

Wage Bargaining, Hard Money and Economic Performance: Theory and Evidence for Organized Market Economies



Torben Iversen

British Journal of Political Science, Vol. 28, No. 1 (Jan., 1998), 31-61.

Stable URL:

<http://links.jstor.org/sici?sici=0007-1234%28199801%2928%3A1%3C31%3AWBHMAE%3E2.0.CO%3B2-7>

British Journal of Political Science is currently published by Cambridge University Press.

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/cup.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is an independent not-for-profit organization dedicated to creating and preserving a digital archive of scholarly journals. For more information regarding JSTOR, please contact support@jstor.org.

Wage Bargaining, Hard Money and Economic Performance: Theory and Evidence for Organized Market Economies

TORBEN IVERSEN*

The political and economic couplings between wage bargaining institutions and macro-economic policy regimes are explored in this article. It is argued that in advanced industrialized democracies with well-organized unions and employers' associations, macro-economic performance (especially unemployment) is the outcome of an interaction between the centralization of the wage bargaining system and the monetary policy regime. Thus, a decentralized bargaining system in which the government is credibly committed to a non-accommodating monetary policy rule poses an institutional alternative to a centralized mode of wage regulation where the government enjoys macro-economic policy flexibility. Based on time-series data from ten highly organized market economies, I show that both of these institutional 'equilibria' produce superior employment performance, but also that the two systems are associated with very different distributional outcomes, and that they are supported by different coalitions of organized interests. In addition to predicting economic outcomes, the proposed model provides a theoretical framework for analysing institutional change in wage bargaining systems and in macro-economic policy regimes.

Over the past decade there has been a surge in the political enthusiasm for independent central banks and for 'hard currency' regimes as solutions to macro-economic problems. This enthusiasm is matched by recent economic models and econometrics evidence supporting the notion that monetary policies that are institutionally tied to a non-accommodating policy rule produce superior macro-economic outcomes – especially low inflation – compared to more flexible (and presumably more accommodating) policy regimes.¹ According to

* Department of Government, Harvard University. I would like to thank William Bernhard, Jeffrey Frieden, Geoffrey Garrett, Andrew Glyn, Andrew Graham, Peter Hall, James Granato, Robert Hancké, Herbert Kitschelt, Peter Lange, Brian Loynd, Jonas Pontusson, David Soskice, Peter Swenson, Kathleen Thelen and Sigurt Vitols for many helpful comments and discussions on previous versions of this article. I also gratefully acknowledge financial support from the National Science Foundation, the Social Science Research Council and Wissenschaftszentrum Berlin für Sozialforschung.

¹ See, for example, Alex Cukierman, *Central Bank Strategy, Credibility, and Independence* (Cambridge: MIT Press, 1992); Alberto Alesina, Gerald D. Cohen and Nouriel Roubini, 'Macroeconomic Policy and Elections in OECD Democracies' *Economics and Politics*, 4 (1992), 1–30; Alberto Alesina and Vittorio Grilli, 'The European Central Bank: Reshaping Monetary Policy in Europe', in Matthew Canzoneri, Vittorio Grilli and Paul Masson, eds, *Establishing a Central Bank: Issues in Europe and Lessons from the United States* (Cambridge: Cambridge University Press, 1993), pp. 49–77; Susanne Lohmann, 'Optimal of Commitment in Monetary Policy: Credibility versus Flexibility', *American Economic Review*, 82 (1992), 273–86; Vittorio

this view, freely operating markets are inherently efficient if permitted to work in a stable and predictable macro-economic environment.

The focus on independent central banks as a magic cure for economic ills presents a significant departure in the debate over appropriate economic policies and institutions. Less than a decade ago the attention in the political economy literature was almost exclusively directed at 'corporatist' labour market institutions and 'Keynesian' economic policy instruments. A large number of studies provided theoretical and empirical support for the idea that centralized wage-bargaining institutions coupled with flexible government economic policies (including Keynesian demand management) would produce superior macro-economic performance. Instead of the government tying its hands in economic policies, this literature suggested that flexible full employment policies were crucial in facilitating the co-operation between labour and capital necessary for adapting to a changing world economy.²

Considering that both approaches are concerned with economic performance yet reach opposite conclusions about appropriate economic institutions and policies, it is surprising how little intellectual engagement there has been between proponents of the two schools of thought. As always, there are a few notable exceptions such as the recent work by Fritz Scharpf and Peter Hall, but the theory and evidence remain very sketchy and sometimes conflicting.³ This article seeks to develop a more general argument and to devise a systematic empirical test of this argument.

More specifically, it is suggested that a restrictive macro-economic policy

(F'note continued)

Grilli, Donato Masciandoro and Guido Tabellini, 'Political and Monetary Institutions and Public Financial Policies in the Industrialized Countries', *Economic Policy*, 13 (1991), 42-92; Kenneth Rogoff, 'The Optimal Degree of Commitment to an Intermediate Monetary Target', *Quarterly Journal of Economics*, 100 (1985), 1169-89.

² See, for example, Peter Katzenstein, *Small States in World Markets* (Ithaca: Cornell University Press, 1985); Peter Lange and Geoffrey Garrett, 'The Politics of Growth: Strategic Interaction and Economic Performance in the Advanced Industrial Democracies, 1974-1980', *Journal of Politics*, 47 (1985), 792-827; David Cameron, 'Social Democracy, Corporatism, Labor Quiescence, and the Representation of Economic Interest in Advanced Capitalist Society', in John H. Goldthorpe, ed., *Order and Conflict in Contemporary Capitalism* (New York: Oxford University Press, 1984), pp. 143-78; Manfred G. Schmidt, 'The Welfare State and the Economy in Periods of Economic Crisis: A Comparative Study of Twenty-Three OECD Nations', *European Journal of Political Research*, 11 (1983), 1-26; Adam Przeworski and Michael Wallerstein, 'The Structure of Class Conflict in Democratic Capitalist Societies', *American Political Science Review*, 76 (1982).

³ Fritz Scharpf, *Crisis and Choice in European Social Democracy* (Ithaca, NY: Cornell University Press, 1991); Peter A. Hall, 'Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe', *German Politics and Society* (April 1994), 1-23. See also Wolfgang Streeck, 'Pay Restraint without Incomes Policy: Institutionalized Monetarism and Industrial Unionism in Germany', in Ronald Dore, Robert Boyer and Zoe Marn, eds, *The Return of Incomes Policy* (London: Pinter Publishers, 1994); Robert Franzese, 'Central Bank Independence, Sectoral Interests, and the Wage Bargain', Center for European Studies Working Paper Series (Cambridge, Mass.: Harvard University, 1994); and Thomas Havrilevski and James Granato, 'Determinants of Inflationary Performance: Corporatist Structures vs. Central Bank Autonomy', *Public Choice*, 76 (1993), 249-61.

regime with a credible commitment to low inflation, *and* a flexible economic policy regime aimed at maintaining full employment are elements of distinct institutional equilibria. The two equilibria are characterized by superior macro-economic performance (especially low unemployment), but also by very different distributional consequences and underlying alliances of partisan governments and sectors of workers and employers. The argument is tested against data from ten advanced industrialized countries where the assumptions of the model are reasonably well satisfied.

The article is organized into four sections. In the first, the logic of the argument, and the assumptions upon which it is based, are spelled out. In the second the choice of statistical model is explained, and the main findings for unemployment and equality are discussed. The third section discusses the implications of the argument for the politics of institutional design, while the last section concludes.

THE ARGUMENT

In countries that are highly exposed to changing international markets, adaptation is the *modus operandi* of any successful economic strategy. As Peter Katzenstein has pointed out, in an increasingly interdependent world even large countries 'must learn how to tap-dance rather than trample'.⁴ According to Katzenstein, these lessons are learned during periods of great international pressure when adversarial societal interests are brought together in search of flexible and mutually beneficial institutions. When such institutions emerge they will be stable until another shock upsets the underlying political balance of power and paralyses their adaptive capacity. This pattern of institutional stability occasionally interrupted by political realignments and institutional redesign has aptly been called 'punctuated equilibria' by Stephen Krasner.⁵

This article identifies two such equilibria with specific reference to the organization of wage bargaining, on the one hand, and macro-economic institutions and policies, on the other.⁶ Both institutional outcomes presuppose that the pivotal players – wage bargainers and economic policy makers – possess *strategic rationality* in the sense that they are able to anticipate the decisions of others, and then make the choices that maximize their own welfare.⁷ In addition, both assume that the actors exhibit *strategic capacity* in the sense that their actions have predictable and discernible effects on the welfare and decisions of other

⁴ Katzenstein, *Small States in World Markets*, p. 22.

⁵ Stephen D. Krasner, 'Approaches to the State: Alternative Conceptions and Historical Dynamics', *Comparative Politics*, 16 (1984), 223–46.

⁶ I here use 'equilibria' in the same sense as Krasner: as stable institutional configurations. Although it may be possible to represent these configurations in a game-theoretic equilibrium model, this is not the task of this article and it is not necessary for understanding the logic of the argument.

⁷ Strictly speaking, it is also necessary to assume that rationality is common knowledge. See Jon Elster, *Explaining Technical Change* (Cambridge: Cambridge University Press, 1983), p. 77.

players.⁸ In particular, those political economies where the organization of unions and employers is such that their price–wage behaviour has real and anticipated effects on the welfare of others approximate the requirement for strategic capacity. These systems are here called *Organized Market Economies*, and they are distinguished from *Liberal Market Economies* where strategic capacity is lacking. In practice, the first type refers to Northern Europe and Japan, where it is assumed that employers and workers are organized into industry- or sector-wide organizations which bargain wages and working conditions on behalf of their members. The classification closely follows the conceptualization proposed by David Soskice whose label for Organized Market Economies is ‘Co-ordinated Market Economies’.⁹ I prefer the term Organized Market Economies in order to separate organizational and institutional variables clearly from behavioural outcomes (‘co-ordination’).

Among organized market economies two additional distinctions are made: (i) between those in which wages (and prices) are determined through *centralized peak-level bargaining*, and those in which wages are determined through *decentralized sector- or industry-level bargaining*;¹⁰ and (ii) between those in which macro-economic policies are subject to *flexible accommodation* to changing economic circumstances, and those in which macro-economic policies are institutionally constrained by a *non-accommodating policy rule*. A non-accommodating policy rule implies that inflationary pressures in the economy are always met with deflationary monetary responses, while a flexible policy regime permits measured policy reactions aimed at maintaining full employment.

