# The Cost and Benefits of Collective Bargaining

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**Abstract.** Coordination through collective bargaining is recognized as an influential determinant of labor market and macroeconomic performance. This paper provides a systematic review of the empirical literature on the subject. We focus on comparative studies of labor market institutions in the OECD area that try to disentangle the impact of different institutional approaches to collective bargaining from other determinants of macroeconomic performance and review the recent literature on the interaction between labor market institutions and monetary policy.

*Keywords*: Collective bargaining, unions, and macroeconomic performance.
*JEL classification*: J5 and E24.

# 1 INTRODUCTION

Collective bargaining facilitates *coordination* in the labor market and is recognized as an influential determinant of macroeconomic performance. Coordination can take many forms ranging from informal coordination as in Japan to centralization of collective bargaining as in heavily unionized labor markets in Scandinavia. Differences in the degree and type of bargaining coordination combined with the observed differences in macroeconomic performance among the OECD countries over the last 40 years have spurred a large literature that tries to explain cross-country variation in economic performance by cross-country differences in labor market institutions.

The purpose of this paper is to provide a systematic review of this literature. We focus on comparative studies of labor market institutions in the OECD area that try to disentangle the impact of different institutional approaches to collective bargaining from other determinants of macroeconomic performance. A central theme is whether or not coordination of collective bargaining can enhance economic performance, both in a *static* sense by internalising externalities and in a *dynamic* sense by helping the economy to absorb shocks more effectively. It emerges, firstly, that bargaining coordination matters most in times of rapid economic and social change, while the differences appear to contribute less to comparative economic performance under more stable economic conditions. This means that bargaining coordination, not only through formal centralization of collective bargaining and social partnerships but also through more informal mechanisms, enables the labor market to coordinate its responds to shocks and to eliminate their adverse effects more effectively. Secondly, interactions between different aspects of collective bargaining are important for the macroeconomic impact. One example is that high levels bargaining coordination reduces the negative impact of high bargaining coverage on unemployment performance. Another is that informal coordination of the

wage bargaining often develops in labor markets where formal coordination of bargaining is absent. This implies that it is the total "package" of (formal and informal) institutions that matters for economic performance. Thirdly, the consequences of labor market coordination or absence thereof depend on the monetary policy regime, and the introduction of a regime of non-accommodating monetary policy can eliminate some of adverse unemployment consequences otherwise associated with industry-level collective bargaining.

The rest of the survey is organized as follows. In section 2, we provide a short survey of the relevant theoretical literature and identify a number of channels through which collective bargaining can affect economic outcomes. In section 3, we review, in detail, the empirical evidence and we undertake, for part of the material, a "meta-analysis" of the underlying studies. In section 4, we summarize the more specific findings of the survey.

## 2    THE THEORY OF COLLECTIVE BARGAINING

Unions and employers' organizations arise from the asymmetry in contracting between individual workers and employers, the concern for basic labor rights, and different perceptions about the merits of employment relations governed by individual contracts and collective agreements. The consequences of collective bargaining depend on many factors, including the share of the labor market covered by collective agreements as oppose to individual wage contracts and the degree of bargaining coordination.

### 2.1    CENTRALIZATION OF COLLECTIVE BARGAINING

Centralization of collective bargaining is one of many institutional aspects of the labor market that determine the degree of bargaining coordination.[1] Collective bargaining is centralized when the national union confederation and the national employers' organization can influence and control wage levels and patterns across the economy. The capacity to do so depends on many factors, including i) the level at which bargaining primarily takes place (the plant, the industry or the national level) and ii) whether or not the national organization(s) can control the behavior of their constituent organizations and avoid wage drift. Table 1 summaries eight important aspects of bargaining centralization and evaluates the associated (static) costs and benefits.

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[1] We discuss two other aspects – informal coordination and corporatism – when we turn to the empirical evidence.

**Table 1. The Economic Costs and Benefits of Centralization of Collective Bargaining**

| Issue | Benefit | Cost |
|---|---|---|
| 1. Internalization of externalities: Unions and firms acting independently of the rest of the market (decentralization) can have unintended negative effects (externalities) upon the rest of the economy (e.g. higher wages can be passed on to consumers in the form of higher prices; higher inflation; an increase in unemployment) | Centralization increases the size of the bargaining coalition, thereby internalizing negative externalities. This effect is larger, the more workers are unionized. | |
| 2. Competitive pressure: Competition in product markets disciplines unions and firms, and this effect is strongest at decentralized level (more competition reduces the ability to pass wage increases on to consumers as higher prices). | | As bargaining becomes more centralized, competitive pressure is reduced because firms acting in unison are less likely to lose their market share (product demand is more inelastic at the industry level than at the firm level). This increases wage pressure and leads to higher unemployment. This effect is less important in an open economy. |
| 3. Wage compression: Under centralized collective bargaining, egalitarian wage goals are easier to achieve, and firm-specific conditions are less likely to enter the wage contracts. This tends to reduce wage dispersion. | When wage setting is centralized to the national level rather than related to the circumstances of individual industries, wages are compressed. This tends to bolster expanding, progressive industries and hamper declining ones. The net effect is often to increase output and promote growth. In addition, centralized wage-setting can act as social insurance. | A reduction in wage dispersion leads to an economic misallocation of resources and lower output because wages become detached from local productivity conditions. |
| 4. Areas of Bargaining: Some issues can only be subject to collective bargaining at certain levels of centralization or above (e.g., training, health and safety, and so on). | For example, general training of workers is more likely to be part of centralized collective bargaining because it has the characteristics of a public good. Subsequently, training can lead to higher economy-wide labor productivity and overall economic growth. | Efficient bargaining (over employment and wages) is only feasible under decentralized bargaining. Work place co-operation and other participatory activities between unions and firms decrease under centralized bargaining. |
| 5. Hold-up problems: Firms undertake investment decisions today that affect future profits. If workers, via collective bargaining, can get a share of these profits without contributing to the costs, firms would under-invest. | The hold-up problem is reduced under centralized bargaining because an individual firm cannot affect the outcome of collective bargaining by its pre-bargaining investment decisions. This encourages firms to invest more. | |
| 6. Insider-Induced Hysteresis: Only the group of insiders (e.g. union members and employed workers) counts in wage bargaining. When the insiders are reduced in number (e.g., after layoffs in a recession), they can push for higher wages in the next bargaining round and cause unemployment to remain persistently high (insider-induced hysteresis). | Under centralized bargaining, more workers can be perceived to be insiders (including the unemployed) to the extent that unions are concerned about aggregate unemployment. | |
| 7. Strikes: Imperfect information can lead to more strikes. | Centralization increases the level of information about demand conditions, thereby reducing the likelihood of strikes, especially wild-cat strikes. | Centralization increases the risk of a general strike. |
| 8. Bargaining power: The relative bargaining power of workers and employers depends on the "fall-back" option of the two parties (what they will get if an agreement is not reached). | Centralization can reduce wage pressure by increasing employers' bargaining power because workers' alternative job options in case of an industrial conflict are substantially reduced if all firms "lock-out" workers. | Centralization can increase wage pressure if unions derive their bargaining power from the monopoly command over labor supply. It is easier for a single firm than it is for an entire industry or nation to replace workers in the event of a strike. |

Sources: General: Calmfors (1993), Moene and Wallerstein (1993), Layard et al (1991, chapter 2), Sapsford and Tzannatos (1993) and Booth (1995). Specific: (1)-(2) Calmfors and Drifill (1988); (3) Agell and Lommerud (1993), Moene and Wallerstein (1997) and Agell (1999), Harcourt (1997); (4) Soskice (1990); (5) Grout (1984); (6) Blanchard and Summers (1986).

The idea that centralization of collective bargaining can facilitate internalization of externalities has received particular attention in the literature and warrants a more detailed discussion than the one given in Table 1. To fix ideas, imagine a society in which all workers are organized in unions. Suppose that each firm negotiates with a company union. In this case, wage-setters only bear a (small) fraction of the total economic cost associated with a given increase in their real wage as they impose external costs on others. Table 2 defines, in more detail, six such externalities. Due to these externalities, the negotiated wage is "too" high and the result is, *ceteris paribus*, "too" little total employment. By centralizing the bargaining process to the industry or national level, wage-setters are forced to bear a larger share of the cost of their actions, as more (and ultimately all) workers become included in the bargaining coalition. This creates incentives in favor of wage restraint, which, *ceteris paribus*, leads to more total employment.

**Table 2. Six Important Externalities Associated with Decentralized Wage Setting.**

| The input price externality | Decentralized wage gains are passed on as higher product prices, thus increasing the real cost of inputs for other firms. |
|---|---|
| The fiscal externality | Decentralized wage gains lead to unemployment. The cost in terms of unemployment benefits is born by all tax-payers, not only those involved in wage setting. |
| The unemployment externality | Decentralized wage gains increase overall unemployment, making it more difficult for all unemployed workers to find a new job. |
| The envy externality | Decentralized wage gains create envy among other workers. |
| The consumer price externality | Decentralized wage gains are passed on as higher product prices, thus lowering the real wage of all workers. |
| Efficiency wage externality | At the decentralized level, firms have an incentive to try to increase the relative wage of their workers to increase their motivation. |

Note: See Calmfors (1993, pp. 5-6).

