theoretical reasoning to arrive at elegant mathematical models, this assumption certainly does not match reality. This is most evident from the implications this assumption has for the question of power. Perfect markets are, by definition, powerless, insofar as the actors are all forced to adapt their strategies to the market movements, i.e. have to take the market price, without any possibility of exerting influence and setting prices. This runs counter to the actual situation in markets where power relations are always present. In labour markets, in particular, power asymmetries between business and labour are endemic (e.g. Offe and Wiesenthal 1980), Growing internationalization has rather magnified these asymmetries: A case in point is the marked difference in transnational mobility between capital and labour. The main reason why power necessarily interferes in markets is that markets are no "natural" thing, but socially constructed (e.g. Polanyi 1944). Hence, their structure is always skewed towards and embedded in a certain configuration of power, interests, and socio-cultural norms.

This argument brings us directly to the second line of reasoning: Institutionalist analysis that draws from institutional economics, sociology, and political science. Its premise is that institutions in which specific configurations of power, interests, and norms have crystallized do matter. In consequence, differences in the institutional set-up result in different socio-economic outcomes. Applied to our problem, this means that differences in the presence and importance of collective bargaining (as indicated by collective bargaining coverage) as well as differences in the structure of collective bargaining (such as bargaining centralization) translate into differential socio-economic outcomes.

When recognizing neoclassical economics and institutional accounts as the two alternative theoretical perspectives, it is also important to note that applied research somewhat blends this theoretical divide. The hump-shape hypothesis (see below) provides a particular instance in that it analyzes the comparative performance of different degrees of bargaining centralization on the assumption of perfect competition in product markets.

This section can give only a very brief overview of the debate on collective bargaining and performance. This is for three reasons: First, the purpose of this study is not theoretical, but empirical. Second, there are very few theoretical contributions which specifically address collective bargaining coverage, while one finds a huge body of literature on the effects of other dimensions of collective bargaining. Third, our theoretical overview will be oriented towards our empirical analysis. Therefore, we will concentrate on those streams of the debate which relate to dimensions of performance for which quantitative, cross-nationally comparable time-series data are available. This implies that our focus will be on the macro level.

As far as the manifold dimensions of collective bargaining are concerned, this means that our theoretical overview will centre on bargaining centralization. This is because theoretical literature as well as empirical studies have addressed collective bargaining coverage only in connection and interaction with bargaining centralization.

As regards the socio-economic effects, we distinguish between two main kinds of performance: On the one hand, collective bargaining affects the demand side of the economy, insofar as the standard rates, as fixed by the collective agreements, secures the purchasing power of the employees, and thus essentially conditions consumer demand. Aside from the aggregate effect on the purchasing power, a distributive effect of collective bargaining is also commonly emphasized. The argument is that pay structures become more egalitarian with growing levels of bargaining coverage and bargaining centralization. On the other hand, collective bargaining is also important to the supply side. In this respect, the literature mainly highlights the fact that collective bargaining has an impact on labour costs and thus influences the competitiveness of the companies. However, there are other important supply-side effects as well. This includes skill formation as factor of growth, employment and competitiveness. As is well known, the supply of skilled labour is beset with collective-action problems and the risk of market failure. As a collective approach to labour market regulation that involves the two sides of industries, collective bargaining can make a substantial improvement to vocational training and further training.

As is also well known, there are tensions between demand-side and supply-side requirements for economic policy. As a consequence, collective bargaining policy also faces a trade-off between demand-side and supply-side considerations. Ideally, collective bargaining balances these considerations, such that its agreements stimulate consumer demand for the sake of employment and economic growth while also moderating the pay demands in line with the requirements for price stability and competitiveness. It is important to note that such kind of bargaining does not simply mean pay *restraint*, as this would imply reducing the bargaining strategy solely to supply-side considerations of pay. On the contrary, this line of bargaining *synchronizes* its policy with economic requirements, such that both demand-side and supply-side are taken into account. One might call this coordinated pay policy if this notion were not

commonly used as a certain type of bargaining. In contrast to this, we refer here to (anticipated) bargaining outcomes. For the sake of terminological clarity, we thus designate here the capacity for synchronizing demand-side and supply-side considerations as pay synchronization. Put in more economical terms, such capacity depends on the ability of the bargaining system to internalize the negative consequences of their policy. Differences in this capacity are assumed to correlate with differences in the bargaining system. Most of this literature discusses these differences in terms of bargaining centralization.

Theoretical reasoning on the socio-economic effects of collective bargaining concentrates on two issues: (i) the distributional impact in terms of *relative* pay; and (ii) the impact on *aggregate pay*, along with its macroeconomic consequences for inflation and employment.

As far as relative pay is concerned, the theoretical and empirical literature widely agrees that pay differential become compressed with growing level of bargaining centralization and collective bargaining coverage. This effect is argued to be driven by economic, ideological and political mechanisms (Wallerstein 1999). The economic argument refers to efficiency gains from a pay levelling effect. The argument is that decentralized forms of pay-setting result in a misallocation of labour and a misalignment of prices because decentralized pay setting distorts the market process as a consequence of marked differences in union strength, presence of collective agreements, productive processes and elasticity of demand for output across companies and sectors. In these circumstances, central-level bargaining which imposes equal pay for equal work brings about a wage distribution that may come closer to the model of a perfectly competitive labour market than decentralized modes of wage formation (Moene and Wallerstein 1997). Ideologically, the positive impact of bargaining centralization and results from the fact that considerations of fairness – which are always important to pay policy – become increasingly generalized with growing levels of bargaining decentralization. The larger the number of employees who are covered by one single, central-level agreement, the more egalitarian the effect of applications of equal sharing rules. The political mechanism rests on the condition that the majority of employees earn less than the mean. Therefore, the median voter, i.e. the employee whose vote gives the union leadership the majority supports a policy of wage compression (Freeman 1980). While this situation applies to any union and any level of bargaining centralization, the scale of its pay-levelling effect throughout the economy increases with growing bargaining centralization. Each of these three explanations explicitly refer to bargaining centralization. Compared to centralization, bargaining coverage can be attributed only a supplementary effect on pay inequality. This is mainly because multi-employer bargaining in general rather than centralized bargaining in particular ensures a high level of coverage, as will be shown below. When industry-level thus associates with high collective bargaining coverage, each of the above explanations implies that the pay-levelling effect will be smaller than in the case of centralized bargaining.

In addition, each of the three explanations for the equalizing effect of encompassment can be challenged from a theoretical point o view. The efficiency gains of a compressed pay structure rests on macroeconomic reasoning. From a micro perspective, it may be argued that an egalitarian pay structure is at loggerheads with the need to incentivate the employees. This makes the net effect on efficiency of bargaining centralization uncertain and contingent on circumstances. Conversely, the ideological and political explanations are overly micro-centred and thus neglect the relevance of structures. With growing levels of bargaining centralization, the confederation and their member associations rather than the individual employees determine the distributional strategies of the union. The pay distribution, as covered by their membership domain of the member associations and their confederation, does not necessarily coincide with the overall pay distribution in the economy (Traxler and Brandl 2008). Furthermore, the conventional concepts of bargaining centralization obscure that central-level bargaining is usually one single component of a multi-level bargaining system that embraces also the industry and/or the company as the locus of bargaining. Finally, the ideological and political explanations for the pay levelling effect of centralization focus only on labour, while neglecting the role of the employers in pay determination (Dell'Arringa and Pagani 2007).

Turning from the effect on relative pay to the effect on aggregate pay and its macroeconomic consequences, one finds three main lines of arguments:

The *corporatist thesis* assumes a linear relationship between bargaining centralization and the capacity for pay synchronization (e.g. Cameron 1984, Headey 1970). Accordingly, this capacity monotonically increases with the degree of centralization because growing degrees of centralization prevent the bargainers to pass the negative pay externalities (i.e. the costs of pay rises in terms of inflation, unemployment and loss of competitiveness) on to third parties (e.g. consumers, other employee groups and the state) (Figure 1). In the case of full centralization, as given under the condition of one single, all-encompassing collective agreement, the signatory unions and employer associations are compelled to internalize the negative pay externalities of their agreement, because it is their own members who have to bear its costs. Hence, they will be anxious to synchronize their pay policy, so as to minimize negative pay externalities.

Figure 1: **The corporatist thesis (Cameron 1984)**
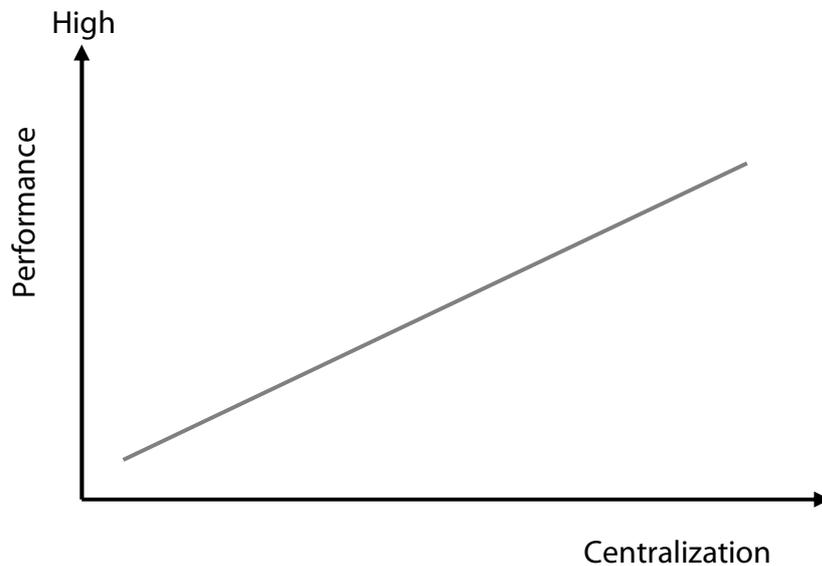
The corporatist thesis has been challenged by the *hump-shape thesis* (Calmfors and Driffill 1988). In contrast to the corporatist thesis, the hump-shape thesis emphasizes the importance of market effects. Assuming perfect competition in product markets, Calmfors and Driffill (1988) develop a non-linear (i.e. hump shape) thesis (Figure 2): Extremes (i.e. highly centralized and highly decentralized bargaining) are argued to perform well, while the performance of intermediate centralization (i.e. industry-level bargaining) is poor. Fully centralized bargaining is presumed to perform well for the reason outlined above. The comparatively good performance of decentralized (i.e. single-employer) bargaining is assigned to (perfect) competition in product markets which preclude the companies from passing their pay hikes on to their product prices. In contrast to this, industry-level bargaining is presumed to be able to externalize the costs of its pay increases on to the public, since it works like a branch-specific cartel. Hence, industry-level bargaining is assumed to be able to ignore macroeconomic requirements, such that its performance is inferior to centralized and decentralized bargaining.

Figure 2:   **The hump-shape thesis**
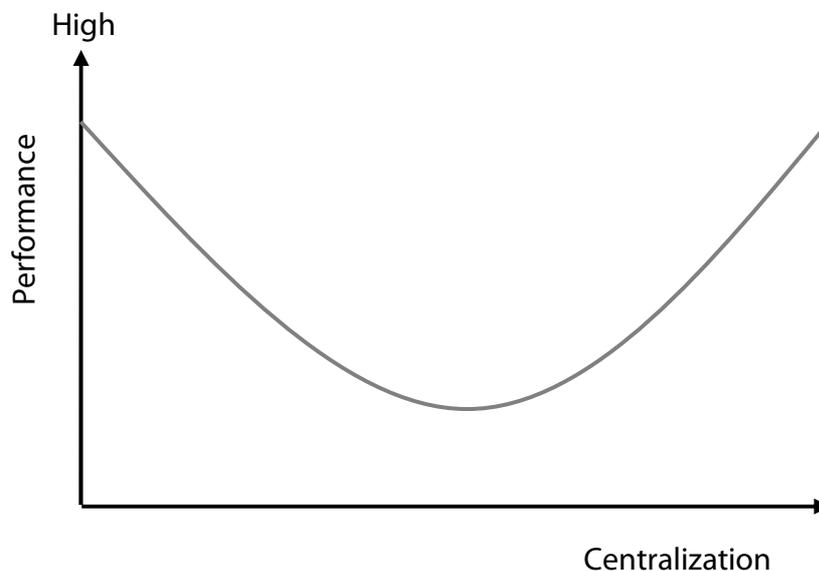
More recent research has questioned both the corporatist thesis and the hump-shape thesis, as they abstract from important factors that intervene in the performance of collective bargaining. There are three kinds of such shortcomings. First, both theses over-simplify the bargaining structure, when reducing its complexity to mere centralization. This over-simplification ignores that the coordination of industry-level bargaining across the economy can work as a functional equivalent to centralized bargaining (Soskice 1990). In a way analogous to centralized bargaining, none of the industry-level bargaining units can externalize the costs of pay rises, if their pay policies are coordinated across the economy. Second, the assumption of perfect competition does not match the reality of markets. Third, the hump-shape thesis is deduced from a model of closed economy, in which the parties to industry-level bargaining face a demand curve which is relatively inelastic. In open economies industry-level bargaining for exposed sectors is incapable of cartelizing the labour market. This is because the purview of industry-level bargaining is still limited to a certain territory (e.g. regions within a country or a country as a whole), such that any cartelizing effort is ineffective if an industry is exposed to international competition. In open economies the hump-shape thesis thus holds for sheltered sectors at best. On aggregate, the performance of industry-level bargaining in open economies is essentially conditional on how bargaining for the exposed sectors relates to its counterpart in the sheltered sectors. If the exposed sectors set the pattern for the overall bargaining process, then industry-level bargaining tends to outperform alternative bargaining structures (Traxler and Brandl 2008).