With these distinctions in mind, two stable macro-institutional configurations (or equilibria) can now be identified that both facilitate successful economic adaptation: *centralized accommodation* and *decentralized non-accommodation*. In the former, adaptation is made possible through a co-ordinated adjustment between government-controlled macro-economic policies and the wage–price behaviour of encompassing peak-level organizations of unions and employers. In the latter, adaptation is achieved by industry-level organizations of unions and employers adjusting their wage and price behaviour to the anticipated policy

⁸ In the absence of strategic competence – as in the case of a finite multi-player prisoner’s dilemma (PD) game – all players have a dominant strategy, and their choices are unaffected by the choices of others.

⁹ See David Soskice, ‘Wage Determination: The Changing Role of Institutions in Advanced Industrialized Countries’, *Oxford Review of Economic Policy*, 6 (1990), 36–61; ‘The German Apprenticeship System: Reconciling Markets and Institutions’, in Lisa Lynch, ed., *International Comparisons of Private Sector Training*, NBER Conference Volume (Chicago: University of Chicago Press, 1992); and ‘Innovation Strategies of Companies: A Comparative Institutional Explanation of Cross-Country Differences’ (unpublished, Wissenschaftszentrum für Sozialforschung, 1994).

¹⁰ Systems in which all bargaining takes place at the firm or plant level fall in to the Liberal Market Economy category. Perhaps it would therefore be more appropriate to speak of centralized and ‘semi-centralized’ bargaining systems, but as long as the definitions are kept in mind it should be possible to avoid this more cumbersome terminology.

responses of an inflation-adverse monetary policy authority. Both outcomes will be shown to produce superior outcomes compared to situations in which either centralization is coupled with a non-accommodating policy regime, or decentralization is coupled with flexible accommodation. Yet because the distributive consequences of the two equilibria turn out also to be different, partisan governments and sectors of workers and employers will have conflicting institutional preferences. I consequently refer to the argument as a model of *contested economic institutions*.

The distinctive features of the centralized-accommodating equilibrium are the extreme dependence of all institutionalized actors on one another: the choices of one agent have immediate effects on the others, and there is no possibility for any agents to 'externalize' the costs of unilateral behaviour to other actors. Much of the neo-corporatist literature has accorded particular attention to the interaction between fiscal policies and wage militancy. Building on the work of Mancur Olson, it is argued that if an 'encompassing' union confederation is reassured by the government about its long-term welfare and does not discount the future too heavily, it has some self-interest in exercising restraint.¹¹ In particular, through counter-cyclical macro-economic policies and public sector employment expansion, the government can facilitate co-operative union behaviour by acting as a 'guarantor' for full employment and thereby reassuring labour about its future welfare.¹²

In addition to adaptive fiscal capacity, I wish to highlight the central importance of monetary policy flexibility. The key here is the role that accommodating monetary policies play in facilitating the reconciliation of conflicting interests within the confederal union structure, thereby contributing to real wage adjustment and full employment. A centralized bargaining system is always based on a *coalition of interests* where the confederal leadership has to forge a distributive compromise between high- and low-wage unions. Such compromises almost invariably lead to more or less egalitarian wage policies because low-wage unions can veto wage bargains that do not distribute wage

¹¹ Mancur Olson, *The Logic of Collective Action* (Cambridge, Mass.: Harvard University Press, 1965) and *The Rise and Decline of Nations* (New Haven, Conn.: Yale University Press, 1982); Lars Calmfors and John Driffill, 'Centralization of Wage Bargaining', *Economic Policy* (1988), 14–61; Peter Lange, 'Unions, Workers, and Wage Regulation: The Rational Bases of Consent', in Goldthorpe, ed., *Order and Conflict in Contemporary Capitalism*, pp. 98–123; Cameron, 'Social Democracy, Corporatism, Labor Quiescence, and the Representation of Economic Interest in Advanced Capitalist Society'; Przeworski and Wallerstein, 'The Structure of Class Conflict in Democratic Capitalist Societies'.

¹² See Michael Alvarez, Geoffrey Garrett and Peter Lange. 'Government Partisanship, Labor Organization, and Macroeconomic Performance', *American Political Science Review*, 85 (1991); Lange and Garrett, 'The Politics of Growth: Strategic Interaction and Economic Performance in the Advanced Industrial Democracies, 1974–1980'; Cameron, 'Social Democracy, Corporatism, Labor Quiescence, and the Representation of Economic Interest in Advanced Capitalist Society'; Schmidt, 'The Welfare State and the Economy in Periods of Economic Crisis: A Comparative Study of Twenty-Three OECD Nations'.

increases ‘fairly’ among members.¹³ In turn, solidaristic wage policies are linked to monetary policies via the incentive that peak-level bargainers have to use inflationary wage demands as a ‘safeguard’ against inequalizing, market-generated ‘wage drift’ (wage increases above the negotiated rates). Because wage drift tends to primarily benefit high-wage groups (whose wages are held back in the collective bargaining process), it undermines the distributive terms of the centralized wage bargain.

Especially during periods of low economic growth, *in order to counteract the differentiation effects of wage drift*, low wage unions will push for bargained wage increases that are anticipated to exceed the scope for real wage growth in the economy.¹⁴ Under these circumstances, the confederal leadership will find it politically difficult to offer *nominal-wage restraint* at a level that is consistent with stable prices. Solidaristic wage policies in a centralized bargaining system therefore have a tendency – in a manner of speaking – to ‘spill over’ into nominal wage pressure; a phenomenon that is now widely recognized among Scandinavian economists.¹⁵ If monetary policies are non-accommodating, such wage pressure will translate into real wage pressure and unemployment. If monetary policies are accommodating, real-wage restraint is feasible as long as the confederal leadership understands the importance of refraining from making radical inflation-compensating demands. Precisely because of its encompassing nature, such understanding is facilitated in a peak-level bargaining system. Full employment in a centralized system is thus facilitated by flexible, accommodating monetary policies.

¹³ In a decentralized bargaining system, by contrast, weak unions lack veto power over distributive outcomes and will be more vulnerable to slack labour market conditions. In the jargon of bargaining theory, the ‘inside options’ of low-wage unions tend to be superior to their ‘outside options’, leading to a gradual compression of wages. See Michael Wallerstein, ‘Centralized Bargaining and Wage Restraint’, *American Journal of Political Science*, 34 (1990), 982–1004.

¹⁴ It can be objected that if high-paid workers are willing to accept greater redistribution though the bargained wage (even accepting wage cuts), there would be no reason for the confederation to push up nominal wage claims in order to preserve an acceptable distributive balance in the total wage increase. Real wage adjustment could thus be achieved without monetary accommodation, while distributive outcomes would be identical (since high-skill workers would benefit proportionally more from drift). However, such deals are difficult to sell to the membership of high-wage unions. Rank-and-file members with incomplete information will rationally worry about the bargaining skills of their representatives if these rely primarily on non-negotiated drift, and since such drift represents an uncertain prospect while negotiated wage increases represent sure gains, there is every reason for the median union member to demand a ‘fair share’ of the bargained increase. Whatever the exact size of this share – in most cases it will probably approximate a 50–50 split – it will force negotiators to use nominal increases to achieve their distributive goals (i.e., an acceptable division of total increases after drift).

¹⁵ See, for example, Karl-Otto Faxen, Clas-Erik Odhner and R. Spånt, ‘Lönebildning för sysselsättning och prisstabilitet’, *Ekonomisk Debatt*, 17 (1989), 510–24; Douglas Hibbs and Håkan Locking, ‘Löneutjämning och löneökningstakt under den solidariske lönepolitiken’, *Ekonomisk Debatt*, 8 (1991), 653–64; and Douglas Hibbs and Håkan Locking, ‘Wage Compression, Wage Drift, and Wage Inflation in Sweden’, *Labour Economics*, 77 (1996), 109–41. The latter presents a formal model and detailed econometric evidence for Sweden.

In contrast to this logic, flexible monetary accommodation can turn into a liability in (intermediately) *decentralized* systems. The reason is that the government can no longer count on the full co-operation of unions and employers.¹⁶ Thus, if unions and employers can anticipate that wage increases will be accommodated by the government through expansionary monetary and fiscal policies, firms and workers in sheltered sectors of the economy can raise wages and prices while benefiting in real terms from cheaper imports and goods produced in the import-competing sectors.¹⁷ Employers and workers in the export and import-competing sectors, however, will lose out because they cannot externalize higher factor prices and higher cost-of-living expenses in competitive international markets. The combined effect will be relatively higher real wages and profits in the sheltered sectors, and a fall in international competitiveness. Over the medium to long run, this shift in the 'terms of trade' between the traded and non-traded sectors will lead to current account deficits that can only be addressed through deflationary policies and rising unemployment.

However, the government can prevent such outcomes if it adheres to a well-publicized, non-accommodating policy rule that 'punishes' militant wage-price behaviour. Because traditional sheltered sectors – such as construction and retail – are highly vulnerable to rising interest rates (and to reductions in domestic consumption), and because the government directly controls wages and spending in the public sector, unions and employers have an incentive to anticipate restrictive policy-responses and to moderate their price-wage claims accordingly (unions in order to avoid unemployment, and employers in order to avoid a profit squeeze).¹⁸ Although wage solidarism still gives rise to a little nominal wage pressure, the magnitude of the problem falls with decentralization since the heterogeneity of workers subjected to any particular wage agreement declines. Specifically, the smaller the effects of solidaristic wage policies on the wage structure, the less high-wage workers will be advantaged by wage drift, and the lower the incentive for union bargainers to 'safeguard' against differentiating drift. The problem of achieving real wage restraint in (intermediately) centralized systems can therefore be reduced to a problem of providing disincentives for nominal wage militancy.

It should be noted here that the success of a non-accommodating policy depends on the use of credible threats, and that democratic governments are not always in a good position to issue such threats due to short-term

¹⁶ See Scharpf, *Crisis and Choice in European Social Democracy*, chap. 9.

¹⁷ See Wendy Carlin and David Soskice, *Macroeconomics and the Wage Bargain* (Oxford: Oxford University Press, 1990).

