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**Varieties of Capitalism and Institutional  
Complementarities in the Macroeconomy**  
An Empirical Analysis

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## **Abstract**

Using aggregate analysis, this paper examines the core contentions of the “varieties of capitalism” perspective on comparative capitalism. We construct a coordination index to assess whether the institutional features of liberal and coordinated market economies conform to the predictions of the theory. We test the contention that institutional complementarities occur across sub-spheres of the macroeconomy by examining the correspondence of institutions across sub-spheres and estimating the impact of complementarities in labor relations and corporate governance on rates of growth. To assess the stability of the institutional features central to the theory, we assess the dynamics of institutional change in recent years. The evidence suggests that there are powerful interaction effects among institutions across sub-spheres of the political economy that must be considered if the economic impact of institutional change in any one sphere is to be accurately assessed.

## **Zusammenfassung**

Mit Hilfe von Aggregatdaten analysiert dieses Papier Kernaussagen des „Varieties-of-Capitalism“-Ansatzes. Um beurteilen zu können, ob die Aussagen der Theorie mit den institutionellen Begebenheiten liberaler und koordinierter Ökonomien übereinstimmen, konstruieren wir einen ländervergleichenden Index der ökonomischen Koordination. Wir überprüfen die These von der institutionellen Komplementarität zwischen den verschiedenen Sphären politischer Ökonomien, indem wir das Zusammenwirken von Institutionen analysieren und den Einfluss komplementärer Institutionen der Arbeitsbeziehungen und der Unternehmenskontrolle auf die Höhe von Wachstumsraten untersuchen. Wir diskutieren darüber hinaus, wie stabil die institutionellen Begebenheiten in den vergangenen Jahren waren. Im Ergebnis zeigen sich starke Interaktionseffekte zwischen den Sphären politischer Ökonomien, die berücksichtigt werden müssen, um die wirtschaftlichen Wirkungen institutionellen Wandels in einzelnen Sphären zu verstehen.

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How do national variations in the institutions of the political economy affect economic performance? This question has been central to comparative political economy for many years. However, most answers to it focus on institutions in a single sphere of the political economy. In economics, there are large but separate literatures on labor and financial markets. One explores the impact of labor regulations, social regimes, and trade unions on growth or unemployment (Nickell 1997; OECD 1994; Calmfors/Driffil 1988). The other considers the effects of accounting standards, the legal standing of owners or creditors, ownership patterns, and equity or bank-based finance on levels of investment or growth (Carlin/Mayer 1999a, 1999b; LaPorta et al. 1998a; Huang/Xu 1999; Mayer 1996). A similar separation is evident in political science. Although neocorporatism can be defined in broad terms (cf. Katzenstein 1985; Schmitter/Lehmbruch 1978), analyses of its economic impact usually focus on the organization of the trade union movement, considering its interaction mainly with the partisanship of governance (Cameron 1984; Alvarez et al. 1991; Garrett 1999).<sup>1</sup> An entirely different literature examines the structure of financial systems (Verdier 2000; Cox 1986; Zysman 1984).<sup>2</sup>

However, there are good reasons to expect interaction effects among institutions across spheres of the political economy. In recent years, significant interaction effects have been found between monetary institutions and those governing wage coordination (Franzese 2002; Cukierman/Lippi 1999; Soskice/Iversen 2000; Iversen et al. 2000; Iversen 1998; Hall/Franzese 1998). But investigation of such effects among other institutions has barely begun (cf. Amable 2000; Amable et al. 2001; Ernst 2002; Fehn/Meier 2000; Caballero/Hamour 1998; Nicoletti et al. 2000).

The problem can be described as one of identifying *institutional complementarities* in the macroeconomy. Economists have identified complementarities among the activities of firms: marketing strategies based on product customization, for instance, can be complementary to computer-controlled machines on the production line (cf. Jai-

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- 1 Hicks and Kenworthy (1998; cf. Kenworthy 1995) are a notable exception. They examine the impact of neocorporatism construed as a broad system of cooperation; and a few other studies do so as well, without, however, examining interaction effects among spheres of the economy directly.
- 2 Less relevant to this paper but of equal importance is a literature on the economic impact of variation in the institutions responsible for economic policy (cf. Drazen 2000; Persson/Tabelini 1994).

kumar 1986; Milgrom/Roberts 1990, 1995). It is plausible to posit analogous complementarities among the institutions structuring relations in the political economy (Amable 2000). One set of institutions is complementary to another when its presence raises the returns available from the other. Here, we refer to the returns to the actors involved in the relevant activities that feed into national economic performance.<sup>3</sup>

The requirement for any investigation of this issue, however, is a theory specifying why two or more institutions might be complementary to each other, and where such complementarities are located in the political economy. Aoki (1994) offers important observations about the issue but focuses only on the case of Japan. An important literature on comparative capitalism suggests that political economies contain such complementarities (Crouch/Streeck 1997; Whitley 1999; Hollingsworth/Boyer 1997; Albert 1993), but most contributions to it address a limited number of countries and do not specify the complementarities in readily generalizable terms.<sup>4</sup>

In this context, a new body of work on ‘varieties of capitalism’ is important (cf. Hall/Soskice 2001b).<sup>5</sup> Its formulations contain a theory about the nature of the institutional complementarities found in the political economies of the developed world. Applying the new economics of organization to the macroeconomy, this literature distinguishes among capitalist economies by reference to the means firms and other actors use to coordinate their endeavors. It suggests that nations cluster into identifiable groups based on the extent to which firms rely on market or strategic modes of coordination and that important complementarities can exist between the institutions in different spheres of the political economy. From this follow many important contentions about variations in economic performance, comparative institutional advantage, national responses to globalization, and comparative public policy, which are grounded in a rich set of comparative case studies (see the references in Hall/Soskice 2001b).<sup>6</sup>

However, the core postulates of the varieties of capitalism approach have not yet been subjected to empirical tests based on aggregate analysis of a large number of cases. As yet, we do not even have good measures for the character of coordination, the concept

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3 Obviously, this leaves aside the question of how these returns are distributed, a matter that may also be conditioned by the character of the institutions.