The consequence of these shortcomings is that analysis has to take account of the broader economic and institutional context in which collective bargaining is embedded. In accordance with this, analytical and empirical studies have come up with results that show that the economic performance of collective bargaining is highly contingent on its interaction with its context. Related research points to the interaction of collective bargaining with such factors as monetary policy (e.g. Franzese 2002, Iversen 1998, Traxler et al. 2001), government partisanship (e.g. Alvarez et al. 1991, Lange and Garrett 1985), the sectoral composition of the labour force (e.g. Crouch 1990, Garrett and Way 1995, 1999, 2000, Traxler and Brandl 2008) and the capacity of the bargaining system to make local pay setting comply with its agreements (e.g. Traxler and Kittel 2000, Traxler 2003a). This is not the place to review this debate in greater detail. Whilst studies of the interactive effects of collective bargaining disagree in manifold respects, their common essence is nevertheless that the performance of collective bargaining significantly varies with circumstances. Therefore, one and the same system of collective bargaining may bring about fairly distinct economic effects. As an implication, there is no one best way to good economic performance, but there are functionally equivalent bargaining systems.

3. ECONOMIC PERFORMANCE AND COLLECTIVE BARGAINING COVERAGE: THEORETICAL, CONCEPTUAL AND METHODOLOGICAL CONSIDERATIONS

To clarify the analytical purchase of a study of the socio-economic impact of collective bargaining coverage, one has to relate this study to the above theoretical debate. This includes conceptual reflections on both performance and collective bargaining.

As regards performance, our short overview of the theoretical debate has shown that its focus is on the impact of bargaining on pay. It is clear that this focus does not capture the full range of socio-economic effects of collective bargaining. Therefore, the rationale of this study is to extend the number of socio-economic performance indicators as much as data availability enables analysis to do so. Another implication of this broader perspective on socio-economic effects is that one has to be more cautious when it comes to interpreting empirical findings. A case in point is performance in terms of labour cost growth. From a rather narrow supply-side point of view, the performance of a bargaining system increases with growing capacity to restrain labour cost growth, as compared to alternative bargaining systems. From a demand-side perspective, however, such performance raises macroeconomic problems to the extent that it fuels competitive bargaining strategies that result in downward pressures on labour standards within and across countries.

Our key explanatory variable, collective bargaining coverage, designates one specific dimension of collective bargaining. As the ratio of employees, who are covered by any collective agreement, to the total number of employees, collective bargaining indicates the quantitative importance of collective bargaining, as compared to alternative modes of employment regulation (i.e. individual labour contracts and unilateral regulation by the state).

As the above review has shown, collective bargaining coverage is not at the centre of theoretical reasoning on the economic effects of collective bargaining. From a demand-side perspective, collective bargaining coverage is likely to matter, insofar as the purchasing power of the employees tends to increase with its coverage. The supply-side effect of bargaining coverage is controversial. One influential stream of the debate assigns a detrimental effect of growing rates of collective bargaining coverage. The main argument is that pay flexibility decreases with growing coverage. In particular, the alleged wage-levelling effect of high coverage is argued to cause unemployment. As stressed by the OECD Jobs Study (1994:35): "a widening of wage differentials could be expected to support faster employment growth, and there is cross-country evidence that it does". In consequence, the study recommends governments to phase out "legal

or administrative provisions which extend collective agreements to sectors, enterprises or regions that are not parties to the original negotiation…" (OECD 1994:36).

OECD (1997) and Layard et al. (1991) corroborate the detrimental effect of collective bargaining coverage (OECD 1997). However, while finding a significantly detrimental effect of collective bargaining coverage, the same regression analyses indicate that unemployment significantly decreases with bargaining centralization and coordination. Other studies which analyze also the interaction of bargaining centralization and coverage arrive at similar results (e.g. Nickell and Layard 1999, Nickell 1997). They find that coverage has a negative employment effect at a given level of bargaining centralization; and that centralization has a positive effect at a given level of coverage. The basic explanation for this is that high coverage has detrimental effects in combination with decentralized bargaining, but beneficial effects in tandem with centralization (Layard et al. 1991: 137f).

However, the problem is that the beneficial effect of centralization and the detrimental effect of coverage are not easily to reconcile for two reasons. On the one hand, collective bargaining coverage significantly increases with bargaining centralization (Aidt and Tzannatos 2008 Traxler and Kittel 2000). According to the data available to this study, the correlation of bargaining decentralization with each the adjusted coverage rate (acbc) and the unadjusted coverage rate (ucbc)[1] is - 0.49 ($p = 0.00$, $N = 88$). Therefore, high coverage does not coincide with strongly decentralized bargaining. On the other hand, centralization is widely presumed to generate also a wage-levelling effect (e.g. Aidt and Tzannatos 2008). Hence, there are two closely interrelated properties of collective bargaining, which both are held to reduce wage differentials, but which nevertheless appear to have contrasting effects on unemployment. In this respect, it is important to note that theoretical explanations for a wage-levelling effect on "encompassing" bargaining structures refer to centralization rather than to bargaining coverage (Wallerstein 1999). In addition, the literature still disagrees on whether egalitarian pay structures actually harm employment (Nickel 1997).

Analogous objections can be raised with regard to similar findings on interaction of coverage and coordination:[2] Coverage significantly correlates also with coordination (Traxler and Kittel 2000, Aidt and Tzannatos 2008), and it is plausible that the efficacy of coordination activities depends on the coverage rate.

These objections cast doubt on whether there is an empirically robust effect of bargaining coverage on performance. In accordance with this, some empirical studies conclude that the performance effects of collective bargaining coverage carry little weight, as compared to other factors. According to Traxler and Kittel (2000) and Traxler et al. (2001) collective bargaining coverage lacks any significant impact on the growth rates of labour costs and unit labour costs. Running period-

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[1] For the definition of variables, see the appendix.
[2] OECD (1997) interacts a combined measure of centralization and coordination with coverage.

wise regressions for 3 periods from 1986 to 1996, Traxler (2003b) estimates the performance of private-sector coverage and its interaction with statutory provisions for rank-and-file compliance. He found that increasing levels of coverage significantly inflate labour costs in all periods, whereas such effect on unit labour costs was completely absent. For one single period in the case of both labour costs and unit labour costs, increasing levels of coverage when being backed by statutory provisions for rank-and-file compliance had a significantly dampening effect.

The above considerations lead us to the following hypotheses and modelling strategy: Proceeding from those areas of socio-economic effects for which comparable data are available, we hypothesize that collective bargaining coverage has a significantly positive effect on indicators of demand, such as public expenditures. Furthermore, we assume that working hours significantly decrease with growing coverage. In line with prevailing opinion we also hypothesize that growing levels of coverage significantly compress the pay structure, boost labour cost growth and inflation, and increase unemployment. With growing levels of centralization, however, the hypothesized effects on labour cost and unemployment are supposed to decline. For the above reasons, however, these hypotheses should be taken with a grain of salt. Hence, the null hypothesis (i.e. the assumption that bargaining coverage does not have a systematic effect) is as important as these hypotheses.

This brings us to the modelling strategy. Although we have time-series data on coverage for 18 countries, the number of cases is nevertheless rather limited. This restrains the number of explanatory variables which can enter the models. While focusing on bargaining coverage, we pay also special attention to union density and bargaining centralization. Put more specifically, we include an interactive term which captures the interplay of coverage and centralization. This is because most of the literature emphasizes the pre-eminent importance of bargaining centralization in general and its contingent effect on the impact of the coverage rate, as noted above. However, we also run models which do not include this interactive term. We also include a limited number of control variables which vary with the respective dependent variable. The well-known technical problems of multivariate regressions are taken into account. Predictors which may be endogenous are left out. The same applies to multicollinearity.[3]

We turn now to explain the variables, their measures and the data base.

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[3] Bivariate correlations between our industrial relations variables (i.e. collective bargaining coverage, bargaining centralization and union density) remain on a scale which does not raise concern about multicollinearity (Table 5).

4. COLLECTIVE BARGAINING COVERAGE AND BARGAINING CENTRALIZATION: MEASURES AND FIGURES

Comparable time-series data on collective bargaining coverage are available for 18 OECD countries: Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Japan, Norway, New Zealand, the Netherlands, Portugal, Spain, Sweden, Switzerland, and the USA. Our study covers the time period from 1980 to 2000. This is because data before 1980 are available only for a few countries (Nickell et al. 2001). The data from 1980 to 1995/1996 are from Traxler et al. (2001); the data for the rest of the period covered are own calculations. The definition and calculation of collective bargaining coverage follows Traxler (1994, 1996) and Traxler et al. (2001). For detailed information on the definition and sources see the Appendix. We focus here on explaining the rationale of the measures. Since collective bargaining coverage is captured as the ratio of employees covered to the total number of employees, this requires discussing its numerator and its denominator.

As regards the numerator, collective bargaining coverage refers to the number of employees under *any type* of collective agreement. This specification is important, because systems of multi-level bargaining exist in many countries with the consequence that one single employee may be covered by more than one collective agreement. One has to avoid multiple counting in these cases, because this would bias the cross-national comparison. Hence, the numerator measures "net coverage" of employees, regardless of how many agreements per employee exist.

As far as the denominator of the coverage rate is concerned, one has to distinguish between the unadjusted and the adjusted coverage rate. The unadjusted coverage rate (ucbc) is defined as the share of employees under a collective agreement in relation to the total number of employees, regardless of whether or not they are entitled to conclude collective agreements. The adjusted coverage rate (acbc) refers to the share of employees covered by collective agreements in relation to the total number of employees equipped with bargaining right. The need to differentiate between these two measures emanates from the fact that the public sector or certain parts of it are excluded from the right to bargain. In this case the employment terms are unilaterally determined by the state in formal terms, while *de facto* negotiations between the authorities and the unions often take place in practice. Of the 18 countries, such restraints on public-sector employees include Austria, Switzerland, Germany, Great Britain, and Japan. In France, Spain and the Netherlands the right to bargain was given to the public-sector employees during the period under consideration, i.e. in 1984, 1988, and 1993, respectively (Traxler et al. 2001). Conversely, notable groups of employees of the public sector were excluded from collective bargaining in Great Britain during the early 1980s and early 1990s. In countries,

where the bargaining right is formally established also for the public sector, the agreements sometimes need final approval by parliament. If collective bargaining extends to the public sector in a country, the adjusted coverage rate is identical with the unadjusted rate.

From a methodological point of view, the adjusted coverage rate measures the importance of collective bargaining, as compared to purely individual contracting, within its own realm. The unadjusted rate stands for the relevance of collective bargaining in relation to alternative regulatory mechanisms in a country's labour market, i.e. individual contracting and unilateral regulation by the state.

It is worthwhile to consider how these measures relate to continued spread of new, non-standard forms of employment. As anecdotal information on Europe suggests (European Commission 2004), part-time work and temporary agency work which are the most frequent form of non-standard employment are usually covered by collective agreements. Measurement problems arise mainly from economically dependent self-employment which resembles dependent employment in most respects. There has been a tendency of business to outsource activities by subcontracting to self-employed persons not only for reasons of flexibility, but also as a means of avoiding social security contributions as well as coverage by labour law and collective agreements (Vaughan-Whitehead 2004). Hence, there might be good reason to calculate a third measure of coverage which includes this group of quasi-employees into the denominator. Unfortunately, available statistics do not allow for disentangling this group from genuine self-employment. In a rather small number of cases, quasi-employees are covered by collective agreements and thus affect the numerator of the coverage rate as well.[4] On balance, the number of uncovered quasi-employees is likely to clearly outnumber their covered counterparts. This somewhat qualifies the validity of the unadjusted coverage rate as an indication of the relevance of collective bargaining in relation to alternative regulatory mechanisms in a country's labour market.

A detailed summary of developments is given by Figure 3 which documents the changes in the level of unadjusted and adjusted coverage for each of the 18 countries. Three observations are of utmost importance. First, the level of coverage enormously varies across countries. These differences in coverage rate range from less than 30% (Japan and the USA) to 90% and more (e.g. Belgium and Sweden). Second, the country developments show a high degree of continuity: There are no turnarounds. Instead, the development of the distinct countries is characterized either by stability at a given level or by a persistent trend towards continued growth or decay. As an implication, the coverage rates of the countries do not converge over time.

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[4] In Austria, for instance, the collective pay agreement for journalists covers also free lancers.