¹⁸ This logic follows very closely the idea of non-myopic equilibria proposed by Steven Brams, *Negotiation Games* (New York: Routledge Press, 1990), and *Theory of Moves* (Cambridge: Cambridge University Press, 1994). In this highly pertinent game-theoretic formulation, players ask themselves before they act whether a change in their own behaviour is likely to trigger retaliation by others, possibly leaving them worse off than the status quo. If this is the case, then gains that could be realized only if others stayed put (such as defection in a PD game) are effectively discounted. For this 'non-myopic' logic to work, individual players' actions must have significant effects on the welfare of other players. In other words, players must possess strategic capacity.

electoral incentives for boosting demand and employment.¹⁹ This dilemma is known in new classical economics as the *time-inconsistency problem*, and raises the important issue of how a government can credibly commit to a non-accommodating monetary policy rule. A widely suggested solution is to institutionalize such a rule in the form of an independent agency (such as an independent central bank) with extensive powers over monetary policy-making, and with a high degree of political autonomy.²⁰ Yet, for the purposes of this article the institutional sources of a credible commitment are less central. What matters is that such commitments will indeed induce unions and employers with strategic foresight to refrain from militant price–wage strategies in anticipation of deflationary monetary responses.

It must be emphasized that while the argument presented for intermediately centralized bargaining systems is consistent with the central bank independence literature, it relies on a distinct micro logic that is not recognized in this literature. What makes a non-accommodating monetary regime effective in terms of unemployment is the capacity of economic agents to anticipate the decisions of monetary authorities and to adjust real wage demands accordingly. Because beneficial deterrence effects presuppose strategic capacity, this logic does not extend to highly fragmented bargaining systems ('Liberal Market Economies'). Regardless of how well-publicized and credible a non-accommodating policy may be in such a system, the only moderating influence on union policies is the actual (as opposed to the anticipated) risk and severity of unemployment. Like prices in perfectly competitive markets, even if all unions realize that their collective interest is best served by wage moderation, and even if the government's deflationary policy rule is common knowledge, it is always in the self-interest of unions to push for higher wages to the point where unemployment undermines any incentive to raise wages even further. While inflation expectations will be adjusted up or down according to the anticipated policies of the monetary authority, real wage behaviour will not be affected. This 'neutrality of money' result is entirely in agreement with new classical economics, but it does not generalize to political economies with highly organized labour markets.²¹ By assuming free labour markets, new classical

¹⁹ See William D. Nordhaus, 'The Political Business Cycle', *Review of Economic Studies*, 42 (1975), 169–90; Alex Cukierman and Alan H. Meltzer, 'A Positive Theory of Discretionary Policy, the Costs of Democratic Government, and the Benefits of a Constitution', *Economic Inquiry*, 24 (1986), 367–88; and Alesina, Cohen and Roubini, 'Macroeconomic Policy and Elections in OECD Democracies'.

²⁰ Cukierman, *Central Bank Strategy, Credibility, and Independence*; Alberto Alesina and Lawrence Summers, 'Bank Independence and Macroeconomic Performance: Some Comparative Evidence', *Journal of Money, Credit, and Banking*, 256 (1993), 151–62; Havrileski and Granato, 'Determinants of Inflationary Performance: Corporatist Structures vs. Central Bank Autonomy'; Grilli, Masciandoro and Tabellini, 'Political and Monetary Institutions and Public Financial Policies in the Industrialized Countries'; Alberto Alesina, 'Politics and Business Cycles in Industrial Democracies', *Economic Policy*, 8 (1989), 58–98.

²¹ The neutrality of money thesis is elegantly presented in Robert Barro and David Gordon, 'Rules, Discretion, and Reputation in a Model of Monetary Policy', *Journal of Monetary Policy*, 12 (1983), 589–610.

theory thus precludes itself from explaining the real effects of money, while such effects are integral to the present argument.²²

Summarizing, the *best* unemployment performance occurs when either the wage bargaining system is centralized and the monetary regime is accommodating, or when the bargaining system is decentralized and the monetary regime is non-accommodating. In the former case, it is possible to develop a virtuous and sustainable co-ordination of wage, price and employment policies between unions, employers and the government. In the latter case, the credibility of the government's commitment to low inflation will deter union militancy and increase employer resolve. The *poorest* employment performance is predicted for situations in which either the bargaining system is decentralized while the monetary system is accommodating, or in which the bargaining system is centralized while the monetary system is non-accommodating. In the former situation, unions (especially in the sheltered sectors) are likely to press for higher wages while the government will be unable to retain full employment levels over the medium term. In the latter case, with little flexibility in the government's economic policies, the leadership of the union confederation will find it hard to reconcile the need for downward real wage flexibility with the political goal of wage redistribution. As in the decentralized/accommodating scenario, high real wage pressures and unemployment are likely to ensue. Finally, the argument implies that both centralization and accommodation are positively related to wage equality, making the two equilibrium outcomes distributively distinct. *Institutional design* is therefore a matter for political contestation rather than consensual co-ordination.

TESTING THE ARGUMENT

Following David Soskice's classification, there are ten major Organization for Economic Co-operation and Development (OECD) countries that can reasonably be viewed as belonging to the group of organized market economies: Austria, Belgium, Denmark, Finland, Germany, Japan, Netherlands, Norway, Sweden and Switzerland. The following analysis is based on time-series data for these countries covering a twenty-one year period beginning in 1973 (the first oil crisis) and ending in 1993 (the most recent data point).

²² One of the curious aspects of the new classical literature on central banks is that while it is committed to a rational expectations framework in which nominal variables are deemed unimportant, the benefits of central bank independence (which are considered important) are stated in terms of nominal variables such as inflation. Elsewhere, however, I have shown formally that the Baro-Gordon model yields real effects of money if the free market assumption is dropped and wage- or price-setters are given strategic capacity. See Torben Iversen, 'The Real Effects of Money: An Institutional Model of the Effects of Wage Bargaining and Monetary Policies on Unemployment' (Berkeley Center for German and European Studies Working Paper Series, 1996).

Operationalization of Variables

The independent institutional variables are the centralization of wage bargaining, and the degree to which the monetary regime is non-accommodating. The centralization variable is constructed as a composite measure for the locus of bargaining authority, and the number and size of bargaining agents. At any level of bargaining, the smaller the number of bargaining agents, and the more uneven their size, the higher the degree of centralization. Where several bargaining levels are involved (the national and industry levels, for example), centralization is a weighted average of the different levels, where the weights are determined by the relative authority over the wage-setting process wielded at each level. Specifically, the centralization index (CEN) is defined as $\sum_{ij} w_i p_{ij}^2$ where w_i is the weight accorded to each bargaining level i ($\sum w_i = 1$), and p_{ij} is the share of workers covered by union (or federation) j at level i .²³ Unlike existing indices of centralization, this one specifies the exact relationship between centralization of authority and concentration of membership – the two common components of all centralization indices – and permits the construction of panel data that is required for the application of sophisticated statistical techniques to a small number of cases.

The actual calculation of the index is based on (i) a classification of bargaining rounds in each country according to the weight of three different bargaining levels: the national level, the industry/sectoral level, and the local/plant level, and (ii) a calculation of the degree of concentration of union membership at each level based on union membership data. The Appendix details the classification of bargaining rounds in the ten countries between 1973 and 1993, and explains the exact procedure for computing the composite centralization scores. The country averages for the entire period (1973–93) are shown in Table 1, ordered by degree of centralization. For comparison, I have included three widely used rankings by Schmitter, Cameron, and Calmfors and Driffill.²⁴ As indicated by the rank-order correlations, all of these rankings are very similar to the one implied by the CEN index. The main disagreement is over the exact classification of Austria.²⁵ Austria is commonly viewed as a highly centralized

²³ The weighing of p by itself (p^2) insures that a very uneven distribution of members (i.e., where a few unions are dominant) leads to a lower N than if the unions were equally sized.

²⁴ Philippe Schmitter, 'Interest Intermediation and Regime Governability in Contemporary Western Europe and North America', in Suzanne Berger, ed., *Organizing Interests in Western Europe* (Cambridge: Cambridge University Press, 1982), pp. 285–327; Cameron, 'Social Democracy, Corporatism, Labor Quiescence, and the Representation of Economic Interest in Advanced Capitalist Society'; Calmfors and Driffill, 'Centralization of Wage Bargaining'.

²⁵ The apparent correspondence also disguises a real disagreement over the proper classification of Japan and Switzerland. In the full Calmfors–Driffill ranking of all OECD countries, for example, these cases are located in close proximity to Britain and the United States – systems that fall into my category of Liberal Market Economies. I have here accepted Soskice's critique of the Calmfors–Driffill classification of these cases (Soskice, 'Wage Determination: The Changing Role of Institutions in Advanced Industrialized Countries'), especially their insufficient attention to the role of powerful employers' organizations at the national and sectoral/industry levels (see also Colin

bargaining system because the authority to initiate bargaining and enforce agreements is concentrated at the peak level. However, the argument in this article (especially as it pertains to wage solidarity) presupposes that bargaining at any particular level is actually occurring, and in Austria bargaining is exclusively restricted to the industry and local levels. The coding of Austria therefore reflects the pre-eminent level of bargaining (the industry level), rather than the pre-eminent level of authority (the peak level).²⁶

The limitations of existing measures of monetary policies are even more severe than for measures of centralization. Although several indexes of central bank independence have been proposed, these tend to be rather impressionistic and very insensitive to changes over time – limitations that can be quite severe with a small number of cases. Even if we assume that the indexes accurately measure central bank independence, we cannot assume that they accurately capture the theoretical concern for non-accommodation. Granting a central bank a high level of independence is neither a necessary, nor a sufficient, condition for solving the time-inconsistency problem. When the bank is dependent, a credible commitment to a non-accommodating policy may be achieved through alternative institutional avenues (such as membership in international monetary institutions), or it may come about as a result of persistent policies by governments that are sufficiently secure in power to create a reputation for ‘toughness’.²⁷ Conversely, when the bank is independent, policy intentions may be defeated through a combination of expansionary fiscal policies, exhortation and political threats.

In addition to central bank independence, another frequently noted disciplinary device in macro-economic policies is to peg the value of a currency to one or more other currencies generally perceived to be anti-inflationary.²⁸ The most widely cited example is the exchange rate mechanism (ERM) in the European Monetary System (EMS), where it has been argued that the dominant position of the German Mark lends credibility to the price-stabilizing policies of the member countries. Yet such arguments have to be carefully qualified. While membership in the ERM sets a standard against which the success and

(F' note continued)

Crouch, *Industrial Relations and European State Traditions* (Oxford: Clarendon Press, 1993)). What is important for our purposes is that the highly structured Japanese and Swiss bargaining systems, and the strong industry and national organizations that underpin these systems, make it reasonable to categorize them in the Organized Market Economy group.