4 For important recent exceptions, see Amable (2000); Amable et al. (2001); Ernst (2002); Boyer (1989).

5 This approach originates in early formulations by Soskice (1990a, 1990b) that build on the literature about neocorporatism and regulation (cf. Katzenstein 1985; Boyer 1989) but add to it a fuller appreciation for the role that employer networks play in the economy. It has subsequently been developed by Soskice and a number of other scholars, many of whom are contributors to Hall and Soskice (2001b).

6 Aggregate analysis has been applied to a few of the relatively specific propositions generated by this approach (cf. Franzese 2001; Estevez et al. 2001; Iversen/Soskice 2000, 2001).

at the heart of the analysis. This poses many problems. Case studies have been used to classify nations into general categories, but reliance on such broad classifications has meant that a theory designed to offer insights about all the developed nations is sometimes misinterpreted to be one that speaks only to a few ideal types, and the position of many nations within these categories remains ambiguous.

The object of this paper is to address these problems, by devising indicators for some of the central concepts of the varieties of capitalism approach and subjecting some of its core contentions to aggregate empirical tests. We begin by developing indices to measure the character of coordination in key spheres of the political economy. We use them and other measures to assess the plausibility of the account given by the varieties of capitalism perspective about how behavior across the sub-spheres of the political economy interlocks and how national political economies differ. We then examine the core postulates of the theory about the presence of institutional complementarities in the macroeconomy. Finally, we examine patterns of political adjustment and institutional change in order to assess the durability of the national distinctions identified by this approach. Before considering specific propositions, we open with an overview of the varieties of capitalism perspective.<sup>7</sup>

## 1 The varieties of capitalism approach

In contrast to the large literature focused on national labor movements, varieties of capitalism analyses assume that firms are the central actors in the economy whose behavior aggregates into national economic performance. In order to prosper, firms must engage with others in multiple spheres of the political economy: to raise finance (on financial markets), to regulate wages and working conditions (industrial relations), to ensure workers have the requisite skills (education and training), to secure access to inputs and technology (via interfirm relations), to compete for customers (in product markets), and to secure the cooperation of their workforce (firm–employee relations). Adopting a relational view of the firm, this perspective assumes that the key to success in each of these endeavors is efficient coordination with other actors. The central problems facing firms are, therefore, coordination problems involving other actors in the economy.

The varieties of capitalism approach draws a distinction between two modes of coordination. In one, firms coordinate with other actors primarily through competitive markets, characterized by arms-length relations and formal contracting. Here, equi-

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<sup>7</sup> This approach originates in the early work of David Soskice (1990a, b), and the account given of it here draws extensively on joint work with him (Hall/Soskice 2001a).

librium outcomes are dictated primarily by relative prices, market signals, and familiar marginalist considerations. In the other modality, firms coordinate with other actors through processes of strategic interaction of the kind typically modeled by game theory. Here, equilibrium outcomes depend on the institutional support available for the formation of credible commitments, including support for effective information-sharing, monitoring, sanctioning, and deliberation.<sup>8</sup>

Although instances of market and strategic coordination occur in all capitalist economies, this approach contends that, in the spheres central to firm endeavor, the balance between these two types of coordination varies across political economies. At one end of the spectrum stand *liberal market economies* (LMEs) where relations between firms and other actors are coordinated primarily by competitive markets. At the other end are *coordinated market economies* (CMEs) where firms typically engage in more strategic interaction with trade unions, suppliers of finance, and other actors.<sup>9</sup>

Whether a firm coordinates its endeavors through market relations or strategic interaction is said to depend on the institutional setting. Where markets are imperfect and there is substantial institutional support for the formation of credible commitments, firms can be expected to rely more extensively on strategic coordination. Where markets are fluid and there is little support for such commitments, firms will rely more heavily on market coordination. Accordingly there should be a correspondence between the institutional configuration of each sphere of the economy and the character of coordination there.<sup>10</sup>

The distinction will be clearer if we describe a liberal and coordinated market economy. Market coordination is a familiar concept in neoclassical economics, and the United States is a typical liberal market economy. Here, firms face large equity markets marked by high levels of transparency and dispersed shareholding, where firms' access to external finance depends heavily on publicly assessable criteria such as market valuation. Regulatory regimes allow hostile takeovers that depend on share price, rendering managers sensitive to current profitability. Because trade unions are rela-

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8 This list of the institutional correlates of effective strategic coordination is a familiar one that draws on the conventional literature (cf. Ostrom 1990) but also includes the presence of a capacity for deliberation whose importance is outlined in Hall/Soskice (2001a).

9 The approach concentrates on cross-national variation because it examines spheres where national regulations and nationally specific institutions are especially important, but it acknowledges there can be additional variation across specific regions or sectors (cf. Campbell et al. 1991; Herrigel 1996).

10 Of course, the distinction between institutions and coordination is a narrow one, especially if coordination is construed as rule-patterned behavior (cf. Calvert 1995). Here, institutions are construed as rules and practices, more or less formal, that actors take into account when making decisions about what actions to undertake. These include the institutions generated by the organizational setting (cf. Hall/Soskice 2001a: 9).

tively weak and employment protection low, labor markets are fluid and wage-setting primarily a matter of contract between workers and individual employers. Because labor markets are fluid, workers have incentives to invest in general skills that can be taken to other jobs, and, because industry associations are weak, firms lack the capacity to mount the collaborative training programs that confer industry-specific skills. Technology transfer is accomplished primarily by licensing or taking on expert personnel, and standards are usually set by market races. Top managers enjoy substantial authority over all aspects of firm strategy, including layoffs. In such settings, many of the relationships firms form with other actors are mediated by competitive markets. Although there are variations among them, the United Kingdom, Ireland, Canada, Australia and New Zealand are also generally identified by this approach as liberal market economies.