Figure 3:   Development of collective bargaining coverage
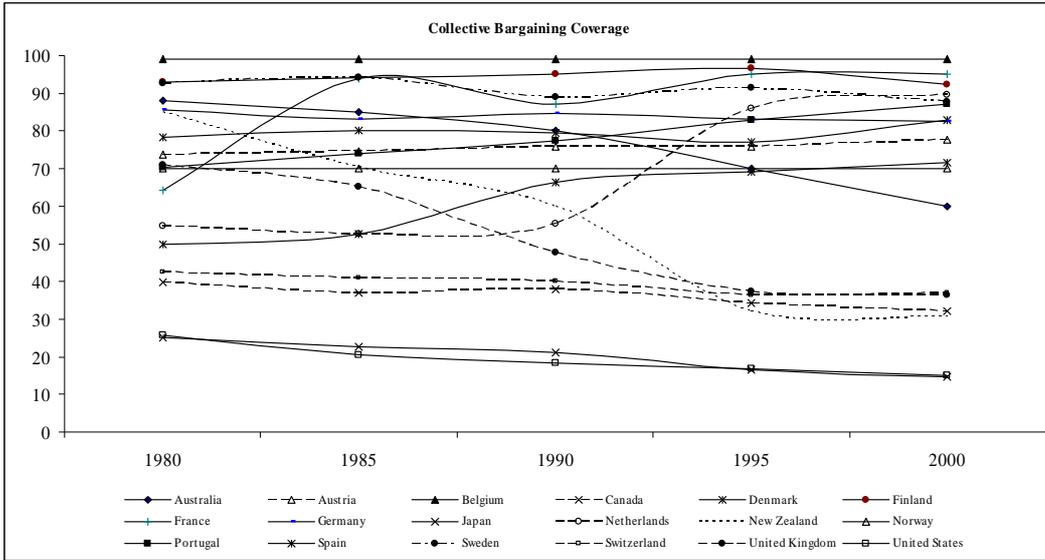
Figure 3a: **Development of collective bargaining coverage**
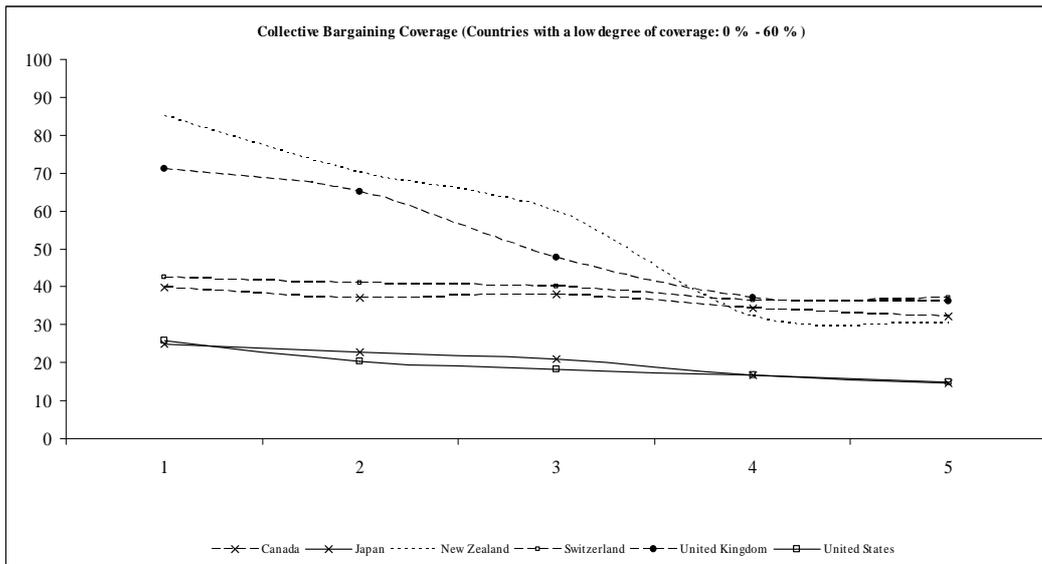
Note: High, medium and low coverage countries are classified according to the mean coverage from 1980 to 2000.

Figure 3b: Development of collective bargaining coverage
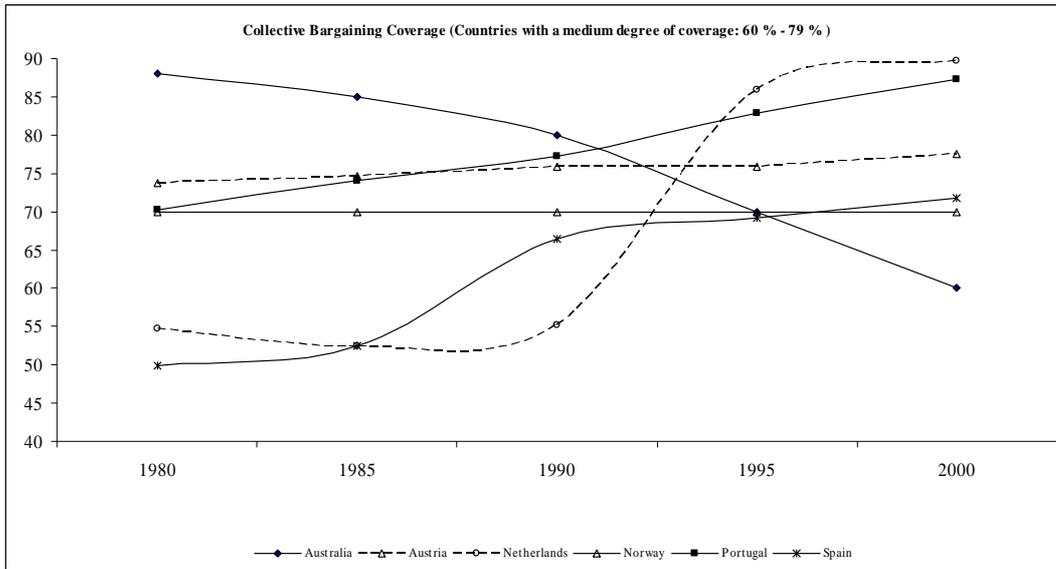
Note: High, medium and low coverage countries are classified according to the mean coverage from 1980 to 2000.

Figure 3c: Development of collective bargaining coverage
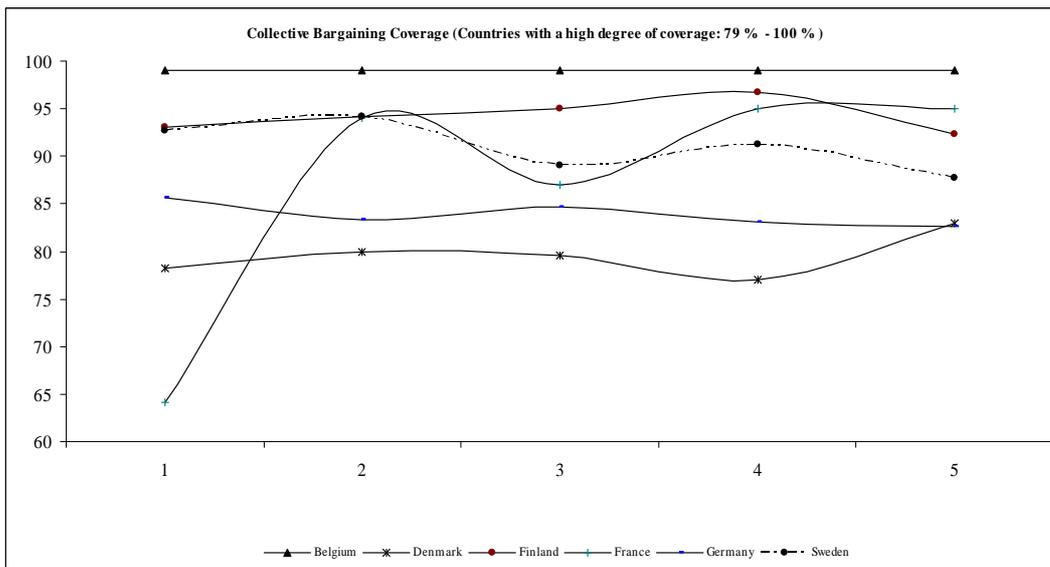
Note: High, medium and low coverage countries are classified according to the mean coverage from 1980 to 2000.

Statistical analysis has detected the determinants of these patterns of development (Traxler et al. 2001). Its main findings can be summarized as follows:

- Multi-employer bargaining, especially when being complemented by persistently applied statutory mechanisms to extend the purview of collective agreements to employers who are not affiliated to the signatory employer associations, covers a high proportion of employees.[5] In most of these cases, far more than two thirds of the employees are covered by collective agreements. The prevailing development is either stability at a high level of coverage or continued growth. This pattern characterizes the majority of the European countries (i.e. Austria, Belgium, Finland, France, the Netherlands, Portugal, and Spain).

- If statutory extension provisions are either lacking or implemented rather rarely, the coverage rate almost monotonically increases with union density. In other words, the incidence of collective bargaining becomes a matter of union strength, if statutory support from extension procedures is lacking. This situation has led to polar opposite cases. Clusters of very low levels of both coverage and unionization are given in the USA and Japan, whereas high-level clusters are typical of the Scandinavian countries. Germany and Switzerland hold less accentuated, intermediate positions.

- Single-employer bargaining covers only a minority of employees. As a rule, far less than one third of the employees are covered in these countries. This is mainly because single-employer bargaining presupposes a strong union presence in the company which is given only in large companies. The group of large companies, however, accounts only for a minority of the total number of employees. In 2000, the USA, Japan, Canada, New Zealand and Great Britain belonged to this group. In the EU-15, for instance, the employment share of the group of large companies, which are defined as employing 250 employees or more, is around 30% (Traxler 2007).

- Single-employer bargaining and multi-employer bargaining in tandem with extension practices unleash contrasting developments of collective bargaining coverage. Due to its low coverage rate single-employer bargaining gives rise to an accentuated divide between covered firms and uncovered firms, which employers perceive as distorting inter-firm competition. This, in turn, sets a rather strong incentive for employers to pursue anti-union policies, so as to avoid or dismantle collective agreements. No comparative incentives are set by multi-employer

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[5] We address here only extension mechanisms which refer to unaffiliated *employers* because they make a significant difference in bargaining coverage. This is because they do not exist in all countries. When existing, their implementation is often contingent on certain criteria of representativeness of the signatory parties. In practice, their implementation also presupposes multi-employer agreements. In comparison to this, most countries register provisions for automatic extension of collective agreements to non-unionized *employees*, in accordance with ILO Recommendation No. 91 of 1951 (Cordova 1982).

bargaining. Moreover, extension practices which build on multi-employer bargaining set an incentive for employers to join their employer association, something which buttresses collective bargaining and increases its coverage.

These findings explain the notable scale of cross-national differences in the coverage rate: They mainly echo the divide between countries under single-employer bargaining and countries under multi-employer bargaining. In addition, this divide also accounts for the observed changes over time: The coverage rate dwindled strongly in countries which are characterized by either persistent single-employer bargaining (i.e. Japan and the USA) or by a shift from multi- to single-employer bargaining during the period under consideration (i.e. Great Britain and New Zealand). Anecdotal evidence from more recent data indicates that these developments have continued beyond the observed period:[6] In Great Britain the coverage rate has declined from 36.3 in 2000 to 35.3 in 2005 according to the Labour Force Survey (Grainger and Crowther 2007). In Germany multi-employer bargaining had been never backed strongly by extension practices which even declined from the mid-1990s onwards, in contrast to the majority of countries in Western Europe In combination with the economic problems caused by unification, this fostered a noticeable decrease in coverage. As data on West Germany from the IAB panel reveal, coverage fell from 70% in 2000 to 67% in 2005.

With the exception of Great Britain and Germany, collective bargaining has remained stable at comparatively high levels throughout Western Europe. This is remarkable because European economic integration has most strongly exposed collective bargaining of these countries to the disruptive forces of intensified international competition. At the same time, fixed exchange rates and EMU have deprived these countries of the means of cushioning these competitive pressures by exchange rate policy and monetary policy. This shows that state support, as provided by statutory extension schemes, can help collective bargaining weather international competition and moderate its pressures on labour standards.

As can also be seen from Figure 3, we do not have data on the 18 countries for each of the years under consideration. However, the high continuity of country developments enables us to fill the data gaps by extrapolation. For the purpose of the following data analysis, this is reasonable because it increases the number of cases in a small sample situation which creates manifold problems for statistical testing.

Figure 4 shows the development of the adjusted and non-adjusted collective bargaining coverage from 1980 to 2000, on the basis of the data series which include extrapolated figures. The columns indicate the levels of coverage, averaged over the 18 countries. The dotted lines visualize the standard deviation (i.e. the scale of differences in the coverage rates across the 18 countries). As regards the level of coverage, the adjusted collective bargaining coverage is

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[6] Note that these data are not strictly comparable from a cross-national perspective.

higher than the unadjusted rate by definition. Aside from this, the two indicators tend to run parallel over time. Hence they follow the same trends: The level of coverage slightly fell over the entire period. The differences in levels between the countries modestly grew until the mid-1980s, remained rather stable until 1999, sharply increased from 1990 to 1995, and again modestly widened afterwards. From a long-term perspective, this means that the predominant trend is growing polarization across countries. They more and more diverge in the level of coverage. The prime movers of this polarization are the countries characterized by multi-employer bargaining and pervasive extension practices at one end of the extremes, and the countries operating under single-employer bargaining on the other end. If one knows how each country is grouped according to its prevalent bargaining system and the incidence of extension practices, this polarized development is evident also from Figure 3. The upshot of these considerations is that the observed differences in coverage across countries are not caused by mere coincidence, but originate in structural properties of the national bargaining systems.

Figure 4: **Collective bargaining coverage over time (average of 18 OECD countries)**
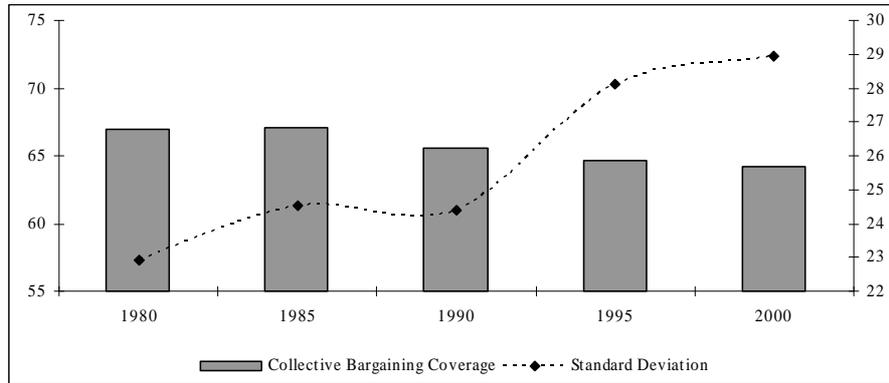
(a) Unadjusted collective bargaining coverage and respective standard deviation across 18 OECD countries
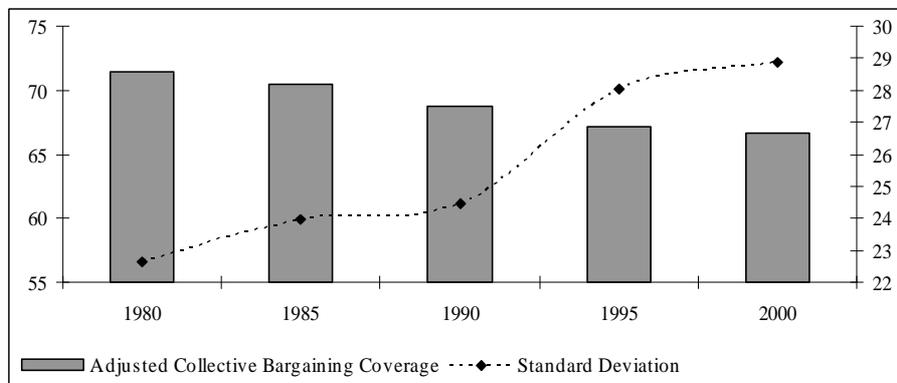
(b) Adjusted collective bargaining coverage and respective standard deviation across 18 OECD countries

Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis the standard deviation across countries is shown. The dotted line shows the development of the standard deviation.