As pointed out by Calmfors and Driffill (1988), this argument ignores the fact that the competitive pressure from product markets and the moderating effect it has on wage demands change systematically with the level of centralization. To see this, consider what happens when a union demands (and gets) a high nominal wage. To avoid an increase in the product real wage, firms pass (to the extent they can) the cost on to consumers as higher prices. From the point of view of the union, this has an unpleasant side effect in addition to the reduction in the consumption real wage: it reduces the demand for the goods

produced by the host firm, thereby endangering the jobs of the union members. Anticipating this, the union moderates its wage demand. At the firm level, the competitive pressure from other firms in the same industry (producing close substitutes) provides strong incentives to moderate wage demands. At the national level, on the other hand, competitive pressure is relatively weak, but this is compensated for by the fact that the federation of unions bear the full cost of its actions and that social partnerships become possible and unions and employers' organizations are sufficiently encompassing to make rent-seeking unprofitable (Olson, 1982; Heitger, 1987). At the industry level, neither of these factors produces much wage moderation. On the contrary, firms in an industry can pass on a substantial portion of the wage demands to consumers at a relatively low employment cost. In addition, industry-based unions often form effective lobby groups that seek distributive favors from the government at the expense of society at large.[2]

It follows from this discussion that the relationship between economic performance and centralization of collective bargaining can be non-monotonic (U- or Hump-shaped): relatively good performance for decentralized and centralized systems, but relatively poor performance for systems based on industry-level bargaining (Calmfors and Driffill, 1988). It should be noted, however, that this hypothesis – referred to as the hump hypothesis in what follows – is sensitive to many of the underlying assumptions. For example, Rama (1994) and Danthine and Hunt (1994) show that the non-monotonic relationship tends to disappear in an open economy as competitive pressure becomes more intense at all levels of centralization. It is also clear that centralization will not help to internalize external costs unless most workers are union members or have their pay and work conditions determined by collective agreements. More critical, perhaps, is the fact that the analysis takes a static view on the economy. Arguably, one of the key advantages of a centralized bargaining system is that it enables a coordinated and fast response to *changing* economic conditions.

To see this important point more clearly, consider the following (simplistic) New Keynesian model of the labor market (see, e.g., Carlin and Soskice (1990, chapter 16) or Rowthorn (1977) for more details). Assume that both product and labor markets are

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[2] With regard to regulation of the product market, unions and firms have a common interest, and they may form a very effective distributional coalition (Rama, 1997; Rama and Tabellini, 1997). On the other hand, with respect to labor market regulations such as job security legislation and minimum wages, they disagree.

imperfectly competitive. In the labor market, workers are organized in (firm-specific) unions that determine the nominal wage (W), while firms determine the price (P) of the (differentiated) goods that they produce as a mark-up on wages. Workers set the nominal wage based on expectations about the price level to achieve a particular real wage target. This is illustrated in Figure 1 by the BRW (bargained real wage) line. It is upwards sloping in employment (E) real wage (W/P) space because unions hold more bargaining power in a tight labor market and thus adjust their aspirations accordingly. Firms, on the other hand, set prices to achieve a real profit target. This is shown in Figure 1 as the PRW (price real wage) line. For simplicity, we assume that the real profit target is constant over the cycle. A macroeconomic equilibrium arises when the aspirations of the two parties are consistent and that defines the equilibrium level of employment and, as a residual, the equilibrium level of unemployment (the NAIRU). In Figure 1, we have drawn three different BRW curves, reflecting the three levels of centralization of bargaining (the firm, the industry and the national level). The location of the three curves and so of the equilibrium level of employment captures the static gains of centralization and decentralization, as discussed in detail above. The subtle thing to notice is that wage setters are *more* responsive to *changes* in employment under decentralized and centralized bargaining (there is more real wage flexibility) than under industry-based bargaining. This makes the BRW curve steeper in the two former cases than in the latter. This has an important implication for the response of the labor market to negative shocks. Suppose, for example, that the economy is hit by a negative (productivity) shock that shifts the PRW curve down. We see from Figure 1 that the employment loss is modest under centralized (and decentralized) bargaining compared to industry-level bargaining. In short, a centralized labor market insulates the economy from the impact of negative shocks. In addition, by facilitating coordination of expectations and by taking a broader view on those interest should be represented in the bargaining (being more encompassing in the sense of Olson, 1982), it can achieve a faster adjustment to the new equilibrium position and reduce hysteresis effects. This is particularly helpful when the shock reverses and the economy begins its long journey back to the initial equilibrium position.

In the argument above, it is implicitly assumed that aggregate demand is the same under the three bargaining regimes. As pointed out by, for example, Cornwall (1997), this

assumption is not valid if the government adopts new policies when the institutions of the labor market change. In particular, the fact that wage pressure is relatively high under decentralized bargaining suggests that that system may not be consistent with full employment *and* a politically acceptable level of inflation. As a consequence, the government may be tempted to intervene and introduce restrictive demand policies. On the other hand, when bargaining is centralized and conducted by national labor and employers' organizations, which have an understanding of the economy-wide implications of the wage bargain, wage pressure is reduced, and it is more likely that full employment is consistent with a politically acceptable level of inflation. If so, aggregate demand will not be depressed by restrictive government intervention and better employment outcomes can be expected.
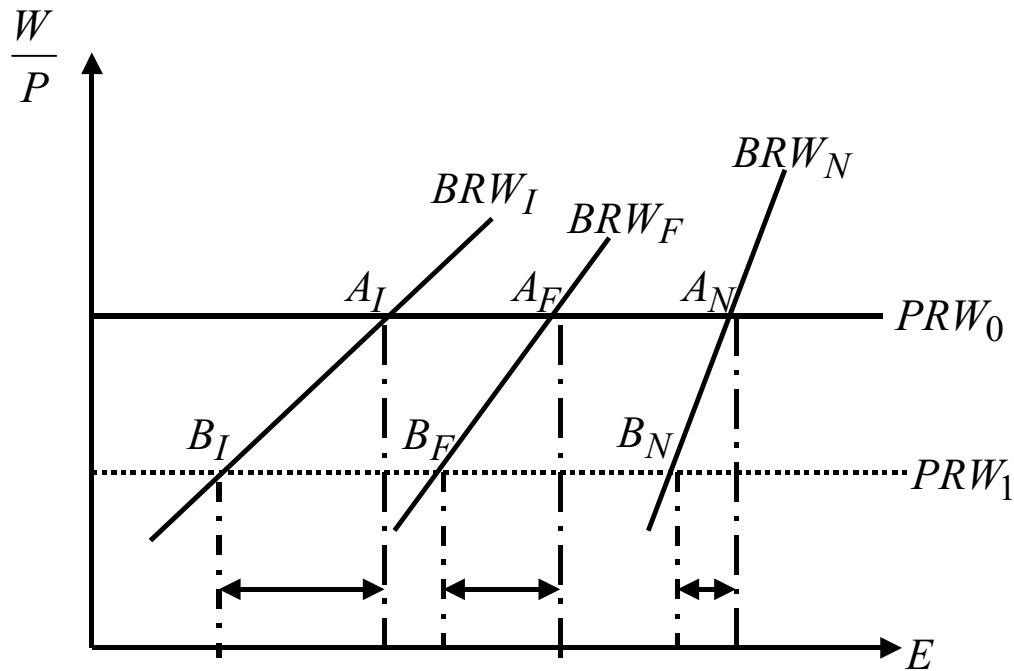


**Figure 1: The response to shocks under different bargaining regimes.**

Note: $BRW_I$ refers to industry level bargaining, $BRW_R$ refers to firm level bargaining and $BRW_N$ refers to national level bargaining.

## 2.2 BARGAINING COORDINATION AND MONETARY POLICY

The organization of collective bargaining can affect economic outcomes in other ways than through the direct impact on wages and employment. An important indirect link is the interaction between the bargaining structure and economic policy. The establishment of the European Monetary Union and the move towards central bank independence in many OECD countries in the last 10 years have spurred an interest in this link. Under a regime of decentralized collective bargaining, unions are unlikely to take into account how wage settlements might affect monetary policy. However, when collective bargaining is coordinated, unions can act strategically and take into account how the central bank might react to different wage settlements. Broadly speaking, this can affect economic outcomes through two channels. The first approach takes as its starting point the inflation bias in monetary policy that arises because the central bank is tempted to print money to expand aggregate demand once the private sector has locked itself into nominal wage contracts. Unions anticipate this and, as a consequence, attempts to reduce unemployment below the equilibrium level will fail, and inflation will be sub-optimally high. Importantly, the inflation bias is larger, the higher the equilibrium level of unemployment is because this makes the temptation to create surprise inflation so much bigger. Now, unions may – under a regime of coordinated bargaining – realize that their wage strategy affects the level of equilibrium unemployment and thus the size of the inflation bias. If, therefore, unions care about inflation *per se* (independently of their concern for real wages and employment), they have an incentive to moderate their wage demands in order to reduce the equilibrium level of unemployment *and* the inflation bias (Skott, 1997). Thus, coordinate bargaining may lead to low unemployment and inflation.

The second approach focuses on the interaction between the degree of bargaining coordination and the monetary policy regime. It is argued that equilibrium unemployment is lower the fewer the number of unions and the more non-accommodating the monetary regime is (Iversen 1998, Sockice and Iversen 2000). The logic is that unions might realize that their wage settlements will lead to a larger reduction in real demand when the central bank is committed to a fixed nominal money supply than when it is anticipated that the central bank will accommodate whatever wage settlement is reached by increasing the money supply. Consequently, unions have an incentive to lower their wage demands when monetary policy is non-accommodating and this leads to high levels of (equilibrium) employment. It is important to notice, however, that this mechanism is not operating if collective bargaining is completely uncoordinated because in that case the price effect is too small to be internalised by the unions. Nor does the monetary regime matter if bargaining is completely centralized or fully coordinated. This is because the unions, in this case, can coordinate their wage policies perfectly and choose full employment irrespectively of the monetary regime. Thus, the argument is that semi-coordinated collective bargaining combined with non-accommodating monetary policy is likely to lead to higher levels of employment than semi-coordinated bargaining with accommodating monetary policy. If true, this suggests that semi-coordinated collective bargaining is not necessarily associated with poorer economic outcomes, as otherwise suggested by the reasoning behind the hump hypothesis advocated by Calmfors and Driffill (1988).

## 3    COLLECTIVE BARGAINING AND ECONOMIC PERFORMANCE – THE EMPIRICAL EVIDENCE

We now turn to the review of the empirical evidence from comparative studies of OECD economies that in different ways throws light on the macroeconomic impact of collective bargaining. The survey builds on and updates Aidt and Tzannatos (2002, chapter 5).[3]

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[3] See also the survey by Flanagan (1999).