Germany provides a good example of a coordinated market economy. Its firms are closely connected by dense networks of cross-shareholding and membership in influential employers associations. These networks provide for substantial exchanges of private information, allowing firms to develop reputations that permit them some access to capital on terms that depend more heavily on reputation than share value. Accordingly, managers are less sensitive to current profitability. In the presence of strong trade unions, powerful works councils, and high levels of employment protection, labor markets are less fluid and job tenures longer. In most industries, wage-setting is coordinated by trade unions and employers associations that also supervise collaborative training schemes, providing workers with industry-specific skills and assurances of available positions if they invest in them. Industry associations play a major role in standard-setting with legal endorsement, and substantial amounts of technology transfer take place through interfirm collaboration. Hemmed in by powerful workforce representatives and business networks, top managers have less scope for unilateral action, and firms typically adhere to more consensual styles of decision-making.

It should be apparent that, in order to perform their core functions, firms in coordinated market economies like that of Germany must engage in strategic interaction in multiple spheres, although the institutions on which they rely and the quality of the outcomes may vary from one to another. Austria, Japan, South Korea, Sweden, Norway, Finland, Denmark, Belgium, the Netherlands, and Switzerland are usually also identified by those who adopt this approach as coordinated market economies.

## 2 Establishing coordination as a crucial dimension

We begin our analysis by examining the core contention of the varieties of capitalism approach that the developed economies differ systematically from one another according to the extent to which firms depend on market or strategic coordination to accomplish their endeavors. Of course, the character of coordination is difficult to measure directly. However, as Hall and Soskice (2001a) point out, the nature of the coordination present in any sphere of the economy depends on the type of institutions available to support it there. Accordingly, a factor analysis designed to identify commonalities that may be unobservable in themselves but that correlate with a range of observable variables provides an appropriate technique for identifying the character of coordination (Harman 1976). By performing a factor analysis on a set of institutional measures that are commonly associated with one type of coordination or another, we can assess whether the dimensions of market and strategic coordination posited by varieties of capitalism theory exist and where they are present. Varieties of capitalism theory generates two hypotheses that can be tested using such an analysis:

*H1: The character of coordination constitutes a key dimension stretching across spheres of the political economy.*

If this is correct, a factor analysis of variables representing the institutional conditions associated with different types of coordination in various spheres of the political economy should identify a single principal component loading on the relevant variables across spheres of the political economy.

*H2: This dimension reflects variation along a spectrum running from market coordination to strategic coordination.*

If this is correct, the underlying factor identified in the analysis should be positively correlated with indicators for institutional support for strategic coordination and negatively correlated with indicators for institutional support for market coordination.

The central obstacle to such an analysis is the paucity of relevant indicators available for more than a few countries. The measurement of coordination poses special difficulties. In principle, types of coordination are observable, but intense observation is required. Only one sphere has been the object of such observation, namely that of wage bargaining. Accordingly, we employ two independent assessments of coordination in wage bargaining. The other variables used in the factor analysis are all indicators of institutional features of the political economy that can reasonably be said to provide support for or to reflect the operation of one type of coordination or the other. We have deliberately identified variables that extend across two important spheres of the political economy, those pertinent to labor relations and corporate gov-

ernance. The observations were drawn from the 1990–1995 period, the latest for which comparable data is available.

The variables employed in the factor analysis are as follows:<sup>11</sup>

**Shareholder Power** reflects the legal protection and likely influence over firms of ordinary shareholders relative to managers or dominant shareholders. It is a composite measure of legal regulations covering six issues: the availability of proxy voting, deposit requirements for shares, the election of directors, the legal recourse available to minority shareholders, shareholders' rights to issues of new stock, and the calling of shareholder meetings. Regulations governing each issue are coded 0 or 1 and summed. Higher scores indicate that ordinary shareholders enjoy more rights vis-à-vis managers and dominant shareholders (La Porta et al. 1998a: 1130).

**Dispersion of Control** indicates how many firms in the economy are widely held relative to the number with controlling shareholders. Taking the smallest ten firms with market capitalization of common equity of at least \$500 million at the end of 1995 as a sample of firms, it reports the percentage that do not have a controlling shareholder, defined as one who controls, directly or indirectly, more than 10 percent of the voting rights in the firm. Higher values indicate that larger proportions of firms in the economy are widely held (LaPorta et al. 1998b: Table II, Panel B).

**Size of Stock Market** is the market valuation of equities on the stock exchanges of a nation as a percentage of its gross domestic product in 1993 (Oecd.org/corporate affairs).

**Level of Wage Coordination** is the level at which unions normally coordinate wage-claims and employers coordinate wage-offers where 3 represents the national level, 2 the intermediate level, and 1 the firm level. Levels of coordination for unions and employers are assessed separately and averaged. Higher values indicate higher levels of coordination in wage-setting (Layard/Nickell/Jackson 1991: 52).

**Degree of Wage Coordination** reflects estimates by the OECD Secretariat of the degree to which wage bargaining is (strategically) coordinated by unions and employers along a scale on which 3 indicates coordinated and 1 indicates uncoordinated. Observations are for 1994. Higher values indicate higher levels of wage coordination (OECD 1997: 71).

**Labor Turnover** is an indicator of the fluidity of national labor markets and reports the number of employees who had held their jobs for less than one year as a percentage of all employees surveyed in 1995<sup>12</sup> (OECD 1997: 138).

The appropriateness of these variables for the analysis should be apparent from our description of liberal and coordinated market economies. The first three variables

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11 Further details of the derivation and definition of these measures can be found in the original sources.

12 The value for New Zealand on this variable is estimated using a multiple imputation technique.

reflect institutional variation in the sphere of corporate governance of the sort highlighted by the varieties of capitalism approach. Where the balance of influence tilts toward dominant shareholders, ownership is relatively concentrated, and equity markets are small, securing access to external finance and negotiating corporate control is more likely to involve firms in strategic interaction within corporate networks. When these conditions are reversed, issues of finance and corporate control are determined more heavily by more competitive markets. The next three variables reflect relevant variation in the sphere of labor relations. Two assess the level and degree of strategic coordination in wage bargaining. Labor turnover reflects the degree to which workers move from one firm to another via competitive labor markets.

