

Chapter 2. Explaining wage coordination

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The nature of wage bargaining in general, and the extent to which such bargaining is coordinated in particular, has become one of the most frequently used variables in quantitative analyses of the comparative political economy of industrialised democracies. To take but a few examples, wage coordination has been shown to affect unemployment and inflation (Calmfors and Driffill, 1988; Iversen, 1999), wage inequality (Wallerstein, 1999; Oskarsson, 2003), and the viability of partisan politics in face of globalisation (Garrett, 1998). Against this background, surprisingly little systematic attention has been paid to the origins of wage coordination. Why is it, for instance, that wage bargaining is always coordinated in Germany but never in Canada? Or, why did wage coordination suddenly become a dead project in the UK after its breakdown in the late 1970s, whereas coordination was restored in the Netherlands only a few years later?

Rather than addressing questions such as these, most quantitatively oriented scholars have chosen to take the nature of wage bargaining as exogenously given; that is, coordination has simply been considered a characteristic that some countries have and others lack (cf Thelen, 2001). This is an unfortunate practice since not only does it divert scholarly attention from some fundamental scientific questions, but – to the extent that institutional changes in wage bargaining are endogenous to the outcomes of interest – the practice also implies that many of the empirical results in the field may be subject to simultaneous equation bias (cf Flanagan, 1999). This chapter seeks to contribute toward filling this gap in the literature by exploring *why* unions and employers *voluntarily* choose to coordinate wage bargaining in some countries but not in others.

When addressing the question of why unions and employers in some countries choose not to coordinate their wage bargaining, two answers immediately come to mind; they do not want to coordinate their actions, or they cannot do so. Or, as Scharpf and Schmidt (2000, p. 12) chose to put it:

‘coordinated collective bargaining implies the *capacity* and *willingness* of negotiators in individual bargaining units to reflect the joint impact of bargaining outcomes on the state of the national economy’.

Although the importance of willing and able labour market actors is a common theme in writings on the topic, there seems to be rather fundamental disagreement between scholars on the relative significance of these two factors. Whereas

some suggest that ability is the prime mover of wage coordination, others stress the primacy of incentives.

There is, however, a third partially contending perspective on the origins of wage bargaining institutions in different countries. This perspective suggests that such institutions are not so much the creation of willing and able intentional actors as the result of earlier choices. Wage bargaining institutions are said to be characterised by *path dependence*; that is, once a country has embarked on a specific institutional path, it rarely changes to another.

However, since ultimately the relative merits of these different explanations depend upon their empirical validity as much as their theoretical power, they need to be tested against data. Whereas there is widespread case and descriptive evidence of the evolution of bargaining systems in specific countries (eg Thelen, 1993; Pontusson and Swenson, 1996; Elvander, 1997; Iversen, 1999; Perez, 2002), there are very few systematic quantitative studies covering the entire group of industrialised democracies over time. To my knowledge there are only two such studies.

One is the study by Wallerstein and Western (2000), in which the authors set out to explain the variation in centralisation of wage setting across 15 countries between 1950 and 1992. Undoubtedly, this study both improves on and complements the earlier literature in many important respects. Nevertheless, the study has two main drawbacks. First, it focuses on centralisation instead of coordination. But, today most scholars seem to hold the view that coordination is more important than centralisation. Second, Wallerstein and Western do not differentiate between voluntary and state-led centralisation. Instead, their ‘scale of the level of wage setting combines both’, though they note that ‘confederal involvement and government intervention can be examined separately’ (Wallerstein and Western, 2000, p. 365).

In contrast to this view, I argue that not only is it possible to examine these two forms of coordination (centralisation) separately, but that it is something we ought to do. This becomes particularly important when studying the causes of different wage bargaining institutions, since we usually have no reason to assume that the goals and motivations of the government are the same as those of employers and unions. Nonetheless, this is exactly what Wallerstein and Western seem to assume. By lumping together voluntary and state-led coordination they implicitly posit that the same variables affect both the government’s decision whether or not to intervene in wage bargaining and the decision of unions and employers whether or not to establish voluntary coordination. Moreover, they assume the variables to have the same effect on these two decisions. Neither of these assumptions is plausible.

The second larger quantitative study addressing the issue of why wage bargaining is conducted differently in different countries is that of Traxler et al. (2001, Chapter 10). Unlike Wallerstein and Western, Traxler and his co-authors

focus on coordination rather than centralisation, and they carefully distinguish between voluntary and state-imposed coordination. Nonetheless, this study also leaves something to be desired. Given our question why wage bargaining is coordinated in some countries but not in others, it is especially troubling that Traxler et al. (2001, p. 162) keep their analysis ‘solely bivariate and primarily descriptive’. The problem is that we cannot really know whether the results presented by the authors are true or spurious, because a bivariate analysis provides no way of isolating the effects of the different variables.

In brief, empirical analysis of the origins of wage coordination needs to distinguish between voluntary and non-voluntary coordination forms. Further, in order to find out whether a particular factor is decisive to the decision to coordinate wage bargaining or only spuriously related to that decision, the analysis needs to be multivariate rather than bivariate. This chapter provides such an analysis.

The problem defined

As mentioned in the introduction to this volume, there is a huge amount of research on the effects of different wage bargaining institutions, in both political science and economics. Most recent accounts focus on the degree of coordination of wage bargaining, ie the extent to which the pay negotiations conducted by distinct bargaining units are synchronised across the economy. This concept is separable from the degree of centralisation, which refers to the level at which wage settlements are formally concluded (Traxler et al., 2001, p. 144). It is often noted that effective voluntary coordination comes in two forms. In one, the principal locus of bargaining is at the economy-wide or peak level, where negotiations take place among highly centralised trade union and employers’ confederations. In the other, bargaining takes place primarily among actors at industry level, but is equipped with sufficient economy-wide linkages to transmit the settlement in the leading sector across the economy (Franzese and Hall, 2000, p. 178). While the former type of coordination is often referred to as centralised bargaining, the latter has been termed pattern-setting bargaining.

Inspired by the seminal work of David Soskice (1990), there now seems to be a growing consensus that coordination of wage bargaining promotes real wage restraint and low unemployment. The predominant understanding is that wage coordination constitutes a solution to the collective action problem of securing wage restraint. This argument follows the simple logic that when wages are set in a fully coordinated fashion, the temptation to free ride on the wage restraint on others will evaporate, since all actors know that wage militancy in one sector automatically will be transmitted to other sectors of the economy, leaving everybody worse off (Iversen, 1999).

As pointed out by Kenworthy (2001b), wage coordination is fundamentally a behavioural concept, measuring the degree to which wage bargaining in different sectors of the economy is synchronised (ie oriented towards a common goal). However, since such coordination can be generated by qualitatively different institutional arrangements – such as centralised and pattern-setting bargaining – the concept is not straightforward to measure. One approach is that taken by Soskice (1990), who ranks each country according to the observed degree of coordination of wage outcomes. Although commonly used, measures adhering to this method have been criticised for being impressionistic and suffering from a substantial amount of measurement error (Kenworthy, 2001b).

An alternative – and more promising – route is taken by Traxler et al. (2001), who focus on the coordinating activities of actors, instead of the degree of coordination actually achieved. Using this strategy, they are able to distinguish between no less than six different bargaining modes: *inter-associational coordination*, *intra-associational coordination*, *state-sponsored coordination*, *pattern-setting coordination*, *state-imposed coordination*, and *non-coordination* (see Appendix 2.1 for further details). This measure differs from many of the others available in the literature, in treating coordination as a discrete rather than as a continuous phenomenon. The justification for this approach, they argue, is that because wage coordination is generated by qualitatively different institutions, it is impossible unambiguously to rank different bargaining arrangements in terms of their degree of coordination. Or, as Traxler (2002, p. 117) puts it:

‘There is no theoretical argument that can show that decentralised coordination forms are more/better coordinated than centralised bargaining or vice versa. Therefore, any kind of single, composite measure based on ordinal or parametric ranking of bargaining coordination is pointless’.

There are two interpretations of this statement. One is that wage coordination is an inherently discrete concept that never will lend itself to anything more than a nominal classification. The other is that, although it eventually might be possible to construct an unambiguous continuous scale of wage coordination, this is not possible given the knowledge we currently possess on the workings of different types of bargaining institutions. Therefore, it is better to employ a nominal approach until we find out how to construct an unambiguous continuous measure.

I think the latter, pragmatic interpretation of the statement is the more reasonable one, and that it has a lot speaking in its favour. Since the aim of this chapter is not to explain how the actors choose to coordinate, but merely to explain why they occasionally choose to do so, I believe a dichotomous measure of wage coordination can prove useful. Perhaps some readers may find such a typology strange, since it discards information on all of the more subtle differences in the way wage bargaining is conducted in different countries. However, it is precisely because the classification abstracts from the finer details in bargaining arrange-

ments that it helps to highlight the key elements common to all countries in one camp but not shared by those in the other camp.

It can also be noted that the approach taken here is not in any way new. Much of the early research in the field built on a more or less explicit dichotomy between corporatist and non-corporatist countries. As a matter of fact, in one of the earliest quantitative analysis of the relationship between labour market institutions and economic performance, Crouch (1985) used a dichotomous distinction between coordinated and uncoordinated systems as his main independent variable. A more recent example is to be found in the ‘varieties of capitalism’ literature, which employs the dichotomy between coordinated and liberal market economies to classify the overarching economic systems in different countries (Hall and Soskice, 2001). Thus, although the ‘all or nothing’ approach here taken towards wage coordination may seem rather blunt, I believe it to be a useful starting point when trying to understand the determinants of different types of wage bargaining institutions. We therefore need to find a way to convert the six bargaining modes identified by Traxler et al. into a dichotomy.

In order to save on degrees of freedom when conducting a statistical analysis, Traxler and his co-authors gather inter-associational coordination, intra-associational coordination and state-sponsored coordination under the heading ‘voluntary peak-level coordination’ (see Traxler and Kittel, 2000). I will do the same, but in line with more common parlance, I will refer to this combined category as ‘centralised coordination’. This reduces the number of categories from six to four. The question is how to fit the four into the coordination vs. non-coordination categorisation. Obviously, both centralised and pattern-setting coordination belong in the former category. Equally obvious is that non-coordinated bargaining should be placed in the latter category.

The category of state-imposed coordination, however, poses a problem. It is qualitatively different from the other coordination modes, in that it does not refer to voluntary coordination on behalf of unions and employers, but to coordination forced upon the actors by the state. This is problematic since our interest is in the factors making voluntary coordination more or less likely, not in the factors making state intervention more or less likely. Hence, it is not obvious how to code this specific bargaining mode.

Nevertheless, I believe the ambiguity of the state-imposed coordination category disappears (or at least is severely lessened) once we consider the preferences of government. Most governments are very reluctant to take full responsibility for wage bargaining. And they have good reasons for being reluctant, since government agencies usually lack the information necessary to set efficient and fair wages. Therefore, as Soskice (1990, p. 59) points out, once the government ‘begins to lay down explicit pay guidelines it can easily get caught in politically damaging situations’. Because of this, we would usually expect that it is only when voluntary coordination has failed that the government considers adopting

authoritarian measures to curb rising inflation and unemployment. This being the case, the question of how to establish and maintain voluntary coordination is prior to the question of how different governments will respond when voluntary coordination has failed.

So understood, both state-imposed coordination and uncoordinated bargaining refer to situations where voluntary coordination is lacking. This view squares with the empirical observation of Traxler et al. (2001, p. 297) ‘that state-imposed incomes policy normally follows failure by voluntary coordination’. Hence, I will throughout this chapter take non-coordination to mean either uncoordinated bargaining or state-imposed coordination, and coordination to mean either centralised or pattern-setting bargaining.

Although Traxler et al. have so far only made their data available in the form of three-year period averages, I have been able to interpret the data on an annual basis by using complementary sources (Kenworthy, 2001a; Golden et al., 2002; Traxler, 1999). Unfortunately, it has proven impossible to differentiate between coordination on the employer and on the union side. Therefore, bargaining in a country will be considered as coordinated if it is coordinated on either one of the two sides of the labour market. However, since coordination on one side is usually accompanied by coordination on the other, this is not a serious limitation.