## 3.1  MACROECONOMIC PERFORMANCE INDICATORS

Ideally, we would like to measure the impact of collective bargaining on social welfare. Short of any good measure of social welfare, we can think of macroeconomic performance as a reasonable proxy. The prevalent approach in the literature is to assume that macroeconomic performance can be measured by individual sub-outcomes, such as the unemployment rate, the employment rate, inflation, wage dispersion, GDP and productivity growth. Some studies have simultaneously tried to measure different aspects of economic performance by means of a *performance index*, such as *Okun's index* (the sum of the unemployment rate and inflation) or the *open economy index* (the sum of the unemployment rate and current account deficit as a percentage of GDP). Others (e.g., Jackman et al, 1990; and Scarpetta, 1996) use indicators of the degree of labor market flexibility (such as real wage flexibility and search effectiveness).

## 3.2  INDICATORS OF COLLECTIVE BARGAINING

The empirical literature focuses on three measurable aspects of collective bargaining: Union density, bargaining coverage and bargaining coordination. Union density, defined as the number of workers who are members of a union, as a percentage of all workers, unionized and non-unionized, and bargaining coverage, defined as the number of workers, unionized or not, who have their pay and employment conditions determined by a collective agreement, as a percentage of all workers, unionized and non-unionized, go some way in measuring the "importance" of collective agreements as oppose to individual contracts, though they can hardly be seen as indicators of union power because spill-over effects are not accounted for.[4]

Table 3 shows union density and bargaining coverage for 19 OECD countries in 1970, 1980, 1994 and 2000. Average union density increased from 43 percent to 47 percent

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[4] For instance, firms in non-covered sectors may set wages at the collectively agreed level to avoid being subject to other effects of unionization or to motivate workers concerned about relative wages  (Pancavel, 1991; and Mazumdar, 1989).

during the 1970s but declined during the 1980s and 1990s to 35 percent. However, the average hides a lot of variation. Some countries, such as the US, the UK, Japan, and the Netherlands, have experienced a significant reduction in union density. Other countries, such as Finland and Sweden, have experienced a significant increase over the three decades. Also, the cross-country variation is significant. Countries such as France, the US, and Spain have very low union density rates (less than 30 percent). On the other hand, the Scandinavian countries have very high rates (all above 50 percent, some around 80 percent).

Bargaining coverage is on average much higher than union density and was relatively constant around 70 percent during the period. While high union density leads to high coverage of collective bargaining, Table 3 shows that the converse is not true. Countries such as Spain and France have very low union density, yet the coverage of collective agreements is very high. The difference between union density and bargaining coverage is largely attributed to mandatory extensions of collective agreements to non-unionized sectors and to the share of employers belonging to employer associations that negotiate collective contracts (OECD, 1994, 2004).

**Table 3. Union Density and Bargaining Coverage in Selected OECD Countries**

| Country | Union density | | | | Bargaining coverage | | | |
|---|---|---|---|---|---|---|---|---|
| | 1970 | 1980 | 1994 | 2000 | 1980 | 1990 | 1994 | 2000 |
| Australia | 50 | 48 | 41 | 25 | 88 | 80 | 80 | 83 |
| Austria | 62 | 56 | 42 | 37 | 98 | 98 | 98 | 98 |
| Belgium | 46 | 56 | 54 | 56 | 90 | 90 | 90 | 93 |
| Canada | 31 | 36 | 38 | 28 | 37 | 38 | 38 | 32 |
| Denmark | 60 | 76 | 76 | 74 | 69 | 69 | 69 | 83 |
| Finland | 51 | 70 | 81 | 76 | 95 | 95 | 95 | 93 |
| France | 22 | 18 | 9 | 10 | 85 | 92 | 95 | 93 |
| Germany | 33 | 36 | 29 | 25 | 91 | 90 | 92 | 68 |
| Italy | 36 | 49 | 39 | 35 | 85 | 83 | 82 | 83 |
| Japan | 35 | 31 | 24 | 22 | 28 | 23 | 21 | 18 |
| Netherlands | 38 | 35 | 26 | 23 | 76 | 71 | 81 | 83 |
| New Zealand | n.a. | 56 | 30 | 23 | 67 | 67 | 31 | 28 |
| Norway | 51 | 57 | 58 | 54 | 75 | 75 | 74 | 73 |
| Portugal | 61 | 61 | 32 | 24 | 70 | 79 | 71 | 83 |
| Spain | 27 | 19 | 19 | 15 | 76 | 76 | 78 | 83 |
| Sweden | 68 | 80 | 91 | 81 | 86 | 86 | 89 | 93 |
| Switzerland | 30 | 31 | 27 | 18 | 53 | 53 | 50 | 43 |
| UK | 45 | 50 | 34 | 31 | 70 | 47 | 47 | 33 |
| US | 23 | 22 | 16 | 13 | 26 | 18 | 18 | 14 |
| Average | 43 | 47 | 40 | 35 | 72 | 70 | 68 | 67 |

Source: Freeman (1988) and OECD (1997a, Table 3.3), OECD (2004).

B*argaining coordination* is much harder to measure empirically than union density and bargaining coverage. To obtain empirical measures, the literature has focused on six (related) aspects of bargaining coordination, which are summarized in Table 4. Based on one or more of these aspects, the degree of bargaining coordination in individual OECD countries is assessed and a ranking or classification is derived.

**Table 4. Aspects of Bargaining Coordination**

| A. Union centralization | The capacity of the national union confederation to influence wage levels/patterns across the economy. |
| --- | --- |
| B. Union concentration | Union concentration is high if "few" unions at the relevant level of bargaining are representing workers. |
| C. Employer centralization | The capacity of the national employers' confederation to influence wage levels/patterns across the economy. |
| D. Level of Bargaining | Collective bargaining takes place at different levels: the firm level, the industry level, and the regional/national level. |
| E. Informal coordination | 1) Informal consultations at the industry, regional, or national level among unions and firms.<br>2) Pattern bargaining (an agreement in a dominant sector is mimicked by other sectors). |
| F. Corporatism | A combination of<br>1) High union density and bargaining coverage and a high degree of union and employer centralization/concentration and<br>2) Social partnership between national workers' and employers' organizations and the government. |
| G. Other aspects | This include different types of dispute resolution procedures, the proportion of unionized workers employed in sectors that are subject to international competition, and union density. |

Table 5 characterizes the 29 indicators of bargaining coordination used in the studies surveyed here. Each row provides information on how a particular indicator has been constructed. The first column indicates the source of the study that constructed the indicator. The second column indicates which aspects of bargaining coordination the study emphasized. Each of the indicators is then given a code name for mnemonic purposes (column 3). The subsequent columns are labeled A to G. They refer to the aspects of coordination, presented in Table 4, that were used to construct the indicators in each individual study. The last two columns refer respectively to the period for which the indicator applies (the reference period) and to whether the study developed its own indicator of bargaining coordination or utilized/updated an existing one (index used).

Table 5. Characterization of 29 Indicators of Bargaining Coordination.

| Source/Study | Indicator gives emphasis on: | Indicator Code | A | B | C | D | E | F | G | Reference period | Index used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dowrick (1993) | Coordination | D1993-2 | X | (X) | (X) | X | X | | | 60s, 70s and 80s | C1990-1, CD1988, S1990 |
| Layard et al (1991) | Employee coordination | LNJ1991-1 | X | X | | X | X | | | 80s | Own |
| Layard et al (1991) | Employer coordination | LNJ1991-2 | | | X | X | X | | | 80s | Own |
| Layard et al (1991) | Employer and employee coordination | LNJ1991-1/2 | X | X | X | X | X | | | 80s | LNJ1991-1 LNJ1991-2 |
| OECD (1997) | Coordination | OECD1997-2 | X | | X | | X | | | 1980, 1990 and 1994 | Own |
| OECD (1997) | Centralization and informal coordination | OECD1991-3 | X | | X | X | X | | | 1980, 1990 and 1994 | OECD1997-1 and OECD1997-2 |
| Soskice (1990) | Economy-wide coordination | S1990 | X | | X | X | X | | | 1985-90 | Own |
| Blau and Kahn (1996) | Centralization | BK1996 | X | X | X | X | | | union density | 70s 80s | BS1985 CD1988 C1984-1 Others |
| Bleaney (1996) | Corporatism and centralization | B1996 | X | X | X | | | | | 70s 80s | BS1985 CD1988 |
| Heitger (1987) | Corporatism | H1987 | X | X | X | | | | | 70s | BS1985 |
| Bruno and Sacks (1985) | Corporatism | BS1985 | X | X | X | | | | | 70s | Crouch (1985) |
| Calmfors and Driffill (1988) | Centralization | CD1988 | X | X | X | X | | | | 80s | Own |
| Cameron (1984) | Organizational power of labor | C1984-1 | X | X | | | | | union density | 1965-80 | Own |
| Cameron (1984) | Union centralization | C1984-2 | X | | | | | | | 1965-80 | Own |
| Cameron (1984) | Union concentration | C1984-3 | | X | | | | | | 1965-80 | Own |
| Crouch (1985) | Neo-corporatism | C1985 | X | | | | | | | 70s | Own |
| Crouch (1990) | Labor movement centralization | C1990 | X | | | X | | | | 60s, 70s and 80s | Own |
| Dowrick (1993) | Centralization | D1993-1 | X | (X) | (X) | X | | | | 60s, 70s and 80s | CD1988, C1990-1 |
| Lange and Garrett (1985) | Organizational power of labor | GL1985 | X | X | | | | | | 1965-80 | C1984 |
| McCallum (1986) | Corporatism | MC1986 | X | X | X | | | | | 70s | Crouch (1985) |
| Newell and Symons (1987) | Corporatism | NS1987 | X | X | X | | | | | 1955-83 | Own |
| OECD (1997) | Bargaining centralization | OECD1997-1 | | | | X | | | | 1980, 1990 and 1994 | OECD (1994) |
| Schmitter (1981) | Corporatism | S1981-1 | X | X | | | | | | 60s 70s | Own |
| Schmitter (1981) | Union centralization | S1981-2 | X | | | | | | | 60s 70s | Own |
| Schmitter (1981) | Union concentration | S1981-3 | | X | | | | | | 60s 70s | Own |
| Soskice (1990) | Wage drift | S1990-2 | X | | | | | | | 1985-90 | Own |
| Taranetelli (1986) | Neo-corporatism | T1986 | X | | X | X | | X | dispute settlement | 70s | Own |
| Crouch (1990) | Power of unions in trade-exposed sectors | C1990-2 | | | | | | | foreign competition | 60s, 70s and 80s | Own |
| Visser (2000) | Distribution of bargaining authority | V2000 | X | X | X | X | | | | 60s, 70s and 80s | Own |

Note: A=union centralization, B=union concentration, C=employer centralization, D=the level of bargaining, E=informal coordination among employees and employers, F=corporatism/social partnership, and G: other aspects. An "X" in column 4 to 9 indicates that the relevant aspect (A to F) is considered by the indicator in question.