As outlined above, the economic effects of collective bargaining coverage are commonly assumed to be conditional on the degree of bargaining centralization. The concept of bargaining centralization refers to the level at which a collective agreement is formally concluded. Centralization of bargaining increases with growing encompassment, i.e. the comprehensiveness of the agreement, as demarcated by its formal purview. Encompassment has two dimensions (Moene et al. 1993). The *vertical* dimension captures the level of aggregation of economic activities covered by an agreement. The main levels are local (i.e. the plant and the company), intermediate (i.e. the branch, sector and occupation), and central (i.e. cross-sectoral agreements). The degree of *horizontal* centralization depends on whether bargaining for distinct categories of jobs (e.g. blue- and white-collar workers) is conducted separately or jointly. Bargaining systems characterized by the same vertical level of economic activities may nevertheless differ in their horizontal encompassment. For instance, bargaining took place at cross-sectoral

level for longer time periods in both Ireland and Finland. However, there were separate accords for blue- and white-collar workers in Finland, whereas joint agreements for these employee groups were struck in Ireland. One can observe analogous differences at the two other vertical levels of encompassment. Measures of bargaining centralization have thus to construct a composite index of both dimensions. It is appropriate to take the vertical centralization as the basic criterion for such an index since differences in vertical encompassment make larger differences in the purview of an agreement, as compared to distinct levels of horizontal encompassment. Therefore the overall degree of bargaining centralization is ranked higher for Ireland than for Finland in the above case.

In many OECD countries multi-level bargaining is established. This further complicates measuring bargaining centralization. To construct a measure of bargaining centralization, one has to clarify the relative importance of the distinct bargaining levels in multi-level bargaining systems. The problem is that the relative importance of distinct levels may vary with issues and areas within one and the same country. As regards issues, we focus here on centralization of *wage* bargaining since wages are the key issue of bargaining in any country. As far as areas are concerned, our focus is on wage bargaining in the private sector. The private sector and the public sector strongly differ in their mode of wage regulation both within and across countries. Even within this specified framework, it is difficult to assess the relative importance of the distinct bargaining systems. For instance, an industry-level agreement covers more employees than the limited number of complementary company agreements within its purview. However, the latter usually fix employment terms which are more favourable to their employees than the more encompassing industry-level agreement. For reasons of logical consistency we refer to encompassment in these cases.

Following this rationale, we adopt a corresponding measure of bargaining centralization (cebale) (Traxler et al. 2001) which an assessment of alternative centralization measures classified as one of the two best available measures (Kenworthy 2001).

5. THE DEPENDENT VARIABLES

This study aims to cover possible socio-economic effects of collective bargaining coverage as extensively as possible. As an implication, the list of dependent variables is rather long. By and large, one can differentiate between five main areas of socio-economic effects. Each of them is considered by more specific measures. Generally, the selection of measures was restrained by availability of data. They stem from official statistics, and the definition of measures follows the conventions underlying these statistics. For details of the definition of measures and data sources, see the Appendix.

The five areas of possible socio-economic effects and the corresponding measures are as follows:

- The terms of employment are captured by the growth rates of nominal labour costs (Δcpe), unit labour costs (Δulc), real labour costs (Δrlc) and labour productivity (Δpdty), and by the working hours per week in manufacturing (hour).
- Employment is measured by the aggregate unemployment rate (ue); the unemployment rate for males (uemale) and for females (uefemale); by the share of unemployed females (sharefemale); by the employment ratio (emplratio); and by the employment share of unemployed with an age of 15 to 24 (age1524), and with an age of 50 to 59 (age5059).
- A third cluster of variables includes inflation (infl); growth of real domestic product (Δgdp); growth of aggregate demand (Δad); and final domestic consumption (Δfc).
- The area of public expenditures embraces measures of total public social expenditures (totpubexp); public expenditures for unemployment benefits (pubexuebenefit); and for active labour market programmes (pubexactivelbor).
- Finally, the income distribution (d9d1) is measured by the ratio of gross earnings (income from employment) at the 9th percentile to earnings at the 10th percentile.

It is important to note that this list of variables does not cover several relevant social and economic conditions because of lack of comparable data. Examples include the level of pay and health and safety in the workplaces which are conditional on whether collective bargaining is established.

6. THE SOCIO-ECONOMIC IMPACT OF COLLECTIVE BARGAINING COVERAGE

The following sections present and also discuss the empirical findings. The regression models are set up as time-series cross-section models covering 18 countries for the time period from 1980 to 2000. For systematic reasons, these statistical analyses are done for both the adjusted and unadjusted coverage rate. However, we do not expect the two coverage measures to differ in their effects very much. This is because the development of the adjusted coverage rate runs parallel to that of the unadjusted coverage rate, as we have seen above. In addition to the Tables which document the results for the regression analyses, graphs visualize for each dependent variable how its development relates to the development of the coverage rates.

6.1 The employment terms

The employment terms are at the heart of any study on the effects of collective bargaining. This is for two reasons. On the one hand, they determine the living conditions of the employees. On the other hand, they are the causal link between collective bargaining and macroeconomic performance. If collective bargaining has an impact on macroeconomic performance, then this works most strongly through its labour cost effects, which in turn may affect such macroeconomic aggregates as inflation, unemployment and growth. If there is no statistically significant impact of bargaining on labour costs, any empirical finding showing a significant effect on macroeconomic performance is dubious.

Pay and working time are the key components of the employment terms. Unfortunately, comparable data on standard pay rates – which are most directly determined by collective bargaining – are not available for all countries covered by this study. We take nominal labour costs (i.e. compensation per employee, cpe) as a proxy for pay. Nominal labour costs are partly beyond the control of collective bargaining, as they also embody overpayment of the standard rate and such non-wage labour costs as social security contributions. Regardless of this, they are a reasonable approximation, since the growth rate of pay and nominal labour costs are highly correlated (Traxler et al. 2001). In addition to nominal labour costs, we study the impact of collective bargaining on the growth of unit labour costs (Δulc), real labour costs (Δrlc) and labour productivity (Δpdty). Working time is captured as hours worked per week in manufacturing.

The results for the regressions are shown in Table 1a to d. Beginning with the models which do not include the interaction with centralization (i.e. Table 1a and b), there is no significant impact of coverage on productivity and any of our measures of labour costs. The same applies to our models which also estimate the effect of the interaction of coverage with bargaining centralization, i.e. Table 1c and d. Likewise, no significant effect of coverage on working hours is visible regardless of whether coverage enters the analysis as the only bargaining variable

or also as an interactive term with centralization. Surprisingly, working hours significantly increase with union density in the models for adjusted coverage at the level of 0.1. However, union density slightly fails this significance level (with p = 0.11) in the models for unadjusted coverage. This union effect is more clearly insignificant in the models which include the interactive term. Hence, a robust impact of union density on working hours is lacking. The reason for this is that the goals and priorities of the unions differ widely across countries. During the 1980s, for instance, cuts in working time were among the most important demands of the German union movement, especially of its strongest organizations such as IG Metall, in stark contrast to the Nordic unions which are all very strong by comparative standards.

6.2   (Un)employment

Since there is no evidence of a robust impact of coverage on labour costs, there is little reason to expect that coverage strongly affects our measures of unemployment. This is confirmed by our results (Table 2a to d). There are results for two indicators (i.e. the employment ratio, emplratio, and overall unemployment, ue) which corroborate prevailing opinion on the detrimental effect of coverage on employment. Both the unadjusted coverage rate and the unadjusted coverage rate significantly dampen the employment ratio (emplratio). Presumably as a consequence of multicollinearity, this effect disappears in the models with the interaction terms: Neither the coverage rates nor their interaction with bargaining centralization shows a significant impact. Overall unemployment (ue) significantly increases with unadjusted coverage when left without interaction with centralization. However, the corresponding results for adjusted coverage remain insignificant. The same holds true for the models that include the interactive terms. In none of these models either coverage or the interaction of coverage and centralization significantly affect the overall unemployment rate. There is only one significant effect of coverage which is robust in all estimated models: Unadjusted as well as adjusted coverage has a significantly dampening effect on youth unemployment (age1524). In the models which include the interactive term, this beneficial effect is captured by this term, while coverage as such remains insignificant. This means that the beneficial effect of coverage unfolds in combination with growing bargaining centralization. This interactive effect, along with the insignificant findings on labour costs and the other unemployment variables, suggests that the beneficial effect of coverage on youth unemployment has to do with differences in the role of the bargaining partners in vocational training. Their bargaining strategies may directly or indirectly help overcome the collective-action problems of vocational training (Crouch 1995).The prospects for such improvements in vocational training are contingent on encompassing (in particular multi-employer) bargaining structures, something which is expressed here as the beneficial effect of the interaction of coverage and centralization.

Given that collective bargaining has beneficial effects on youth unemployment and lacks any significant impact on the employment terms, the significantly negative effect on the employment ratio deserves closer consideration. Even more than the effect on youth unemployment, this effect is likely to be caused indirectly, i.e. via mechanisms other than the employment regulation. In this respect, the significantly positive effect of coverage on public expenditures (see below) is instructive. It is reasonable to believe that the generally stimulating effect on public expenditures includes the propensity to adopt early retirement schemes, something which dampens the employment ratio.

6.3   Inflation, demand, consumption, and growth

Since the above analysis has shown that bargaining coverage lacks a significant impact on labour costs, it is unlikely to affect inflation (infl), and changes in aggregate demand (Δad) and final domestic consumption (Δfc). To make the analysis of macroeconomic aggregates complete, we also examine the impact of coverage on the growth of real GDP (Δgdp). The results from the regression analysis confirm these reservations (Table 3a to d): Neither the unadjusted coverage rate nor the adjusted rate show a significant effect on any of our dependent variables. The same applies to the models which interact the coverage rates with bargaining centralization.

6.4   Public expenditures

The hypothesis is that public expenditures increase with collective bargaining coverage, even though free collective bargaining is not formally linked to public policy. Nevertheless, there is an informal link which results from the macroeconomic relevance of collective bargaining. To the extent that collective bargaining has a noticeable impact on the economy governments cannot ignore the bargainers and their interests. For obvious reasons, the macroeconomic impact of collective bargaining increases with its coverage. A similar effect might be assigned to growing levels of bargaining centralization, although this relationship is less obvious. In principle, decentralized forms of economy-wide bargaining coordination vest the coordinating actors with macro-economic weight in a way analogous to centralized bargaining.

Given the positive association between coverage and centralization, the effect of these two bargaining properties on public expenditures tends to be mutually reinforcing. Governments will be more willing to involve the two sides of industry in public policy, if the coverage rate and the level of centralization and coordination of bargaining are rather high. In accordance with this, there is evidence that the participation of the unions in public policy is positively associated with the incidence of coordinated bargaining, multi-employer bargaining and a correspondingly high level of bargaining coverage (Traxler 2003b, 2004). As an implication of their concern about social welfare, the unions are usually interested in a rather high level of public expenditures in general, as well as of public expenditures for unemployment benefits and active labour

market policies which are addressed here specifically. A high rate of collective bargaining strengthens their voice in this respect.

The findings from the regression analysis by and large confirm our hypothesis, with interesting differences in detail. The models, which include coverage without an interaction with bargaining centralization, show that total public expenditures significantly grow with the adjusted coverage rate as well as the unadjusted rate. Coverage has the same significant effect on public expenditures for active labour market policies. In this case, there is also a significant union effect, insofar as public expenditures for active labour market policies increase with union density. This finding underscores the high union interest in such policy measures. In contrast to total public expenditures and expenditures for active labour market policies, coverage does not significantly affect the scale of expenditures for unemployment benefits. The models which include the interaction of coverage and centralization suggest that coverage is generally more important than bargaining centralization. As regards total public expenditures, only the coverage rate – regardless of being adjusted or not – has a significantly positive impact, in contrast to the interactive term. Again, one finds no significant effect on unemployment benefits of either coverage as such or its interaction with centralization. As far as active labour market policies are concerned, the unadjusted coverage rate as well as its interaction with centralization has a significantly positive impact, while such effects are lacking in the case of the adjusted coverage rate. Again, union density shows a consistently positive and significant effect on active labour market policies. If one compares the models without interactive term with those including the term, one finds that the effect of coverage is generally stronger in the former models than in the latter.

These findings are plausible in the light of the above reflections. Compared to bargaining centralization, the effect of coverage is stronger because decentralized bargaining coordination is a substitute for centralization, as far as the macroeconomic power of the bargainers vis-à-vis governments is concerned. Furthermore, multicollinearity of coverage and centralization weakens the respective effect of coverage in the models which also include the interactive term. Taking this point into consideration, one can conclude that the results for the different models are fairly consistent. They document that collective bargaining coverage stimulates public expenditures in general and expenditures in active labour market policies in particular. The insignificant impact on the expenditures indicates that the importance of coverage varies with the different kinds of public expenditures. Coverage probably does not affect expenditures for unemployment benefits since the scale of these expenditures is strongly contingent on the development of unemployment, such that it is less a discretionary matter which is susceptible to pressure politics. The models for this dependent variable do not include an unemployment variable due to problems of endogeneity.

6.5   Income distribution

Comparable data on income distribution are sparse. Continuous time-series data are not available. Hence, we conduct the pooled analysis, as measured by the ratio of gross earnings at the 9th percentile to earnings at the 10th percentile (d9d1), for selected years. According to conventional wisdom growing degrees of bargaining centralization and bargaining coverage exert an equalizing effect on the income distribution. Most of the empirical studies of the impact of bargaining on pay differentials confirm the wage-levelling impact of centralization and bargaining coverage (e.g. Rowthorn 1992, Rueda and Pontusson 1997, Wallerstein 1999, Zweimüller and Barth 1994).