²⁶ In other words, the classification reflects the answers to the following prioritized set of questions: (i) at what level is bargaining taking place? and (ii) how enforceable are the bargaining agreements?

²⁷ See David Backus and John Driffill, ‘Inflation and Reputation’, *American Economic Review*, 75 (1985), 530–8.

²⁸ See, for example, Susan Collins, ‘Inflation and the European Monetary System’, in Francesco Giavazzi, Stefano Micossi and Marcus Miller, eds, *The European Monetary System* (Cambridge: Cambridge University Press, 1988), 112–33; Stanley Fischer, ‘International Economic Policy Coordination’, NBER Working Paper no. 2344 (1987); John B. Goodman, *Monetary Sovereignty. The Politics of Central Banking in Western Europe* (Ithaca, NY: Cornell University Press, 1992), pp. 197–202.

TABLE 1 *Centralization of Bargaining, Central Bank Independence and Currency Regimes, 1973-93*

	Centralizationmonetary			Monetary Regime					
	(1) Centralization Index	(2) Schmitter Cameron	(3) Calmfors & Driffill	Mean (1)-(3)	Hard Currency Index	(1) Cukierman	(2) Bade and Parkin	(3) Alesina & Summers	Mean (1)-(3)
Norway	0.29	2	2	2.0	0.23	0	0	0	0.00
Sweden	0.24	4	3	3.7	0.00	0.24	0	0	0.08
Denmark	0.22	4	4	4.3	0.28	0.61	0	0.25	0.24
Finland	0.19	4	5	4.7	0.16	0.29	—	—	0.29
Austria	0.18	1	1	1.7	0.59	0.81	—	—	0.81
Netherlands	0.14	6	7	6.8	0.65	0.52	0	0.25	0.26
Germany	0.11	8	6	7.2	0.80	0.96	1	1	0.99
Belgium	0.11	7	8	6.7	0.44	0.09	0	0	0.03
Japan	0.07	10	9	9.7	1.00	0.07	0.5	0.25	0.26
Switzerland	0.06	9	10	9.3	0.97	1.00	1	1	1.00
<i>r</i>		0.86	0.86	0.90		0.47	0.77	0.69	0.64

failure of a government's economic policies can, and often will, be measured, exit or non-compliance is always an option for governments. Besides, the actual operation of the ERM has enabled considerable, while not unconstrained, flexibility in national exchange rate policies.²⁹

Membership in the ERM is also not a prerequisite for a credible commitment to a hard currency policy. Austria, Switzerland and Japan, for example, have all adhered to strong currency policies (in the case of Austria through the unilateral pegging of the schilling to the German Mark) while at the same time remaining outside any formal international institutional arrangements. For all these reasons, neither central bank independence nor international currency arrangements are likely to capture the full range of variation in the underlying theoretical variable (commitment to a non-accommodating policy rule). Since I am not interested here in the effect of any particular institution, a better strategy would be to use actual economic history as a guide to the orientation of monetary policies. In particular, a persistent 'monetarist bias' is bound to show up in the evolution of exchange rates. Viewed through the critical eyes of currency traders, a credible domestic commitment to a non-accommodating strategy is cause for medium- to long-run confidence in the currency, while the reverse is true if domestic economic policies are perceived to be accommodating. A continuous commitment to anti-inflationary policies will therefore reveal itself in the form of a strong and (relatively) appreciating currency.

Empirically, such currency 'regimes' can be measured by the growth in nominal effective exchange rates for periods exhibiting stable appreciation or depreciation. Such periods of steady-state growth can reasonably be assumed to reflect stable expectations about the currency that are based on underlying (but unobserved) policy commitments. Conversely, differences between periods, and differences between countries, can be assumed to represent divergent expectations and policy commitments. Using this logic, a *hard currency index* (*CUR*) was created based on the differential growth in exchange rates. The index varies from low values (reflecting a relatively depreciating currency) to high values (reflecting a relatively appreciating currency).³⁰ The hard currency index is compared to three widely used central bank independence indexes in Table 1 (all have been normalized to have the same value range).

As expected, there is a positive, but by no means perfect, correlation between

²⁹ This argument holds with greater force in the case of the predecessor to the ERM, the European currency 'Snake', which allowed for frequent and often large currency realignments. But even in the ERM, Weber has detected a 'strong' and a 'weak' currency block (the former organized around the German DM, the latter around the French Franc) (Axel Weber, 'European Economic and Monetary Union and Asymmetries and Adjustment Problems in the European Monetary System: Some Empirical Evidence', *European Economy*, Special Edition (1993), 187–207).

³⁰ Specifically, the index was created by partitioning the 1973–93 period into three sub-periods of varying length. The rule for the partitioning was that within-period variance in growth rates should be minimized, while between-period variance should be maximized. No country exhibited more than three distinct sub-periods, and in some cases there is little variance between the periods.

the CUR index and the various measurements of central bank independence. The main disagreement concerns Japan which, according to the hard currency index and most observers, has followed a monetarist strategy since the mid-1970s, yet scores low on most central bank independence indices.³¹ In this case, the institutional key to monetary policies is the intimate organizational ties between the Bank of Japan and the Ministry of Finance. The ministry, especially the powerful Budget Bureau, holds very strong formal powers in the budgetary and monetary policy process, has a permanent appointee on the board of the central bank, and appoints many of the senior-level vacancies in the bank.³² In addition, the ministry enjoys substantial autonomy in fiscal and monetary policy-making, and is widely known to be dominated by fiscal conservatives who believe that inflation is a threat to not only the Japanese economy and state, but also to their own long-term power within the bureaucracy. When these institutional features are combined with a long reign of single-party rule, far-sighted low-inflation policies are to be expected.³³

While both central bank independence and the hard currency index are indicators for the monetary regime, the logic of the theoretical argument can also be tested against other public policies that accommodate union objectives. In particular, expansionary public sector employment policies and social policies which reduce workers' dependence on the market should facilitate union co-operation in highly centralized systems, but encourage militancy in decentralized systems – especially among low-wage workers who are concentrated in the sheltered sectors of the economy. Conversely, restrictive public employment policies and commodifying social policies, by increasing exposure to market forces, should encourage wage moderation in decentralized bargaining systems, but meet with resistance in centralized ones. In order to test these propositions, I devised an *index of commodification* (COMMOD) that is the average of unemployment compensation rates and total public sector employment (after standardization of both variables).³⁴ The former is measured as the average unemployment compensation rate over a three-year period for a representative 40 year old unemployed person, taking into account different family circumstances (single or married with or without working spouse) and previous levels of earnings.³⁵ The data for public sector employment is based

³¹ Yet, there is some disagreement about the coding of the Japanese central bank in terms of independence. For example, in the Bade and Parkin index, the central banks of Japan and the United States share the third position.

³² Michael Hutchison, Takatoshi Ito and Tom Cargil, *Political Economy of Japanese Monetary Policy* (Cambridge, Mass.: MIT Press, forthcoming), chap. 8; Edward Lincoln, *Japan Facing Economic Maturity* (Washington, DC: Brookings Institution, 1988), p. 179; T. J. Pempel, *Policy and Politics in Japan: Creative Conservatism* (Philadelphia, Penn.: Temple University Press, 1982), pp. 61–2.

³³ Hutchison, Ito and Cargil, chap. 8.

³⁴ The index has the same range as the hard currency index.

³⁵ The data is bi-yearly and from the OECD Database on Unemployment Benefit Entitlements and Replacement Rates. The compensation rate for the first year of unemployment is weighted twice that

on OECD's standardized measure of government employment as a percentage of total employment.

The Statistical Model and Estimation

Following Beck and Katz, ordinary least squares (OLS) with lagged dependent variables was used to test the model.³⁶ Not only does OLS yield more accurate standard errors than the commonly used Park's generalized least square (GLS) method, it also allows for an explicit modelling of the dynamic element in the relevant processes. Specifically, the model to be fitted has the following form:

$$UN_{i,t} = a_i + b_1CEN_{i,t} + b_2MON + b_3CEN_{i,t}*MON_{i,t} + b_4EXMAR_{i,t} + b_5UNOECD_i + b_nUN_{i,t-n} + b_jDUMMY_j \quad (1)$$

where $UN_{i,t}$ is the absolute unemployment rate for country i at time t ; $CEN_{i,t}$ is the centralization index; $MON_{i,t}$ is the measure of monetary non-accommodation; $CEN_{i,t}*MON_{i,t}$ is a multiplicative term designed to capture the interaction effects between the bargaining system and the monetary regime; $UNOECD_t$ is the average rate of unemployment across OECD countries at any given point in time; $EXMAR_{i,t}$ is an economic control variable measuring the yearly growth in each country's export market; $DUMMY_j$ is a dummy variable controlling for each j country- or time-specific effect; $UN_{i,t-n}$ is a lagged dependent variable for lag $n = [1,2 \dots , \infty]$.³⁷

The two economic variables, $EXMAR_{i,t}$ and $UNOECD_t$, are included as controls for economic effects that are exogenous to the theoretical model. $EXMAR_{i,t}$ measures the growth in a country's export markets in the expectation that higher rates of growth will stimulate domestic production and hence reduce unemployment. $UNOECD_t$ is the level of OECD unemployment in any given year and has been incorporated in order to control for factors affecting unemployment common to all advanced industrialized countries. Other potential economic control variables, including one measuring dependency on energy imports and one measuring exposure to trade, had negligible effects on the results and were dropped from the analysis.³⁸ $UN_{i,t-n}$ are lagged dependent

(F'note continued)

of the second or third year since the compensation rates for the first year of unemployment is likely to influence union wage policies more than rates for the second and third year. Compensation rates beyond this three-year time horizon are assumed not to affect the wage behaviour of unions. In one case, Sweden, the data was adjusted to take into account that unemployed people in this country can re-earn rights to full compensation by accepting a guaranteed employment offer in a labour market programme. The low legal compensation rates for the second and third years are otherwise highly misleading.

³⁶ Nathaniel Beck and Jonathan Katz, 'What to Do (And Not to Do) With Time-Series Cross-Section Data,' *American Political Science Review*, 89 (1995), 634-48.