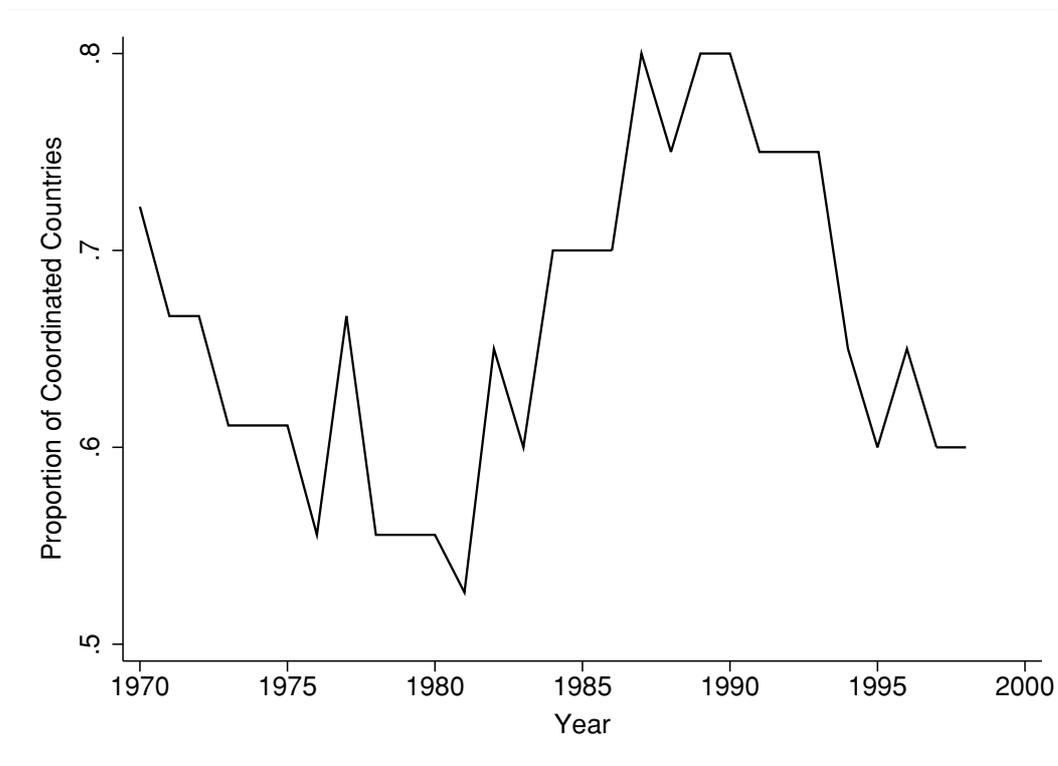


Figure 2.1. Proportion of coordinated countries, 1970-1998.

Figure 2.1 displays the binary coordination data averaged for the 20 OECD countries studied in this chapter over the period 1970-1998.¹ Although the inter-country variation accounts for the lion's share of the total variance in coordination practices, the graph makes clear that there is also a non-negligible amount of intra-country variation in the data.² The proportion of coordinated systems ranges from just over 50 percent in the mid-1970s to almost 80 percent in the late 1980s. During the period of interest, there were 42 transitions into or out of coordination. In nine out of 20 countries wage bargaining was either coordinated or uncoordinated in all years.

It should be obvious from these data that there is interesting variation in bargaining practices – across both time and space – that needs to be accounted for. Before discussing possible explanations of this variation, I present a simple theoretical framework to guide the following discussion.

A theoretical framework

Most of the analysts dealing with the origins of wage bargaining institutions take as their point of departure the assumption that the establishment and maintenance of coordinated wage bargaining constitutes a second-order collective dilemma of considerable magnitude. The idea is that, since wage coordination cannot be enforced by law, the institutional solution risks being subject to the very incentive problem it is supposed to resolve. As Olin Wright (2000, p. 980), among others, points out, the dilemma is equally pressing for employers and unions:

‘Wage restraint is an especially complex collective action problem: individual capitalists need to be prevented from defecting from wage-restraint agreement (ie, they must be prevented from bidding up wages to workers in an effort to lure workers away from other employers given the unavailability of workers in the labour market), and individual workers (and unions) need to be prevented from defecting from the agreement by trying to maximise wages under tight labour market conditions.’

Thus, since coordinated wage bargaining provides a public good (wage restraint), the logic of the situation is assumed to resemble that of the infamous prisoner's dilemma (eg Knight, 1992; Golden, 1993; Bowman, 1998; Swenson, 2002).

Working under the presumption that an external Leviathan is necessary to avoid the suboptimal outcome in the prisoner's dilemma, many rational choice scholars of the 1970s arrived at the same conclusion as the marxists, namely that wage coordination can only be assured by means of coercion. This view has,

¹ The countries covered are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Ireland, Japan, the Netherlands, New Zealand, Norway, Portugal (from 1975), Spain (from 1977), Sweden, Switzerland, the UK, and the US.

² To be more precise, the intra-country variance accounts for 37 percent of the total variance in wage coordination.

however, been criticised by other rational choice theorists, claiming that the argument that individual unions (workers) and firms cannot rationally consent to wage regulation is strongly exaggerated. The most common critique directed against the early rational choice applications in the field is that they chose to model the situation as a single-shot rather than as an iterated game. Lange (1984, p. 102), for instance, suggests that the latter approach is preferable, '[f]or any particular wage-regulation bargain is always just one in a series of bargain (wage-regulation and not) between unions and employers'.

The most thoroughly developed argument along these lines is set forth in an article by Holden and Raaum (1991), who outline a simple formal model that can serve as a useful heuristic device for the following discussion.

The Holden-Raaum model

The game, pictured in Figure 2.2, begins with a wage coordination agreement in place, and each union and employer has to decide whether to respect the terms of the agreement (C) or to cheat on it (D). In order for a coordination agreement to be stable, it must be supported as an equilibrium in this game. If not, unions and employers would never assent to the terms of the agreement in the first place.

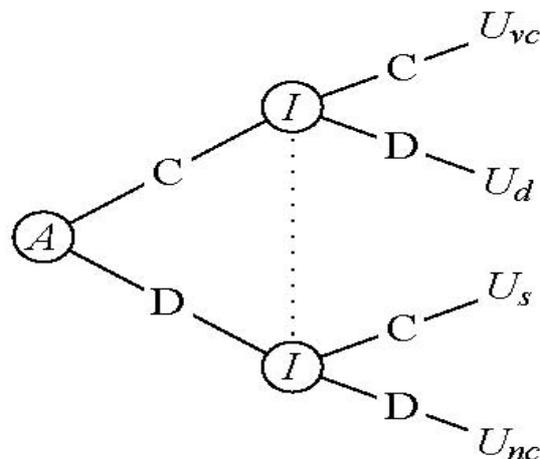


Figure 2. 2 The wage coordination game.

Wages are assumed to be determined simultaneously in all sectors of the economy; that is, any deviations from a prior coordination agreement will not be discovered until all sectors have decided on a wage policy. Accordingly, each *individual* union and employer – which we denote *I* – is assumed to make its decision in ignorance of the choices of *all* other unions and employers (denoted *A*).³ Thus, since the preference ordering is taken to be that of a prisoner's

³ This lack of information is represented by the information set (the dotted line) connecting *I*'s decision nodes.

dilemma – $U_d > U_{vc} > U_{nc} > U_s$ – there will always be a temptation for unions and employers to deviate from a coordination agreement, reaping the short-run gains from setting higher wages. As long as the wage setting in one year is viewed in isolation, wage coordination is not achievable, because the dominant strategy of all players is to cheat on the agreement.

However, just like Lange (1984), Holden and Raaum find it more reasonable to picture the situation as an iterated game. In this iterated game, the actors are assumed to adhere to the following strategies: (i) stick to the coordination agreement until some actor deviates from the agreement, (ii) if some actor has ever deviated, choose uncoordinated bargaining until an exogenous event Q takes place. By including the exogenous event Q, which occurs with the probability $1 - p$, length of punishment is turned into a random variable.⁴ When choosing strategy in the iterated game, the actors' main concern is with the sum of the discounted future payoffs. Since all actors believe the others will partake in coordination as long as they do not cheat on the agreement, they can secure the coordination payoff (U_{vc}) in all future rounds of the game by sticking to the agreement. However, if they decide to cheat on the agreement they can hope to obtain the free-rider payoff (U_d) in the first time period, but after that will either obtain the non-coordination payoff (U_{nc}) – if their defection results in punishment – or the coordination payoff (if defection is forgiven by the others and coordination is resumed). Coordination is only sustainable if the expected payoff from coordination exceeds the expected payoff from defection. Formally, this can be stated as:

$$U_d + \sum_{t=1}^{\infty} \delta^t p^t U_{nc} + \sum_{t=1}^{\infty} \delta^t (1 - p^t) U_{vc} \leq \sum_{t=0}^{\infty} \delta^t U_{vc}, \quad (2.1)$$

where p is the probability that a defection will result in non-coordination in any of the following time periods and δ is the discount factor (which varies between 0 and 1). Rearranging terms and utilising the fact that the sum of the infinite series $\sum_{t=1}^{\infty} \delta^t p^t$ converges on $\delta p / (1 - \delta p)$, we obtain the simpler condition:

$$\frac{U_d - U_{vc}}{U_{vc} - U_{nc}} \leq \frac{\delta p}{1 - \delta p}. \quad (2.2)$$

In order for a coordination agreement to be sustainable, the right hand side of this expression must be at least as large as the left hand side. The numerator of 2.2 represents the gains from cheating on the agreement relative to sticking to it,

⁴ When p equals one, the actors adhere to the grim trigger strategy; that is, a single deviation of any actor induces all actors to choose non-cooperation in all future interactions (eg Morrow, 1994). If, instead, the exogenous event is certain to occur in each period ($p = 0$), this means that a deviation will never be punished.

while the denominator expresses the gains from respecting the agreement relative to the one-shot equilibrium of mutual non-coordination. Depending on the size of the payoffs, the model pictured in the inequality (2.2) can explain both the presence and absence of coordination in a country at a specific point in time. The crucial question, however, is under what conditions voluntary coordination will prevail.

Stated somewhat generally, voluntary coordination becomes more likely: i) the less impatient the actors are (ie δ is higher), ii) the higher the probability of getting punished in case of defection (ie p is higher), and iii) the greater the benefits from coordination relative to the gains to be had from non-coordination. But, this only begs the question of which of these factors are most likely to account for the variation in bargaining practices across time and countries.

One would be hard pressed to come up with any substantive reasons why the discount factors of unions and employers should vary across contexts. Why would, for instance, Canadian unions and employers be more impatient than German ones? Consequently, few scholars have suggested differences in discount factors to be the main reason why wage bargaining is coordinated in some countries but not in others.⁵ It is considerably more common to point to the importance of either of the two remaining factors. In the next section we will focus on the argument that variation in bargaining practices is mainly due to differences in actors' ability to maintain credible punishment schemes.

The lack of ability argument

Led by the conviction that the stability of coordinated wage bargaining depends crucially on the extent to which defection from the agreement can be sufficiently discouraged, much of the early corporatism literature sought to identify different institutional and organisational prerequisites for stable wage moderation. Although all scholars did not subscribe to the most extreme version of the argument – stressed by marxists and some rational choice scholars – that wage coordination can only be assured by means of coercion, it was a commonly held view that rank-and-file wage revolt and grass-roots rebellion were the main obstacles to stable wage coordination (cf Golden, 1993). That is, the viability of wage moderation was thought to hinge on the degree of organisational ability, on the part of labour market actors (especially unions), to handle potential crises of representation (cf Regini, 1984).

Two organisational features in particular were given emphasis, namely associational centralisation and concentration. Centralisation was assumed to affect the ability of the organisations to get their rank-and-file members to accept the terms of an agreement once reached, while concentration, it was argued, was necessary

⁵ Lange (1984) is an exception, but he seems to conflate the size of future payoffs and the discount factor.

to avoid disruptive competition between organisations. Thus, the policy implication of early corporatism research was clear. In countries where the necessary organisational ability is missing, wage coordination, in any form, is bound ultimately to fail.

As Culpepper points out, the more recent literature, based on the ‘varieties of capitalism’ approach can make equally grim reading for public policy makers. If countries lack the institutional framework necessary for sustaining non-market coordination, the advice given by the approach is simply

‘stick with the policies that are compatible with the existing institutional framework of your country, even if that means abandoning goals that could improve both the competitiveness of firms and the wages of workers’ (Culpepper, 2001, p. 275).