**Table 1** Factor loadings of the coordination index

	Coordination	Uniqueness
Shareholder power	.705	.503
Dispersion of control	.821	.325
Size of stock market	.638	.593
Level of wage coordination	-.721	.481
Labor turnover	.512	.739
Degree of wage coordination	-.874	.235
<i>Eigenvalue</i>	3.12	

Note: Estimates calculated by principle factors method; factor presented above was the only one whose *eigenvalue* exceeded 1.

Since the number of indicators available for such an analysis is limited if one wants to include a large number of nations as we do, and the likelihood of some measurement error is high, we entered the analysis with low expectations. Given these constraints, the results are highly supportive of the terms the varieties of capitalism literature uses to characterize political economies. We performed a factor analysis on these variables using the principal factors method, and Table 1 reports the results. The analysis identifies an underlying factor along which the nations vary with an eigenvalue of 3.12, and only one such factor with an eigenvalue above 1. All variables in the analysis are highly correlated with this factor and their signs are congruent with the expectations one would have for a factor representing the extent of market coordination relative to strategic coordination in the political economy. These results suggest that the first two hypotheses examined here should be accepted, and they tend to confirm the basic contention of the varieties of capitalism literature that economies vary systematically according to the relative balance of strategic and market coordination in their political economies.

### 3 Locating Political Economies Relative to One Another

As we have noted, the varieties of capitalism approach classifies some nations as liberal market economies and others as coordinated market economies, although it also anticipates variation within each category and nations that may lie beyond them (Hall/Soskice 2001a). To assess whether this approach classifies countries correctly and whether the basis for the classification is well-grounded, we test two further hypotheses.

*H3: It is possible to identify a distinctive set of liberal market economies that make extensive use of market coordination and another set of coordinated market economies that make extensive use of strategic coordination.*

If this is correct, when the factor loadings are used to construct scores for each nation, the nations identified by the theory as liberal market economies should be located toward the ‘market’ end of the dimension, and those identified as coordinated market economies should be located closer to the ‘strategic’ end.

To assess this hypothesis, we constructed an index based on the factor analysis described in the previous section and calculated scores on it for each of the OECD nations for which we have data. This can be construed as a ‘coordination index’ assessing the overall balance of strategic coordination relative to market coordination in the political economy.

Table 2 reports the factor scores on the relevant principal component for each nation, standardized to vary between 0 and 1, with higher values indicating that strategic coordination is more important in the political economy relative to market coordination. The scores for all the nations that the varieties of capitalism literature classifies as LMEs or CMEs fall into the portions of the spectrum that this literature would lead us to expect. The US, UK, Canada, Ireland and Australia all have scores well below .50. Austria, Germany, Norway, Japan, Belgium, Finland, Denmark, Sweden and Switzerland all have scores above .50, although Switzerland’s score is lower than expected. These results are broadly supportive of this third hypothesis.

Table 2 includes the two other indices in the literature most likely to tap this dimension, although Soskice (1990) focuses on wage coordination and both are based on more subjective assessments of the cases (cf. Hicks/Kenworthy 1998). All three indices confirm the plausibility of the distinction between LMEs and CMEs, although there are some differences in the ranking of countries inside each of these groups and of some countries not assigned to them. For this reason, we would be cautious about attributing too much significance to the precise score a nation receives on these scales relative to the nations around it. It is clear that Austria is a highly-coordinated economy but whether Germany, Sweden or Norway is the next most-coordinated is less certain. However, these findings tend to confirm the basic distinction the varieties of capitalism literature draws between market-oriented and strategic coordination and

**Table 2** The coordination index and analogous indicators compared

	Coordination index	Soskice index	Hicks-Kenworthy corporatism score
Australia	.36	.	.17
Austria	1	5	.96
Belgium	.74	.	.67
Canada	.13	.	.04
Denmark	.70	.	.72
Finland	.72	.	.88
France	.69	1.5	.40
Germany	.95	3.5	.80
Ireland	.29	.	.07
Italy	.87	2	.44
Japan	.74	5	.77
Netherlands	.66	3	.58
New Zealand	.21	.	.14
Norway	.76	4	.96
Portugal	.72	.	.
Spain	.57	.	.
Sweden	.69	4	.97
Switzerland	.51	4	.55
United Kingdom	.07	0	.10
United States	0	0	.02

its contention that economies vary systematically according to the relative balance between strategic and market coordination in the political economy.

As a further test, we have developed indicators for the character of coordination in two of the most crucial spheres of the political economy, those of labor relations and corporate governance, largely responsible for the allocation of labor and capital respectively. To construct the indicator for corporate governance, we performed a factor analysis using the principal factors method on three variables that correspond to the institutional features this approach emphasizes when distinguishing among systems of corporate governance: shareholder power, dispersion of control, and size of the stock market. An analogous indicator was developed for labor relations using a factor analysis on variables representing the level of wage coordination, the degree of wage coordination, and labor turnover. In both cases, the analysis identified only one factor with an eigenvalue over 1 that we take to represent the relative balance between market and strategic coordination in that sphere of the political economy. From the factor loadings, we created factor scores for all the OECD nations for which the relevant data

was available.<sup>13</sup> On both indices, higher scores indicate higher levels of strategic coordination relative to market coordination.

We are now in a position to assess the following hypothesis derived from varieties of capitalism theory:

*H4: There is systematic variation among the developed economies such that those identified by the theory as LMEs display higher levels of market coordination in the spheres of labor relations and corporate governance and those identified as CMEs display higher levels of strategic coordination in both those spheres.*

If this is correct, when arrayed in a two-dimensional space reflecting the character of coordination, nations should not be distributed randomly across that space but at least two clusters should be identifiable toward its two poles and the nations present in those clusters should correspond to those the theory identifies as LMEs and CMEs.

Figure 1 provides the relevant evidence, arraying nations on a two-dimensional plot with standardized scores for coordination in corporate governance on the X-axis and standardized scores for coordination in labor relations on the Y-axis.