³⁷ Date for unemployment and export market growth is from OECD, *OECD Economic Outlook* (Paris, various years).

³⁸ The results when these variables are included are only marginally different, but available upon request.

variables designed to capture the time-dependent element in unemployment, while the dummies are variables used to control for 'fixed' country and/or time effects. The dummies were identified through a Jack Knife procedure, excluding one country or time period at a time.³⁹

The results of an OLS estimation of the model with panel robust *t*-scores are shown in Table 2. The easiest way to explain the predicted signs for the theoretical variables (indicated to the left in the table) is to differentiate Equation (1) with respect to *CEN* and *CUR*. Taking the partial derivative with respect to *CEN* yields the following slope of the unemployment function: $b_1 + b_3CUR$. If the value of *CUR* is close to zero (i.e., the monetary regime is accommodating), then the theoretical argument implies that increasing centralization reduces unemployment and hence that b_1 should be *negative*. If the value of *CUR* is high (i.e., the monetary regime is non-accommodating) then centralization should raise unemployment, which implies that b_3 must be *positive*. Similarly, taking the partial derivative with respect to *CUR* yields the following slope for the unemployment function: $b_2 + b_3CEN$. If *CEN* is close to zero (i.e., bargaining is decentralized), then the theory implies that non-accommodation would reduce unemployment and hence that the value of b_2 must be *negative*. Finally, if *CEN* is high (i.e., bargaining is centralized), non-accommodation should raise unemployment which, as before, requires b_3 to be positive.

With these predictions in mind, the results for the basic model using *CUR* as the measure for non-accommodation (the first column in Table 2) are all in the correct direction and statistically significant at a 0.01 level or better. The dummy variable called *Fin₉₁₋₉₃* was included to capture the collapse in the large Finnish trade with the former Soviet Union and the ensuing deep recession. Such cataclysmic events are neither anticipated by the model, nor do they raise serious theoretical questions about its validity. However, none of the country dummies in the Jack Knife analysis exhibited significant effects on the relationship between the theoretical variables and unemployment, and consequently they were excluded from the analysis.

The second column of the table shows the results from using the mean scores on the three central bank independence indexes listed in Table 1 as the indicator for monetary non-accommodation. As expected, the results from this analysis are somewhat weaker than for the hard currency index, although the signs on the theoretical variables are correctly predicted and statistically significant. Unfortunately, the theoretical parameters are highly sensitive to the inclusion or exclusion of country dummies for Austria and Japan. Compared to the hard currency index, the reason is that the central bank independence measure exaggerates the degree to which Austrian monetary policies are

³⁹ This procedure is very similar to that proposed in James A. Stimson, 'Regression in Space and Time: A Statistical Essay', *American Journal of Political Science*, 29 (1985), 914-47. The solution of including a full set of $n - 1$ country dummies is difficult to apply in this case since the independent institutional variables are very stable over time and therefore highly co-linear with the country dummies.

TABLE 2 Ordinary Least Squares Estimates of the Effects of Institutional Variables on the Rate of Unemployment (pooled time series, 1973-93)

	Regression estimates and <i>t</i> -statistics												
	Predicted sign	CUR				CBI				COMMOD			
		<i>b</i>	<i>t</i> †	<i>b</i>	<i>t</i> †	<i>b</i>	<i>t</i> †	<i>b</i>	<i>t</i> †	<i>b</i>	<i>t</i> †	<i>b</i>	<i>t</i> †
<i>a</i>													
<i>CEN</i> _{<i>i,t</i>}	-	1.56	4.93***	1.18	4.25***	1.47	4.51***						
<i>MON</i> _{<i>i,t</i>}	-	-3.26	-3.66***	-2.20	-2.79***	-2.98	-3.21***						
<i>CEN</i> _{<i>i,t</i>} * <i>MON</i> _{<i>i,t</i>}	+	-1.18	-3.62***	-0.76	-2.17**	-0.93	-3.02***						
<i>UNOECD</i> _{<i>t</i>}		5.94	2.70***	5.49	1.79*	4.68	2.69***						
<i>EXMAR</i> _{<i>i,t</i>}		-0.2	-0.70	0.01	0.32	-0.01	-0.42						
<i>UN</i> _{<i>i,t-1</i>}		-0.06	5.39***	-0.07	5.45***	-0.07	-5.40***						
<i>UN</i> _{<i>i,t-2</i>}		1.47	21.03***	1.48	21.10***	1.48	21.44***						
<i>Fit</i> ₉₁₋₃		-0.53	-7.89***	-0.55	-8.01***	-0.55	-8.22***						
<i>Aus</i>		2.87	5.92***	2.86	6.01***	2.83	5.62***						
<i>Jap</i>		—	—	-0.34	-2.08**	—	—						
Adjusted <i>R</i> ²								0.97					0.97
<i>N</i>								210					210

† Based on White's robust standard errors.
Key to significance levels: *0.10; **0.05; ***0.01 (two-tailed)

non-accommodating, and incorrectly implies that Japanese policies are highly accommodating.⁴⁰ This problem does not arise with the commodification index (column 3) which – although not directly related to monetary policies – implies that accommodation facilitates full employment in centralized, though not in decentralized, bargaining systems. Whichever measure is used, therefore, the results all point in the same direction: the combination of either a highly centralized wage bargaining system with an accommodating policy regime or a decentralized bargaining system with a non-accommodating policy regime is associated with low levels of unemployment, while ‘disequilibrium’ couplings of the bargaining system and the monetary regime are associated with high unemployment.

The findings are illustrated in Figure 1 which shows the estimated relationship between bargaining centralization and the level of unemployment for two types of monetary regimes.⁴¹ An accommodating monetary regime (dashed lines) is operationalized as one in which the hard currency index is one standard deviation ‘softer’ than the mean; a non-accommodating policy regime (solid lines) is operationalized as one in which hard currency index is one standard deviation ‘harder’ than the mean. The effects on unemployment for the various degrees of centralization have been estimated using several different time lags. Starting from a mean level of unemployment (the dotted line in the centre), the regression lines show the predicted unemployment resulting from adopting a particular monetary regime after two years, six years and infinity. For example, in a highly centralized system ($CEN = 0.35$) the gap in unemployment between an accommodating and non-accommodating regime would be approximately 1 and 4 per cent after two and six years respectively. For decentralized systems a similar gap would develop, but with non-accommodating regimes now outperforming accommodating ones.

In the case of $t = \infty$, unemployment reaches a stable equilibrium level that is sustainable indefinitely if institutions remain unchanged. In this long-run scenario, an accommodating monetary system operating in a centralized bargaining system ($CEN = 0.35$) would produce unemployment rates 7 per cent below those in a non-accommodating regime. Conversely, if the bargaining system was decentralized ($CEN = 0.05$), an accommodating monetary system would be associated with 7 per cent *more* unemployment than a non-accommodating regime. In substantive terms – not merely in statistical terms – the model thus produces very significant results.

There is a caveat to this conclusion, however, since the long-term effects of institutions are not directly estimated through the pooled time-series design.

⁴⁰ I have already discussed why indices of central bank independence are misleading in the case of Japan. In the case of Austria, it is noteworthy that one of the most comprehensive comparative studies of Austrian monetary policies suggests that Austrian monetary institutions are more flexible and accommodating than implied by the high central bank independence score. See Scharpf, *Crisis and Choice in European Social Democracy*, chap. 10.

⁴¹ All other variables are kept constant at their mean.

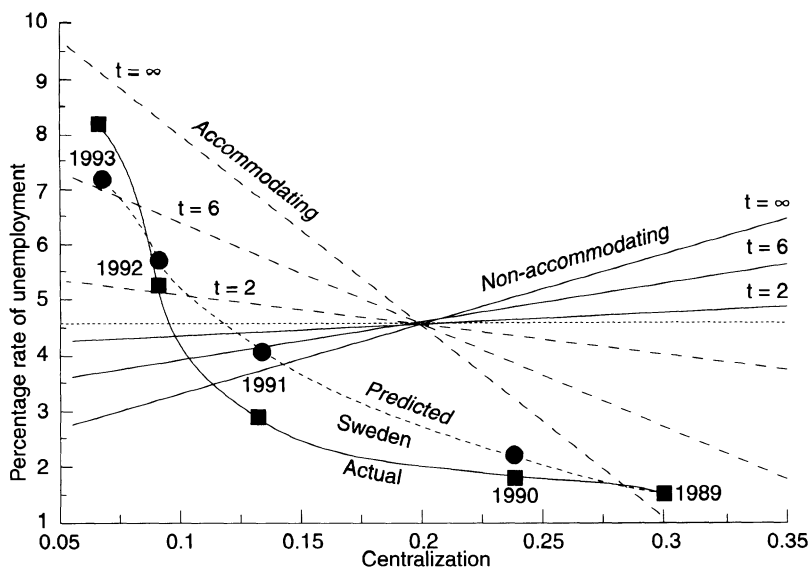


Fig. 1. The estimated relationship between centralization of bargaining and unemployment depending on the type of monetary regime

Note: A non-accommodating monetary regime is defined as a value on the hard currency index that is one standard deviation above the mean. An accommodating regime is defined as a value on the hard currency index that is one standard deviation below the mean. The solid line for Sweden shows the actual evolution of unemployment from 1989–1994; the dotted line shows the predicted evolution of unemployment (using the actual figures for export market growth and OECD unemployment).

Instead, incremental changes in the independent variables and their immediate effects on the dependent variable are used as the basis for *projections* over time. Could it therefore be that the model accurately predicts the effects of small intertemporal changes, but fails to account for either enduring international differences in unemployment rates, or for the effects of radical changes in economic institutions? The latter part of this question is particularly difficult to answer since most countries in the sample exhibit relatively modest institutional change over the twenty-one year period. The main exception is Sweden which offers a very dramatic recent example of decentralization in the wage bargaining system. Starting with the decision in 1983 by the metalworking union (Metall) and the engineering employers (Verkstedsforeningen) to bargain outside the established LO–SAF framework, the Swedish system came under increased pressure to decentralize over the 1980s. The definitive break with the old system came in 1991 when all peak-level bargaining was abandoned, and the main employers’ association (SAF) closed down its central bargaining unit. Subsequently, all bargaining has been conducted at the industry and local levels.