This view is expressed most clearly by Torben Iversen (1999, p. 94) in his seminal work on cross-country variation in monetary policy and wage coordination:

‘My argument pivots around the concept of strategic capacity – that is, the extent to which the actions of economic actors have predictable and discernible effects on the welfare and decisions of other players. I equate empirical cases in which it is reasonable to assume strategic capacity to the previously introduced concept of Organised Market Economies (OMEs), while political economies in which strategic capacity is lacking are equated with Liberal Market Economies (LMEs) ... The discussion in this section focuses on OMEs *because collective action problems preclude coordinated institutional outcomes in LMEs* (italics added).’⁶

Regardless of whether he is right or wrong, Iversen here assumes something that needs to be explained; that is, he never makes explicit *why* liberal market economies cannot overcome their collective action problems. Suggesting that the reason for this is that the actors in those countries lack strategic capacity, only begs another question. Why does strategic capacity matter?

Although Iversen never addresses this question explicitly, he points to a possible answer in a footnote, when noting that when strategic capacity is absent the situation will resemble a finite multiplayer prisoner’s dilemma game, since all actors have a dominant strategy and their choices are unaffected by the choices of others (Iversen, 1999, p. 186). This proposition fits neatly into the model discussed in the previous section. In fact, what Iversen seems to be suggesting is

⁶ Although some authors prefer to refer to the OMEs as Coordinated Market Economies (CMEs), most scholars seem to agree on the classification of the countries in these two groups. The OMEs are supposed to include most northern European countries, such as Germany, Sweden and Switzerland, and also Japan and South Korea, while the LME category mainly comprises the Anglo-Saxon economies (cf Soskice, 1999).

that the threat of punishment is unequally credible in different countries. Or stated somewhat differently, that the parameter p in inequality (2.2) differs across contexts.

A lingering issue, however, is why we should assume the capacity to punish defections to differ across countries. Iversen's answer is that the degree of strategic capacity in a country is closely related to the fragmentation of its labour market; that is, higher fragmentation implies less strategic capacity (Iversen, 1999, p. 74). This observation is well in accordance with the often-cited result from applied game theory, namely that it becomes harder to maintain cooperation in a repeated prisoner's dilemma, since the group size increases. In larger groups the actors tend to perceive their individual actions as less visible, thereby enabling them to cheat on the cooperative agreement without being noticed (cf Snidal, 1985). In the case of wage coordination this means that unions and employers in more fragmented labour markets assign higher probabilities to the chance of getting away with a defection on the coordination agreement unnoticed. In terms of 2.2, the parameter p is lower in more fragmented systems, and therefore the actors have less ability to overcome the dilemma of establishing coordinating institutions (see also Golden, 1993).

Thus, despite the fact that his starting point is different, Iversen reaches the same verdict as many other students of corporatism, ie that associational concentration is a necessary condition for voluntary wage coordination. This conclusion has, however, been called into question by recent empirical findings. Contrary to what we would expect on the basis of the previous argument, Wallerstein and Western (2000) and Traxler et al. (2001) find centralised and coordinated bargaining, respectively, to be associated with lower levels of associational concentration. Whereas Traxler et al. remain puzzled by their result, Wallerstein and Western suggest that centralisation and concentration may in fact be substitutes; that is, centralised wage setting is less needed if the labour market is highly concentrated. Since both of these studies have their shortcomings, there is a need for caution in drawing any firm conclusion. But, the findings do suggest that the relationship between wage coordination and associational coordination is well worth further investigation.

Unfortunately, there exists no good time variant measure of associational concentration among employers' organisations. Therefore, in order to measure the effect of this variable we have to rely solely on data on the situation among unions. This problem is somewhat mitigated by the fact that concentration on the two sides usually go together (Traxler et al., 2001, p. 61). Golden et al. (1999) propose two measures of union concentration, inter-confederal and intra-confederal. While the former focuses on the distribution of union members between different peak-level confederations, the latter is concerned with the distribution of union members within these confederations. Usually, these two dimensions of fragmentation are presented in the form of separate Herfindahl

indexes measuring the probability that two union members selected at random belong to the same confederation or affiliation. However, in order to obtain a valid measure of the overall concentration it seems preferable to combine these two indexes. Here, I will do this by multiplying the Herfindahl index for inter-confederal concentration with the index for intra-confederal concentration. This new index, scaled to range between 0 and 100, represents the relative probability that two union members selected at random belong to the same confederation *and* affiliation.⁷

Much of the previous discussion implies that the sanction is all or nothing. It has been assumed that the only way in which unions and employers can punish defectors is by withdrawing from the coordination agreement themselves. The problem with this kind of sanctioning is that it hurts the punishers as much as it hurts the actor being punished. In some countries, however, unions and employers have access to sanctioning modes of a more incremental nature, ie in those where unions and employers have vested authority in confederal associations. Soskice (1990, p. 43), for instance, stresses the important role played by powerful employer organisations in preventing free riding among firms:

‘Their sanctioning ability is usually informal. It may take the form of quite indirect warnings of a tacit sort related to other areas of activity: generally letting it be known that such and such company is not a good citizen. Or it may involve more explicit actions, such as financial sanctions, as the Swedish SAF has power to impose. Or it may not involve sanctions but support when a company is strikebound: such as strike insurance funds run by German employer organisations.’

Here, Soskice provides an excellent description of what is usually labelled associational centralisation. While his intellectual ancestors found union centralisation to be a necessary condition for stable wage moderation, Soskice finds centralisation on the employer side to be such a condition. Writing on the topic why some labour markets have been deregulated while others have been reregulated in the face of globalisation he suggests that in countries

‘in which business was not organised so effectively, this lack of business coordination meant that the institutional capacity necessary for reregulation along similar lines was missing ...’ (Soskice, 1999, p. 134).

Other scholars have, however, argued that associational centralisation alone is rarely sufficient to discourage defection, since ‘there are general limits for voluntary associations when it comes to binding their members by fiat as reliably as

⁷ Unfortunately, comparable data for the intra-confederal dimension are only available for the largest blue-collar confederation; therefore, this interpretation builds on the assumption that the concentration within the largest confederation is representative of all confederations within any one country.

effective macro-coordination requires' (Traxler et al., 2001, p. 240). Therefore, the likelihood of successful voluntary coordination should increase if associational centralisation is complemented by legal means. In this respect, peace obligations prohibiting industrial action when agreements are in force are usually taken to be the most important aspect of labour legislation.

Following Wallerstein and Western (2000), the index capturing the degree of centralisation on the employer side consists in a threefold scale based on i) whether the Confederation of Employers has the right to veto wage contracts signed by members, ii) whether the Confederation of Employers can veto lock-outs by members, and iii) whether the Confederation of Employers has its own conflict funds. Reasoning in a similar vein, the degree of centralisation on the union side consists in a threefold scale based on i) whether the unions' confederation has the right to veto wage contracts signed by its affiliates, ii) whether the unions' confederation can veto strikes by its affiliates, and iii) whether the unions' confederation has its own conflict funds. If there is more than one confederation on either side of the labour market, the index is based on the authority of the largest of these confederations.

As pointed out by Traxler et al. (2001, p. 186) a peace obligation

'may either follow automatically from any collective agreement or it may be optional in that only an explicit clause in the agreement obliges the signatory parties to keep the peace'.

However, we would assume unions and employers to invoke peace obligations in the agreements where it is possible to do so if they believe such obligations to be of importance for the stability of the agreement. Therefore, the vital distinction should be between the countries in which peace obligations can be signed and where they are non-existent. Consequently, I use a dummy variable taking on the value of 1 when peace obligations are possible, and of 0 when they are non-existent.

Although highly influential, the lack of ability explanation is not uncontested. An alternative, though not exclusive, explanation has been proposed by a group of scholars arguing that the reason why bargaining practices differ across time and countries, is not so much due to differences in the actors' ability to coordinate their actions but to differences in their willingness to do so.

The lack of willingness argument

It is rarely the case that the scholars who stress the priority of willingness over ability, when it comes to explaining variation in bargaining practices, dismiss completely the importance of having the ability to enforce agreements. What they do suggest, however, is that differences in incentives are more likely to account for this variation than are differences in ability. This is, for instance, the

view taken by Marino Regini. Summing up his study on the failure of political exchange in the UK and Italy in the late 1970s, which in both countries aimed at getting unions and employers to accept wage moderation in return for other policy concessions, he suggests that

‘[f]urther research should focus on the variability of the conditions for political exchange, ... rather than on supposed organisational or institutional prerequisites, which, for all their importance in some situations, may be shown to be neither necessary nor sufficient in others (Regini, 1984, p. 141; see also Regini, 1997).

That is, in terms of the previously discussed model, we should concentrate on the benefits of coordination (U_{vc}) relative to the gains to be had from non-coordination (U_d, U_{nc}), rather than on the likelihood of being punished in case of defection (the parameter p in 2.2).

Regini is not alone in taking the position that willingness rather than ability is the prime mover of wage coordination. After first admitting that the organisational features of the unions may be of some importance, Lange (1984, p. 108) goes on to claim that

‘[o]ther factors ... are likely to explain more about when workers decide to co-operate with specific wage-regulation proposals, and why the willingness to co-operate may shift from one agreement (ordinary game) to the next’.⁸

However, in order to find out whether differences in the actors’ incentives can account for the variation in wage bargaining institutions, we must further specify those incentives. Which factors enter into the calculations of unions and employers when deciding on whether or not to take part in wage coordination?

Holden and Raaum (1991) discuss two such factors. First, they claim that unions and employers become less willing to coordinate wage bargaining as union density decreases, because the adverse effects of unionisation will be smaller when the union movement is weaker. For employers, the argument goes, coordinated wage agreements guard against the danger that individual unions will exploit their labour market strength to win settlements that will jeopardise the competitiveness of firms. And the stronger the unions are, the greater harm they can inflict on firms. Somewhat paradoxically, union strength can also be problematic for the unions themselves. Since if a strong union uses its

⁸ Arguing along similar lines, Bowman (2002, p. 1 023) closes his discussion on the persistence of centralised wage bargaining in Norway by remarking that ‘[a]s long as centralized wage setting continues to provide these benefits, Norwegian employers will continue to advocate wage institutions in which market forces continue to be guided by “collective common sense” even as they promote adaptations that increase local-level flexibility’.

‘strength unrestrainedly in pursuing workers’ short-term interests through collective bargaining, then its disruption of the economy may be such as to imperil its future ability to defend its members’ employment and in turn the very basis of its power’ (Regini, 1984, p. 130).

Therefore, Holden and Raaum (1991) posit a positive relationship between union density and the incentives for wage coordination.

I will, however, argue that Holden and Raaum are only partly correct. The problem with the argument is that it neglects the fact that higher union density also implies that union members become more heterogeneous in terms of education, skills and occupations. Building on one of the key insights in the seminal work of Offe and Wiesenthal (1980), we should assume that more heterogeneous union movements are less willing to act collectively than more homogenous ones. More diverse interests entail a greater necessity for compromises within the union movement regarding wage profiles, employment security, working conditions etc., which reduces the benefits of coordination.

Although less obvious, we should assume similar mechanisms to be at work on the employer side. When new groups of workers organise and obtain the right to conclude collective agreements, employers’ associations will be faced with new issues and trade-offs. Hence, an increased heterogeneity among union members will have repercussions for the homogeneity of employers’ interests. The fact that greater dispersion of interests can be thought to reduce the benefits of wage coordination for employers is well exemplified by the breakdown of centralised bargaining in Sweden. In the mid-1970s the board of the Swedish Engineering Employers’ Association concluded that Swedish employers by then had become so heterogeneous that ‘it is currently impossible to reach a solution that suits export industry’ while simultaneously satisfying the home market and service industries (quoted in Swenson, 2002, p. 313). This was one of the main reasons why the organisation later decided to withdraw from centralised bargaining.

I hypothesise the positive effect of unionisation, emanating from the increased amount of internalised externalities, to dominate the negative ‘heterogeneity effect’ at low and intermediate levels of union density. However, at high levels of unionisation we should expect the opposite relationship to hold; that is, the relationship between actors’ willingness to coordinate wage bargaining and union density should be hump-shaped rather than linear. This line of reasoning is well in accordance with Regini’s suggestion that it is ‘the medium-strong trade unions ... that may be seen as the most conducive to a successful concertation of – either formal or informal – incomes policies’ (1997, p. 273). In order to find out whether this is the case, I will include both adjusted union density and its square in the statistical model specification, to be discussed below.