Nevertheless, there are reservations from an empirical point of view. Empirical studies of pay inequality are burdened with problems of data availability. This has led many studies to use the same data set. Hence, concurring results do not come as a big surprise. However, recent empirical studies have cast doubt on a strong association between centralization and equalization (Golden and Londregan 2006; Dell'Arringa and Pagani 2007). This questions the equalizing effect of bargaining coverage as well. As outlined above, there are also theoretical caveats. Our empirical findings on this question are summarized in Table 4a to d. Collective bargaining coverage per se as well as its interaction with centralization remains insignificant with the exception of one model specification: With $p = 0.09$ unadjusted coverage has a significantly pay levelling effect according to the model which includes also the interactive term. Overall, these findings reject rather than confirm conventional wisdom on a strong pay-compressing effect of coverage and centralization. It is plausible that the pay-levelling effect of bargaining coverage and centralization has declined over time (Baccaro and Ferguson 2008). One important reason for this development has been a tendency to re-design the regulatory tasks of higher and lower levels bargaining since the mid-1980s, which first affected working time and then pay from the early 1990s onwards. Centralized bargaining systems have undergone a process of organized decentralization in the course of which the multi-employer settlements have delegated important bargaining tasks to the local level (Traxler et al. 2001). As regards pay bargaining, this process of organized decentralization has been far most pronounced in the Scandinavian countries which are commonly held as most centralized (Stokke 2008, Traxler et al. 2008). Similar processes of organized decentralization have taken place also in countries like Austria, Germany and Italy, where industry-level bargaining traditionally prevails.

Unfortunately, data characteristics do not allow for an empirical examination of whether and how the pay-compressing effect of bargaining centralization and bargaining coverage has changed during the time period under consideration.

7. CONCLUSIONS

Conventional wisdom assigns a detrimental effect of bargaining coverage on macroeconomic performance. This detrimental effect is commonly presumed to be dammed by growing degrees of bargaining centralization. Our empirical findings run counter to this reasoning. Put more specifically, they reveal that collective bargaining coverage exerts neither a positive nor a negative influence on most of our socioeconomic variables: As the examination of the effect of coverage on the employment terms, unemployment, inflation, demand, consumption, economic growth, public expenditures and income inequality document there is a statistically significant effect of collective bargaining coverage in some cases. The share of unemployed with an age of 15 to 24 (i.e. youth unemployment) declines with growing coverage. The share of public expenditures for active labour market policies as well as of total public expenditures increases with growing bargaining coverage. Furthermore, the employment ratio decreases with growing coverage. Finally, there is a pay levelling impact of (unadjusted) coverage, which is far less robust than wide-spread assumptions imply, i.e. the study reveals a decreasing effect of earnings inequality with increasing collective bargaining coverage. As these findings elucidate, coverage tends to have both detrimental and beneficial effects even within the narrower area of employment. The stimulating effect on active labour market policies can be considered beneficial although the scale of expenditures cannot be taken as evidence of their effectiveness. It is important to note that there are good reasons to assume that none of the significant and robust effects is caused by the core regulatory function of bargaining, i.e. the determination of the employment terms. As outlined above, neither collective bargaining coverage per se nor its interaction with bargaining centralization exerts a significant influence on the employment terms in stark contrast to conventional wisdom.

This brings us to the question of why our findings contrast with conventional wisdom. This question includes a methodological and an analytical dimension.

Methodologically, empirical studies may come up with diverging results as a consequence of differences in design, data and measures, and time periods covered. As regards the design, our study shares with earlier important studies at least the cross-nationally comparative set up. Aside from this, the advantage of our statistical analysis is its set up as a time-series cross-section model, something which is unique at least for studies which capture collective bargaining coverage on a metric scale over two decades. This brings us to differences in measures. Most of the earlier studies, in particular those covering longer time periods, use rather rough rankings of bargaining coverage. For instance, Layard et al. (1991) use an ordinal scale with three scores differentiating between coverage rates under 25%, 25-75% and over 75%. Differences in the time periods covered may also entail differences in results, in particular when the different time periods capture distinct economic contexts. As outlined above, there is strong evidence that the comparative performance of different bargaining systems is contingent

on context, which changed over time in manifold respects. This is not the place to discuss this issue in greater detail. It is, however, worth noting that the comparative strength of this study lies in combining a time-series cross-section statistical design and metric measures of collective bargaining coverage for a time period which covers most recent comparable data.

Theoretically, the socio-economic effects of collective bargaining coverage have remained rather unexplored. There are two arguments on which the widely shared proposition of a detrimental effect of growing degrees of collective bargaining coverage is based. First, high levels of coverage reduce pay differentials, something which in turn affects employment negatively. Regardless of whether egalitarian pay policy actually harms employment, this reasoning does not hold simply robust evidence that pay differentials decrease with growing bargaining coverage is lacking. Second, collective bargaining coverage is presumed to constitute a performance-inhibiting rigidity. This echoes the neo-liberal verdict on the detrimental effect of any collective regulation of the labour market (e.g. Siebert 1997). While this verdict has become close to commonplace in public and political debates it has never been elaborated on collective bargaining coverage. Moreover, it is essentially at odds with the state of the art, as far as the literature on the comparative performance of distinct bargaining systems is concerned. As outlined above, this literature shows that relatively centralized bargaining systems as well as coordinated bargaining systems fare well at least under certain circumstances. The same applies to relatively high levels of coverage since they correlate with centralization and coordination of bargaining. Nevertheless, there is no compelling evidence on a generally beneficial effect of high coverage for two reasons: First, a high level of coverage may combine with fairly distinct forms of centralization and coordination. Second, socio-economic performance varies across these forms and with circumstances.

These methodological and theoretical reflections explain why collective bargaining coverage does not have a thoroughgoing impact on socio-economic developments, as far as they are covered by our indicators. This does not rule out the possibility that collective bargaining coverage has stronger influence in other areas which this study does not address due to lack of cross-nationally comparable data. A case in point is the level of pay on which collective agreements exert a downward ratchet effect insofar as they put a floor under pay movements. This is especially important in slack segments of the labour market. The role of collective agreements is less eminent in tight segments where overpayment relative to the standard rates is practice.

As regards coverage, these findings can be explained by the fact that a certain coverage level can combine with fairly distinct scores on other bargaining properties which are commonly seen as important determinants of performance (e.g. coordination and centralization). For instance, relatively high levels of coverage associate with both intermediate and high bargaining centralization (i.e. multi-employer bargaining in general), as we have seen. We have also pointed out in the theoretical section that there is evidence that the performance of

centralization and coordination are conditional on certain circumstance. Therefore, we agree with Aidt and Tzannatos (2008) that the most promising potential for future research lies in exploring such interaction effects.

The finding that the effect of bargaining coverage on social and economic conditions is rather modest on aggregate is unspectacular, but nevertheless important since collective bargaining coverage more than other dimensions of bargaining captures the general relevance of industrial democracy and collective bargaining per se. Seen from this perspective, one can conclude that industrial democracy does not conflict with economic efficiency: While a decay of coverage, as caused by intentional deregulation or unintended decline of the collective bargaining system, does not improve economic performance, it may well incur costs of social disruptions and conflict.

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TABLES AND FIGURES

Table 5:   Description of variables, data and sources

Variable	Description, sources and comments
acbc	Adjusted collective bargaining coverage. Ratio of employees under any type of collective agreement to the total number of employees. The calculation of the coverage rates generally follows the sources and methods used in Traxler (1994, 1996) and Traxler et al. (2001). The concept of statutory regulation of the working conditions in the public sector was improved according to Traxler (1999). If there is a formal right of public-sector employees to conduct collective bargaining, countries are classified as having collective bargaining in the public sector even when these agreements require unilateral approval by government or parliament. For a detailed description see Traxler et al (2001:306-7). Data source: Traxler et al (2001) and own updates.
age1524	Share of unemployed with an age of 15 to 24 as a percentage of total unemployed. Source OECD Labour Force Statistics.
age5059	Share of unemployed with an age of 50 to 59 as a percentage of total unemployed. Source OECD Labour Force Statistics.
cebale	Centralization of Bargaining Level (wage bargaining, private sector only). The ranking based on *most important level* according to special scores in case of equally important levels 1 = central / all employees 2 = central / group-specific 3 = central and industry / all groups 4 = central and industry / group-specific 5 = combination of central - industry - company/plant / all groups 5,42 = combination of central - industry - company/plant (central: all groups, all other levels group-specific) 6 = combination of central - industry - company/plant / group-specific 7 = industry / all groups 8 = industry / group specific; (incl. occupational bargaining for New Zealand) 9 = combination of industry and company/plant, both all groups 9.5 = combination of industry and company/plant, both all groups and group-specific equally important (UK 1970-83) 10 = combination of industry and company/plant, group-specific 11 = company/plant, all groups

	11.5 = company/plant, all groups and group-specific equally important 12 = company/plant, group-specific Source: Traxler et al. (2001); own updates.
d9d1	Earnings dispersion: Measured by the ratio of 9th to 1st decile limits of earnings. Estimates of earnings used refer to gross earnings of full-time wage and salary workers. Source: OECD database on Earnings Distribution, OECD Employment Outlook 1993 and 2008. With exception of Norway and Spain no data for 2000 is available. Further missings include: Austria 1985; Belgium 1980 and 1995; Germany 1980; Netherlands 1980, New Zealand 1980; Portugal 1980 and 1995; Spain 1980, 1985 and 1990; Switzerland 1980 and 1995.
Δad	Growth rate (year to year) of aggregate demand (consumption, investment, government expenditures, imports). Source: OECD National Accounts I.
Δcpe	Growth rate (year to year) of compensation per employee. Source: OECD Economic Outlook.
Δfc	Growth rate (year to year) of final domestic consumption. Source: OECD National Accounts I.
Δgdp	Growth rate (year to year) of real gross domestic product. Source: OECD, National Accounts.
Δpdty	Growth rate (year to year) of the labour productivity index. Source: OECD Economic Outlook.
Δrlc	Growth rate (year to year) of the real labour cost index which is based on compensation per employee in the private sector. Source: OECD Economic Outlook.
Δulc	Growth rate (year to year) of unit labour costs. Source: OECD Economic Outlook.
emplratio	Employment ratio defined as the ratio between total employment (incl. self-employed) and total population. Source: OECD Economic Outlook for total population and OECD Labour Force Statistics for total employment.
hour	Hours worked per week in manufacturing. Source: ILO Yearbook of Labour Statistics.
infl	Growth rate (year to year) of the Consumer Price Index. Source: OECD Economic Outlook.
leftgov	Participation of left parties in government, interval scale. Operationalized by number of seats in cabinets of left parties (i.e. social democratic and socialist parties). Data

	provided by Manfred Schmidt.
pubexactivelabor	Public social expenditures for active labour market programmes as a percentage of GDP. Source: OECD Social Expenditure Database.
pubexuebenefit	Public expenditures for unemployment benefits as a percentage of GDP. Source: OECD Social Expenditure Database.
sharefemale	Share of unemployed females as a percentage of total unemployment. Source: OECD Labour Force Statistics.
totpubexp	Total public social expenditures as a percentage of GDP. Source: OECD Social Expenditure Database.
ucbc	Unadjusted collective bargaining coverage. Ratio of employees under any type of collective agreement to the total number of employees. Source: Traxler et al. (2001) and own updates.
ud	Union density. Net trade union density, except gross density for, Switzerland and Japan. Source: OECD Labour Force Statistics.
ue	Unemployment rate (commonly used definition). Source: OECD Economic Outlook.
uefemale	Unemployment rate for females (basis: civilian labour force). Source: OECD Labour Force Statistics.
uemale	Unemployment rate for males (basis: civilian labour force). Source: OECD Labour Force Statistics.

Figure 5: Collective bargaining coverage versus compensation per employee
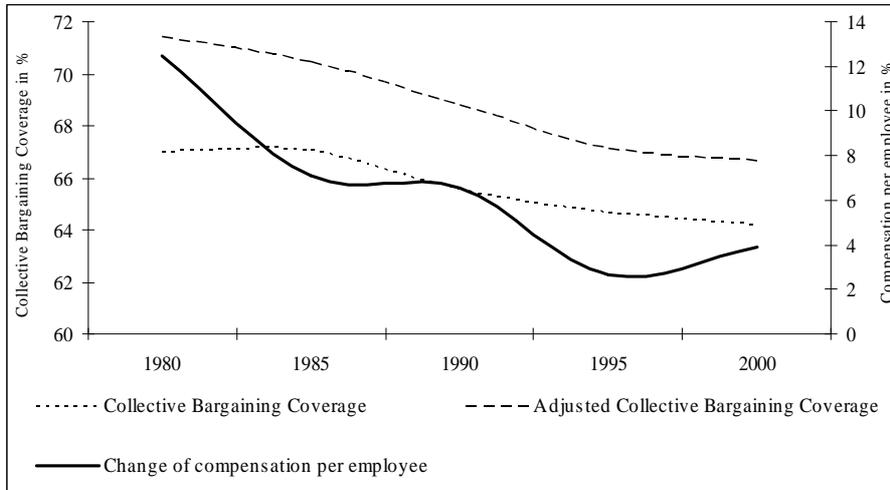
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis yearly percentage growth of compensation per employee is shown.