We notice two things from Table 5. First, most of the indicators combine a cluster of different aspects of bargaining coordination and are, therefore, highly correlated (see Table 15). This makes it difficult to isolate empirically the contribution of individual aspects of bargaining coordination to macroeconomic performance. Second, although researchers in the area are familiar with the details of bargaining systems in many different countries, the resulting rankings of countries involve a large element of subjectivity. Not surprisingly, researchers often strongly disagree on the ranking of particular countries (see, for example, Soskice, 1990).

Table 6 presents four indicators of bargaining coordination that are representative of those found in the literature. A detailed comparison of the four reveals a number of interesting similarities and differences. In particular, we notice that it makes a considerable difference whether *informal* coordination is accounted for or not.  Comparing the two indicators (S1990-1 and OECD1997-2) that do take informal coordination into account with the two (CD1988 and OECD1997-1) that do not, we see that Japan switches from being among the *most* coordinated countries in the sample to being among the *least* coordinated ones. Other countries, such as Belgium, move in the opposite direction. It is also evident that the bargaining institutions in a few countries have changed significantly from 1980 to 1994.  For instance, the UK, Australia and New Zealand have become less coordinated and less centralized, while the opposite is true for Italy and Portugal. However, for most other countries bargaining institutions have been fairly constant.

**Table 6. Country Rankings Based on Alternative Indicators of Bargaining Coordination**

| Country | S1990-1[1] | CD1988[2] | OECD1997-1[3] | | | OECD1997-2[3] | | |
|---|---|---|---|---|---|---|---|---|
| | 1980s | mid-80s | 1980 | 1990 | 1994 | 1980 | 1990 | 1994 |
| Australia | .. | 10 | 3 | 1 | 14 | 7 | 5 | 15 |
| Austria | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 |
| Belgium | .. | 8 | 3 | 1 | 1 | 10 | 10 | 9 |
| Canada | .. | 17 | 17 | 17 | 16 | 18 | 17 | 16 |
| Denmark | .. | 4 | 3 | 8 | 5 | 4 | 5 | 6 |
| Finland | .. | 5 | 2 | 4 | 4 | 7 | 5 | 6 |
| France | 9 | 11 | 8 | 8 | 5 | 13 | 10 | 9 |
| Germany | 6 | 6 | 8 | 8 | 5 | 1 | 1 | 1 |
| Italy | 8 | 13 | 15 | 14 | 5 | 15 | 15 | 4 |
| Japan | **1** | **14** | **17** | **17** | **16** | **1** | **1** | **1** |
| Netherlands | 7 | 7 | 8 | 8 | 5 | 10 | 10 | 9 |
| New Zealand | .. | 9 | 8 | 16 | 16 | 15 | 17 | 16 |
| Norway | 4 | 2 | 8 | 1 | 1 | 4 | 4 | 4 |
| Portugal | .. | .. | 15 | 1 | 5 | 13 | 10 | 9 |
| Spain | .. | .. | 3 | 8 | 5 | 10 | 10 | 9 |
| Sweden | 5 | 3 | 1 | 1 | 5 | 4 | 5 | 9 |
| Switzerland | **3** | **15** | 8 | 8 | 5 | 7 | 5 | 6 |
| UK | 10 | 12 | 8 | 14 | 14 | 15 | 16 | 16 |
| US | 11 | 16 | 17 | 17 | 16 | 18 | 17 | 16 |

Note: The codes refer to Table 5. A *low* rank is an indication of a *high* degree of bargaining coordination. (1) see Soskice (1990); (2) see Calmfors and Driffill (1988); (3) see OECD (1997).

3.3  METHODOLOGY

Armed with indictors of collective bargaining and macroeconomic performance, the relationship between the two can be represented by the following set of equations:

(1) $$y_{i,t} = g_{i,t}(\mathbf{z}_{i,t}, \mathbf{x}_{i,t}, \varepsilon_{i,t}),$$

where subscript *i* refers to a particular country and subscript *t* refers to a particular point in time. $y_{i,t}$ is a vector of (observed) performance indicators (such as the unemployment rate or inflation), $\mathbf{z}_i$ is a vector of institutional indicators (such as union density, bargaining coverage or bargaining coordination), $\mathbf{x}_{i,t}$ is a vector of economic, political, and socioeconomic control variables and $\varepsilon_{i,t}$ is a disturbance term. The function $g_{i,t}$ is in principle unrestricted, i.e., it may be non-linear and non-monotonic.

Broadly speaking, equation (1) has been estimated in three different ways in the literature. The simplest approach is the *correlation approach,* which estimates the relationship between two particular indictors as a simple correlation using cross-country

data (see, e.g., Calmfors and Driffill 1988; Bruno and Sacks, 1985). This is obviously a very crude approach that makes no attempt at all to construct a counterfactual. The *regression approach* uses multiple regression analysis to estimate equation (1), thereby attempting to isolate the impact of a particular institutional indicator from that of other determinants (see, e.g., Dowrick 1993; Nickell and Layard, 1999). Insofar as the assumption of conditional independence is satisfied, the impact of the institutional indicators can be given a causal interpretation. However, in most cases, this assumption fails and such an interpretation is unwarranted. The *two-step regression approach* is a more sophisticated version of the regression approach. In the first step, an economic model (such as a system of wage and price equations) is econometrically estimated for each country using time series data (see e.g., Layard et al. 1991; Scarpetta 1996). The results are used to obtain *estimated indicators* of labor market flexibility (such as real wage flexibility and search effectiveness). In the second step, the relationship (if any) between the estimated indictors and bargaining coordination, union density and bargaining coverage is analyzed.

Irrespectively of estimation approach, drawing inference about the relationship between collective bargaining and macroeconomic performance is a challenge. First, the data material is limited and a few outliers can significantly bias the results. Most studies are based on a sample of 10-20 observations from OECD countries at a given point in time. Only a few (OECD, 1997; Heitger, 1987; Dowrick 1993) uses panel data. This increases the number of observations to about 60 and makes it possible to take unobserved country fixed effects into account. Second, industrial relations *do* change over time but only slowly in response to political and economic conditions.[5] This raising the question of simultaneity biases as, in the long run, the pressure from economic conditions can call for a reconsideration of the institutional framework. The literature, on the whole, ignores this

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[5]It is obvious from the experience of New Zealand and the UK that major labor reforms can change the institutional framework of collective bargaining significantly. However, changing economic condition may have the same effect. For instance, centralized collective bargaining or even social partnership may, in some countries, have been a reasonable way to deal with the major supply side shocks of the 1970s, while more decentralized bargaining structures are better able to accommodate the challenge of globalization in the 1990s. Therefore, the tendency to decentralize collective bargaining in some OECD countries (such as Sweden and Denmark) can be seen as an endogenous response to changing economic conditions.

feedback and assumes that it is institutional factors that affect economic indicators and not *vice versa*.[6]

It is, therefore, clear that one should be careful not to read too much into the empirical results and avoid causal interpretations. To reflect this, we focus on the *qualitative* impact (i.e. positive or negative), if any, of collective bargaining on economic performance[7] and stress that cross-country analysis without proper instrumentation can tell us little about the underlying causal relationship. With this in mind, we now turn to the evidence.


3.4    UNION DENSITY AND BARGAINING COVERAGE

Table 7 summarizes the findings of studies that have investigated the relationship between union density and bargaining coverage and a variety of economic performance indicators. For each study, the Table contains information about the time period for which the study is relevant (column one); the economic performance indicator(s) under investigation (column two); the control variables, if any, used (column three); the estimation approach (column four). In column five, we summarize the main results of the study.

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[6] An exception is OECD (1997). They report that the "causality" (in the sense of Granger) runs from bargaining institutions to economic performance.

[7] We use the 10 percent level to judge the statistical significance of the estimated effects.

**Table 7. Union Density and Economic Performance in the OECD Countries: A Summary of Relevant Studies**

| Study and years | Performance indicator | Control variables | Estimation approach | Result |
|---|---|---|---|---|
| OECD (1997) 1980-94 | Unemployment rate Inflation Employment rate Real earnings growth Earnings inequality | Bargaining coverage OECD1997-3 | Regression approach with pooled cross-country data set. | Union density increases the employment rate but has no effect on the unemployment rate, inflation, and real earnings growth. Union density reduces earnings inequality. |
| OECD (1997) 1980-94 | Unemployment rate Inflation Employment rate Real earnings growth Earnings inequality | Non | Correlation approach; three points in time: 1980, 1990 and 1994. | Union density reduces earnings inequality in 1990 and 1994. Weak indication of a positive relationship between union density and the employment rate and a negative relationship between union density and real earnings growth in 1980 but not in other years. |
| Freeman (1988) 1979-85 | Unemployment rate Employment rate Compensation | C1985 Wage dispersion Others | Regression approach with cross-country data | Union density has no effect on the unemployment rate, the employment rate, and compensation. |
| Scarpetta (1996) 1983-93 | Unemployment rate | CD1988 LNJ1991-1 LNJ1991-2 | Regression approach with cross country data | Union density increases unemployment, in particular youth and long-term unemployment but no control for bargaining coverage is made. |
| Nickell and Layard (1999) and Nickell (1997), 1983-88, 1989-94 | Unemployment Labor supply Productivity growth | LNJ1991-1 LNJ1991-2 Bargaining coverage Others | Regression approach with (pooled) cross country data | Union density increases total unemployment but has no separate effect on short- and long-term unemployment. Union density has no effect on labor supply, and productivity growth. |
| Bean et al (1986) 1956-85 | Adjustment speed Real wage flexibility | BS1985 | Two-step regression approach | Union density has no effect on adjustment speed (to wage shocks) and real wage flexibility. |
| Layard et al (1991) 1980-94 | Real wage flexibility | CD1988 LNJ1991-1 LNJ1991-2 T1986 Others | Two-step regression approach | Union density has no effect on real wage flexibility. |
| Scarpetta (1996) 1970-93 | Hysteresis in unemployment | CD1988 LNJ1991-1 LNJ1991-2 | Two-step regression approach | Union density increases unemployment persistence but no control for bargaining coverage is made. |

Note: Union density = the number of workers who are members of a union, as a percentage of all workers, unionized and non-unionized. For more information on the indicators of bargaining coordination in column three, see Table 5. "Adjustment speed" is the mean adjustment speed of employment to a real wage shock.