Holden and Raaum also suggest that the costs and benefits of coordination should be conditional on the behaviour of the government. In an article of his own, Holden discusses at length the effects of different exchange rate policies, arguing that the adverse effect on unemployment (from uncoordinated bargaining) will be mitigated if the government pursues an accommodating monetary policy, as the depreciation of the currency will reduce the real wage towards its full employment level. Therefore, he claims, government policy will affect whether or not actors are willing to coordinate, 'as a devaluation policy may make the costs of independent wage setting so small that cooperation is not sustainable' (Holden, 1991, p. 1 545). According to this argument, we should assume willingness to coordinate to decrease with toughness of monetary policy within a country. The toughness of monetary policy is usually presumed to vary with the independence of the central bank. Following Franzese (2002), I will measure central bank independence as the average of five commonly used indexes, which measure both the legal status of the central bank and its reputation for independence. This averaged index ranges from 0 to 1, with higher scores indicating a greater degree of independence.

Another variable that is often thought to affect unions' and employers' incentives to establish and maintain coordinated wage bargaining is degree of economic openness. There is, however, no consensus on the direction of this effect. On the one hand, there are scholars who suggest that increased internationalisation should decrease actors' incentives (employers' in particular) to coordinate bargaining. This is because stronger international competition makes it 'more important to adjust wage costs to foreign competitors rather than to secure a "level playing field" in the sense of equal wages across the domestic economy' (Calmfors, 2001, p. 340). On the other hand, there are those scholars who claim that internationalisation will increase the incentives for wage coordination, especially among workers. This is because, the argument goes, international competition will increase exposure to different forms of macroeconomic shocks and therefore lead to a higher demand for social protection. Reduction of wage dispersion associated with coordinated bargaining can be seen as one such form of protection (Visser, 2002, p. 63).

Previous empirical results on this topic are mixed. While Wallerstein and Western (2000) find no effect at all of economic openness, Traxler et al. (2001) find coordinated systems to simultaneously be both more and less open than uncoordinated systems, depending on what kind of coordination (centralised or pattern-setting) and openness (trade or financial) we are referring to. In line with much of the previous research on economic internationalisation, I will use two measures of economic openness: trade openness, calculated as total imports plus exports as a percentage of GDP, and Quinn's (1997) 14-point scale of financial openness.

Finally, it is often argued that cooperation on wage restraint is more likely when the left controls the government. Different scholars have proposed a wide variety of ingenious mechanisms supporting this relationship (see Lange, 1984). A highly influential argument to this effect concerns the role of the state as a compensator for wage restraint. According to this argument, unions may agree to regulate their wages if the state compensates them for not utilising fully their labour market power in uncoordinated bargaining. Union members are usually assumed to be compensated by an increase in the social wage, ie publicly provided services and any cash benefits that are viewed by workers as part of their income. Parties to the left are usually both more sympathetic to the unions and more willing to increase this social wage than are parties to the right.

Even if correct, this argument appears to have little bearing on employers' willingness to consent to wage coordination, since it is mainly workers, not firms, that are assumed to be compensated for their cooperation. We might, however, also expect government partisanship to affect employers' interests in this regard. Primarily, this is because union strength may vary with the extent to which parties to the left control government. For example, it is often noted that the extent of union control over the labour supply will depend on the legal framework and legislative environment in which bargaining takes place (eg Calmfors et al., 2001). It can be thought that this environment is more supportive of unions' right to industrial action etc. under leftist governments than under rightist ones. It was, for instance, this kind of reasoning that led the Swedish employers in engineering to (at least temporarily) suspend their demands for full-blooded decentralisation of wage bargaining by signing the industrial agreement of 1997. The Swedish Engineering Employers' Association explains their decision to ratify the agreement as follows:

'The problem of unions' right to industrial action became a decisive factor for the decision. The government authorities had shown some willingness to come to terms with the problem of union conflicts, but all previous experience showed that a Social Democratic government was incapable of taking decisions, which LO [the Swedish Trade Union Confederation] opposed. Therefore, the inspection of legislation, which eventually was proposed, was unlikely to be far reaching enough. Thus, it was considered wisest to go for the proposed negotiation agreement, which under all circumstances would lessen the problem of industrial action and which also could open up possibilities for a revised legislation' (Sandgren, 2002, p. 44).

Just as the return of the Social Democrats to office in Sweden in 1994 served to increase employers' incentives to take part in coordinated bargaining, the election of the Conservative government in the UK in 1979 served to decrease employers' incentives for wage coordination in Britain. During the 1980s, British

unions' freedom to organise industrial action became heavily circumscribed; union members were provided with new rights against their unions, and legislative guarantees for union recognition were removed. It appears likely these changes in the legislative framework have helped to shape British employers' new, and more hostile, view of unions in general and coordinated wage bargaining in particular (Howell, 1995, p. 161).

Thus, there are reasons to expect government partisanship to affect the willingness of both unions and employers to coordinate wage bargaining. In the early literature on partisanship and welfare-spending, the emphasis was on the division between socialist or social democratic parties and centre/right parties. More recent research points to the fact that the most important division may be that between left/centre parties, on the one hand, and right parties on the other (cf Moene and Wallerstein, 2001). Along the lines of this argument, I measure government partisanship as share of cabinet seats held by right-wing parties.

To sum up, I use five different indicators of actors' willingness to coordinate wage bargaining: union density, monetary policy, trade openness, financial openness, and government partisanship.⁹ Before turning to the empirical enquiry, however, we should consider a last type of explanation, which – if correct – suggests that wage bargaining institutions are not so much the creation of willing and able intentional actors but the result of earlier choices.

The path dependence argument

In recent years, it has become increasingly popular in the social sciences to invoke the legacy of the past as an independent explanation of various contemporary phenomena. The research on wage bargaining institutions is no exception in this respect. Writing about inter-country variations in the institutional structure of wage bargaining, Robert Flanagan notes that '[a] tendency to view such variations as the outcomes of historical accidents has produced little research on this question' (Flanagan, 1999, p. 170). The idea that early institutional choices often will have a decisive effect in determining later ones serves as the basic justification for treating wage bargaining institutions in this way. Institutional

⁹ Certainly, one can think of additional variables affecting actors' willingness to coordinate wage bargaining. Unemployment and production technology are two such variables. The former variable was left out of the analysis due to concerns of endogeneity; that is, low unemployment is often regarded as an outcome of wage coordination rather than its cause. (However, when included, the coefficient of unemployment turns out to be insignificant in most specifications.) When it comes to production technology, it has been argued that coordination of wage bargaining has become more costly over time (especially for employers) as a result of the reorganisation of work. Unfortunately, no hard data exist on this alleged shift in production technology. I have tried to capture this shift by proxies such as R&D intensity and the percentage of industrial employment. Regardless of conceptualisation, the effect is insignificant.

choices are said to be path dependent. That is, once a country has embarked on a specific institutional path, it rarely changes to another (North, 1990).

Many scholars claim that path dependence is the main reason why differences in labour market institutions across countries persist despite increased internationalisation. Ferner's and Hyman's concluding remarks are representative of a nascent conventional wisdom:

‘Institutions may be the crystallisation of specific class forces and balances of power, but once established they have a life and reality of their own, independent of political (or economic) fluctuations or caprices; they are in Streeck's term “sticky”, especially when enshrined in law. This institutional persistence appears to explain much of the variability in countries' responses to common influences in the 1980s' (Ferner and Hyman, 1992, p. xxxiii).¹⁰

It is a problematic fact, however, that the nature of this relationship, between the past and the present, is badly underspecified in most of the analyses that stress the importance of past experiences. That is, rather than *a priori* spelling out the criteria for when a process is to be characterised as path dependent, there is a tendency to invoke path dependence as a residual category for all sorts of unexplained institutional stickiness. But, we need to apply the same criteria for establishing path dependence explanations as we do for other kinds of explanations. That is, in order to prove that some of the variance, in bargaining practices, is due to path dependence, we must: i) establish associations between choices at different points in time, ii) make sure that we posit the correct time order, and iii) show that the effect of previous choices is non-spurious. Most scholars would agree that an explanation is strengthened if we are able to identify the mechanisms by which earlier choices affect later ones.

While the temporal order is unusually unproblematic in this case, and the observed stickiness in wage bargaining institutions supports the fact that there is an association between actors' decisions at different points in time, most accounts of path dependence leave much to be desired as far as isolation and discussion of mechanisms are concerned. However, before discussing the shortcomings of many path dependence explanations in these respects, we need to address the non-trivial question of precisely what is meant by the term ‘path dependence’.

The concept of path dependence is used in many different ways. In its broadest sense, the term amounts to little more than the loose assertion that

¹⁰ The same view is expressed by Traxler et al. (2001). In a chapter named ‘The Prevalence of Path Dependency’, they suggest that ‘high variation in developments across [labour-relations] dimensions matches path dependency instead of the convergence thesis’. For some other works stressing the path dependent character of wage bargaining institutions, see Teulings and Hartog (1998) and Elvander (1990).

‘history matters’. However, as Pierson (2000) points out, in order to be useful as an explanation, path dependence needs to be more carefully defined. Following Arthur (1994), Pierson suggests that what distinguishes path dependent processes from other kind of processes is that they are self-reinforcing; that is, the probability of taking further steps along the same path increases as one initially decides to move down a specific one.¹¹

In an often-cited article, Mahoney (2000, p. 511) questions this definition by arguing that the concept of contingency should be invoked in the definition of path dependence. This is because ‘in a path-dependent sequence, early historical events are contingent occurrences that cannot be explained on the basis of prior events or initial conditions’. Such a conceptualisation of path dependence would, however, have absurd consequences, since it entails that the extent to which the world is path dependent depends on current scientific knowledge. That is, the world must be assumed to become less path dependent as science advances.¹² Hence, Pierson’s definition of path dependence seems preferable to that advanced by Mahoney. By defining path dependence in terms of self-reinforcement we avoid both the danger of using a too wide definition (eg history matters), and that of using a too narrow definition (eg by invoking the requirement of contingency). Hence, in what follows I take path dependence to refer to situations *in which earlier choices (for whatever reason they are made) increase the probability that the same choices will be made in the future.*

The decision to reserve the term ‘path dependence’ for truly self-reinforcing processes has more far-reaching consequences for the study of such dependence than most scholars writing on the topic seem to have realised. Most importantly, it means that not all instances of institutional stickiness are due to path dependence. Only in cases where sources of institutional stability are endogenous to the institutions themselves should we speak of path dependence. In their eagerness to propose path dependence as the main explanation for institutional and policy stability, far too many researchers forget the old dictum that association is not the same as causation. That is, before we can conclude that the stability of wage bargaining institutions is due to path dependence, we must rule out other sources of continuity.

In particular, we need to distinguish between the institutional persistence that arises because previous choices affect actors’ incentives and opportunities in the future, and the persistence that arises because of unobserved heterogeneity or serial correlation in latent factors. To take but one example, it has been argued that divergence in industrial relations institutions can be linked to a variation in fundamental social norms across countries (Flanagan, 1999, p. 1 170). If this

¹¹ In economics, such processes often go under the name of increasing returns.

¹² The problem seems to be that Mahoney conflates ontological and epistemological questions: *What is the cause? How do we know whether it is the cause?*

suggestion is correct, but we are unable to measure norms explicitly (which is often the case), differences in social norms will give rise to permanent differences in countries' propensities to achieve wage coordination. If we fail to control for these permanent differences across countries, it will appear that past coordination makes future coordination more likely, even if previous choices have no true structural effect on future choices. A similar problem will arise if the countries are hit occasionally by transitory shocks, making coordination more or less likely. Heckman (1981b) refers to these two sources of persistence as true and spurious *state* dependence. Given the problem at hand, I speak instead of true and spurious *path* dependence.

Not only do many studies of path dependence fail to distinguish between different sources of stability, but they also fail to distinguish between different *mechanisms* of path dependence. This is problematic, since the exact nature of path dependence is contingent on the mechanisms giving rise to it. To decide whether or not path dependence is present in a particular case we must know exactly what to look for. Among the scholars who have paid some attention to the mechanisms of path dependence, the conventional view seems to be that institutional choices can be self-reinforcing for either one of two different reasons.

First, self-reinforcement might be because the establishment of new institutions is associated with high fixed costs. Having incurred the costs, the argument goes, choice-sets for future decisions change because actors do not have to incur costs anew for so long as they stick to the current institution (cf Traxler et al., 2001; Heckman, 1981b).

Second, it has been suggested that institutions may be path dependent because actors adapt to the opportunity structure defined by the institutions; that is, a symbiotic relationship between the institutions and the actors crystallises over time. In an innovative piece, Pierson and O'Neil Trowbridge (2002) claim that the basis for such a symbiotic relationship, between actors and institutions, is that institutions foster the development of assets that are specific to the continued operation of the institutions themselves. These institution-specific assets accumulate with the passage of time, they argue, and therefore 'all other things being equal, an institution will be more resilient, and any revisions more incremental in nature, the longer the institution has been in place' (Pierson and O'Neil Trowbridge, 2002, p. 12). This remark points to a key difference between these two mechanisms of true path dependence. While the fixed cost mechanism implies that current choice is only affected by most recent choice, the asset specificity mechanism suggests that choices made further back in the past are important determinants of current choices.