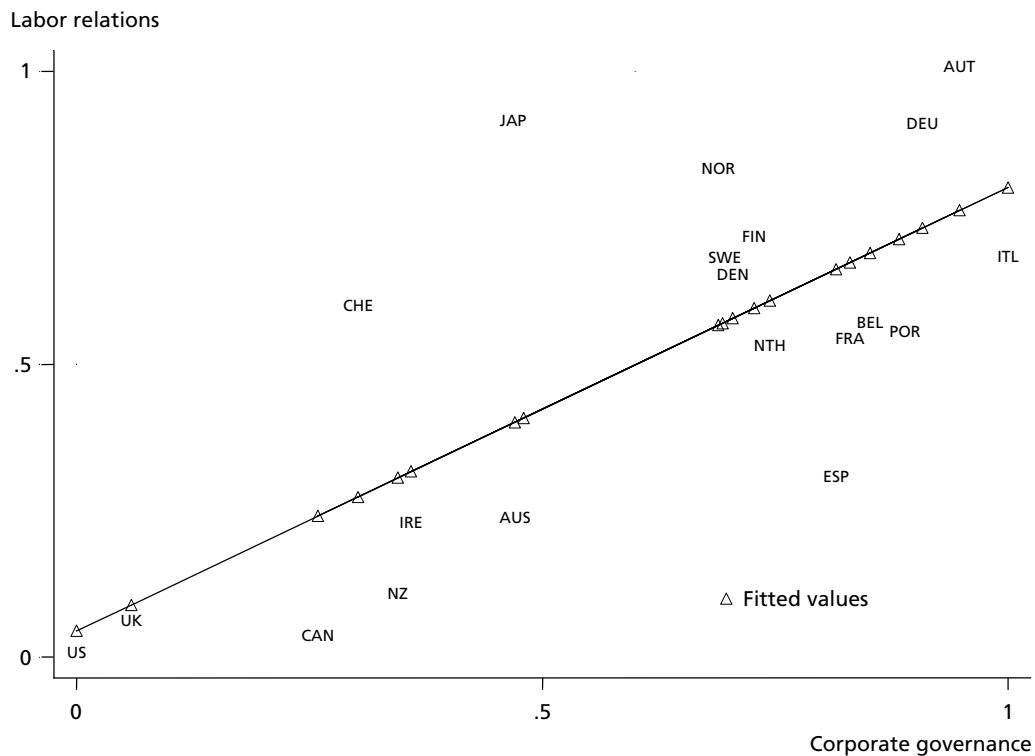
The results are broadly supportive of the hypothesis. As the regression line indicates, there is a strong and statistically significant relationship in the predicted direction between coordination in labor relations and corporate governance. Nations cluster toward the southwest and northeast quadrants of the diagram, as the theory would lead us to expect. Six nations, all normally identified by varieties of capitalism theory as liberal market economies, cluster to the southwest, on or below the regression line. The economies of northern Europe generally identified as CMEs cluster toward the northeast in this two-dimensional space.

Japan and Switzerland are the two most obvious outliers. We are inclined to view their position as the result of measurement error associated with the limitations of our measure for coordination in corporate governance. The latter attaches considerable weight to the size of the stock market and both nations have large stock markets relative to their GDP. But there is also extensive cross-shareholding in these nations not picked up by our measure of shareholder dispersion because many of the relevant holdings fall below our 10 percent cut-off (Windolf 2002; Roe 2000). Nevertheless,

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13 For detailed description of the variables, see Section 2 above. The factor loadings were as follows. For coordination in corporate governance: shareholder power .629 (uniqueness .604), dispersion of control .820 (uniqueness .327), size of stock market .718 (uniqueness .484). For coordination in labor relations: level of wage coordination .728 (uniqueness .450), degree of wage coordination .850 (uniqueness .277); labor turnover  $-.551$  (uniqueness .696). The standardized scores for each nation on these factors are reported in Table 2.

**Figure 1 Institutional complementarities between coordination in labor relations and corporate governance**



these cross-shareholdings limit hostile takeovers and serve as vehicles for network monitoring. In short, we think an accurate assignment of these cases would put them into the northeast quadrant of the diagram. The coordination of labor relations in the Netherlands and Belgium may also be underestimated here, reflecting OECD figures that may underestimate coordination in labor relations. Given the potential for such measurement error in indices taken entirely from external sources, however, the correspondence between the location of economies in Figure 1 and the account the varieties of capitalism literatures gives of such economies is striking.

The proximity of various nations to one another in this institutional space is also interesting and facilitates more fine-grained assessment of variations among the OECD economies. Correcting for measurement error, there are four distinct clusters of nations. Among the liberal market economies, the United States and the United Kingdom appear as relatively 'pure' cases, while four other liberal market economies stand slightly apart by virtue of systems of corporate governance in which market coordination is not as fully developed. On the other side of Figure 1, the nations most often identified as coordinated market economies all lie near or above the regression line, indicating high levels of strategic coordination in both their labor and financial markets.

Four nations, Spain, Portugal, France and Italy all lie to the east in the figure but below the regression line. This is especially interesting because there has been some controversy about whether these nations are coordinated market economies or examples of another distinctive type of capitalism often associated with high levels of state intervention on the supply side of the economy (Hall/Soskice 2001a; Rhodes 1997). Figure 1 clarifies some of the issues that render these ambiguous cases. These nations all have institutional capacities for strategic coordination in labor relations and corporate governance that are higher than those of LMEs. However, their capacities for strategic coordination in labor relations tend to be lower than those in northern Europe, perhaps because their union movements are still divided along what used to be called ‘confessional’ lines. Although strategic coordination is clearly more important in these nations than in liberal market economies, there may be systematic differences in the operation of southern, as compared to northern, European economies.<sup>14</sup>

#### 4 Congruence across spheres of the political economy

Although we have focused on corporate governance and labor relations as the two most important spheres of the economy, the varieties of capitalism approach also expects systematic variation, between LMEs and CMEs, across other spheres of the political economy, including those associated with product-market competition, social protection, vocational training, and interfirm relations more generally. Much of the force of the varieties of capitalism approach as a theory of comparative capitalism rests on its claim to be able to specify systematic variations across nations that extend to many spheres of the political economy. We turn now to assessment of that claim.