Decentralization in Sweden occurred in the context of an accommodating, government-controlled monetary regime which, according to the theory, is ill-suited to deter price–wage militancy. Unemployment should therefore be expected to have risen. For the purpose of illustrating this dynamic, I compared the actual and simulated evolution of Swedish unemployment since 1989 as mapped in Figure 1 above. Although the model predicts a slightly ‘steeper’ initial rise in unemployment than actually occurred, the unprecedented rise in Swedish unemployment is nevertheless correctly anticipated. In fact, the model predicts continued future increases in unemployment *unless* the Swedish government restructures monetary institutions in a non-accommodating direction.⁴² With this background information it is interesting to note that such reforms have in fact been initiated, starting with the bourgeois government’s pegging of the Swedish currency to the ECU in 1991. Although the peg had to be suspended due to unprecedented volatility in international currency markets, the re-orientation in macro-economic policies was continued under the new Social Democratic government. In particular, plans have been introduced to increase the independence of the central bank, and the government has committed itself to membership in the European Monetary Union. Although it is too early to say whether a permanent monetary regime shift has occurred in Sweden, the old regime has clearly reached a dead end.

For more systematic evidence of the accuracy of the model’s long-run predictions, we have to turn to the international evidence. Specifically, the model was asked what would happen in the long run if countries with the same rate of unemployment at time $t = 0$ exhibited differences in their bargaining systems and monetary regimes that mirrored those actually observed in our ten cases (using their mean values on the institutional variables). If the model yielded correct long-term predictions, the estimated equilibrium rates of unemployment should approach those actually experienced. In other words, does simply knowing the character of the relevant national institutions – while disregarding all path-dependent differences in unemployment – allow us to predict the observed differences in the rates of unemployment correctly? The answer is provided in Figure 2 which plots the predicted (long-term) equilibrium rates of unemployment against the actually observed rates.

Overall, the predicted unemployment levels are remarkably close to the observed levels ($r = 0.76$). Although there are three mild outliers (Austria, Denmark and Switzerland), two of these (Denmark and Switzerland) can probably be easily explained by idiosyncrasies in national unemployment statistics. Standardized unemployment figures that conform to the ILO/OECD definitions – based on labour force surveys – are not available for these countries. Instead, figures refer to the number of *registered unemployed* which tends to inflate Danish numbers because lax administration of unemployment benefits provides people who are only marginally available for the labour market

⁴² The equilibrium level of unemployment with unchanged institutions and export market conditions is over 12 per cent.

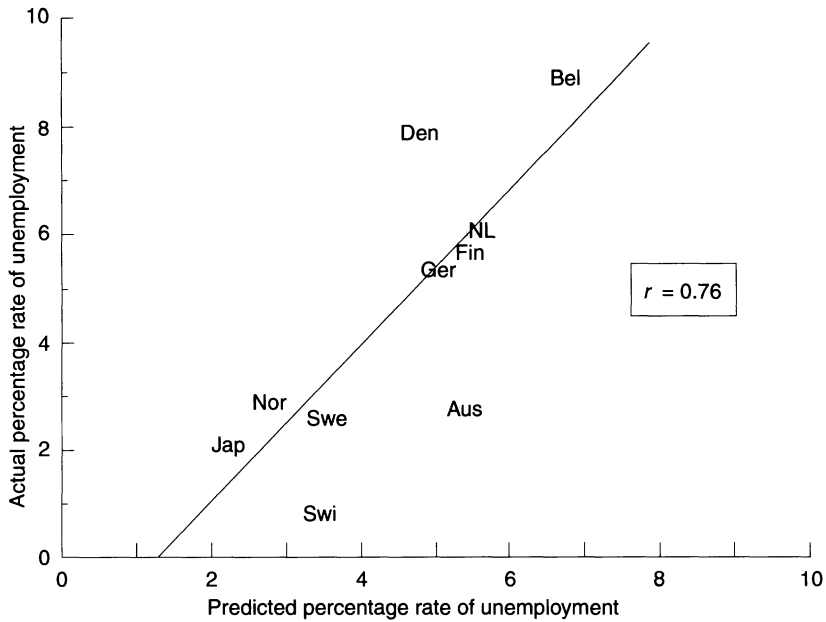


Fig. 2. The Estimated and Actual Levels of Unemployment in Ten Organized Market Economies (1973–93)

Note: The predicted rates of unemployment are the long-run equilibrium levels assuming that all countries start from the same plateau of unemployment at time $t = 0$ (measured as the average observed level of unemployment). The cases are assigned their mean values on the indexes for centralization and monetary regime.

with a strong incentive to register, while in Switzerland the ineligibility for unemployment benefits of a sizeable contingent of foreign ‘guest’ workers deflates the unemployment figure. The Austrian outlier is more puzzling. In this case it is quite likely that the co-ordinating role of the peak associations in the wage bargaining process provides greater capacity for wage restraint than anticipated by the centralization index used in this study. Since the index focuses on the predominant *level* of bargaining, it fails to capture fully the co-ordinating function performed at the peak level. With these caveats in mind, the long-term properties of the model clearly resonates well with the data.

Overall, the findings for unemployment lend strong support to the notion that high economic performance can be achieved through two distinct institutional routes. What remains to be shown is that these alternative routes are not distributively neutral. As argued above, if centralization of decisions over the wage-formation process causes a ‘politicization’ of the distribution of wages, then we should expect centralization to have a dampening effect on wage differentials. And since monetary accommodation facilitates internal

distributive compromises, we would expect accommodating regimes to have a similar effect.

This argument applies with even greater force to accommodation through decommodifying unemployment and public employment policies. Such policies cushion workers from the discriminatory effects of unemployment and low-paid private sector employment, and they point to the broader role played by the 'social wage' in the interface between the state and the labour market. Thus, to the extent that centralized systems produce co-ordinated expansions of the social wage (as argued in the neo-corporatist literature), this 'wage' should also reflect the underlying structure of power between different occupational groups. Consequently, in centralized accommodating systems the social wage would be predicted to have a solidaristic or egalitarian structure, and the government would be expected to favour policies that reduced workers' dependence on the market. Conversely, in decentralized non-accommodating systems we would expect the social wage to be more inegalitarian, and the government to be engaged in policies that created greater exposure to (and less sharing of) the risks of unemployment.

Unfortunately, comparable data on the equality of either wages proper or the social wage is very scarce, and it does not permit the application of detailed time-series analysis. Instead, we have to contend ourselves with bi-variate relationships between the institutional variables and indicators of wage inequality. Table 3 shows the result of such an analysis using cross-industry wage compression and a variety of measures for social wage equality as indicators. Several of these indicators have been developed by Gösta Esping-Andersen whose work is intimately tied to issues of labour market stratification.⁴³ Thus, his measure of decommodification indicates the extent to which benefits reduce peoples' dependence on the labour market (and hence their exposure to risks), while his measures of benefit equality and universalism are designed to capture the distributive effects of such benefits. The table also includes the previously introduced measure for unemployment replacement rates which is a particularly salient aspect of Esping-Andersen's decommodification variable.

Note that all correlations are strong and in the expected (positive) direction. Although it is impossible to sort out the independent contributions of centralization and monetary accommodation, let alone their interactive effects, the results strongly suggest that both variables have a dampening effect on inequality. Indeed, the correlations presented in Table 3 bring out very clearly the linkages between economic institutions and economic outcomes that has been argued for in this article: *centralization of bargaining is associated with flexible policy accommodation and distributive equality; decentralization is associated with non-accommodation and distributive inequality.*

This conclusion is indirectly supported by a number of empirical studies.

⁴³ Gösta Esping-Andersen, *The Three Worlds of Welfare Capitalism* (Princeton, NJ: Princeton University Press, 1990).

TABLE 3 *Pearson's Correlation Coefficients between Different Measures of Economic Institutions and Distributional Outcomes*

	Centralization of wage bargaining	Monetary accommodation ^b	Wage equality ^c	Decommod- ification ^d	Benefit equality/ univers- alism ^e	Unemployment replace- ment rate ^f
Centralization	1					
Accommodation	0.86	1				
Wage equality	0.69	0.74	1			
Decommodif.	0.82	0.75	0.72	1		
Benefit equality	0.70	0.80	0.85	0.84	1	
Replacement rate	0.81	0.84	0.86	0.94	0.88	1

Sources and Notes

^a Based on the mean scores on the index of centralization (1973-93).

^b Based on the mean scores on the hard currency index (1973-93).

^c Wage equality is measured as the variance in gross earnings across industries at the three-digit ISIC level for the years 1974 and 1984. (Sources: ILO labour statistics, except for Switzerland which is based on US bureau of labor statistics.)

^d Decommodification refers to the ease by which a person can opt out of the market, and the coverage of the various social security programmes that makes this possible. It is based on an assessment of pensions, health care and unemployment cash benefits, and is adopted from Gösta Esping-Andersen, *The Three Worlds of Welfare Capitalism* (Princeton, NJ: Princeton University Press, 1990), Table 2.2, p. 52.

^e Based on an average of universality of sickness benefits, unemployment benefits and pensions, and on the equality of such benefits as measured by the differential between the basic and maximum of such benefits. (Source: Esping-Andersen 1990, Table 3.1, p. 70.)

^f Measured as the average unemployment compensation rate over a three-year period for a representative 40 year old unemployed person, taking into account different family circumstances (single or married with or without working spouse). (Source: OECD, *The OECD Jobs Study. Evidence and Explanations* (Paris, 1994)).

Thus, Richard Freeman, Robert Rowthorn and Jonas Pontusson have all found a positive relationship between centralization of wage bargaining and wage equality, while Minford and Hibbs have found that inflation (which is associated with accommodating policies) tends to reduce overall earnings inequality.⁴⁴ To my knowledge there are no studies examining the *interactive* effects of wage bargaining institutions and monetary regimes on wage inequality, although the theoretical argument in this article suggests that this approach would produce the best empirical results.

In conclusion, the empirical findings for unemployment and wage inequality conform well to the predictions of the model. In particular, the two hypothesized equilibrium outcomes can be clearly detected in the results: a centralized bargaining system combined with an accommodating monetary regime as well as a decentralized bargaining system combined with a non-accommodating monetary regime. Yet, while both are associated with superior employment performance, the two combinations produce very different distributional outcomes, making them subject to political contestation. This is the topic of the next section.