Therefore, just as it is necessary to specify the different factors affecting unions' and employers' willingness and ability to coordinate wage bargaining in order to evaluate the two arguments, it becomes necessary to specify the exact

nature of the relationship between the past and the present in order to evaluate the path dependence argument.

From theory to empirical test

The lack of willingness and lack of ability arguments are fairly straightforward to test empirically. We simply include indicators of actors' willingness and ability to coordinate wage bargaining as independent variables in the analysis and evaluate their explanatory power. The question of how to test the path dependence argument, however, requires some further thought.

As explained in the previous section we are faced with at least two problems when investigating the extent to which any decision regarding wage bargaining institutions is characterised by path dependence. First, we need to specify *how* past choices affect current ones. Second, we need to distinguish between true and spurious path dependence. In order to address these problems we need to study the development of wage bargaining institutions over time; that is, the problem is not of a static but a dynamic nature, and must therefore be analysed in dynamic terms.

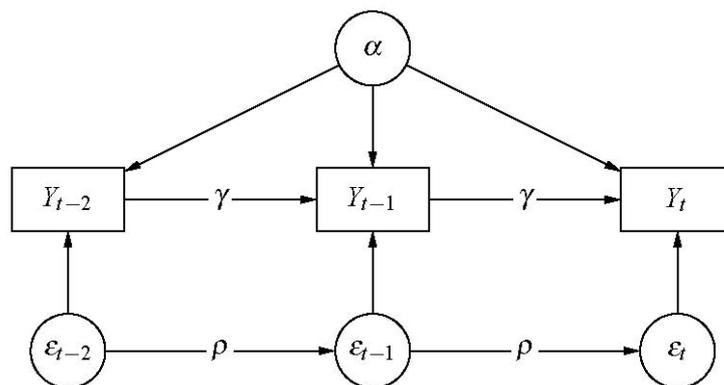


Figure 2.3. A dynamic statistical model.

Figure 2.3 illustrates a simple dynamic model with three time periods. At each point in time we observe a specific choice of bargaining arrangement (Y) in each of the countries under study. The question to be answered is whether or not the choice at a later point in time, ie Y_t , is affected by the choice made at an earlier point in time, ie Y_{t-1} . For example, if the mere fact that wage coordination was coordinated last year makes it more likely that bargaining will be coordinated this year, the process can be said to be path dependent. The parameter measuring the effect of the lagged dependent variable, γ , will then be positive and significantly different from zero. In this example it is assumed that the current decision – whether or not to coordinate bargaining – is only affected by the most recent choice, because there is no causal arrow running from Y_{t-2} to Y_t . In the statistical literature this kind of model is known as a *first-order Markov* model. Although

this is the most commonly used model, it is by no means the only one available. Indeed, there are an infinity of ways in which past choices can exert influence over current ones. For instance, the choices at $t-1$ and $t-2$ may both exert an independent effect on choice at time t , or the decision taken at the last time period may be expressed as a function of some weighted average of the earlier two decisions. Therefore, to be able to test the path dependence explanation we must first decide on the shape of the lag structure; that is, we need to specify exactly how the past affects the present.

Given the large number of alternatives, we should be guided by substantive theory when making this choice. As I explain in greater detail below, I will experiment with three different *empirical* conceptualisations of path dependence, each of which can be derived from a certain *theoretical* conceptualisation of the mechanisms giving rise to such dependence. In addition to the first-order Markov model, according to which the probability of coordinating this year is a function solely of the choice in the immediately preceding period, I will also make use of the so-called *Pólya* and *Renewal* models (Heckman, 1981b). According to the *Pólya* model, the choice of wage coordination at time t is influenced by all previous years of coordinated bargaining. That is, wage bargaining is taken to be more likely to be coordinated in a country that has experienced a total of ten years of coordinated bargaining in the past compared with a country that has only experienced a total of five years of past coordination. Unlike the *Pólya* model, the *Renewal* model asserts that the current choice of coordination is not affected by all previous years of coordination but only by the *length* of the most recent unbroken ‘spell’ of coordination. This implies that bargaining is more likely to be coordinated in a country in which bargaining has been coordinated the last six years than in a country in which bargaining has been coordinated the last two years.

The main reason for choosing these three different conceptualisations of path dependence is that each of them is associated with a specific idea of the mechanisms giving rise to institutional stickiness (see previous section). If the reason for institutions being sticky is that the establishment of new institutions imply high fixed costs, path dependence should take the form of a first-order Markov model. Because the effect of the fixed costs is fully accounted for in the most recent choice, choices further back in the chain provide no additional information. However, if path dependence arises because of asset specificity, a *Pólya* or a *Renewal* specification seems more appropriate, because both these processes imply that it becomes harder to change an institution the longer it has been in place. If we believe that all institution-specific assets are destroyed once the institution is changed we should model path dependence as a *Renewal* process, while we should opt for the *Pólya* specification if we believe that once acquired the assets retain their value forever.

However, as Finkel (1995, p. 70) points out, successful causal inference in a dynamic context ‘depends not only on specifying the proper lag structure but also on controlling for potentially contaminating effects of outside unmeasured variables on a causal system’. Turning back to Figure 3.2 we can see that the choice of wage coordination at time t is not only affected by the coordination decision at time $t-1$ but also by the unmeasured factors α (alpha) and ε (epsilon).¹³

The term α is a shorthand notation for all *time-invariant* unmeasured variables that affect the likelihood of coordinated bargaining (eg social norms). Because the effect of these time-invariant unmeasured variables usually differs across countries (eg the Germans might not hold the same norms as the Canadians) α is commonly referred to as a *unit specific effect*. The term ε , in the figure, refers to all the time-varying unmeasured variables that affect the propensity of coordination in a country at any given point in time. Although these variables change in value over time they can be rather persistent; that is, the values of the variables at time t may depend on the values they took on in the previous period. The strength of this persistence will depend on the *autocorrelation parameter* ρ (rho). If ρ equals 0.5 this means that 50 percent of a change in ε last year will carry over to ε this year, while if ρ equals 0 the time-varying unmeasured variables will be independent over time. When ε , as is the case here, is only affected by its most recent value the autocorrelation is said to be first-order.

Figure 2.3 makes clear why we need to distinguish between true and spurious path dependence. As can be seen, a potential positive correlation between values on the dependent variable at two different points in time, eg Y_t and Y_{t-1} , can emanate from at least three different sources. First, it can be due to a true structural effect of Y_{t-1} on Y_t (ie $\gamma > 0$). Second, the correlation can be caused by the unit specific effects (α); for example, if the Germans hold a cooperative norm that makes it more likely that they will coordinate wage bargaining at any point in time, this ‘unmeasurable’ norm will serve as a common source variable, creating association between the choices of wage bargaining institutions in Germany at different points in time. Important to note, however, is that in this case the association between the choice at Y_t and Y_{t-1} is illusory rather than real, since it is not due to a genuine causal effect of earlier decisions on later ones, but merely to the fact that the decisions at both points in time share a common source. Third, the correlation may be due to persistence in the time-varying unmeasured variables (ε). This will be the case if the autocorrelation parameter (ρ) exceeds 0. And just as the unit specific effects will give rise to an illusory

¹³ Obviously, the decision at time t is also affected by a number of observed variables, such as the different indicators of the actors’ willingness and ability to coordinate bargaining, but since these variables do not introduce any additional complications we can ignore them for the moment.

association between bargaining institutions at different points in time, so will a positive correlation among the time-varying unmeasured variables.

As previously argued, we should reserve the term path dependence for truly self-reinforcing processes. That is, we should only speak of path dependence when the correlation between Y_t and Y_{t-1} is due to a true structural effect of the value of the dependent variable at the earlier time period, not when the correlation is due to the effect of the different unmeasured variables (α and ε). Thus, to be able to distinguish between true and spurious path dependence we need to separate the true structural effect of previous choices from the effect of the unmeasured variables. Or, in somewhat more technical terms, in order to get a correct estimate of the causal effect (γ) of the past on the present we need to control for unit specific effects (α) and autocorrelation in the time-varying unmeasured variables (ρ).

As I explain in the next section, the way to do this is to relax the usual regression assumption of independent error terms. More specifically, I will estimate a dynamic probit¹⁴ model that attempts to control for unit specific effects by the inclusion of so-called random effects, while the problem of autocorrelated time-varying variables are handled by assuming a first-order autocorrelation structure for the error terms (see Heckman, 1981b). This statistical model and the reasons for choosing it are described in greater detail in the next section. However, since this section is somewhat technical by nature, the reader who is more interested in the substantive findings than in the nitty-gritty of the statistical model underpinning these findings may turn directly to the empirical results.

The statistical model

As discussed above, I have here chosen to work with a dichotomised coordination measure. This suggests that we should move beyond linear regression in order properly to test different theories of coordination. The range of applicable statistical techniques is further reduced by the fact that testing for path dependence requires a specification that is flexible enough to allow dynamics to enter the model.

A general dynamic discrete choice model that meets our requirements has been presented by Heckman (1981b). Denoting country i 's propensity to coordinate at time t as y_{it}^* , and letting the dummy variable y_{it} signify the actual occurrence of coordination, this model can be written as:

¹⁴ Probit regression is used instead of ordinary linear regression since the dependent variable is dichotomous.

$$y_{it}^* = \mathbf{x}_{it}\beta + \sum_{j=1}^{\infty} \gamma y_{i,t-j} + \lambda \sum_{s=1}^{\infty} \prod_{j=1}^{\infty} y_{i,t-j} + \sum_{j=1}^{\infty} \delta y_{i,t-j}^* + v_{it}. \quad (2.3)$$

The first term of the right hand side of this expression represents the effect of the exogenous variables on current propensity to coordinate, ie the variables measuring the actors' willingness and ability to coordinate wage bargaining. The second term captures the effect of the entire past history of the process on current choices. The third term represents the cumulative effect on current choices of most recent continuous experience (in a particular state). And, the fourth term captures the effect of previous propensity to coordinate wage bargaining on present propensity.

A wide variety of dynamic processes can be obtained by imposing appropriate restrictions on the general model in Equation 2.3. The assumption that the current decision – whether or not to coordinate bargaining – is only affected by the most recent choice generates a first-order Markov model, whereas the assumption that the proper determinant of the current decision instead is the *propensity* to coordinate in the last period (ie $y_{i,t-1}^*$) gives rise to a first-order *latent* Markov model. If the entire history of previous choices is assumed to be relevant to current choices, we get a Pólya process. Finally, the assumption that only the most recent continuous duration in a state, in or out of coordination, is important to current choice generates a Renewal process (Heckman, 1981b, p. 117).

To some adherents of path dependence explanations this wide range of possibilities – for specifying the relationship between the past and the present – may come as a mixed blessing, since it forces them to be more explicit about exactly how history influence future events. Is it in the form of an ordinary Markov model, a Pólya process, a Renewal process, or even a latent Markov model?

Hence, even if we decide to rule out the possibility of specifying path dependence as a latent Markov model, we still have to make a choice between three different conceptualisations of path dependence.¹⁵ With enough observations and extraordinarily good data, it might be possible to distinguish between these different forms of path dependence on empirical grounds by including different ‘transformations’ of the lagged dependent variable in the same equation and investigating which effects are significant. Unfortunately, a restricted amount of data precludes this strategy in the case at hand. Instead, I will have to rest content

¹⁵ Since most scholars agree that path dependence should refer to the effect of past occupancy of a state on current choices rather than the effect of past propensity to occupy a state on current choices, it appears reasonable to rule out the possibility of specifying path dependence as a latent Markov model.

with the second-best option of estimating different models in order to see if the substantive results are consistent across different specifications.

Before we can go ahead with estimating the model in Equation 2.3 we must pick a specific distribution for the error term. If the disturbances are assumed to be normally distributed and independent across both time and countries, we will obtain the ordinary probit model. However, as pointed out earlier, institutions can be sticky for two different reasons – either because previous choices have a structural effect on future choices by affecting actors’ incentives and opportunities, or because of unobserved heterogeneity and serial correlation in latent factors. While the first source of persistence poses no problems for the ordinary probit specification, the second does – since it will generate dependence among the errors.