Figure 6: Collective bargaining coverage versus labour costs
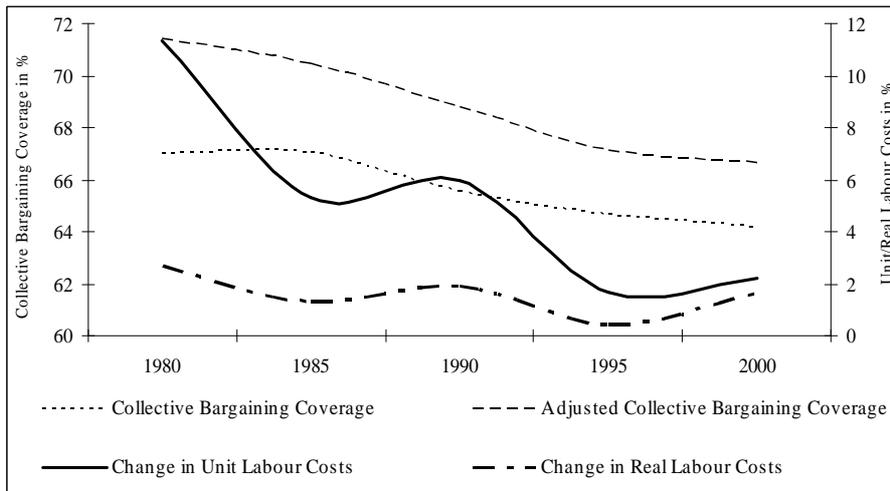
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis yearly percentage growth of unit labour costs and real labour costs is shown.

Figure 7: **Collective bargaining coverage versus labour productivity**
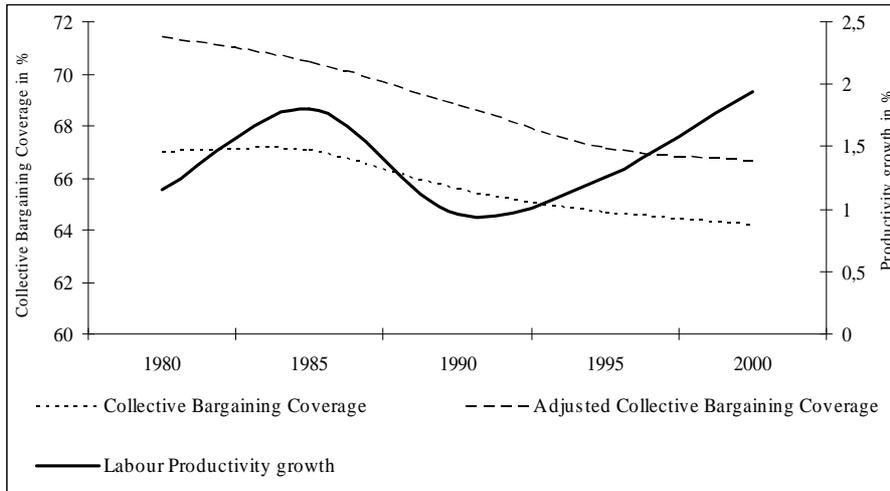
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis labour productivity is shown.

Figure 8: **Collective bargaining coverage versus average hours worked per week**
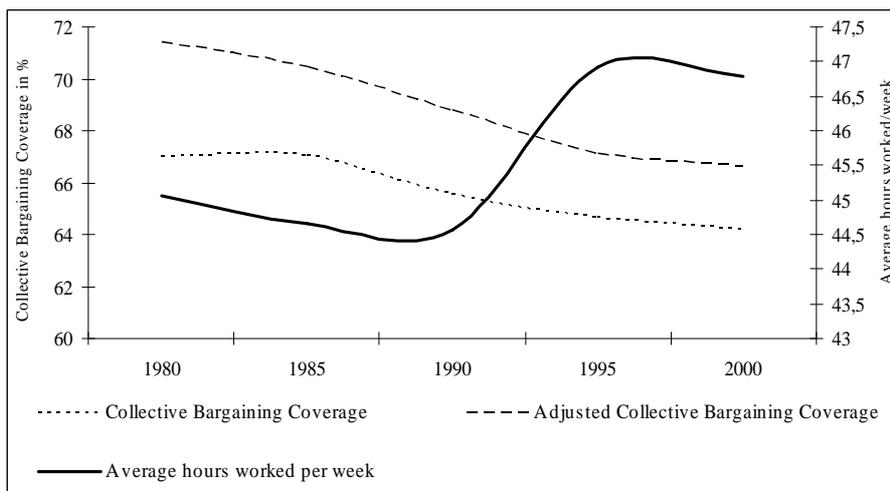
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis average hours worked (in manufacturing) are shown.

Figure 9: Collective bargaining coverage versus unemployment rate
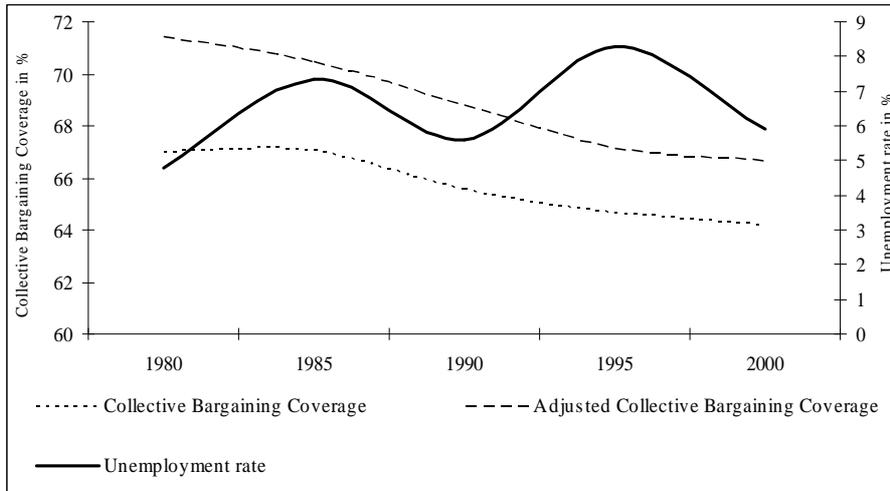
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis unemployment rate is shown.

Figure 10: Collective bargaining coverage versus unemployment rates (male and female)
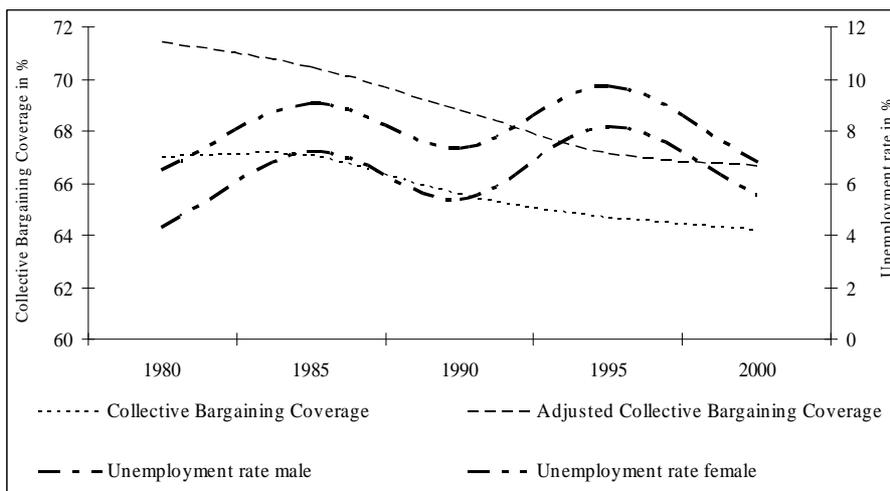
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis unemployment rates for males and females are shown.

Figure 11:   Collective bargaining coverage versus employment ratio
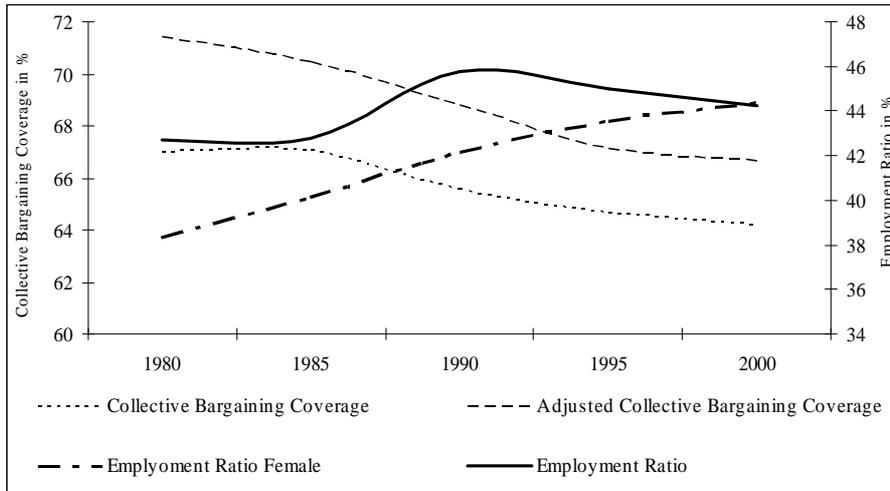
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis the total employment ratio and the respective share of females is shown.

Figure 12:   Collective bargaining coverage versus employment share of young and old persons
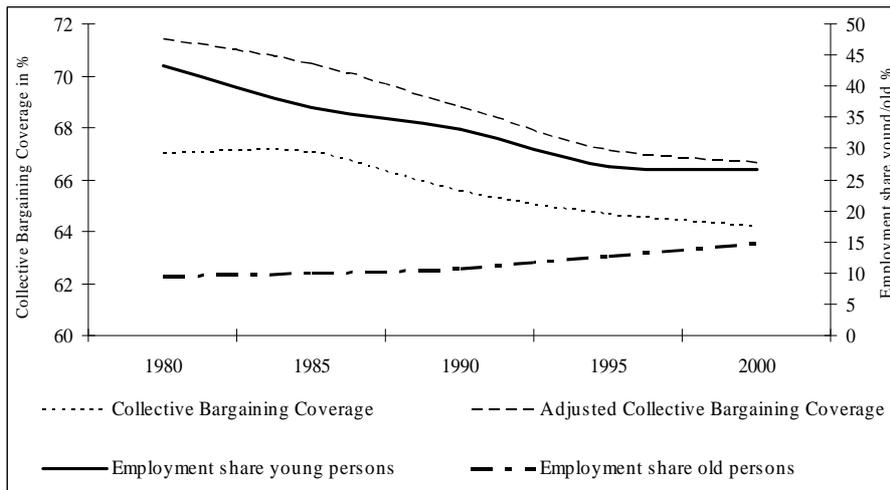
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis the share of unemployment young persons (age between 15 and 24) and old persons (age between 50 and 59) is shown.

Figure 13: Collective bargaining coverage versus inflation
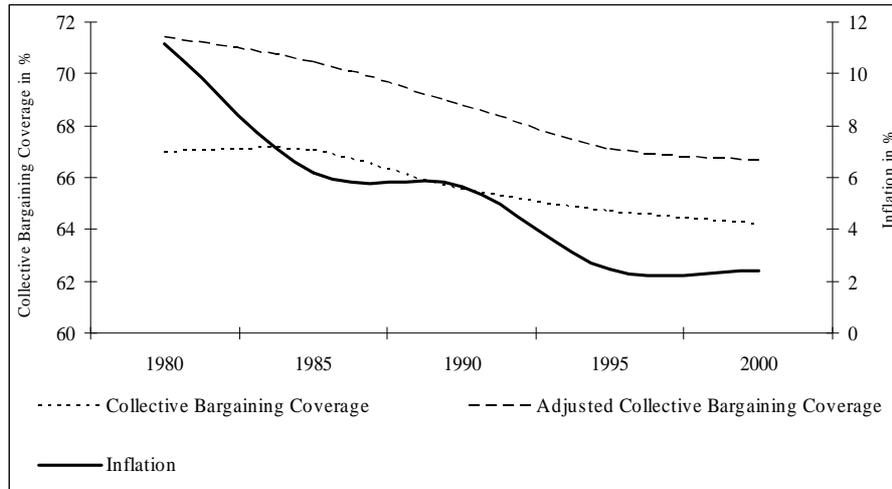
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis inflation is shown.

Figure 14: Collective bargaining coverage versus economic growth (GDP)
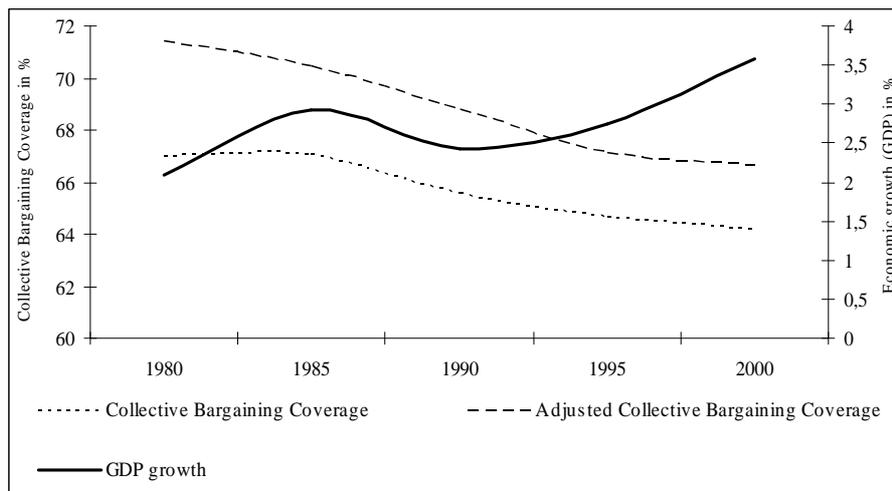
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis economic growth (GDP) is shown.

Figure 15:   **Collective bargaining coverage versus aggregate demand and final consumption**
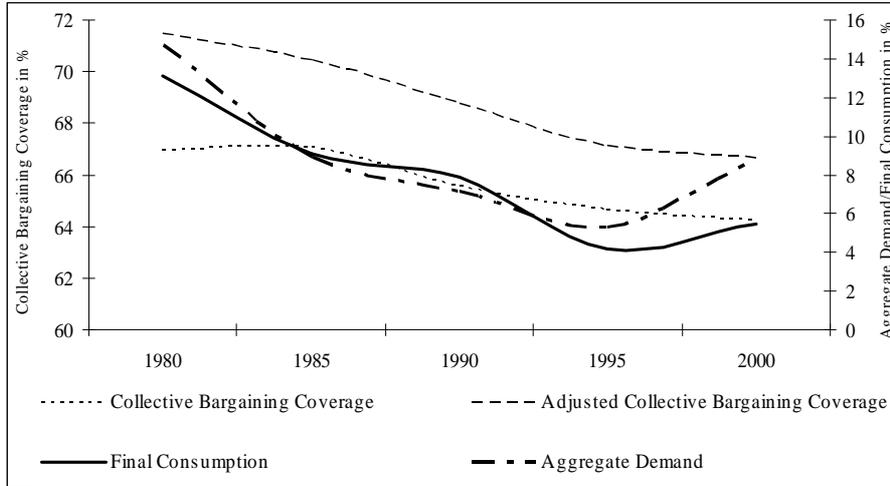
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis the yearly growth rates of aggregate demand and final consumption is shown.