Union density appears to have little or no impact on comparative labor market performance, once bargaining coverage and bargaining coordination have been controlled for with one significant exception: Union density *is* associated with a compression of the wage distribution and a reduction in earnings inequality. A similar result emerges from microeconomic studies (see, e.g., Freeman, 1980b; Blanchflower 1996; Gosling and Machin, 1993).

It is evident from Table 8 that the picture looks different for bargaining coverage.[8] After controlling for union density and bargaining coordination, countries with high bargaining coverage (such as Austria, France and Finland), *ceteris paribus*, experience higher unemployment rates, lower employment rates, and more inflation than countries with low bargaining coverage (such as the US, Japan and Canada). Moreover, high bargaining coverage seems to increase the supply of labor but has no effect on productivity (Nickell and Layard, 1999). Finally, as for union density, high bargaining coverage is associated with a reduction in earnings inequality.

**Table 8. Bargaining Coverage and Economic Performance: A Summary of Relevant Studies**

| Study and years | Performance indicator | Control variables | Estimation approach | Result |
|---|---|---|---|---|
| OECD (1997) 1980-94 | Unemployment rate Inflation Employment rate Real earnings growth Earnings inequality | Union density OECD1997 -3 | Regression approach with pooled cross-country data set. | Bargaining coverage increases unemployment, inflation and real earnings growth, and reduces the employment rate and earnings inequality. |
| OECD (1997) 1980-94 | Unemployment rate Inflation Employment rate Real earnings growth Earnings inequality | Non | Correlation approach at three points in time: 1980, 1990 and 1994. | Bargaining coverage increases unemployment only in 1994, reduces the employment rate in only 1990 and 1994, and earnings inequality in 1994. Otherwise it has no impact on economic performance. |
| Jackman (1993) 1983-88 | Unemployment rate | LNJ1991-1 LNJ1991-2 Others | Regression approach with cross country data | Bargaining coverage increases unemployment |
| Nickell and Layard (1999), Nickell (1997) 1989-94 | Unemployment rate Labor supply Productivity growth | LNJ1991-1 LNJ1991-2 Union density Others | Regression approach with cross-country data | Bargaining coverage increases both short- and long-term unemployment and labor supply but has no effect on productivity growth. |

Note: Bargaining coverage = The number of workers, unionized or not, which have their pay and employment conditions determined by a collective agreement, as a percentage of all workers, unionized and non-unionized. For more information on the indicators of bargaining coordination in column three, see Table 5.

One interpretation of the finding that bargaining coverage, but not union density is negatively correlated with (some measures) of economic performance is that extension of collective agreements to non-unionized sectors does not bring with it worker/management cooperation and other productivity-enhancing "voice" factors (Freeman and Medoff, 1979; 1984; Freeman, 1980a, Aidt and Sena, 2005) that to some extent compensate for the economic costs associated with the wage mark-up and other distorting aspects of

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[8] The layout of the Table is similar to Table 7.

collectively agreed contracts in unionized sectors. If so, the negative correlation between coverage and performance should not be taken as evidence of harmful and distorting union activities per se; rather combined with the lack of a strong (negative) correlation between union density and performance, the correlation is consistent with the view that unions can serve a useful and productive purpose where they are allowed to develop.

3.5    BARGAINING COORDINATION AND COMPARATIVE ECONOMIC PERFORMANCE: THE BIG
          PICTURE

We have identified 26 comparative, cross-country studies that have examined the relationship between bargaining coordination and economic performance in subsets of OECD countries during the past 40 years.[9]  To synthesize the evidence, we have undertaken a "meta-analysis" of these studies.[10] We divide the 26 studies into 125 *sub-studies*. The unit of analysis (a sub-study) then is a relationship between a specific indicator of bargaining coordination (defined in Table 5) *vis-à-vis* a specific economic performance indicator.[11] Meta-analysis allows us, in principle, to aggregate the statistical information from different studies and to combine many tests with low power to one test with high power. Here, however, we take a more heuristic approach and rely on "vote counting" (how large a fraction of the sub-studies reports a significant relationship) supplemented with some sensitivity analysis that attaches different "weights" to studies of different quality. Given the limited data material, we believe that is the more reasonable cause of action.

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[9]The studies are Cameron (1984), OECD (1988, 1997), Rowthorn (1992a; 1992b), Freeman (1988), Tarantelli (1986), Bruno and Sachs (1985), Crouch (1985, 1990), Bleaney (1996), Heitger (1987), Jackman (1993), Golden (1993), McCallum (1983, 1986), Dowrick (1993), Calmfors and Driffill (1988), Soskice (1990), Scarpetta (1996), Cameron (1984), Bean (1994), Blau and Kahn (1996), Zweimuller and Barth (1994), Nickell and Layard (1999), and Nickell (1997).

[10] See, e.g., van den Bergh et al (1997, chapter 3) for an introduction to meta-analysis.

[11] Each sub-study is characterized in terms of the econometric methodology (estimation approach) and the type of data set (cross-country or pooled cross country data set) used to estimate it, the time period considered, the type of test, if any, used to test the hump hypothesis, and the type of control variables used. Doing this makes it possible to analyze if the underlying attributes of the studies (such as the econometric methodology, the data material, and the time period) have any systematic influence on the pattern of results.

### 3.5.1 Does bargaining coordination matter for economic outcomes?

The indicators of bargaining coordination focus on multiple aspects of collective bargaining (see section 3.2). It is, therefore, a reasonable starting point to ask what we learn from the 26 studies about the *combined* impact of centralization, concentration, informal coordination, and corporatism on different dimensions of economic performance. We summarize the findings of the 125 sub-studies in Table 9 as a "vote count." Column one lists the relevant macroeconomic performance indicators. Column two lists the hypothesized relationship between the relevant performance indicator and bargaining coordination: positive (+), negative (-), U-shaped (U) and Hump-shaped (H). The columns headed "rate 1", "rate 2" and "evaluation of evidence" summarize the empirical findings. "Rate 1" is the proportion of all sub-studies that find evidence in support of the hypothesized relationship, and "rate 2" is the proportion of sub-studies that test for and find evidence of a hump- or U-shaped relationship.

In the aggregate, about 60% of the sub-studies support the view that bargaining coordination affects economic outcomes in the predicted way.[12] However, as is evident from Table 9, there is significant variation in the level of confidence that we can place upon the relationship between individual macroeconomic performance indicators and bargaining coordination.[13] The most robust result is that countries with a high level of bargaining coordination tend to have a more compressed wage distribution.[14] This finding can be attributed to a number of causes, including egalitarian bargaining; the fact that centralized bargaining reduces the scope for firm- and/or industry-specific factors to enter wage contracts (Harcourt, 1997); or to insurance motives (Agell and Lommerud, 1992).

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[12]Only two of the 125 sub-studies find results that are at variance with the predictions of economic theory. The first of these is obtained by OECD (1997) and suggests that the employment rate is low in countries with high levels of bargaining coordination. The result is based on a simple correlation between the employment rate and OECD1997-3. The Spearman correlation is significant at the 10% level but only for 1994. For the years 1980 and 1990, the relationship is insignificant. Hence, the result is not very robust. The second result, obtained by Bean (1994), suggests that a high level of employee coordination (measured by LNJ1991-1) is associated with high unemployment. However, if the combined effect of employer and employee coordination is taken into account, the correlation is negative.

[13]Clearly, if there is a tendency not to report insignificant results, then the evidence overstates the true significance of the relationship.

[14]Wallerstein (1999) points out that the impact is the same whether coordination occurs via collective bargaining or via government involvement in private sector bargaining.

Furthermore, Rowthorn (1992a; 1992b) argues that wage dispersion is a proxy for job quality. He provides evidence that both the quantity of jobs (a high employment rate) and the quality of jobs (low wage dispersion) are higher in countries with coordinated collective bargaining. In addition to this, it appears that bargaining coordination is negatively correlated with unemployment, but for other performance measures, including the employment rate, inflation and productivity growth, the association is much weaker and the majority of sub-studies fail to find statistically significant relationships.