Varieties of capitalism analysts argue that, where *labor relations* are based on high levels of job mobility and firm-level wage-setting, *training systems* that provide general skills through formal education will be more efficient than collaborative training schemes that confer industry-specific skills, because workers who must frequently shift jobs have strong incentives to acquire the general skills that qualify them for other positions. Conversely, where labor relations are based on strong unions and coordinated wage-bargaining, it will be more efficient for firms to operate collaborative training schemes conferring high levels of industry-specific skills. High wages set at the industry level encourage workers to acquire industry-specific skills, and they make it more difficult for non-training firms to poach workers by offering wage pre-

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14 The varieties of capitalism literature acknowledges that such differences may exist. Those between the “industry-coordinated” economies of northern Europe and “group-coordinated” economies of Asia have been elaborated most fully (cf. Soskice 1999).

miums. The organizations that coordinate wages can also be used to coordinate training systems (Finegold/Soskice 1988; Culpepper 2001).

For similar reasons, this approach expects a relationship between the character of *corporate governance* and the character of *interfirm relations*. Where the institutions of corporate governance limit the demands on firms to maximize current profitability or shareholder value, firms are said to find it easier to enter into collaborative arrangements with other firms, for the purposes of research, product development or technology transfer. Facing fewer pressures from financial markets, firms can make more credible commitments to the incomplete contracts and co-specific investments that such collaboration requires. Conversely, where fluid capital markets facilitate the movement of funds from one endeavor to another, it will be more efficient for firms to access technology by acquiring other enterprises or new personnel and to invest in assets that can be switched to other uses as market opportunities emerge, rather than to engage in long-term collaboration with other firms (Casper 1999; Hall/Soskice 2001a).

Estevez et al. (2001) argue that *social policies* providing generous employment and unemployment protection will be complementary to *production strategies* based on the use of specific skills because they provide incentives to workers for acquiring those skills (cf. Mares 2000). Hall and Soskice (2001a; Soskice 1999) argue that high levels of *product-market regulation* may be complementary to *systems of corporate governance* that encourage network monitoring, to wage coordination, and to interfirm collaboration in research and development because they limit the intensity of competition in product markets that might otherwise undermine cooperation in these other spheres. Therefore, they expect to see some correspondence, if sometimes a loose one, between institutional practices across these spheres.

The varieties of capitalism perspective also identifies potential complementarities between institutional arrangements in the political economy and the *strategy of firms*. Where strong trade unions or regulatory regimes inhibit layoffs and facilitate the formation of credible commitments among firms or between a firm and its employees, the theory suggests that firms will often find it efficient to develop corporate strategies that turn on close cooperation with their employees and other firms. Conversely, where fluid labor markets facilitate layoffs and dispersed financial markets frequently demand them, firms are said to find such cooperative arrangements less advantageous. With such reasoning, the approach contends that firm strategy will vary systematically across nations with the kind of institutional support their political economies provide for different types of coordination (cf. Hall/Soskice 2001a; Lehrer 2001).

In short, the varieties of capitalism literature contends that systematic variation across nations is present not only in the spheres of labor relations and corporate governance but across many other spheres of the political economy.<sup>15</sup> To assess this contention, we have sought indicators for the types of variation in institutional practices the theory emphasizes. We have found indicators for relevant types of institutional variation across seven spheres. For labor relations and corporate governance, we use the same indicators employed in the preceding analysis. The others are as follows:

**Social Protection** refers to the level of support provided to the unemployed and to limitations on the right of firms to lay off workers. We measure it by combining the indices of ‘unemployment protection’ and ‘employment protection’ devised by Estevez et al. (2001) using weights for each generated by the principal component that appears when a factor analysis is applied to the two indices. Higher values indicate higher levels of social protection.

**Product Market Regulation** refers to the limits placed on competition in product markets by the regulatory restrictions that national governments impose on businesses. The measure is based on an OECD survey of many types of regulatory practices combined into a composite measure through multi-level factor analysis by Nicoletti et al. (2000: 80). Higher values indicate product market regulations more restrictive of competition.

**Training Systems** are assessed with a view to establishing the extent of institutional support a nation provides for the development of vocational skills in young workers beyond what they secure in formal secondary or university education. In general, this entails apprenticeship schemes or training programs dependent on the collaborative involvement of firms. The measure is based on the principal component that emerges from a factor analysis on two variables: the number of pupils in vocational training as a proportion of those in general education and the mean scores on a literacy test secured by a sample of workers between the ages of 20 and 25 who left school before completing secondary education (United Nations 1999: xxx; OECD 1997b: 141). Higher values indicate higher levels of institutional support for this kind of vocational training.

**Interfirm Relations** refer to the institutionalized practices that link firms to other firms producing goods and services. Of particular relevance is the extent to which firms collaborate with others to secure access to new technology or markets relative to their reliance on competitive market relations for such purposes. Mergers and acquisitions are typical of the latter. Accordingly, the measure is based on the annual number of mergers and acquisitions in a nation during 1990–1997 expressed as a ratio of its population (Pagano/Volpin 2000: Table 4). We reverse the direction of the measure so that higher values indicate more inter-firm collaboration.

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15 Note that we make no claims here about why this systematic variation occurs nor do we assess claims about its origins. It may be encouraged by the presence of complementarities among these spheres but it may also arise because institutions diffuse together or as the result of complex political processes. Our concern here is simply to assess whether the variation the varieties of capitalism approach posits across political economies is present there.

To assess the ancillary claim that systematic variation in the institutions of the political economy will be associated with distinctive types of firm structures and strategies, we have also sought measures for the latter, as follows:

**Managerial Prerogative** refers to the extent to which firms concentrate control over their operations in the hands of top management. On the premise that compensation will correspond to the level of responsibility they are assigned for the firm's operations, our measure is the average compensation of chief executive officers as a ratio of the compensation of average production workers in manufacturing in 1999 (Economic Policy Institute 2001: xx). Higher values indicate higher levels of managerial prerogative.

**Employment Tenure** is a measure of the length of time employees typically stay with the same firm, assessed here by median employer tenure in 1995 (OECD 1997: 138). This can be read as a reflection of the extent to which firm strategies turn on the development of close relations with a stable workforce rather than on production regimes that can be operated by more transient and potentially less-skilled labor.