Figure 16:   **Collective bargaining coverage versus total social expenditures (public)**
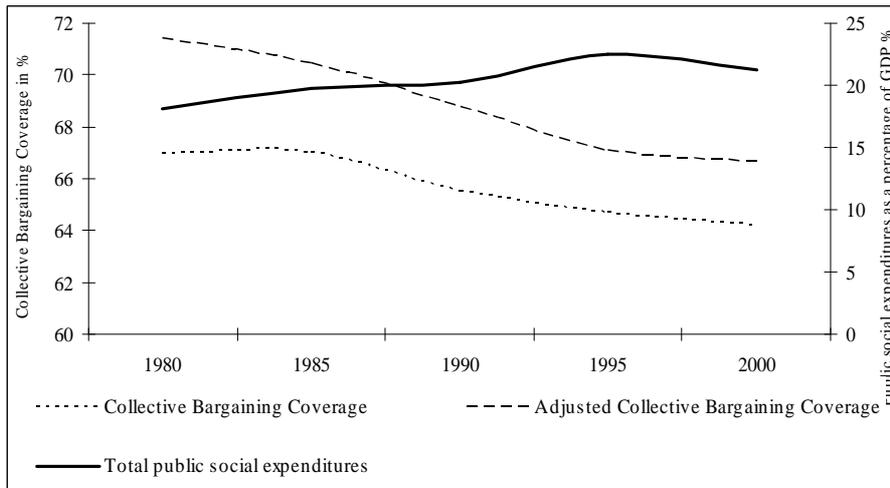
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis public social expenditures as a share of GDP is shown.

Figure 17: Collective bargaining coverage versus social expenditures (active labour market programmes and unemployment benefits)
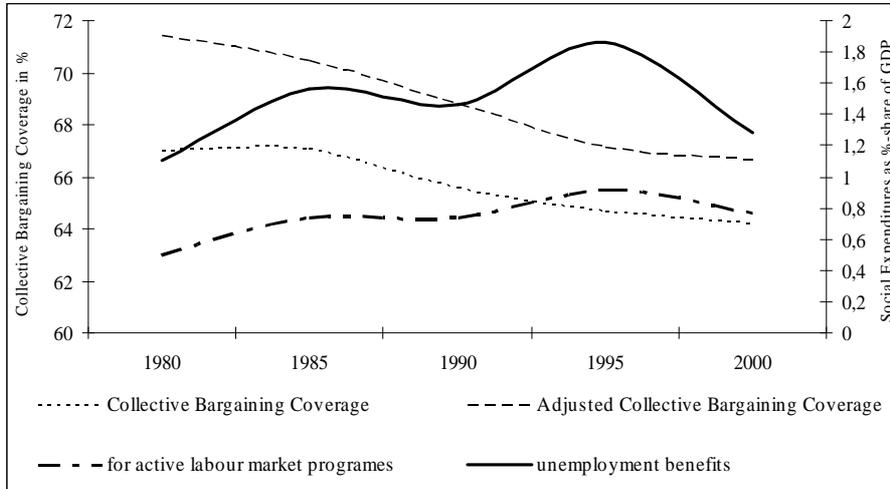
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis public social expenditures as a share of GDP for unemployment benefits and active labour market programmes is shown.

Figure 18: Collective bargaining coverage versus Earnings dispersion
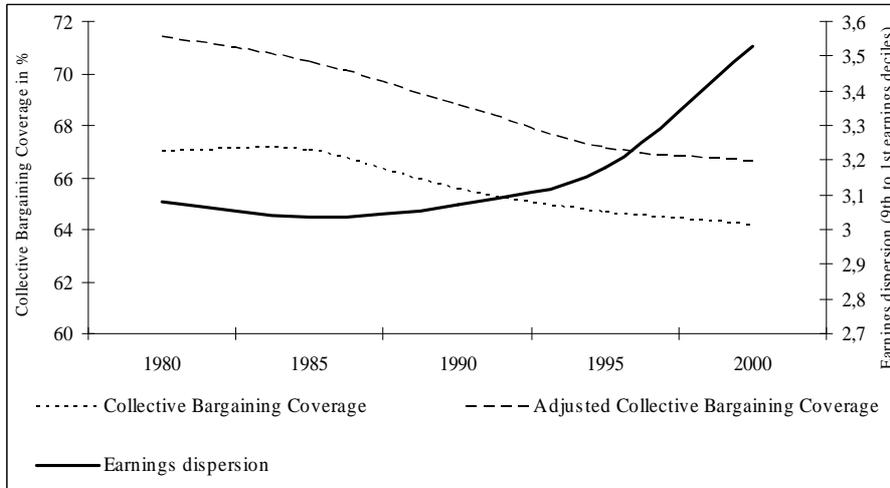
Note: On the left axis collective bargaining coverage in percentages is indicated. On the right axis earnings dispersion measured by the ration of 9th to 1st deciles limits of earnings is shown.

Table 1a: **The effects of bargaining coverage and centralization on the employment terms**

	Δcpe	Δulc	Δrlc	Δpdty	hour
c	0.990178	1.891003	0.280560	1.317352***	0.384809
	(1.267841)	(1.453120)	(0.804663)	(0.416690)	(0.803363)
ucbc	-0.000166	0.009571	-0.000339	-0.002407	-0.004283
	(0.015044)	(0.017282)	(0.009837)	(0.006653)	(0.009336)
ud	0.017808	0.008449	-0.001255	0.001726	0.019139
	(0.017885)	(0.020717)	(0.011519)	(0.007829)	(0.011621)
Δgdp	0.062911	-0.409283	0.282103*	-	-
	(0.243453)	(0.281568)	(0.159837)		
Δad	-	-	-	-	-2.154487
					(6.213076)
Y_{t-1}	0.443393***	0.353439***	0.167306	0.231642**	0.981548***
	(0.064800)	(0.072779)	(0.107200)	(0.101207)	(0.008360)
R^2	0.446995	0.322235	0.065156	0.071817	0.995852
R^2-adjust.	0.413979	0.281771	0.009344	0.030868	0.995566
N	72	72	72	72	63

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 1b: The effects of bargaining coverage and centralization on the employment terms

	Δcpe	Δulc	Δrlc	Δpdty	hour
c	1.047337	1.995816	0.261261	1.261033***	0.405483
	(1.301691)	(1.496902)	(0.822621)	(0.431292)	(0.800087)
acbc	-0.001410	0.006255	0.000147	-0.000823	-0.005032
	(0.014764)	(0.017001)	(0.009722)	(0.006593)	(0.009406)
ud	0.018452	0.010584	-0.001529	0.000749	0.019342*
	(0.017554)	(0.020370)	(0.011283)	(0.007678)	(0.011462)
Δgdp	0.062317	-0.409791	0.282013*	-	-
	(0.243482)	(0.282002)	(0.159835)		
Δad	-	-	-	-	-2.204238
					(6.175740)
Y_{t-1}	0.444051***	0.355691***	0.166107	0.226617**	0.982428***
	(0.064549)	(0.072668)	(0.107535)	(0.101810)	(0.008582)
R^2	0.447069	0.320504	0.065142	0.070243	0.995858
R^2-adjust.	0.414058	0.279938	0.009330	0.029224	0.995572
N	72	72	72	72	63

Standard errors in parentheses; *N* denotes the number of observations. ***α ≤ 0.01; ** α ≤ 0.05; * α ≤ 0.10.

Table 1c: The effects of bargaining coverage and centralization on the employment terms

	Δcpe	Δulc	Δrlc	Δpdty	hour
c	1.056172	2.030240	0.435351	1.341623***	0.454006
	(1.294030)	(1.478300)	(0.836063)	(0.442736)	(0.759676)
ucbc	0.008192	0.022118	0.008500	-0.001209	-0.004324
	(0.019109)	(0.021828)	(0.013049)	(0.008791)	(0.011129)
ucbc*cebale	-0.000963	-0.001707	-0.001256	-0.000182	-0.000719
	(0.001903)	(0.002192)	(0.001299)	(0.000868)	(0.001088)
ud	0.017513	0.007496	-0.002369	0.001525	0.016199
	(0.017966)	(0.020850)	(0.011650)	(0.008006)	(0.010899)
Δgdp	0.048957	-0.420623	0.271153*	-	-
	(0.243989)	(0.282575)	(0.160859)		
Δad	-	-	-	-	0.051372
					(5.875904)
Y_{t-1}	0.435990***	0.348026***	0.139825	0.225873**	0.984365***
	(0.065304)	(0.073110)	(0.115165)	(0.106445)	(0.007800)
R^2	0.455804	0.333098	0.081570	0.072442	0.996582
R^2-adjust.	0.413942	0.281798	0.010922	0.016227	0.996277
N	71	71	71	71	62

Standard errors in parentheses; N denotes the number of observations. ***α ≤ 0.01; ** α ≤ 0.05; * α ≤ 0.10.

Table 1d: **The effects of bargaining coverage and centralization on the employment terms**

	Δcpe	Δulc	Δrlc	Δpdty	hour
c	1.112435	2.147194	0.400974	1.278697***	0.463916
	(1.328645)	(1.522268)	(0.852839)	(0.455755)	(0.757074)
acbc	0.006444	0.018859	0.008499	0.000192	-0.005365
	(0.018917)	(0.021644)	(0.013057)	(0.008780)	(0.010999)
acbc*cebale	-0.000916	-0.001738	-0.001163	-0.000147	-0.000682
	(0.001875)	(0.002159)	(0.001284)	(0.000854)	(0.001077)
ud	0.018376	0.009677	-0.002594	0.000581	0.016285
	(0.017657)	(0.020529)	(0.011444)	(0.007869)	(0.010736)
Δgdp	0.048597	-0.420596	0.271539*	-	-
	(0.244099)	(0.283054)	(0.161001)		
Δad	-	-	-	-	-0.120981
					(5.842587)
Y_{t-1}	0.436632***	0.349771***	0.139725	0.221926**	0.986195***
	(0.065205)	(0.073010)	(0.116131)	(0.107113)	(0.008067)
R^2	0.455481	0.331137	0.080033	0.070710	0.996588
R^2-adjust.	0.413595	0.279686	0.009266	0.014389	0.996284
N	71	71	71	71	62

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 2a: The effects of bargaining coverage and centralization on unemployment

	ue	uemale	uefemale	sharefemale	empratio	age1524	age5059
c	3.430619***	3.535123***	2.808654**	8.264539***	21.99497***	9.347066***	0.044662
	(1.189678)	(1.307856)	(1.360984)	(1.282634)	(8.238568)	(2.726181)	(1.261619)
ucbc	0.029687*	0.022630	0.023168	0.002138	-0.089653**	-0.064837**	0.011333
	(0.015874)	(0.016965)	(0.020278)	(0.005587)	(0.036572)	(0.027065)	(0.012116)
ud	-0.018974	-0.007655	-0.014249	0.005144	0.084096*	0.029268	0.006143
	(0.019322)	(0.020477)	(0.024213)	(0.007286)	(0.045004)	(0.031634)	(0.014369)
Δad	-16.17607	-17.73070	-26.76377**	-2.146039	-21.15106	39.44431*	3.416623
	(10.47453)	(11.21367)	(12.61840)	(3.664243)	(22.27334)	(20.12593)	(8.781264)
Y_{t-1}	0.509899***	0.501925***	0.789995***	0.831650***	0.604282***	0.627008***	0.995954***
	(0.106356)	(0.103124)	(0.087148)	(0.030732)	(0.164077)	(0.067645)	(0.071093)
R^2	0.350982	0.303182	0.643627	0.935918	0.453159	0.703663	0.809106
R^2-adjust.	0.312234	0.261581	0.622351	0.932092	0.419507	0.682496	0.794966
N	72	72	72	72	70	61	59

Standard errors in parentheses; *N* denotes the number of observations. ***α ≤ 0.01; ** α ≤ 0.05; * α ≤ 0.10.