**Table 9. Bargaining Coordination and Economic Outcomes: A Summary and Evaluation of Results**

| Performance indicator[1] | Hypothesis[4] | Rate 1[2] | | Rate 2[3] | | Evaluation of evidence |
|---|---|---|---|---|---|---|
| | | % | $n_1$ | % | $n_2$ | |
| The unemployment rate | -/ H | 70 | 40 | 44 | 16 | Evidence of a negative relationship. Little evidence of a hump-shaped relationship. |
| Inflation | - / H | 30 | 20 | 9 | 11 | Little evidence of any relationship. |
| The employment rate | +/ U | 42 | 12 | 36 | 11 | Weak evidence of a U-shaped relationship. |
| Okun's index | - / H | 75 | 12 | 100 | 2 | Some evidence of a hump-shaped relationship but most of the evidence suggests that the relationship is negative . |
| Real compensation growth | - / H | 56 | 9 | 20 | 5 | Evidence of a negative relationship. Almost no evidence of a hump-shaped relationship. |
| Productivity growth | + / U | 38 | 9 | 50 | 6 | Weak evidence of a U-shaped relationship. |
| Open economy index | - / H | 50 | 8 | 100 | 2 | Some evidence of a hump-shaped relationship but most of the evidence suggests that the relationship is negative . |
| Wage dispersion | + | 100 | 7 | n.a. | n.a. | Strong evidence of a positive relationship. |
| Earnings inequality | + | 80 | 5 | 20 | 5 | Strong evidence of a positive relationship. |
| Index of job quality[6] | + | 100 | 2 | n.a. | n.a. | Some evidence of a positive relationship. |
| Labor supply | + | 100 | 1 | n.a. | n.a. | Some evidence of a positive relationship. |

Source: authors.

Notes:
All relationships are reported with reference to an *increase* in bargaining coordination. For example, a positive relationship means that the economic indicator increases as bargaining coordination increases, and a U-shaped relationship means that the economic indicator decreases at first and then starts rising at higher levels of coordination.
(1) The performance indicators are either in levels (typically decade averages) or in first differences.
(2) Rate 1 = the proportion of sub-studies that find evidence of the expected relationship, and $n_1$ is the total number of sub-studies that investigate the relevant relationship.
(3) Rate 2 = the proportion of sub-studies that test for and find evidence of a hump- or U-shaped relationship, and $n_2$ is total number of sub-studies that perform a test for a hump- or U-shaped relationship.
(4) In column 2, we indicate for each of the 11 economic outcomes what economic theory predicts about the relationship between the particular economic performance indicator and bargaining coordination.
(5) $n_1$ is the total number of sub-studies that investigate the relevant relationship, and $n_2$ is the total number of sub-studies that perform a test of the hump hypothesis.
(6) "Index of job quality" is the difference between the employment rate and wage dispersion (coefficient of variation) (see Rowthorn, 1992a; 1992b).
.

In Table 9, we attribute equal weight to all sub-studies irrespectively of the estimation approach and data material used. To judge the robustness of the results reported in the Table, we pool all sub-studies irrespective of macroeconomic indicator and divide them into three groups. In the first group, we include studies that use the correlation approach. In the second group, we include those studies that use the regression approach to analyze cross-country data. The third group contains those studies that apply the regression approach to analyze panel data. Table 10 summarizes the results for each group as percentages of the sub-studies that do (and do not) find evidence of the predicted relationship between economic performance (in general) and bargaining coordination.

**Table 10. Percentage of Sub-studies that Find a Relationship between Bargaining Coordination and Economic Outcomes, Disaggregated according to the Estimation Approach and Data Material Used**

|  | Correlation approach | Regression approach with cross country data | Regression approach with pooled cross country data | Regression approach, total |
|---|---|---|---|---|
| Relationship | 73% | 53% | 67% | 57% |
| No relationship | 27% | 47% | 33% | 43% |
| Number of sub-studies | 53 | 50 | 22 | 72 |

Note: We construct the table by pooling the results for the economic indicators and calculate the percentage of sub-studies that finds a relationship (or no relationship) for each of the three groups. We construct the information in the last column ("regression approach, total") from data on all sub-studies using the regression approach irrespective of the data used.

It is clear from Table 11 that the studies based on the correlation approach find statistically significant relationships more often than those that use more advanced statistical techniques. Unsurprisingly, this suggests that the more and better one controls for cross-country differences in economic policy, in the institutional environment, and in economic conditions, the harder it is to detect a relationship between bargaining coordination and economic performance. This tendency, however, becomes less apparent when the quality of the underlying data material is taken into account. Overall, we believe that the simple "vote count" of Table 9 *exaggerates* the importance of bargaining coordination.

### 3.5.2 Testing the hump hypothesis

The hump hypothesis, discussed in Section 2.1, has been explicitly tested in a number of studies (Calmfors and Driffill, 1988; Freeman, 1988; OECD, 1988, 1997; Dowrick, 1993) accounting for 58 of the 125 sub-studies. Overall, the evidence in favor of the hypothesis is weak: only 21 out of the 58 sub-studies report evidence consistent with it. The evidence for individual performance indicators is summarized in Table 9 by "rate 2". The view that semi-coordinated bargaining systems are associated with a relatively high unemployment rate is supported by fewer than half the relevant sub-studies, while the evidence of a U-shaped relationship between bargaining coordination and the employment rate is even weaker. Half of sub-studies concerned with productivity growth find evidence of a U-shaped relationship between bargaining coordination and productivity growth, but is based on an uncomfortably small number of sub-studies.[15]

    To investigate the robustness of the results, we pool the 58 relevant sub-studies and divide them into three groups according to the test procedure used to test for the hump. A similar decomposition is done with respect to estimation approach. The results are reported in Table 11 and we see that the main conclusion remains; irrespective of which test procedure is used, the evidence in favor of the hump hypothesis is weak.[16] In addition, the underlying estimation approach does not have any systematic influence on the results.

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[15] Dowrick (1993) explains the U-shaped relationship between productivity growth and bargaining coordination as follows. Whether or not unions welcome or fight productivity-enhancing changes (new machinery or new working practices) depends on the elasticity of labor demand. If labor demand is inelastic, then unions are likely to fight productivity-enhancing changes because they would lead to lay-offs. Hence, institutional changes that reduce the elasticity of labor demand, such as a move from firm-level bargaining to industry-level bargaining, mobilize unions to oppose technological progress and, ultimately, productivity growth may be relatively low in a semi-centralized bargaining system.

[16] The dummy variable test detects less "humps" and "Us" than the ranking and the quadratic test, however. This supports the view that the "true relationship" is more likely to be monotone (if not constant) than hump- or U-shaped. The dummy variable test basically compares the average performance of the three groups of countries using the group of countries with uncoordinated bargaining systems as the baseline. If the true relationship between, say, unemployment and bargaining coordination is only slightly hump-shaped, then the difference between the average performance of countries with uncoordinated and semi-coordinated bargaining systems is rather small. Accordingly, the dummy variable test has a hard time detecting a "hump." The quadratic test and the ranking test, on the other hand, are more likely to detect it. Moreover, the evidence in Table 11 suggests that the latter two may be equally effective in doing so.

**Table 11. Percentage of Sub-studies Testing the Hump Hypothesis that Find a Relationship between Bargaining Coordination and Economic Outcomes, Disaggregated According Test Procedure and Estimation Approach Used**

| | Different test specification[1] | | | Different estimation approaches[2] | |
|---|---|---|---|---|---|
| | Dummy variable test[3] | Quadratic test[4] | Ranking test[5] | Correlation | Regression |
| Hump/U-shaped relationship | 11% | 40% | 41% | 35% | 38% |
| No relationship | 44% | 60% | 45% | 46% | 53% |
| Monotonic relationship | 44% | 0% | 14% | 19% | 9% |
| Number of sub-studies | 9 | 20 | 29 | 26 | 32 |

Note: (1) For each of the tests, the null hypothesis is that there is no hump/U-shaped relationship. The alternative hypothesis is that the relationship is hump/U-shaped. (2) We construct the frequency distribution by pooling the results for the macroeconomic indicators and calculate the percentage of "hump/U-shaped relationships," "no relationships," and "monotonic relationships" respectively, for each of the groups of sub-studies. (3) The dummy variable test is performed by dividing the countries into three groups (coordinated, semi-coordinated, and uncoordinated countries) and including a dummy variable for two of the groups in the relevant regression model. (4) The quadratic test includes the institutional indicator (of interest) and its square in a regression model and their significance tested. (5) The ranking test ranks the countries such that those that have coordinated bargaining systems and those that have uncoordinated systems are ranked above those with semi-coordinated bargaining systems (Calmfors and Driffill, 1988: 22-23). This (new) ranking is then examined against the relevant macroeconomic performance indicator.

Flanagan (1999) noticed an interesting pattern that emerges when studies that focus on the 1970s and 1980s are compared with more recent studies that focus mainly on the 1990s. Whereas the studies that analyze performance differences as they arose in the 1970s and the 1980s (Calmfors and Driffill 1988, Cameron 1984, Tarantelli 1986) tend to support the view that bargaining coordination is associated with relatively good macroeconomic conditions, the evidence for the 1990s reported in OECD (1997) is much weaker.[17] Although a recent study by Nicoletti et al. (2001), which estimates employment regressions for a panel of OECD countries covering the period 1985-95, does report evidence of a U-shaped relationship between bargaining coordination and the employment rate, it appears that the relationship between bargaining coordination and macroeconomic performance has become less pronounced in the 1990s than in previous decades. This is not entirely surprising. In fact, the observed differences between labor market systems in the 1970s and 1980s may simply reflect differences in their capacities to adapt to the supply shocks of the 1970s and the disinflationary policies of the 1980s. In the more stable environment of the

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[17] Dowrick (1993) can only find a U-shaped relationship between total factor productivity and bargaining coordination in the 1960s and 1970s. In the 1980s, he can not identify any statistically significant relationship.

1990s, bargaining coordination has become less important relative to other determinants of macroeconomic performance. This suggests that it is the *dynamic* benefits of bargaining coordination – the capacity of highly coordinated labor markets to absorb shocks more effectively – that matter most. This observation is supported by the fact that, in the relatively stable environment of the 1960s, countries with widely different bargaining systems were performing equally well.

3.6    BARGAINING COORDINATION AND THE FLEXIBILITY OF THE LABOR MARKET

The evidence discussed so far focuses on the link between cross-country differences in economic *outcomes* and bargaining coordination. The studies reviewed in this section ask a different question: how is bargaining coordination related to labor market flexibility? Labor market flexibility is measured by indicators such as real wage flexibility, adjustment speed to wage shocks, unemployment persistence, and search effectiveness of unemployed workers. Seven studies have used the two-step regression approach to estimate these indicators and have investigated their relationship with bargaining coordination. Table 12 summarizes the results.