If we fail to account for unit heterogeneity and serially correlated disturbances (when they are present), we do not only run the risk of getting biased and inefficient coefficient estimates, but also of highly overestimating the effect of path dependence, since the lagged dependent variable will act as a proxy that picks up much of the effect of unmeasured variables. I will try to account for potential dependence in the errors by allowing for both unit specific effects and first-order serial correlation. More formally, the errors are assumed to take on the following structure:

$$v_{it} = \alpha_i + \varepsilon_{it} \quad \text{with } \varepsilon_{it} = \rho\varepsilon_{i,t-1} + \eta_{it} \quad (2.4)$$

where η_{it} is independent and identically distributed over time and countries with a normal distribution, and ρ is an autocorrelation parameter. The unit specific effects, α_i , can be captured by the inclusion of either fixed or random effects. Most scholars prefer the former approach, since the use of random effects comes at the cost of the additional assumption that the unit effects are uncorrelated with all independent variables. Nevertheless, I will here opt for the random effects approach.¹⁶ The most important reason for this choice is that the fixed effects approach implies that we would have to discard all observations on countries in which wage bargaining institutions have remained unaltered during the period of interest. Hence, we would end up with an endogenous sample from which all stable systems have been excluded. This feature of the sample would be particularly troublesome when investigating the relative merits of the path dependence explanation, since it is stability, more than anything else, that the theory sets out to explain. Hence, α_i is here taken to be a random variable with a zero mean.

¹⁶ Because most of the independent variables used in this analysis are highly stable over time, multicollinearity problems preclude the use of Chamberlain’s (1984) correlated random effects estimator, which would otherwise have been a possible solution.

As a result of allowing for autocorrelation in the error terms, the solution to Equation 2.3 will require solving higher order integrals. By today's computer standards, numerical solutions to such problems become unfeasible as soon as the number of time periods exceeds three or four. Recent results on accurate simulators have, however, enabled the estimation of considerably longer time series (Greene, 2000, p. 872). The dynamic probit models of the next section are estimated by the method of maximum simulated likelihood (MSL), using the GHK simulator that has proven to be the fastest and most accurate of the 'classical' simulators (cf Train, 2002; Hyslop, 1999).

Empirical results

To test different explanations of wage coordination I pooled time series data for the period 1970-1998 across 20 industrialised democracies. The periodisation is mainly a result of available data. Since the analysis is restricted to democracies, two countries, Spain and Portugal, enter the sample later than the others. Portugal enters in 1981, and Spain in 1982. In both cases there is a delay between democratisation and entrance, which is due to the fact that there is a shortage of reliable data for the first few years following the democratisation. As I explain in greater detail in Appendix 2.2, I have been forced to draw on a number of different sources in order to include as many countries as possible in this study. Data on at least one of the three variables, union concentration, union centralisation, and employer centralisation, for five different countries – France, Ireland, New Zealand, Spain and Portugal – draw on sources that are not fully comparable with those of other countries. Obviously, it is difficult to assess exactly how such differences affect the results. It is, however, comforting to note that all of the major results remain intact even if we limit our interest to the 15 countries for which fully comparable data, for all variables, exist. To handle remaining missing data problems I rely on multiple imputation, using the EMis algorithm proposed by King et al. (2001).¹⁷ Finally, to alleviate possible endogeneity, all explanatory variables are lagged by one year.

¹⁷ Data are missing on union concentration. In four countries, Australia, Canada, Japan, and the US, measures on the variable are only available every five years. For these countries, interior missing values were filled in by linear *interpolation*. Because the change in Herfindahl indexes is small, this way of handling interior missing data should have little effect on the substantive results (cf Wallerstein, 1999). However, since *extrapolation* is considerably more model dependent than are both interpolation and multiple imputation, I used multiple imputation to complete the series (ie to fill in the values that otherwise would have required extrapolation). The AMELIA software package (Honaker et al., 1999) was used to create 10 imputed datasets.

Different errors, different results

I examine first the results from the most parsimonious model specification available for the case at issue, ie an ordinary probit model only slightly complicated by the inclusion of values of the lagged dependent variable on the right hand side of the regression equation. This approach has seen heavy use in many areas of political science. For instance, it is this kind of model that leads Wallerstein and Western (2000, p. 370) to suggest that wage bargaining institutions are path dependent, since ‘[c]ountries are more likely to centralise wage-setting when wage setting was centralised in the previous year’.

Table 2.1. Determinants of wage coordination, restricted model.

| | Markov | Pólya | Renewal |
|---------------------------|---------------------|----------------------|----------------------|
| Constant | -2.972 * (1.194) | -2.864 (1.647) | -3.112 * (1.489) |
| <i>Willingness</i> | | | |
| Union density | 0.072 * (0.032) | 0.150 ** (0.051) | 0.116 ** (0.046) |
| Union density squared | -0.081 * (0.032) | -0.175 ** (0.057) | -0.127 ** (0.050) |
| Trade openness | -1.145 * (0.449) | -2.364 ** (0.655) | -1.229 * (0.592) |
| Financial openness | 0.021 (0.066) | -0.061 (0.093) | -0.011 (0.079) |
| Government partisanship | -0.409 (0.266) | -0.723 * (0.358) | -0.648 (0.353) |
| Central bank independence | -1.326 (0.847) | -1.426 (1.055) | -1.327 (0.975) |
| <i>Ability</i> | | | |
| Union concentration | 0.229 ** (0.053) | 0.308 ** (0.069) | 0.255 ** (0.068) |
| Peace obligation | 0.959 * (0.415) | 1.324 ** (0.506) | 1.306 ** (0.465) |
| Union centralisation | 0.161 (0.200) | 0.493 (0.362) | 0.253 (0.318) |
| Employer centralisation | 0.068 (0.106) | 0.066 (0.170) | 0.151 (0.147) |
| <i>Path dependence</i> | | | |
| Past coordination | 2.096 ** (0.281) | 0.105 ** (0.027) | 0.145 ** (0.040) |
| Number of cases | 557 | 557 | 557 |

Note: * indicates significance at the 0.05 level, two-tailed test, ** at the 0.01 level, two-tailed test. Robust standard errors are given in parentheses.

The results from this specification are shown in Table 2.1.¹⁸ The first column gives the results from the estimation of a first-order Markov model; that is, only the most recent lag of the dependent variable (y_{t-1}) is included as a predictor of current coordination. Columns two and three contain the results from Pólya and Renewal specifications, respectively. That is, in the former case the current propensity of coordination is regarded as depending on all previous years of coordination, whereas, in the latter case, such propensity is assumed to depend exclusively on the most recent continuous experience of wage coordination.

A first thing to note is that the results are rather consistent across the different specifications, since all but one of the coefficients have the same sign in all three columns. In all instances except one, the models are also in agreement with regard to which coefficients are statistically significant at the 0.05 level. Among the variables measuring actors' willingness, only union density and trade openness reach this level of significance across all specifications. That the effect of increased unionisation is hump-shaped, and not linear, as suggested by Holden and Raaum (1991), is borne out by all three models. This is seen from the fact that while the coefficient of union density is positive, the coefficient of the same variable squared is negative.¹⁹ The coefficient for trade openness is negative and significant in all specifications. Thus, coordinated wage bargaining becomes less likely as an economy becomes more open in terms of trade.

Whereas the data suggest that trade openness has detrimental consequences for the prospect of establishing and maintaining coordination, we find no similar effect for financial openness. Not only does the sign of its coefficient differ across models, but it is also highly insignificant. The coefficients for government partisanship and central bank independence are signed according to our expectations; that is, coordination becomes less likely as the government becomes more rightist and as the central bank becomes more independent. However, with one exception, neither of these effects is large enough to be statistically significant.

While the effects of different indicators of willingness are ambiguous (as shown in Table 2.1), the variables measuring actors' ability fare only slightly better. As hypothesised, coordination is considerable more likely in countries with a less fragmented labour market. This can be seen from the coefficient for union concentration, which is positive and highly significant in all instances. It also seems to be the case that the likelihood of coordinated bargaining increases in the presence of peace obligations. Although signed in the anticipated direction,

¹⁸ All the statistical results in this paper were generated using Ox version 3.20 (Doornik, 2001). Ox is a highly flexible matrix programming language (similar to GAUSS), which is free for academic use. The program can be obtained from www.nuff.ox.ac.uk/Users/Doornik. The code for the dynamic probit model estimated in this paper was written by the author, and is available upon request.

¹⁹ In order to make estimation easier, union density squared has been divided by 100.

neither union nor employer centralisation reaches a conventional level of statistical significance.

If the results signal some ambiguity with respect to the effects of the actors' willingness and ability, this is not the case with respect to the effect of previous choices. On the basis of the results presented in the table, one has to be neither an economic historian nor a true believer in the legacy of the past to come to the conclusion that past choices (for whatever reason they were made) are one of the most important determinants of current wage coordination. This conclusion remains valid regardless of whether path dependence is specified in a first-order Markov, a Pólya or a Renewal model. The coefficient for past choices is large in magnitude and highly significant in all models.

An important caveat, however, is that all these conclusions rest on the crucial assumption that the error terms are independent and identically distributed across both time and countries. The question is whether this is a tenable assumption. In fact, there are both theoretical and methodological reasons speaking in favour of relaxing this assumption. On strictly theoretical grounds, the problem is that, for so long as we assume the errors to be independent, we cannot really know whether the large coefficient for past experiences is due to a true structural effect of previous choices or due to unobserved heterogeneity across countries. Or, to put it slightly differently, we do not know if the path dependence effect is true or spurious.

In Table 2.2, I present the results from the same three models, when both random effects and first-order serial correlation in the errors are allowed for (see Equation 2.4). First, we can note that the autocorrelation parameter (ρ) enters all models with a highly significant coefficient, indicating that the assumption of independent errors is indeed untenable. The magnitude of the coefficient indicates that between 70 and 80 percent of a shock in any time-varying unmeasured variable carries over to the next year. Although rather large in magnitude, the random effects (σ_u) parameter, which measures the unit specific effects, only reaches statistical significance in the Markov model. This could be taken to indicate that there is not enough variation in the data precisely to distinguish country-specific effects from the impacts of some of the independent variables that are highly stable over time. (Note here that the variable indicating the existence of peace clauses is in fact time-invariant.) However, this potential multicollinearity problem mainly seems to affect the standard error of the random effects parameter, not the standard errors of the independent variables, which are the ones we are interested in. Indeed, the standard errors of most coefficients are smaller in Table 2.2 than they are in Table 2.1. Therefore, there is little reason to fear that this feature of the data should seriously distort our substantive conclusions.

Table 2.2. The determinants of wage coordination, full model.

| | Markov | Pólya | Renewal |
|---------------------------|----------------------|----------------------|-----------------------|
| Constant | -3.386 * (1.657) | -3.202 (1.696) | -3.304 * (1.674) |
| <i>Willingness</i> | | | |
| Union density | 0.108 * (0.041) | 0.119 ** (0.044) | 0.116 ** (0.042) |
| Union density squared | -0.121 ** (0.039) | -0.136 ** (0.043) | -0.132 *** (0.040) |
| Trade openness | -1.922 ** (0.541) | -2.062 ** (0.567) | -1.926 ** (0.511) |
| Financial openness | 0.106 (0.073) | 0.084 (0.093) | 0.096 (0.079) |
| Government partisanship | -0.523 * (0.247) | -0.510 * (0.228) | -0.527 * (0.237) |
| Central bank independence | -1.852 (1.252) | -1.821 (1.230) | -1.884 (1.193) |
| <i>Ability</i> | | | |
| Union concentration | 0.258 ** (0.080) | 0.250 ** (0.082) | 0.249 ** (0.080) |
| Peace obligation | 1.265 * (0.620) | 1.278 * (0.619) | 1.308 * (0.626) |
| Union centralisation | 0.482 * (0.248) | 0.564 * (0.261) | 0.540 * (0.254) |
| Employer centralisation | 0.002 (0.158) | 0.016 (0.142) | 0.025 (0.141) |
| <i>Path dependence</i> | | | |
| Past coordination | 0.285 (0.207) | 0.016 (0.026) | 0.016 (0.017) |
| <i>Heterogeneity</i> | | | |
| | 0.698 * (0.139) | 0.793 ** (0.079) | 0.785 ** (0.074) |
| | 0.461 * (0.234) | 0.400 (0.288) | 0.398 (0.292) |
| Number of cases | 557 | 557 | 557 |

Notes: * Indicates significance at the 0.05 level, two-tailed test, ** at the 0.01 level, two-tailed test. Robust standard errors are given in parentheses.