**Firm Strategy** is a composite measure tapping many of the core practices of firms, including the use they make of multidivisional project teams, participatory work teams, alliances with other firms, close, voice-based relations with suppliers, long-term relations with investors, and cooperative labor-management relations built on employment guarantees. Each practice has been coded on a 3 point scale and combined via factor analysis by Hicks and Kenworthy (1998: 1649).<sup>16</sup> Higher values indicate firm strategies that make more extensive use of these 'cooperative' practices.

Using these variables, we test the following hypothesis:

*H5: Institutionalized practices extending across the spheres of the political economy vary systematically such that the institutionalized practices associated with market coordination are present in multiple spheres of many political economies classified as LMEs and practices associated with strategic coordination are present in multiple spheres of political economies classified as CMEs.*

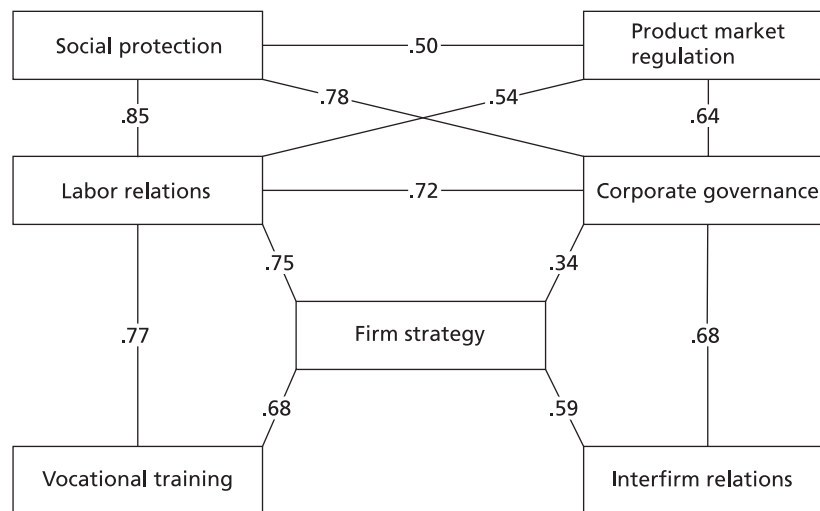
If this is correct, there should be significant correlations across spheres at the national level among the variables representing the institutional practices the varieties of capitalism perspective identifies as important to coordination.

Figure 2 summarizes the results of this test. The boxes around 'firm strategy' represent the four spheres in which a firm coordinates with other actors to accomplish its principal endeavors. The two variables at the top indicate policy regimes relevant to this coordination. The lines between the boxes correspond to the hypotheses about com-

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16 This measure uses the average 1960–89 scores for a factor that Hicks and Kenworthy label "firm-level cooperation" which includes some further variables assigned low weights that we do not enumerate here.

Figure 2 Complementarities across sub-spheres of the political economy



plementarities generated by the varieties of capitalism literature. Using cross-national comparisons of all the cases for which we have relevant measures, we have calculated correlation coefficients indicating whether the presence of institutional practices of a particular type in one sphere are associated with institutional practices in adjacent spheres that correspond to those posited by a varieties of capitalism perspective. That perspective predicts positive coefficients across the diagram. The results are impressive. The coefficients in Figure 2 are uniformly positive and relatively large. All are statistically significant at the .05 level.<sup>17</sup> The uniformity of the results is striking.

Although these results do not speak to the issue of why such uniformities exist, they confirm that institutional differences corresponding to market-oriented or strategic-coordination of the sort expected by the varieties of capitalism perspective exist among the developed economies and stretch systematically across spheres of the political economy.<sup>18</sup>

The patterns of firm strategy present in Figure 2 are also notable. They suggest that corporate strategy varies systematically with the institutional support available for

17 The coefficient between corporate governance and firm strategy just misses significance at the .05 level.

18 Although some analysts associate institutional congruence of these sorts with institutional complementarities, on the grounds that the search for greater efficiencies will motivate firms to seek and support congruent practices, precisely why such congruence exists remains an open question. It may well be conditioned by processes of institutional emulation in which analogous institutions in multiple spheres 'diffuse' together or by broader political processes that we do not address here.

**Table 3**      **The relationship between institutional support for strategic coordination and corporate strategy**

	Correlation with coordination index
Firm strategy	.615 (.007)
Employment tenure	.694 (.001)
Managerial prerogative	-.794 (.006)

Note: Significance levels in parentheses.

different types of coordination in the political economy, as varieties of capitalism theory predicts. Table 3 provides further evidence for this contention by comparing the relationship between three indicators for corporate strategy and national scores on the coordination index. In each case, there is a strong and statistically significant correlation in the direction posited by the theory.

## 5 The effect of institutional complementarities on economic growth

Up to this point, our results indicate that the patterns in institutionalized practices that the varieties of capitalism perspective expects to see across the developed economies are present there. We turn now to one of the most important contentions in that perspective, namely the claim that there is not only some congruence among institutional practices in different spheres of the economy but that, in some cases, these practices can be complementary to one another. Following this literature, we define complementarity as follows: one set of institutional practices can be said to be complementary to another when each raises the returns available from the other. Although these institutions may also have distributive effects that increase the returns to some actors relative to others, we are concerned here with returns to the economy as a whole of the sort normally reflected in aggregate economic performance.

Our analysis focuses on the potential for complementarities between the sphere of corporate governance and the sphere of labor relations. Following Aoki (1994), Hall and Soskice (2001a) develop a theoretical rationale for why such complementarities should exist and in what sorts of institutional practices they consist, based on the importance of coordination to the success of a firm's endeavors. They argue that institutional practices in the sphere of corporate governance that encourage cross-shareholding and concentrate control in the hands of management, thereby limiting the potential for hostile takeovers and providing firms with access to finance that turns more heavily on reputational monitoring than current profitability, enhance the efficiency of institutional practices in the sphere of labor relations that provide high

levels of employment security and long job tenures as well as forms of wage-setting that revolve around strategic interaction between employers associations and trade unions.<sup>19</sup> The logic is that firms that do not have to sustain current profitability in the face of a fluctuating economy are better placed to make credible commitments to their employees about wages and job security and therefore better able to realize the gains available from utilizing production regimes based on such commitments. This combination of institutions corresponds to the institutional patterns the varieties of capitalism perspective sees in CMEs.