Table 2b: The effects of bargaining coverage and centralization on unemployment

	ue	uemale	uefemale	sharefemale	empratio	age1524	age5059
c	3.333184***	3.56098**	2.685196*	8.328528***	19.78195**	9.736403***	0.052013
	(1.246756)	(1.372025)	(1.413093)	(1.315665)	(8.193462)	(2.773876)	(1.263465)
acbc	0.023648	0.016003	0.020500	0.000812	-0.072670**	-0.066054**	0.010765
	(0.015277)	(0.016488)	(0.019093)	(0.005510)	(0.035068)	(0.026784)	(0.012064)
ud	-0.013488	-0.002641	-0.011132	0.005995	0.067476	0.027515	0.006867
	(0.018728)	(0.019955)	(0.023126)	(0.007253)	(0.043610)	(0.031037)	(0.014162)
Δad	-15.46318	-16.69745	-26.39311**	-1.949435	-23.12773	39.55995*	3.515625
	(10.53430)	(11.22751)	(12.61474)	(3.632938)	(22.53674)	(20.04828)	(8.786679)
Y_{t-1}	0.535042***	0.516632***	0.801628***	0.830982***	0.651949***	0.622628***	0.993906***
	(0.104895)	(0.102710)	(0.084088)	(0.031059)	(0.161728)	(0.067681)	(0.071587)
R^2	0.340682	0.294594	0.642829	0.935798	0.439623	0.705299	0.808833
R^2-adjust.	0.301320	0.252480	0.621506	0.931965	0.405138	0.684249	0.794672
N	72	72	72	72	70	61	59

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 2c: The effects of bargaining coverage and centralization on unemployment

	ue	uemale	uefemale	sharefemale	empratio	age1524	age5059
c	3.366577***	3.543310**	2.889156**	8.291026***	22.99876***	13.06079***	0.079331
	(1.227782)	(1.357054)	(1.412763)	(1.299532)	(8.445149)	(2.721605)	(1.276639)
ucbc	0.024101	0.019936	0.021390	0.000529	-0.075535*	0.001118	0.001915
	(0.020006)	(0.021826)	(0.024547)	(0.007291)	(0.043585)	(0.031644)	(0.016458)
ucbc*cebale	0.000702	0.000113	-6.12E-05	0.000319	-0.002439	- 0.011632***	0.001821
	(0.001998)	(0.002154)	(0.002390)	(0.000711)	(0.004048)	(0.003308)	(0.001767)
ud	-0.019195	-0.007896	-0.016163	0.005700	0.083958*	0.014951	0.007619
	(0.019543)	(0.020731)	(0.024392)	(0.007430)	(0.045226)	(0.029287)	(0.014466)
Δad	-14.31409	-16.38697	-24.40381*	-2.131252	-23.87790	36.71929*	3.094290
	(10.99640)	(11.67751)	(13.20476)	(3.800839)	(22.83613)	(18.59314)	(9.064660)
Y_{t-1}	0.500077***	0.499823***	0.777899***	0.829524***	0.591737***	0.569935	0.969979***
	(0.109825)	(0.104894)	(0.089762)	(0.031250)	(0.166196)	(0.064411)	(0.074202)
R^2	0.349074	0.300679	0.637715	0.936338	0.456244	0.757102	0.812477
R^2-adjust.	0.299002	0.246886	0.609847	0.931441	0.413763	0.734612	0.794446
N	71	71	71	71	70	60	58

Standard errors in parentheses; *N* denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 2d: **The effects of bargaining coverage and centralization on unemployment**

	ue	uemale	uefemale	sharefemale	empratio	age1524	age5059
c	3.337615**	3.653947**	2.847451*	8.349735***	20.41264**	13.68801***	0.084784
	(1.288961)	(1.424092)	(1.467899)	(1.332860)	(8.371357)	(2.774353)	(1.278850)
acbc	0.021029	0.016517	0.021714	-0.000992	-0.062055	-0.000790	0.001706
	(0.019750)	(0.021529)	(0.023826)	(0.007232)	(0.042894)	(0.031025)	(0.016212)
acbc*cebale	0.000204	-0.000373	-0.000511	0.000328	-0.001755	- 0.011647***	0.001788
	(0.001975)	(0.002129)	(0.002344)	(0.000702)	(0.004033)	(0.003262)	(0.001748)
ud	-0.014001	-0.003542	-0.013554	0.006624	0.066871	0.013206	0.008354
	(0.018971)	(0.020217)	(0.023322)	(0.007409)	(0.043906)	(0.028662)	(0.014265)
Δad	-14.16296	-15.87684	-24.63946*	-1.856740	-25.18250	36.84525*	3.188200
	(11.07789)	(11.69656)	(13.20901)	(3.773969)	(23.16459)	(18.46180)	(9.069739)
Y_{t-1}	0.529570***	0.515376***	0.790635***	0.828914***	0.645129***	0.561251***	0.966694***
	(0.107832)	(0.104151)	(0.086267)	(0.031583)	(0.163498)	(0.064511)	(0.075028)
R^2	0.338439	0.293464	0.637326	0.936198	0.441277	0.759794	0.812098
R^2-adjust.	0.287549	0.239115	0.609428	0.931290	0.397627	0.737553	0.794031
N	71	71	71	71	70	60	58

Standard errors in parentheses; N denotes the number of observations. ***$α ≤ 0.01$; ** $α ≤ 0.05$; * $α ≤ 0.10$.

Table 3a: The effects of bargaining coverage and centralization on macroeconomic aggregates

	infl	Δgdp	Δad	Δfc
c	-1.146534	2.752569***	0.032612***	0.019150*
	(0.784553)	(0.557383)	(0.011045)	(0.010084)
ucbc	-0.008326	-0.006819	0.000236	7.86E-05
	(0.010897)	(0.007045)	(0.000165)	(0.000151)
ud	0.011461	-0.003423	-7.85E-05	-3.04E-05
	(0.012825)	(0.008262)	(0.000189)	(0.000174)
Δad	41.38610***	15.36961***	-	-
	(7.945554)	(4.626689)		
leftgov	-	-	3.28E-05	2.03E-05
			(9.77E-05)	(8.96E-05)
Y_{t-1}	0.357862***	-0.139856	0.325593***	0.505768***
	(0.057877)	(0.095149)	(0.068488)	(0.064745)
R^2	0.644211	0.164689	0.295383	0.489215
R^2-adjust.	0.622970	0.114819	0.253316	0.458721
N	72	72	72	72

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 3b: The effects of bargaining coverage and centralization on macroeconomic aggregates

	infl	Δgdp	Δad	Δfc
c	-1.143879	2.758722***	0.03368***7	0.019813*
	(0.816235)	(0.574908)	(0.011552)	(0.010544)
acbc	-0.006998	-0.005823	0.000179	5.20E-05
	(0.010666)	(0.006886)	(0.000163)	(0.000148)
ud	0.010444	-0.004216	-4.22E-05	-1.49E-05
	(0.012592)	(0.008106)	(0.000187)	(0.000171)
Δad	41.01528***	15.05661***	-	-
	(7.897728)	(4.591299)		
leftgov	-	-	4.23E-05	2.47E-05
			(9.82E-05)	(8.97E-05)
Y_{t-1}	0.357441***	-0.140162	0.329842***	0.507585***
	(0.058055)	(0.095307)	(0.068776)	(0.064696)
R^2	0.643402	0.161952	0.286632	0.488085
R^2-adjust.	0.622112	0.111919	0.244043	0.457523
N	72	72	72	72

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 3c: **The effects of bargaining coverage and centralization on macroeconomic aggregates**

	infl	Δgdp	Δad	Δfc
c	-1.103076	2.703283***	0.034249***	0.022016**
	(0.829481)	(0.620447)	(0.011766)	(0.010555)
ucbc	-0.006241	-0.008230	0.000324	0.000229
	(0.014244)	(0.009493)	(0.000219)	(0.000197)
ucbc*cebale	-0.000274	0.000197	-1.09E-05	-2.07E-05
	(0.001395)	(0.000965)	(2.12E-05)	(1.90E-05)
ud	0.011259	-0.003232	-8.18E-05	-3.94E-05
	(0.013079)	(0.008449)	(0.000191)	(0.000174)
Δad	40.90599***	15.63036***	-	-
	(8.248196)	(4.811978)		
leftgov	-	-	2.18E-05	-2.92E-07
			(0.000101)	(9.16E-05)
Y_{t-1}	0.357944***	-0.133006	0.310675***	0.489105***
	(0.058820)	(0.103243)	(0.071852)	(0.066127)
R^2	0.641269	0.163299	0.296919	0.497130
R^2-adjust.	0.613674	0.098938	0.242835	0.458448
N	71	71	71	71

Standard errors in parentheses; N denotes the number of observations. ***α ≤ 0.01; ** α ≤ 0.05; * α ≤ 0.10.

Table 3d: **The effects of bargaining coverage and centralization on macroeconomic aggregates**

	infl	Δgdp	Δad	Δfc
c	-1.105501	2.691435***	0.035573***	0.022830**
	(0.862608)	(0.637764)	(0.012287)	(0.011020)
acbc	-0.005155	-0.007576	0.000270	0.000201
	(0.014026)	(0.009343)	(0.000218)	(0.000195)
acbc*cebale	-0.000235	0.000257	-1.17E-05	-2.07E-05
	(0.001377)	(0.000951)	(2.11E-05)	(1.88E-05)
ud	0.010321	-0.003956	-4.51E-05	-2.29E-05
	(0.012853)	(0.008298)	(0.000189)	(0.000172)
Δad	40.55660***	15.36178***	-	-
	(8.204907)	(4.781770)		
leftgov	-	-	3.03E-05	3.43E-06
			(0.000101)	(9.18E-05)
Y_{t-1}	0.357309***	-0.130969	0.314350***	0.490215***
	(0.058970)	(0.103153)	(0.072397	(0.066219
R^2	0.640472	0.160849	0.287705	0.495907
R^2-adjust.	0.612816	0.096299	0.232913	0.457130
N	71	71	71	71

Standard errors in parentheses; N denotes the number of observations. ***α ≤ 0.01; ** α ≤ 0.05; * α ≤ 0.10.

Table 4a: The effects of bargaining coverage and centralization on macroeconomic aggregates

	totpubexp	pubexuebenefit	pubexactivelabor	d9d1
c	5.110302***	0.232140	-0.112285	0.465115
	(0.947550)	(0.274716)	(0.121781)	(0.298128)
ucbc	0.033142***	0.005624	0.005893***	-0.002323
	(0.011701)	(0.003725)	(0.001794)	(0.001789)
Δgdp	-0.506305***	-0.084832	0.014169	-
	(0.157881)	(0.054836)	(0.025687)	
leftgov	0.000531	-0.001025	0.000106	0.000215
	(0.006015)	(0.002093)	(0.000995)	(0.001060)
ud	0.001991	0.004579	0.004104**	0.000219
	(0.011923)	(0.004146)	(0.001997)	(0.002163)
Y_{t-1}	0.748344***	0.686365***	0.457103***	0.897376***
	(0.052429)	(0.070278)	(0.104905)	(0.061614)
R^2	0.883402	0.689275	0.708085	0.937042
R^2-adjust.	0.874569	0.665373	0.682021	0.930235
N	72	71	61	42

Standard errors in parentheses; *N* denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 4b: The effects of bargaining coverage and centralization on public expenditures and the income structure

	totpubexp	pubexuebenefit	pubexactivelabor	d9d1
c	5.008703***	0.209254	-0.103940	0.452523
	(0.948406)	(0.282034)	(0.127308)	(0.308075)
acbc	0.033714***	0.005384	0.004815***	-0.002014
	(0.011639)	(0.003589)	(0.001727)	(0.001798)
Δgdp	-0.502339***	-0.084322	0.014105	-
	(0.157544)	(0.054848)	(0.026300)	
leftgov	0.000576	-0.000998	0.000165	0.000169
	(0.005991)	(0.002090)	(0.001019)	(0.001067)
ud	0.003766	0.004883	0.004332**	3.38E-05
	(0.011741)	(0.004070)	(0.002042)	(0.002164)
Y_{t-1}	0.742840***	0.692530***	0.506300***	0.899116***
	(0.053013)	(0.069150)	(0.103379)	(0.062791)
R^2	0.883978	0.689144	0.694284	0.936330
R^2-adjust.	0.875189	0.665232	0.666988	0.929446
N	72	71	61	42

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 4c: The effects of bargaining coverage and centralization on public expenditures and the income structure

	totpubexp	pubexuebenefit	pubexactivelabor	d9d1
c	5.1729***	0.2158	-0.1447	0.479118
	(0.9671)	(0.2817)	(0.1219)	(0.296442)
ucbc	0.0299**	0.0039	0.0038*	-0.003829*
	(0.0134)	(0.0045)	(0.0021)	(0.002166)
ucbc*cebale	0.0007	0.0003	0.0004*	0.000214
	(0.0014)	(0.0005)	(0.0002)	(0.000176)
Δgdp	-0.5016**	-0.0826	0.0074	-
	(0.1603)	(0.0554)	(0.0257)	
leftgov	0.0013	-0.0008	0.0006	0.000538
	(0.0063)	(0.0022)	(0.0010)	(0.001086)
ud	0.0032	0.0047	0.0045**	0.000323
	(0.0123)	(0.0042)	(0.0020)	(0.002151)
Y_{t-1}	0.7338***	0.6708***	0.4035***	0.887701***
	(0.0604)	(0.0736)	(0.1078)	(0.061734)
R^2	0.8821	0.6819	0.7198	0.939526
R^2-adjust.	0.8711	0.6516	0.6887	0.931126
N	71	70	61	42

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 4d: **The effects of bargaining coverage and centralization on public expenditures and the income structure**

	totpubexp	pubexuebenefit	pubexactivelabor	d9d1
C	5.0625***	0.2019	-0.1277	0.470250
	(0.9665)	(0.2889)	(0.1286)	(0.305967)
Acbc	0.0306**	0.0041	0.0030	-0.003627
	(0.0133)	(0.0045)	(0.0021)	(0.002195)
acbc*cebale	0.0007	0.0002	0.0003	0.000222
	(0.0014)	(0.0004)	(0.0002)	(0.000176)
Δgdp	-0.4975***	-0.0821	0.0089	-
	(0.1599)	(0.0555)	(0.0266)	
Leftgov	0.0014	-0.0008	0.0006	0.000516
	(0.0063)	(0.0022)	(0.0011)	(0.001093)
Ud	0.0050	0.0050	0.0047**	0.000161
	(0.0122)	(0.0041)	(0.0021)	(0.002149)
Y_{t-1}	0.7293***	0.6805***	0.4700***	0.888612***
	(0.0607)	(0.0720)	(0.1063)	(0.062850)
R^2	0.8827	0.6811	0.7002	0.939024
R^2-adjust.	0.8717	0.6508	0.6669	0.930555
N	71	70	61	42

Standard errors in parentheses; N denotes the number of observations. ***$\alpha \leq 0.01$; ** $\alpha \leq 0.05$; * $\alpha \leq 0.10$.

Table 5a: **Correlations**

	ucbc	acbc	ud	cebale
ucbc	1	0.9731	0.5241	-0.4954
acbc	0.9731	1	0.4810	-0.4983
ud	0.5241	0.4810	1	-0.3381
cebale	-0.4954	-0.4983	-0.3381	1

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