Further, the consistency of the effects across the different specifications in Table 2.2 is even more striking than it was in the previous analysis (reported in Table 2.1). This time all coefficients have the same sign in all models, and there is also complete agreement between the models on which variables are significant and which are not. The variables measuring actors' willingness to coordinate seem to fare somewhat better when we allow for dependent error terms. Again, both the effects of union density and trade openness remain significant, at the 0.05 level, regardless of how path dependence is conceptualised. While the prospect of

voluntary wage coordination in a country is highest for intermediate levels of unionisation, it decreases the more open an economy becomes in terms of trade. In the previous analysis, though correctly signed, the government partisanship variable failed to achieve statistical significance in two out of three models. Once autocorrelation and country-specific effects are controlled for, however, the variable enters with the expected sign, and is also statistically significant in all instances. Thus, the results suggest that voluntary coordination is less likely when rightist parties control the government.

When it comes to evaluating the effects of central bank independence and financial openness our previous conclusions remain valid. While the coefficient for the former variable indicates that voluntary coordination becomes less likely as the independence of a central bank grows, the effect is not statistically significant. The data also suggest that actors' willingness to coordinate wage bargaining is somewhat higher when a country puts few restrictions on financial transactions; however, this effect also fails to achieve statistical significance.

Turning to the variables measuring unions and employers' ability to coordinate wage bargaining, we see that both the dummy variable indicating the existence of peace obligations and the union centralisation variable have significant effects in the anticipated direction. Hence, voluntary wage coordination is more likely to be established and maintained if peace obligations can be backed by legal means, and extensive powers have been vested in union confederations. However, once union confederation authority is controlled for, the powers vested in employer confederations lose most of their importance. Thus, contrary to what many scholars have been suggesting, these results indicate that strong confederations on the union side are more important for voluntary wage coordination than are strong confederations on the employer side.

The effect of union concentration remains almost unaltered after introducing correlated errors, which means that the earlier conclusion that the degree of labour market fragmentation is an important determinant of wage bargaining coordination is still valid. The coefficient is large in magnitude and highly significant across all models. Thus, my results do not square well with the results reported by Traxler et al. (2001) and Wallerstein and Western (2000), both of which indicate the relationship to be the opposite. The reason why my findings differ from those of the former study is that the latter focus solely on inter-confederal concentration, whereas my measure of concentration reflects *both* inter-confederal *and* intra-confederal concentration. Using the same measure as Traxler et al. (2001) I obtain the same results as they do, ie that union concentration makes voluntary coordination less likely. However, this approach misses the fact that inter-confederal and intra-confederal concentration are substitutes. The data tell us that it is usually the case that a country either has a smaller number of more heterogenous union confederations or a larger number of more homogenous ones. (The bivariate correlation between the two types of

concentration is around -0.5 .) Thus, any valid measure of union concentration should reflect both inter-confederal and intra-confederal concentration.

The most striking difference between Table 2.1 and Table 2.2, however, is the effect of past experiences. When controlling for country-specific heterogeneity and serial correlation, the effect of past experiences of coordination on the current decision is no longer significant, at the 0.05 level, regardless of whether path dependence is conceptualised as a first-order Markov, a Pólya or a Renewal process. Hence, the large effect of past experiences in Table 2.1 seems to have been spurious; that is, the large coefficient of the lagged dependent variable arose because this variable acted as a proxy for many of the unmeasured factors not included in the model. Before we draw any firm conclusions in this regard, however, we need to consider at least three caveats.

First, we might ask if the lack of support for the path dependence explanation could be due to controlling for its mechanisms. Could it be that the path dependence effect works through some of the other variables included in the model? Although it appears rather far-fetched that wage coordination could affect either trade openness, the existence of peace obligations, or the composition of the government to any great extent, it might be argued that previous coordination could be important for current union density, concentration, or associational centralisation. If this is the case, we will underestimate the impact of previous choices if we include these variables in the model. Nevertheless, if the effect of coordination in the past works through these variables we would expect them to show a positive trend in those countries where wage coordination has been common in the past. But the data do not lend much support for such a view. While union concentration and associational centralisation are very stable over time in all countries, union density is somewhat more trended. Nevertheless, the correlation between this trend and previous experiences of wage coordination is far from perfect.

A second potential objection is that the zero effect of past experiences is an artefact of trying to squeeze too much information out of the limited amount of data available. This argument, however, would suggest that the reason why past experience is no longer significant is not so much the result of a reduction in its coefficient as an increase in its standard error. That is, by including both random effects and autocorrelation in the model, we would not be able to estimate the effect of the lagged dependent variable as precisely as when we assume the error terms to be independent. Although reasonable, this suspicion is not supported by the data. While the size of the coefficient of past experience differs by a factor of between six and nine across the two analyses, the standard error remains more or less the same.²⁰

²⁰ A third line of attack against the results would be to raise the well-known problem of an initial condition that plagues the dynamic panel data model. Here, the initial condition is

Thus, I do not believe that my findings are the result of methodological shortcomings. Admittedly, the idea that wage bargaining institutions are sticky because they are associated with ‘high’ fixed costs (the Markov model), seems to fit data somewhat better (less worse) than the idea that they are sticky because of asset specificity, but neither of the effects is statistically significant. Further, the effects are very small in substantive terms. According to the Markov model, the occurrence of coordination at time t_0 amounts to little more than a four percent increase in the probability of coordination at time t_1 .²¹ Therefore, even those who reject statistical significance as a necessary condition for substantive significance would be led to the conclusion that path dependence is not a salient feature of wage bargaining institutions.

This finding is obviously rather surprising, since so many students of wage bargaining institutions have taken path dependence for granted. The problem, I believe, is that these previous studies have not been able fully to distinguish country heterogeneity from a true structural effect of previous choices. Indeed, this is particularly hard to do in intensive case studies, which make up the lion’s share of the data supporting the view that wage bargaining institutions are highly path dependent. It is, however, important to point out that my results do not imply that wage bargaining institutions are ‘unsticky’, only that this stickiness is due to the stability of the observed and unobserved factors determining these institutions, not to any genuine structural effect of past choice.

Conclusions

This chapter has sought to answer the question why wage bargaining is coordinated in some countries but not in others. Three broad models of coordination have been identified and tested. The first model points to the variation in actors’ willingness to coordinate, the second to the variation in their ability, and the third – applying the logic of path dependence – to the variation in previous choices (for whatever reasons they were once made). The main finding of this chapter is that path dependence, contrary to the conventional wisdom, is not a salient

assumed to be exogenous. Admittedly, this is a highly restrictive assumption. There are, however, two reasons why I feel rather confident that this assumption does not affect the substantive results as far as path dependence is concerned. First, the bias from failing to deal properly with the initial condition is inversely related to panel length, and here we have a rather long panel (29 years). Hence, we would assume the bias to be rather small, if not non-existent. Second, the initial condition bias will lead us to overestimate the effects of the lagged dependent variables and underestimate the effects of the other variables; that is, if anything, the effects of previous choices should be even more inconsequential than our results suggest. I made an attempt to approximate the initial condition along the lines suggested by Heckman (1981b), but because of the small number of cross-section units it proved impossible to obtain any reliable results.

²¹ This effect refers to the average effect in the sample. For the other two specifications (in the Pólya and Renewal models) the cumulative effect of 28 consecutive years of coordination is less than ten percent.

feature of wage bargaining institutions. Although, the path dependence explanation gets strong support for so long as we stick to the commonly adopted but rather naive assumption of identically distributed and serially uncorrelated error terms, this support disappears as soon as we control for dependence among the errors. Hence, the results of this paper suggest that the often-observed stickiness of wage bargaining institutions is due to the stability of observed and unobserved factors determining these institutions, not to any genuine structural effect of past choices, as suggested by the advocates of the path dependence explanation.

Further, it has been shown that both the actors' willingness and their ability are important determinants of wage coordination. However, unlike what many scholars seem to assume, neither incentives nor ability are sufficient conditions for coordination. In order to come to grips with the instability (or stability) of coordinated wage bargaining, we therefore need to understand how these factors interact in bringing about specific wage bargaining institutions. A first step to that end has been taken here.

The results presented in this chapter also suggest several promising avenues for future research in the field. One is further study of the factors affecting actors' willingness and ability. Admittedly, this chapter leaves much to be desired in this respect. It should be possible both to further elaborate on the relationships between different factors, and to find additional variables to include in any model. A second task for future research is to extend the discussion to other spheres of coordination. Indeed, since spheres of coordination have been observed to go together, it might be hypothesised that some of the variables that have proven important for wage coordination can be helpful in understanding coordination in other arenas.

References

- Achen, Christopher H. (2000) 'Why Lagged Dependent Variables Can Suppress the Explanatory Power of Other Independent Variables.' Working Paper, prepared for the Annual Meeting of the Political Methodology Section of the American Political Science Association, UCLA July 20-22, 2000.
- Armingeon, Klaus, Michelle Beyeler and Sarah Menegale (2000) 'Comparative Political Data Set 1960-1998.' Institute of Political Science, University of Berne.
- Arthur, Brian (1994) *Increasing Returns and Path Dependence in the Economy*. Ann Arbor: The University of Michigan Press.
- Bowman, John R. (1998) 'Achieving Capitalist Solidarity: Collective Action Among Norwegian Employers.' *Politics and Society* 26(3):303-336.
- Bowman, John R. (2002) 'Employers and the Persistence of Centralized Wage Setting.' *Comparative Political Studies* 35(9):995-1026.
- Calmfors, Lars (2001) 'Wages and Wage-Bargaining Institutions in the EMU.' *Empirica* 28:325-351.

- Calmfors, Lars, Alison Booth, Michael Burda, Daniel Checchi, Robin Naylor and Jelle Visser (2001) 'The Future of Collective Bargaining in Europe.' In *The Role of Unions in the Twenty-First Century* (ed). Tito Boeri, Agar Brugiavini and Lars Calmfors. Oxford: Oxford University Press.
- Calmfors, Lars and John Driffill (1988) 'Centralization of Wage Bargaining.' *Economic Policy* 6:14-61.
- Chamberlain, Gary (1984) Panel Data. In *Handbook of Econometrics* (ed). Z Griliches and M D Intrilligator. vol. 2 Elsevier Science Publisher.
- Crouch, Colin (1985) Conditions for Trade Union Wage Restraint. In *The Politics of Inflation and Economic Stagnation* (ed). Leon N. Lindberg and Charles S. Mair. Washington: Brooking Institution.
- Culpepper, Pepper D. (2001) Employers, Public Policy, and the Politics of Decentralized Cooperation in Germany and France. In *Varieties of Capitalism* (ed). Peter A. Hall and David Soskice. Oxford: Oxford University Press.
- Doornik, Jurgen A. (2001) *Ox: An Object-Oriented Matrix Language*. London: Timberlake Consultants Press.
- Ebbinghaus, Bernhard and Jelle Visser (2000) *Trade Unions in Western Europe since 1945*. London: MacMillan.
- Elvander, Nils (1990) 'Incomes Policies in the Nordic Countries.' *International Labour Review* 129(1):1-21.
- Elvander, Nils (1997) The Swedish Bargaining System in the Melting Pot. In *The Swedish Bargaining System in the Melting Pot* (ed). Nils Elvander and Bertil Holmlund. Solna: Arbetslivsinstitutet.
- Ferner, Anthony and Richard Hyman (1992) Introduction. In *Industrial Relations in the New Europe* (ed). Anthony Ferner and Richard Hyman. Oxford: Blackwell Publishers.
- Finkel, Steven E. (1995) *Causal Analysis With Panel Data*. Thousand Oaks: Sage Publications.
- Flanagan, Robert J. (1999) 'Macroeconomic Performance and Collective Bargaining: An International Perspective.' *Economic Literature* 37:1150-1175.
- Franzese, Robert J. 2002. *Macroeconomic Policies of Developed Democracies*. Cambridge: Cambridge University Press.
- Franzese, Robert J. and Peter Hall (2000) Institutional Dimensions of Coordinated Wage Bargaining and Monetary Policy. In *Unions, Employers, and Central Banks* (ed). Torben Iversen, Jonas Pontusson and David Soskice. Cambridge: Cambridge University Press.
- Garrett, Geoffrey (1998) *Partisan Politics in the Global Economy*. New York: Cambridge University Press.
- Golden, Miriam (1993) 'The Dynamics of Trade Unionism and National Economic Performance.' *American Political Science Review* 87:439-454.