**Table 12. Labor Market Flexibility: Four Measures and their Relationship to Bargaining Coordination**

| Measure | Predicted relationship | Summary of evidence |
| --- | --- | --- |
| Real wage flexibility | + | Most evidence indicates that real wages are more flexible (i.e. respond more to changes in employment) where bargaining coordination is high. |
| Hysteresis | H | The evidence suggests that hysteresis is associated with employee coordination in semi-coordinated wage bargaining systems. |
| Adjustment speed | + | The adjustment speed of employment to a wage shock is higher where bargaining coordination is high. |
| Search effectiveness | + | The level of unemployment consistent with a given vacancy level is lower (search effectiveness is higher) where bargaining coordination is high. |

Note: See Layard et al (1991); McCallum (1986); Newell and Symons (1987); Bean et al (1986); Scarpetta (1996); Alogoskoufis and Manning (1988); and Jackman et al (1990).

The two most interesting results relate to unemployment persistency (hysteresis) and (real) wage flexibility. First, hysteresis can arise because of membership effects (Blanchard and Summers, 1986), because of loss of skills and discouraged-worker effects, and because of depreciation of capital during recession that does not fully recover subsequently or takes a long time doing so (Rowthorn, 1995). Layard et al (1991) find that *employer* coordination

reduces persistence while *employee* coordination increases it. Subsequent research by Scarpetta (1996) suggests that the employer effect is, on average, greater and that unemployment in countries with semi-coordinated bargaining systems shows a relatively high degree of persistence. In addition, Jackman et al (1990) provide evidence that the search effectiveness of unemployed workers is higher in countries with highly coordinated collective bargaining, suggesting that high bargaining coordination is associated with smaller discouraged-worker effects. Second, the evidence suggests that the (bargained) real wage is more responsive to employment conditions where bargaining coordination is high (Layard et al, 1991; and Bean et al, 1986). This combined with the faster adjustment to shocks bring support to the notion that bargaining coordination helps the labor market absorb shocks fast and at a low employment cost.

This conclusion is further supported by a recent study by Blanchard and Wolfers (2000) who show that it is the interaction between shocks and institutions that is crucial for the observed cross-country and time series variation in unemployment in the OECD over the last 40 years. They argue that neither shocks (such as the relative price shocks of the 1970s, the slow down in total factor productivity, or various shifts in labor demand) nor labor market institutions (as captured by strong unions, bargaining coordination, minimum wages, and a generous unemployment benefit system) can on their own explain the unemployment experience of Europe over the last 40 years. The shocks can explain fairly well the times series pattern (the general rise in unemployment), but fail to explain cross-country differences. Labor market institutions can, on the other hand, explain cross-country variation, but not the times series pattern, partly because most labor market institutions are stable over time and partly because those institutions (e.g., the unemployment benefit system) that have been changing have done so, at least since 1980, in an "employment friendly" direction. Blanchard and Wolfers (2000) combine the two explanations in a regression analysis that allow for interactions between shocks – measured either as a common time trend or as country specific disturbances – and institutions. They show that institutions that promote bargaining coordination reduce the impact of shocks by a substantial margin. Unionization (as measured by union density), on the other hand, has the opposite effect. Their estimates suggest that an adverse shock that increases unemployment by 1 percentage point in the country with "average" bargaining

coordination will only increase unemployment by 0.4 percentage point in the country with the highest degree of bargaining coordination. One problem with the analysis, however, is that the measures of institutions used essentially refer to a given point in time. In reality institutions have change during the last 40 years in many OECD countries and taking that into account would be desirable. One can also question the method used to quantify the shocks. Nevertheless, it seems clear that the interaction between shocks and labor market institutions is of great importance.

## 3.7  DISSECTING BARGAINING COORDINATION

Disentangling the macroeconomic impact of different aspects of bargaining coordination is statistically hard and, in the presence of strong complementarities, it may even be misleading to attempt to do so. With this in mind, we review what can be learned from the literature about individual aspects of bargaining coordination.

### 3.7.1  Formal and informal bargaining coordination

Informal mechanisms sometimes develop to sustain cooperation among labor market parties. One form of informal coordination is *internal* coordination among employers and/or the employees made possible by repeated interaction and reputation effects. At the employer side this involves coordination between industry-based employers' organizations or individual firms. This plays an important role in Japan, Austria, and Switzerland (Soskice, 1990; OECD, 1994). At the employee side, internal coordination, typically, involves coordination between company- and industry-based unions. Another form of informal coordination is pattern bargaining. Here, a dominant industry or company enters a collective agreement that is followed by other firms and industries. This has been important in, e.g., Germany, where the metal industry, traditionally, has acted as the leader.

To investigate the importance of informal coordination as oppose to formal coordination, we divide the sub-studies into two groups. In the first group, we include those sub-studies that use an indicator of bargaining coordination that focuses exclusively on *formal* aspects

of bargaining coordination (such as centralization and union concentration) and in the second group, we include those that use an indicator that also take into account informal coordination.[18] Table 13 summarizes the results.

**Table 13. Percentage of All Sub-studies that Find a Relationship between Bargaining Coordination and Economic Outcomes, Disaggregated According to Formal and Informal Bargaining Coordination**

|  | Formal bargaining coordination only | Formal and informal bargaining coordination |
|---|---|---|
| Relationship | 70% | 51% |
| No relationship | 30% | 49% |
| Number of sub-studies | 84 | 41 |

Note: We construct the Table by pooling the results from all 125 sub-studies and calculate the percentage of relationships (or no relationships) for each of the two groups.

We see that the linkage between bargaining coordination and economic performance is more discernible when the focus is on formal coordination only. When informal aspects of bargaining coordination are taken into account, fewer sub-studies find statistically significant relationships. This pattern becomes even clearer when we restrict attention to those sub-studies that test the hump hypothesis, as is evident from Table 14. This implies that, unless one controls for the degree of informal coordination, the *observed* difference in performance between countries with different *formal* bargaining systems looks larger than it really is (see also Soskice, 1990).

**Table 14. Percentage of Sub-studies Testing the Hump Hypothesis that Find a Relationship between Bargaining Coordination and Economic Outcomes, Disaggregated According to Formal and Informal Bargaining Coordination**

|  | Formal bargaining coordination only | Formal and informal bargaining coordination |
|---|---|---|
| Hump/U-shaped relationship | 58% | 11% |
| No relationship | 39% | 63% |
| Monotonic relationship | 3% | 26% |
| Number of sub-studies | 31 | 27 |

Note: We construct the table by pooling the results from the 58 relevant sub-studies and calculate the percentage of "hump/U-shaped relationship," "no relationships," and "monotonic relationships" for each of the two groups of sub-studies.

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[18] The indicators that take into account both formal *and* informal coordination are the seven indicators listed at the top of Table 5.

These findings suggest that informal coordination can help remove the disadvantage associated with formal, semi-coordinated bargaining. However, informal coordination has a tendency to break down in times of rapid economic and social change. Although it is useful to think of informal coordination as a *substitute* for formal coordination, the two aspects of bargaining coordination are certainly not perfect substitutes.

### 3.7.2  Employer versus employee coordination

Jackman (1993), Bean (1994), and Scarpetta (1996) analyze the relative importance of employee and employer coordination.[19] Using different control variables and time periods, all three studies strongly indicate that *employer* coordination is more important than employee coordination in accounting for comparative unemployment performance. In other words, while more employer coordination always leads to lower unemployment, more employee coordination has a much smaller effect (Jackman, 1993), no effect (Scarpetta, 1996), or can even lead to higher unemployment (Bean, 1994). This finding may be related to the fact that employers' organizations, at successively higher bargaining levels, are more effective than unions in controlling wage drift. If so, wage competition among firms and the pressure on individual firms to give in to unions' wage demands are both reduced.

### 3.8  THE INTERACTION BETWEEN UNION DENSITY, BARGAINING COVERAGE AND COORDINATION

The interaction between bargaining coordination, density, and coverage is also of importance for the relationship between collective bargaining and economic performance, as pointed out by, for example, Visser (1991) and Golden et al. (1997). That these aspects of collective bargaining are highly correlated is clear from Table 15.

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[19] Employee coordination is measured by index LNJ1991-1 and employer coordination by LNJ1991-2. The correlation between the two is 0.65, which suggests that multicollinearity may be a problem.

**Table 15. The Rank Correlation between Selected Indicators of Bargaining Coordination, Union Density, and Bargaining Coverage**

| | Bargaining centralization | | | | Corporatism | | Employee or employer coordination | | Informal and formal coordination | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CD1988 | OECD1997-1 | C1984-1 | S1981-1 | BS1985 | T1986 | LNJ1991-1 | LNJ1991-2 | OECD1997-2 | S1990-1 |
| Union density | 0.71*** | 0.44*** | 0.88*** | 0.65** | 0.34 | 0.25 | 0.65*** | 0.43** | 0.23 | 0.32 |
| Bargaining coverage | 0.70*** | 0.75*** | 0.57** | 0.46* | 0.46* | 0.24 | 0.56** | 0.43** | 0.42** | 0.17 |

Source: OECD (1997: Table 3.4; Table 3.3) and own calculations.
Notes:
(1) See Table 5, for a more precise definition of the 10 indicators of bargaining coordination.
(2) Significance levels: ***=1%; **= 5%; and *= 10%.

Countries with highly coordinated collective bargaining tend to have high union density and high bargaining coverage.[20] This pattern is particularly clear for the group of indicators that focuses on bargaining centralization and employee and employer coordination. Those indicators that focus on *informal* coordination are, with one exception, not strongly correlated with union density and bargaining coverage. This shows that *centralization* of collective bargaining requires high union density or, at least, high bargaining coverage. *Informal* coordination (e.g., between employers as in Japan), on the other hand, can develop and play an important role in an environment where a small proportion of the workforce is unionized and where formal collective agreements only cover a minority of workers.