IMPLICATIONS FOR INSTITUTIONAL DESIGN

In a dual equilibrium world we expect governments and organized interests to support institutions that are efficient, but to disagree over the most desirable institutional equilibrium. For example, employers who are both cost-sensitive and highly dependent on wage flexibility will find a decentralized bargaining system in the context of a non-accommodating policy regime most amenable to their interests. A similar conjecture can be made about workers with scarce skills who are in favourable positions to benefit from a greater wage dispersion. By contrast, centralized accommodation will enjoy strong support among low-paid workers in weak market positions who would stand to benefit from the combination of full employment policies and a bargaining system that offers institutionalized means to influence the distribution of wages. Producers of relatively standardized commodities, who are little concerned with wage flexibility, may likewise view centralization as an effective means to control wage costs while simultaneously permitting a high level of domestic demand.

Governments, finally, will have preferences that depend on their organizational and electoral base of support, as well as on their independent ideological proclivities. In order to understand institutional outcomes in particular cases we would therefore have to investigate a fairly complex strategic game in which

⁴⁴ Richard B. Freeman, 'Labor Market Institutions and Economic Performance', *Economic Policy*, 6 (1988), 64–80; Robert Rowthorn, 'Centralization, Employment and Wage Dispersion', *Economic Journal*, 102 (1992), 506–23; Jonas Pontusson, 'Wage Distribution and Labor Market Institutions in Sweden, Austria and Other OECD Countries' (unpublished, Cornell University, 1996); P. Minford, 'Interest Rates and Bond Financed Deficits in a Ricardian Two-Party Democracy', CEPR Discussion Paper No. 79 (1985); Douglas Hibbs, *The American Political Economy* (Cambridge, Mass.: Harvard University Press, 1987).

the economic environment for bargaining and coalition formation was shaped by the government, while the ability of governments to successfully follow a particular macro-economic strategy would depend on an 'appropriate' bargaining system for which support by pivotal sectoral interests is crucial. In this institutional struggle, some groups will end up supporting their second preference in order to avoid an even worse outcome. For example, engineering employers and skilled workers in Sweden for a long time supported centralization when the cost-push of sheltered sectors was not effectively contained by non-accommodating government policies; yet they supported decentralization when this became a distinct possibility because the social democratic government could no longer credibly commit to an accommodating (full employment) policy (its first preference).⁴⁵

Yet, whatever the particular balance of power between conflicting interests, the implication of the argument is that monetary regimes and collective bargaining institutions are causally related: when they are in equilibrium they tend to be mutually reinforcing and stable; when they move out of equilibrium, political pressure is generated to re-establish an (old or new) equilibrium. Hence, if we examine the relationship between institutional variables over longer periods of time we should expect centralization to be positively related to monetary flexibility. Figure 3 examines this thesis in terms of the changing location of our ten cases on the two institutional variables. The figure shows the mean position of the ten cases in two sub-periods (1973–83 and 1984–93), where the arrows indicate direction of movement.

The emerging pattern is suggestive. As expected, the cases cluster along the northwest–southeast diagonal with Nordic countries initially in the centralized/accommodating cell, and Germany, Japan, Switzerland and the Netherlands in the decentralized/non-accommodating cell. For the period 1973–93 as a whole, the correlation coefficient between centralization and accommodation is 0.86. Belgium is the only country that consistently falls outside both 'equilibrium' cells, although the tightening of monetary policies since 1983 has moved it closer to the decentralized/non-accommodating outcome. Against this background it is worth noting that Belgium has paid a very high price for this institutional 'wavering' in the form of the highest level of unemployment among our ten countries.

Two cases – Denmark and Sweden – have seen pronounced decentralization in their wage bargaining systems over the 1980s and 1990s. Case-oriented studies suggest that these changes were the result of cross-class realignments

⁴⁵ For the shifting institutional preferences of employers and high-skilled workers in the engineering sector, see Peter Swenson, 'Bringing Capital Back In, or Social Democracy Reconsidered: Employer Power, Cross-Class Alliances, and Centralization of Industrial Relations in Denmark and Sweden', *World Politics*, 43 (1991), 513–45; Jonas Pontusson and Peter Swenson, 'Markets, Production, Institutions, and Politics: Why Swedish Employers have Abandoned the Swedish Model', *Comparative Political Studies*, 29 (1996), 223–50; and Torben Iversen, 'Power, Flexibility and the Breakdown of Centralized Wage Bargaining: The Cases of Denmark and Sweden in Comparative Perspective', *Comparative Politics*, 28 (1996), 399–436.

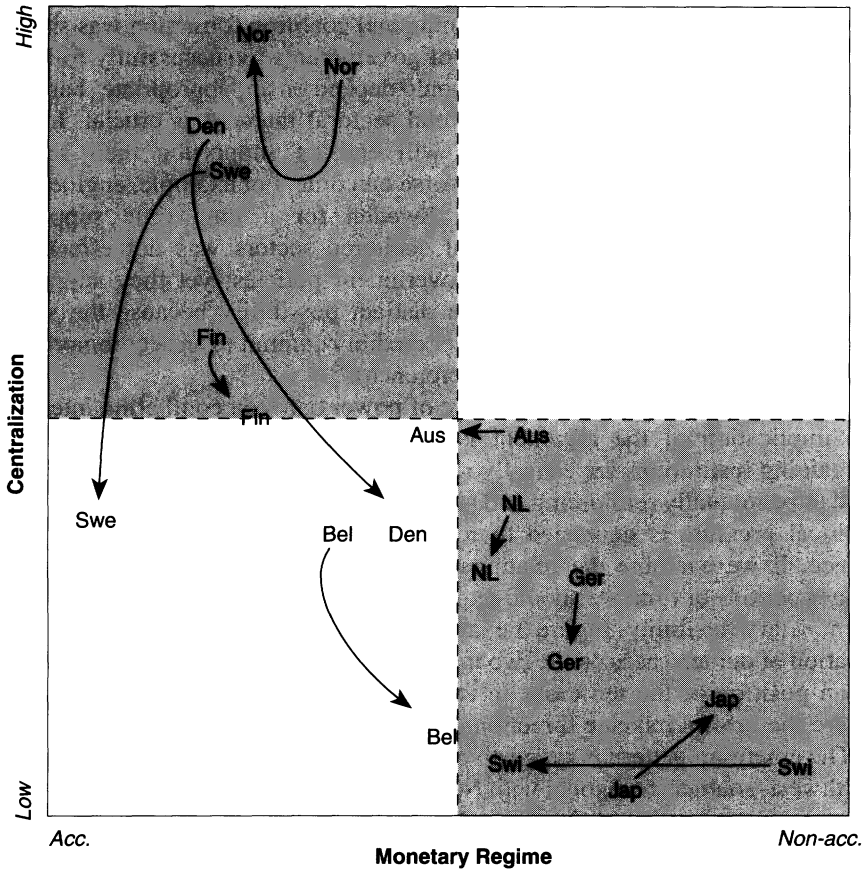


Fig. 3. The changing location of organized market economies on two economic-institutional dimensions

Note: Scores on the monetary regime and centralization variables are measured by the mean value on the CUR and CEN indices the two periods 1972–83 and 1984–93. The arrows indicate the approximate path and direction of change.

triggered in both countries by the rise of new production technologies and work organization, and by the growing integration of capital markets.⁴⁶ Widespread use of flexible production techniques – what Wolfgang Streeck has called diversified quality production – gave rise to demands among employers for greater wage flexibility aimed at encouraging firm-internal skill formation, while growing capital market integration caused inflationary macro-economic regimes to be more difficult to sustain. For the same reasons, skilled workers saw improved opportunities for wage gains in a more decentralized system

⁴⁶ See, for example, Pontussen and Swenson, 'Markets, Production, Institutions and Politics' and Iversen, 'Power, Flexibility and the Breakdown of Centralized Wage Bargaining'.

while being less concerned with its inflationary consequences.⁴⁷ The combination of new technology and economic globalization thus strengthened the power and determination of those sectors among employers and workers favouring decentralization, while it simultaneously weakened the ability of governments to engage in flexible full employment policies. Only in Norway, and to a lesser extent in Finland, did the combination of inflationary pressures from the oil boom (in Finland through expanding trade with the Soviet Union) and accommodating macro-economic policies prove sufficient to preserve a (tenuous) alliance behind centralization.

Turning to the important case of Japan, a firm commitment to an anti-inflationary monetary regime came about only after severe economic problems in the aftermath of the first oil crisis. The initial policy response to the oil shock was expansionary, causing wages and inflation to soar out of control.⁴⁸ But after a failed attempt at decreed price controls, the government threw its support behind a deflationary monetary programme launched by the Bank of Japan. Led by a highly autonomous senior echelon of the finance ministry, the policy implied repeated interest rate hikes and an appreciating currency. The transparency of the policy was ensured by introducing a new signalling device whereby the money supply would be used by the Bank of Japan as an intermediary target for monetary policies. This new commitment to an anti-inflationary regime encouraged the dominant export-oriented employers, in anticipation of future policy responses, to take a much tougher stand in the yearly wage negotiations (called the *Shunto*), and gradually a strategy of wage restraint prevailed among unions (led by the steel and metalworking industries).⁴⁹

In the Netherlands and Germany some experimentation with centralized co-ordination of macro-economic and wage policies occurred in the 1970s, but, as in Switzerland, the dominant pattern in these countries was one of combining a firm commitment to a non-accommodating monetary rule with collective bargaining between well-established industry-based unions and employers' organizations (with the metalworking industry in a dominant position). Focusing specifically on Germany, Peter Hall has recently described the functioning of such non-accommodating and decentralized systems in a manner that is highly amenable to the argument in this article.⁵⁰ Hall explains that the independence of the German central bank (the Bundesbank) allows it to send credible signals about its response to a projected set of wage settlements, while

⁴⁷ See Torben Iversen, 'Contested Economic Institutions: The Politics of Macro-Economics and Wage Bargaining in Organized Market Economies' (doctoral Dissertation, Duke University 1995). For the concept of diversified quality production, see Wolfgang Streeck, 'On the Institutional Conditions of Diversified Quality Production', in Egon Matzner and Wolfgang Streeck, *Beyond Keynesianism* (Aldershot: Edward Elgar, 1991), pp. 21–61.

⁴⁸ Lincoln, *Japan Facing Economic Maturity*, pp. 27–8.