- Golden, Miriam A., Michael Wallerstein and Peter Lange (1999) Postwar Trade-Union Organization and Industrial Relations in Twelve Countries. In *Continuity and Change in Contemporary Capitalism* (ed). Herber Kitschelt, Peter Lange, Gary Marks and John D. Stephens. Cambridge: Cambridge University Press.
- Golden, Miriam, Peter Lange and Michael Wallerstein (2002) 'Union Centralization among Advanced Industrial Societies: An Empirical Study.' Dataset available at <http://www.shelley.polisci.ucla.edu/data>. Version dated September 19, 2002.
- Greene, William. 2000. *Econometric Analysis*. Fourth edition. New Jersey: Prentice Hall.
- Hall, Peter A. and David Soskice (2001) Introduction to Varieties of Capitalism. In *Varieties of Capitalism* (ed). Peter A. Hall and David Soskice. Oxford: Oxford University Press.
- Heckman, James (1981a) The Incidental Parameters Problem and the Problem of Initial Conditions in Estimating a Discrete Time – Discrete Data Stochastic Process. In *Structural Analysis of Discrete Data with Econometric Applications* (ed). Charles F. Manski and Daniel McFadden. Cambridge: MIT Press.
- Heckman, James (1981b) Statistical Models for Discrete Panel Data. In *Structural Analysis of Discrete Data with Econometric Applications* (ed). Charles F. Manski and Daniel McFadden. Cambridge: MIT Press.
- Holden, Steinar (1991) 'Exchange Rate Policy and Wage Formation In an Economy With Many Trade Unions.' *European Economic Review* 35:1543-1557.
- Holden, Steinar and Oddbjørn Raaum (1991) 'Wage Moderation and Union Structure.' *Oxford Economic Papers* 43:409-423.
- Honaker, James, Anne Joseph, Gary King, Kenneth Scheve and Naunihal Singh (1999) 'AMELIA: A Program for Missing Data.' Department of Government, Harvard University.
- Howell, Chris (1995) 'Trade Unions and the State: A Critique of British Industrial Relations.' *Politics and Society* 23(2):149-183.
- Hyslop, Dean (1999) 'State Dependence, Serial Correlation and Heterogeneity in Intertemporal Labor Force Participation of Married Women.' *Econometrica* 67(6): 1255-1294.
- Iversen, Torben (1999) *Contested Economic Institutions*. New York: Cambridge University Press.
- Kenworthy, Lane (2001a) 'Wage Setting Coordination Scores.' Documentation, Department of Sociology, Emory University.
- Kenworthy, Lane (2001b) 'Wage-Setting Measures: A Survey and Assessment.' *World Politics* 54:57-98.
- King, Gary, James Honaker, Anne Joseph and Kenneth Scheve (2001) 'Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation.' *American Political Science Review* 95:49-69.

- Knight, Jack (1992) *Institutions and Social Conflict*. Cambridge: Cambridge University Press.
- Lange, Peter (1984) Unions, Workers, and Wage Regulation: the Rational Bases of Consent. In *Order and Conflict in Contemporary Capitalism* (ed). John H. Goldthorpe. Oxford: Clarendon Press.
- Mahoney, James (2000) 'Path Dependence in Historical Sociology.' *Theory and Society* 29:507-548.
- Moene, Karl Ove and Michael Wallerstein (2001) 'Inequality, Social Insurance, and Redistribution.' *American Political Science Review* 95(4):859-873.
- Morrow, James D. (1994) *Game Theory for Political Scientists*. Princeton, New Jersey: Princeton University Press.
- North, Douglass C. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- OECD (2003) *Statistical Compendium: Economic Outlook*. Paris: OECD.
- Offe, Claus and Helmut Wiesenthal (1980) 'Two Logics of Collective Action.' *Political Power and Social Theory* 1:67-115.
- Olin Wright, Erik (2000) 'Working-Class Power, Capitalist-Class Interests, and Class Compromise.' *American Journal of Sociology* 105(4):957-1002.
- Oskarsson, Sven (2003) *The Fate of Organized Labor*. Uppsala: Department of Government, Uppsala University.
- Perez, Sofia (2002) 'Monetary Union and Wage Bargaining Institutions in the EU.' *Comparative Political Studies* 35(10):1198-1227.
- Pierson, Paul (2000) 'Increasing Returns, Path Dependence, and the Study of Politics.' *American Political Science Review* 94(2):251-267.
- Pierson, Paul and Shannon O'Neil Trowbridge (2002) 'Asset Specificity and Institutional Development.' Paper presented at the 2002 Annual Meeting of the American Political Science Association.
- Pontusson, Jonas and Peter Swenson (1996) 'Labor Markets, Production Strategies, and Wage Bargaining Institutions.' *Comparative Political Studies* 29(2):223-250.
- Quinn, Dennis (1997). 'The Correlates of Change in International Financial Regulation.' *American Political Science Review* 91(3):531-551.
- Regini, Marino (1984) The Conditions for Political Exchange: How Concertation Emerged and Collapsed in Italy and Great Britain. In *Order and Conflict in Contemporary Capitalism*. Oxford: Clarendon Press.
- Regini, Marino (1997) 'Between Deregulation and Social Pacts.' *Politics and Society* 28(1):5-33.
- Sandgren, Anders (2002) *Verkstadsindustrin och Industriavtalet*. Stockholm: VI Grafiska.
- Scharpf, Fritz W. and Vivien A. Schmidt (2000) Introduction. In *Welfare and Work in The Open Economy* (ed). Fritz W. Schapf and Vivien A. Schmidt. Oxford University Press.

- Snidal, Duncan (1985) 'Coordination versus Prisoner's dilemma.' *American Political Science Review* 79:923-942.
- Soskice, David (1990) 'Wage Determination: The Changing Role of Institutions in Advanced Industrial Countries.' *Oxford Review of Economic Policy* 6(4):36-61.
- Soskice, David (1999) Divergent Production Regimes: Coordinated and Uncoordinated Market Economies in the 1980s and 1990s. In *Continuity and Change in Contemporary Capitalism* (ed). Herber Kitschelt, Peter Lange, Gary Marks and John D. Stephens. Cambridge: Cambridge University Press.
- Swenson, Peter (2002) *Capitalists against Markets*. Oxford: Oxford University Press.
- Teulings, Coen and Joop Hartog (1998) *Corporatism or Competition?* Cambridge: Cambridge University Press.
- Thelen, Kathleen (1993) 'West European Labor in Transition.' *World Politics* 23(4): 379-399.
- Thelen, Kathleen (2001) Varieties of Labor Politics in the Developed Democracies. In *Varieties of Capitalism* (ed). Peter A. Hall and David Soskice. Oxford: Oxford University Press.
- Train, Kenneth (2002) *Discrete Choice Methods with Simulation*. Cambridge: Cambridge University Press.
- Traxler, Franz (1999) 'The State in Industrial Relations.' *European Journal of Political Research* 36:55-85.
- Traxler, Franz (2002) Wage Policy, Bargaining Institutions and Monetary Policy. In *Wage Policy in the Eurozone* (ed). Philippe Pochet. Brussels: Peter Lange.
- Traxler, Franz and Bernhard Kittel (2000) 'The Bargaining System and Performance.' *Comparative Political Studies* 33(9):1154-1190.
- Traxler, Franz, Sabine Blaschke and Bernhard Kittel (2001) *National Labour Relations in Internationalized Markets*. Oxford: Oxford University Press.
- Visser, Jelle (2002) Unions, Wage Bargaining and Coordination in European Labour Markets. In *Wage Policy in the Eurozone* (ed). Philippe Pochet. Brussels: Peter Lange.
- Wallerstein, Michael (1999) 'Wage-Setting Institutions and Pay Inequality in Advanced Industrial Societies.' *American Journal of Political Science* 43:649-680.
- Wallerstein, Michael and Bruce Western. 2000. 'Unions in Decline? What has Changed and Why.' *Annual Review of Political Science* 3:355-377.

Appendix 2.1

Coordination Modes

Traxler et al. (2001) distinguish between the following six different bargaining modes.

1. **State-imposed coordination:** the state acts as sovereign power. Wage restraint is enforced by the state through statutory wage freezes, compulsory arbitration, and so on.
2. **Inter-associational coordination:** central-level agreements concluded by the peak associations of unions and employers.
3. **State-sponsored coordination:** central-level agreements concluded by the peak associations but with the state as an additional party (the state does not claim a superior role).
4. **Intra-associational coordination:** internal coordination by the peak associations in relation to their lower level affiliates, but where the collective agreements are formally concluded by the latter.
5. **Pattern-setting coordination:** is indicated by the coexistence of two essential properties: (i) There is an institutionalised timing of bargaining rounds, in that the pace-setting agreement is negotiated first, and all the other collective agreements usually follow; (ii) Bargaining on behalf of a certain sector is pattern setting only when it is the key arena where unions tend to enforce 'break-throughs' and where, at the same time, a ceiling is set for standard rates concluded on behalf of other sectors.
6. **Non-coordination.**

As pointed out by Traxler et al. (2001) these coordination modes are not mutually exhaustive, but may coexist. They have tried to handle this problem by coding the pattern whose coverage is most encompassing and whose goals are most closely related to macro coordination. If two modes do not differ in these respects, the mode representing the highest hierarchical level of coordination is counted. For example, state-imposed coordination is supposed to override all voluntary coordination patterns.

Appendix 2.2

Data Sources

Union density: The adjusted union density figures were obtained from three main sources: Ebbinghaus and Visser (2000), Golden et al. (2002), and OECD (2003). The measure is here scaled to range between 0-100.

Trade openness: Measured as imports plus exports as a percentage of GDP. The data are those of Franzese (2002). The measure is here scaled to range between 0 and 2. Data can be found at <http://www-personal.umich.edu/franzese>.

Financial openness: The measure of financial openness used in this chapter is the one suggested and constructed by Dennis Quinn (1997). This measure captures regulations covering foreign direct investment in both directions, as well as investments in securities. The actual measure reflect the laws governments use to regulate international financial transactions, as reported by the IMF. The measure ranges from 0 to 14, with a higher value indicating greater openness.

Monetary policy: The monetary regime is operationalised as the relative independence of the central bank. Following Franzese (2002), central bank independence is measured as the average of five commonly used indexes, which measure both the legal status of the central bank and its reputation for independence. This averaged index ranges from 0 to 1, with a higher number indicating higher degree of independence.

Government partisanship: Measured as the percentage of cabinet seats held by right parties. The coding of parties is based on expert codings; the data were obtained from Armingeon et al. (2000), and scores range between 0 and 1.

Union concentration: Annual figures for the whole period for the Herfindahl indexes for the following ten countries were obtained from Ebbinghaus and Visser (2000): Austria, Belgium, Denmark, Finland, Germany, Finland, Ireland, the Netherlands, Norway, Sweden, Switzerland, Spain and the UK. Annual figures for Italy were obtained starting in 1975. For Australia, Canada, Japan and the US the data made available by Golden et al. (2002) were used. For the latter group of countries data are only available for every five years. Because data on intra-union concentration in France, New Zealand, Portugal and Spain are lacking in both of the above mentioned sources I had to use the data on union concentration presented in Traxler et al. (2001, p. 46) for these cases. Unfortunately, these data are in the form of decade means, and only the aggregate share of the three largest affiliates of the first confederation is presented. The first shortcoming is less severe, since union concentration is usually rather stable over time. The second shortcoming is, however, more problematic, because in order to compute the intra-union Herfindahl-index for these countries we have to assume

that the three largest affiliates are of equal size. Since this is certainly not the case we will underestimate the true concentration in these countries somewhat. As explained in the text the final measure is scaled to range between 0 and 100.

Associational centralisation: The indexes of union and employer centralisation are described in the text. Data for all but four countries are those presented in Golden et al. (2002). In order to collect data for Ireland, New Zealand, Portugal and Spain I had to draw on the indexes of union and employer centralisation presented in Traxler et al. (2001). Since these indexes contain four additional items of centralisation (seven instead of three) they are not fully comparable with the data for the other countries. Therefore, I used the values on the seven-point scale to impute values on associational centralisation for these four countries.

Peace obligation: Traxler et al. present a peace obligation measure taking on four values: *non-existent*, *dubious*, *optional*, and *automatically follows from the agreement*. For reasons presented in the text, I decided to dichotomise this measure. The dubious category poses some problem in this respect. But only Portugal falls into this category, and it can be shown that no substantive results hinge on the recoding of this case. Based on available information, it seems most reasonable to consider the peace obligation to be non-existent in Portugal.