Jackman (1993), Nickell and Layard (1999), and Nickell (1997) analyze the interaction between the three aspects of collective bargaining and economic performance in a regression analysis. They confirm the finding that bargaining coverage (and, to a lesser extent, union density) has a *negative* effect on unemployment at a given level of bargaining coordination and that bargaining coordination has a *positive* impact on unemployment for given bargaining coverage.[21] More interestingly, as bargaining coverage and bargaining coordination (tend to) increase together (Table 15), the increase in coordination counteracts

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[20]A few outliers should be pointed out. France has a relatively coordinated bargaining system, yet union density (but not coverage) is very low. Likewise, Japan combines a relatively coordinated bargaining system with low union density and coverage (see Table 3 and Table 6).

[21] Union density is typically insignificant.

the adverse impact on economic performance of increasing bargaining coverage (and union density). Moreover, Layard et al (1991: 137) argue that it is the failure of studies such as Calmfors and Driffill (1988) to take into account the impact of bargaining coverage on economic performance that gives the impression that semi-coordinated collective bargaining is "bad." More generally, these results underscore the danger of focusing on individual aspects of labor market institutions when it is the interaction between many different aspects that determines outcomes. Labor market institutions *complement* each other and a comparison between different "packages of institutions" may be the most sensible way to assess the macroeconomic performance of labor market institutions.


3.9    CORPORATISM, SOCIAL COHERENCE AND ECONOMIC PERFORMANCE

In a corporatist society, the political activities of unions and employers' organizations take place within a well-defined framework of social partnership between workers, capitalists, and the government (see, e.g., Cameron, 1984; Tarantelli, 1986; Bruno and Sacks, 1985; Henley and Tsakalotos, 1993; and Lehmbruch, 1984). Social partnership reduces the level of conflict at the labor market and facilitates income policy, economy-wide agreements on wages and weekly hours, health and safety standards and so on. All of these aspects help to bring about "good" economic outcomes. The successful implementation of income policies during the 1960s and 1970s based on tri-party negotiations in Scandinavia and Austria are among the best known examples of corporatism. Since then corporatism has disappeared in countries where it used to play a role[22], but there has been a renewal of corporatism in the Netherlands that has contributed significantly to what has become known as the "Dutch employment miracle" (Visser, 1998).

In a social partnership, unions expect the government to deliver welfare goods and policies in exchange for wage moderation and peace in the labor market. Lange and Garrett (1985) and others have argued that these expectations are important for economic

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[22] Social partnerships have a tendency to break apart because the partners have an incentive to act on their own (Olson, 1995). In addition, while employers have an incentive to help achieve full employment, they have little incentive to help *preserve* it once it has been achieved because they have a harder time controlling workers when the threat of dismissal is less real (Kalecki, 1943).

performance and distinguish among four scenarios. In scenario (1), unions are powerful, in the sense that the majority of workers are unionized and bargaining is controlled by national organizations, and the government is left-wing. Under these circumstances, it is predicted that economic performance will be "good". This is because the pursuit of welfare policies by left-wing parties is likely to lead to voluntary wage moderation. Moreover, as pointed out by Olson (1982), if unions organize the majority of workers, they are less likely to engage in wasteful rent-seeking. This is because unionized workers are going to bear most of the costs associated with these activities themselves. In scenario (2), unions are politically weak, in the sense that union density is low and bargaining is decentralized, and the government is right-wing. Under these circumstances, it is also predicted that economic performance will be "good". This is because unions are restricted in their wage demands by competitive pressure from product markets which are left unprotected by the right-wing government. In scenario (3) and (4), economic performance is expected to be "bad," because there is a mismatch between the power of the labor movement and the political orientation of the government. If, for instance, a right-wing government coexists with powerful unions, unions are unlikely to restrict their wage demands voluntarily, as they cannot expect the government to deliver any welfare goods in return. Likewise, a left-wing government coexisting with weak unions cannot count on any voluntary wage moderation because individual unions are likely to pursue their own interests (wage pressure) without taking into account the economy-wide consequences of their actions.

Using economic growth as the economic performance indicator, these ideas find some support in a sample of OECD countries (Garrett and Lange, 1986; Lange and Garrett, 1985; and Alvarez et al, 1991). A more recent study by Iversen (1998), however, fails to find strong partisan effects and argues that partisan governments matter for outcomes mainly because of their impact of the choice of institutions. For example, left-wing governments might be more favorable to centralized bargaining and more likely to pursue of accommodating monetary policy than a right-wing government. As we shall see below, there is some evidence that the interaction between the choice of monetary policy regime and the degree of bargaining coordination is important for economic outcomes.

## 3.10 MONETARY POLICY AND WAGE-SETTING REGIMES

The hump hypothesis claims that economies with either uncoordinated or completely coordinated wage-setting should have lower unemployment than economies with semi-coordinated wage-setting, but, as discussed above, the evidence in support of this hypothesis is weak. In fact, some (but not all) of the OECD economies with semi-coordinated wage-setting systems have been very successful in sustaining low levels of unemployment for most of the post-war period. Examples include Germany, the Netherlands and Switzerland. Iversen (1998) and Soskice and Iversen (2000) argue that one needs to take into account the interaction between monetary policy and collective bargaining regimes to understand these facts. In particular, as discussed in Section 2.2, semi-coordinated collective bargaining combined with non-accommodating monetary policy (as measured by the degree of central bank independence) may be able to sustain comparably low levels of unemployment and inflation. Table 16  shows that this hypothesis receives support from the data. The Table contains a cross tabulation of average unemployment rates for the period 1973-92 for 17 OECD countries. The countries are divided into 6 groups according to their monetary regime (accommodating or non-accommodating) and the degree of centralization of the collective bargaining (very high, intermediate and very low). While the data confirm that unemployment is comparably low in countries with highly centralized bargaining systems *if* monetary policy is accommodating, we see that the countries with an intermediate level of centralization and a non-accommodating monetary policy regime have the lowest rate of unemployment.

**Table 16.  Long-Run Average Unemployment Rates for 17 OECD Countries Depending on the Monetary Rule and the Centralization of Wage Bargaining, 1973-1993**

| | Centralization | | |
|---|---|---|---|
| | *VERY HIGH* | *INTERMETIATE* | *VERY LOW* |
| Monetary rule | | | |
| Accommodating | 3.9 | 7.6 | 7.1 |
| Non-accommodating | 5.6 | 3.6 | 7.4 |
| Difference | -1.7 | 4.0 | -0.3 |

*Notes:* Monetary rule refers to the independence of the central bank except in the case of Japan where a dependent bank has follows a non-accommodating policy.  An independent central bank is taken to follow a non-accommodating monetary policy rule. Beginning in the top row the countries are (with square brackets demarcating cells): [Finland, Norway, Sweden]; [Australian, Belgium, Italy]; [United Kingdom, France, New Zealand]; [Austria, Denmark]; [Germany, Japan, Netherlands, Switzerland]; [Canada, United States].
*Source:* Soskice and Iversen (2000: Table 1).

The hypothesis that the interaction between monetary policy regime and wage-setting institutions is important has been the subject of further empirical investigation. Iversen (1998) interacts an index of central bank independence with an index of bargaining centralization (V2000, see Table 5) in a study of unemployment in 15 OECD countries during the period 1972-93. His main finding is that centralization has a dampening effect on unemployment under a regime of accommodating monetary policy, but that the relationship under a regime of non-accommodating policy is *U-shaped*; that is, both decentralized and centralized bargaining are associated with higher unemployment than semi-centralized bargaining. Thus, these results give some support to the notion that there is a monotonic relationship (rather than a hump-shaped one) between bargaining coordination and unemployment, but only under accommodating monetary policy. In countries with independent and rule-bound central banks, the relationship seems to be U-shaped. However, Cukierman and Lippi (1999) find that the relationship is monotonic also under non-accommodating monetary policy (conducted by an independent central bank) and hump-shaped under accommodating monetary policy.

Hall and Franzese (1998) study the interaction between coordinated wage bargaining and central bank independence in 16 OECD countries during the period 1953-1992. The key rationale for having an independent central bank that is committed to a target of low inflation is to bring down long-run equilibrium inflation. Hall and Franzese argue that the unemployment cost of achieving this outcome depends on the nature of wage-setting institutions. They find evidence that the unemployment cost of central bank independence is lower under coordinated bargaining than under uncoordinated bargaining. If their estimates are taken at face value, then a shift from a completely dependent central bank to a completely independent one would increase unemployment by almost 10 percentage point under uncoordinated wage bargaining. Under semi-coordinated wage bargaining, the cost would be about 4 percentage points, but under a regime of completely coordinated wage bargaining unemployment will actually fall by about one percentage point.

In conclusion, the evidence points to the importance of the interaction between different monetary policy regimes and bargaining coordination. Although the literature has not yet settled down, there is some support for the notion that central bank independence (or non-accommodating monetary policy) works relatively well in conjunction with systems of semi-coordinated collective bargaining.

## 4    CONCLUSION

The evidence on the macroeconomic impact of collective bargaining in the OECD is too fragile to warrant big generalizations. Nevertheless, a number of conclusions can be drawn out:

- The view that that countries with coordinated bargaining systems, on average, achive better economic outcomes and have more flexible labor markets than countries with

less coordinated systems receives some support, but mostly from the 1970s and 1980s. The hump hypothesis receives little support.

- The view that the interaction between monetary policy regime and bargaining coordination affects economic outcomes receives some support and may help explain why some countries with intermediate levels of centralization and non-accommodating monetary policy avoid high levels of unemployment.

- Countries with coordinated collective bargaining tend to have less wage dispersion than other countries.

- Cross-country variation in union density has little impact on economic performance. High bargaining coverage, on the other hand, tends to be associated with relatively poor economic performance.

- The negative correlation between unemployment and bargaining coverage can be reduced if bargaining takes place in a coordinated fashion. The *interaction* between various aspects of collective bargaining determines the macroeconomic impact.

- In countries that lack formal bargaining coordination (in the form of centralized bargaining between national organizations), informal bargaining coordination can arise as an (imperfect) substitute.

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