⁴⁹ Pempel, *Policy and Politics in Japan: Creative Conservatism*, p. 104.

⁵⁰ Hall, 'Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe'. For analyses along similar lines see Scharpf, *Crisis and Choice in European Social Democracy*; and Streeck, 'Pay Restraint without Incomes Policy'.

‘the key bargainers are positioned in such a way as to render them especially sensitive to [such] signals’.⁵¹ It therefore ‘behooves the wage negotiators to anticipate the response of the Bundesbank to any settlement they might reach’.⁵² The result is comparatively good economic performance and institutional stability. Moreover, Hall is careful to differentiate this type of system from what I have previously termed centralized accommodation: ‘neither the government nor the bank really enter into the kind of “political exchange” that entails providing certain social or economic policies in exchange for a specific settlement’.⁵³ Rather, the system works through the issuing of credible threats that are supported by the institutional independence of the central bank and the co-ordination of wages facilitated by the industry-based bargaining system.

CONCLUSION

When David Cameron and others in the early 1980s asked why some nations are more successful than others in maintaining full employment, their answer centred on the benefits of centralized wage bargaining and flexible neo-Keynesian economic policies. In the early 1990s the focus of many scholars had turned to explaining why some countries were more capable than others of containing inflation over the 1980s, and they concentrated on the crucial role played by independent central banks. While obviously concerned with similar underlying questions, there was little intellectual exchange between these perspectives, and their fundamental theses and policy implications have been widely perceived to be contradictory. By contrast, this article has argued that both perspectives provide useful insights into the workings of organized market economies, and that their conclusions are conditionally applicable to different institutional settings. Thus, credible commitments to a non-accommodating monetary regime help to deter unemployment-inducing wage–price militancy in decentralized bargaining environments, while such commitments produce intense distributional conflicts and unemployment in centralized environments. Conversely, accommodating monetary regimes are compatible with real wage restraint and full employment in centralized bargaining systems, while they encourage wage–price militancy in decentralized ones.

The argument has consequences for our understanding of institutional change. The two institutional equilibria – while preferable to other combinations of institutions on efficiency grounds – have different distributive consequences and are therefore not interchangeable in political terms. By linking these distributive outcomes to the interests of partisan governments and different

⁵¹ Hall, ‘Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe’, p. 11.

⁵² Hall, ‘Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe’, p. 4.

⁵³ Hall, ‘Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe’, p. 15.

sectors of employers and workers, political alignments and realignments in support of particular institutions can be traced to the (changing) balance of power between these actors. More specifically, when exogenous technological and economic conditions are stable, we expect durable coalitions to form behind one of the two equilibrium outcomes. Conversely, when exogenous changes significantly alter the balance of power between agents with opposing institutional preferences, cross-class realignments and institutional transitions are more likely to occur. For example, technological change that places a premium on wage flexibility combined with growing integration of capital markets weakens the capacity of governments to pursue accommodating full employment policies and makes decentralized bargaining systems more attractive to pivotal sectors of employers and workers. Since these forces of change have been pervasive during the 1980s and 1990s, they help explain recent trends in the Scandinavian countries away from egalitarian centralized forms of co-ordination towards more decentralized and inegalitarian forms.

APPENDIX: THE CALCULATION OF CENTRALIZATION OF WAGE BARGAINING

The operational definition of centralization is $\sum w_j p_{ij}^2$ where w_j is the weight accorded to each bargaining level j ($\sum w_j = 1$), and p_{ij} is the share of workers covered by union (or federation) i at level j . Information about the concentration of union membership at each level of bargaining (p_{ij}) was obtained from national statistical sources. The weights (w_j) – listed in Table A1 – depend on (i) the predominant level(s) at which bargaining take place, and (ii) the enforceability of bargaining agreements. The weights were assigned to every bargaining round in each country over the twenty-one year period from 1973 to 1993. Only three levels of bargaining were used in the classification, reflecting the empirical prevalence of peak-level bargaining, sector/industry-level bargaining, and firm/plant-level bargaining.

The degree of enforceability depends on the capacity of bargaining agents to implement their agreements. Enforceable agreements presuppose that bargaining agents control most strike and lockout funds, and can impose fines for non-compliance (particularly important on the employer side). Non-enforceable agreements means that the bargaining agents lack credible threats of sanctions.⁵⁴ In some borderline cases, noted in the table, bargaining agents exercised partial control over enforcement.

In carrying out the coding, the monthly monitoring of bargaining in the *European Industrial Relations Review* was an invaluable source for information about particular bargaining rounds. I have also greatly benefited from the data collected for the collaborative NSF project on centralization by Golden, Wallerstein and Lange.⁵⁵

⁵⁴ Included here are several instances of ‘incomes policies’ – see Robert J. Flanagan, David Soskice and Lloyd Ulman, *Unionism, Economic Stabilization, and Incomes Policies: European Experience* (Washington DC: The Brookings Institution, 1983), p. 983.

⁵⁵ See Miriam Golden and Michael Wallerstein, ‘Unions, Employers, and Collective Bargaining: A Report on Data for 16 Countries from 1950 to 1990’ (presented at the Annual Meetings of the Midwest Political Science Association, 1995). This information has been supplemented with descriptions of particular national bargaining systems in Andrei S. Markovits, *The Politics of West German Trade Unions* (Cambridge: Cambridge University Press, 1986); Jesper Due, Jørgen Steen Madsen, Carsten Strøby Jensen and Lars Kjerulf Petersen, *The Survival of the Danish Model: A Historical Sociological Analysis of the Danish System of Collective Bargaining* (Copenhagen: DJøF, 1994); Colin Crouch, *Industrial Relations and European State Traditions* (Oxford: Clarendon Press,

TABLE A1 *Classification Scheme for Centralization of Authority*

Weights	Definitions
Centralized Authority 0.9, 0, 0.1	National associations monopolize wage bargaining and agreements are enforceable. Lower-level bargaining is banned (Norway 1988–89).
0.7, 0, 0.3	National associations monopolize bargaining and agreements are enforceable. Local bargaining is permitted subject to a peace clause. (Belgium 1973–75; Denmark 1973–79, 1985; Norway 1976–80, 1983, 1985, 1990–1993; Netherlands 1973; Sweden 1973–82, 1983 ^a , 1985 ^a , 1986, 1989 ^a).
0.5, 0.3, 0.2 (0.4, 0, 0.6) ^c	National associations negotiate central agreements with some capacity for enforceability, but industry-level organizations retain the right to bargain separate agreements without adherence to a peace clause. (Finland, 1974, 1976–79, 1981, 1984, 1986 ^b , 1987, 1989–91, 1993; Netherlands 1982–84; Japan 1973–93 ^c).
De-centralized Authority 0.1, 0.7, 0.2	National associations and/or the government set non-enforceable targets for lower-level bargaining, but industry-level organizations retain rights to bargain enforceable agreements. Local bargaining is permitted subject to a peace clause. (Austria 1973–1993; Belgium 1977, 1981–85, 1989–93; Denmark 1983, 1987, 1989, 1991, 1993; Finland 1980, 1983, 1988; Germany 1973–77; Netherlands 1974–81 ^{de} , 1985–93; Norway 1974, 1982, 1984, 1986; Sweden 1984, 1988, 1991–93).
0, 0.8, 0.2	Industry-level organizations monopolize bargaining and strike/lockout decisions, and agreements are enforceable. Local bargaining is permitted subject to a peace clause. (Belgium 1979, 1987; Denmark 1981; Germany 1978–93; Norway 1986; Switzerland 1973–93).

Notes:

^a In these instances bargaining is simultaneously carried out by peak-level organizations and by industry organizations depending on the bargaining area. For simplicity all bargaining is considered to take place at the peak level, while the calculation of the centralization score takes into account the coincidence of industry- and peak-level agreements. The exceptional bargaining rounds are for 1983, 1985 and 1989, when separate agreements were concluded in the metalworking sector.

^b Early in the year, wage agreements are reached at the sectoral level, but they are superseded by a centralized agreement later in the year.

^c The Japanese system is unique because the industry/sectoral level plays no role in the bargaining process. The weight for the intermediate level is therefore *de facto* zero. Moreover, the centralized agreement (*Shunto*) is only weakly enforceable. Note also that in 1987 the four major confederations – Sohyo, Shinsanbetsu, Churitsuroren and Domei – merged to form a single confederation, Rengo. This greatly increased the centralization of the Japanese system.

^d In 1976 the two main federations, NVV and CNV (and its member unions) merged to form the Dutch Federation of Trade Unions (FNV).

^e In 1979 the white-collar union MHP is formed.

As an illustration of how the final centralization score was calculated for a particular country and bargaining round, consider Austria in 1973. Austria had a single labour confederation organizing both blue- and white-collar workers (ÖGB), and sixteen industry unions with the following shares of total union membership (in order of magnitude): 0.183, 0.180, 0.129, 0.095, 0.092, 0.074, 0.046, 0.045, 0.041, 0.031, 0.018, 0.017, 0.016, 0.013, 0.011, 0.009. Substituting this information, along with the weights from Table A1, into the equation yields the following figure for centralization:

$$C = [0.1*1^2 + .7*(0.183^2 + 0.180^2 + 0.129^2 + 0.095^2 + 0.092^2 + 0.074^2 + 0.046^2 + 0.045^2 + 0.041^2 + 0.031^2 + 0.018^2 + 0.017^2 + 0.016^2 + 0.013^2 + 0.011^2 + 0.009^2 + 0.2*(0.00^2))] = 0.18$$

Note that the share of membership by any single union at the local level is assumed to be negligible; an assumption that is practically always satisfied for plant and firm-level bargaining.

(Footnote continued)

1993); and chapters in Flanagan, Soskice, and Ulman, *Unionism, Economic Stabilization, and Incomes Policies: European Experience* (Washington, DC: The Brookings Institution, 1983); John P. Windmuller, *Collective Bargaining in Industrialized Market Economies: A Reappraisal* (Geneva: ILO, 1987); and in Anthony Ferner and Richard Hyman, eds, *Industrial Relations in the New Europe* (Oxford: Basil Blackwell, 1992). In the case of Japan (which is not covered by the EIRR), the classification is based on Taishiro Shirai, 'Japan', in John P. Windmuller, *Collective Bargaining in Industrialized Market Economies: A Reappraisal* (Geneva: ILO, 1987), pp. 242–52, and news reports in the *Japan Labor Bulletin*.