Conversely, where firms are more dependent on dispersed equity markets, face the prospect of hostile takeovers, and confront regulations that give shareholders more power relative to stakeholders, the autonomy of the firm and its managers will be more dependent on current profitability. Here, labor markets allowing for high levels of labor turnover and competitive wage-setting will be more efficient, because they enable managers to reduce wages or staffing levels more quickly in response to fluctuations in current profitability, and allow the kind of labor relations that permit firms to exploit the high levels of capital mobility available in such economies. This combination of institutional practices corresponds to the case of a classic LME.

If the institutionalized practices characteristic of relatively pure liberal or coordinated market economies in these two spheres are complementary to each other, we should expect to see an impact on aggregate economic performance. Our indicator for performance will be rates of economic growth per capita measured in purchasing-parity terms, widely accepted as a good measure of overall economic performance and appropriate for testing postulates about the general efficiency of the economy. However, this measure provides an exceptionally hard test for institutional analyses such as these. Because aggregate rates of growth depend on the efficiency of the entire economy, specific institutions will have to make substantial contributions to it to increase aggregate rates of growth.

We begin by exploring interaction effects between institutions in the spheres of corporate governance and labor relations. As summary measures for the character of institutions in these two spheres, we used the indices for 'labor relations' and 'corporate governance' developed in section 3. High values of these indices reflect institutions more closely approximating those associated with CMEs, of the sort that allow for more effective strategic coordination, and lower values reflect institutions associated with LMEs where market coordination is more feasible. We estimate the interaction effects between these two variables and their impact, with a range of appropriate controls standard in the growth literature, on annual rates of per capita economic growth for OECD nations from 1971 to 1997, taking three different econometric approaches

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19 When we say that one institutional practice enhances the efficiency of another, this means that its presence increases the returns available from using the other institutional practice.

to the panel data.<sup>20</sup> Initially, we employed a model based on ordinary least squares regression with panel-corrected standard errors (PCSE; Beck/Katz 1995) of the following form:

$$Y_{it} = \beta_0 + \beta_1 C_i^{LR} + \beta_2 C_i^{CG} + \beta_3 C_i^{LR} \cdot C_i^{CG} + \beta_4 \ln GDP_i + \beta_5 Int_{it} + \beta_6 \pi_{it} + \beta_7 ToT_{it} + \beta_8 D_{it} + \varepsilon_{it} \quad (1)$$

where  $C_i^{LR}$  represents the character of coordination in labor relations in country  $i$  and  $C_i^{CG}$  represents the character of coordination in its sphere of corporate governance. This model is used to test the following hypothesis derived from the varieties of capitalism perspective on institutional complementarities:

**H6:** *When there are higher levels of market (strategic) coordination in the sphere of labor relations or corporate governance, rates of economic growth increase as the level of market (strategic) coordination in the other sphere increases.*

If this is correct, the interaction term in the model,  $C_i^{LR} \cdot C_i^{CG}$ , should be statistically significant and positive. A significant coefficient indicates that the impact of coordination in one sphere is dependent on the character of coordination in the other sphere, and a positive coefficient indicates that analogous types of coordination in the two spheres raise rates of growth.

The controls employed here are standard for estimating rates of economic growth:  $\ln GDP_i$  is the log of gross domestic product per capita for country  $i$  at the beginning of the period controlling for ‘catch up’ effects that generate higher rates of growth in nations at lower levels of economic development.  $Int_{it}$  represents international demand conditions measured by the average rate of growth for our sample countries in period  $t$  weighted by the trade openness of country  $i$ .  $\pi_{it}$  is the country’s rate of inflation measured by the rate of increase in its consumer price index. In the developed world, where rates of inflation are moderate, we expect them to be positively related to rates of growth.  $ToT_{it}$  is the percentage change in the terms of trade of country  $i$  weighted by trade openness: adverse movements should lower rates of economic growth.  $D_{it}$  is the dependency ratio measured as the share of the population below the age of 15 or above the age of 65. A higher proportion of dependents is expected to lower rates of economic growth.

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20 The nations included were those for which data was available to construct the indices for coordination in labor relations and corporate governance. See the Table 3 for the full list. Because we think there is substantial measurement error in the placement of Japan and Switzerland on the CG index, they were excluded from these estimations. When they are included, the sign on the interaction variable remains positive but it is statistically significant only in the estimation using OLS with panel-corrected standard errors.

However, the coefficients generated by this estimation procedure may be biased by country-specific fixed effects. The application of a LaGrange multiplier test devised by Bruesch and Pagan (1980) indicates the presence of such effects, and using a standard fixed-effects regression would not allow us to estimate coefficients for the time-invariant independent variables.<sup>21</sup> Accordingly, we also use a random-effects estimator with time-invariant independent variables as presented in Ruud (2000; cf. Hsiao 1986). It is based on a matrix-weighted average of a fixed-effects estimator, generated by performing OLS on dependent and independent variables that have been multiplied by an idempotent matrix to transform them into differences from their means, and a between-estimator generated by performing OLS on dependent and independent variables that have been transformed into ones reflecting the difference between panel means and the variable mean. The random effects estimator converges to the OLS estimator as the efficient estimate of the between-group variance component goes to zero, and to the fixed-effects estimator as the between-group variance goes toward infinity (Hsiao 1986: 34–38). The model treats panel-specific effects as random disturbances, as they would be if the panels in the study represent a random sample from a larger population, and it takes the following form:

$$Y_{it} = \beta X_{it}' + \gamma Z_i' + v_{it} \quad (2)$$

where  $X_{it}$  is a  $K \times 1$  vector of time- and panel-varying independent variables,  $Z_i$  is a  $J \times 1$  vector of panel-varying but time-invariant independent variables, and  $v_{it}$  is an error term where  $u_i$  are scalar constants representing panel-specific fixed effects and the error term is  $v_{it} = u_i + w_{it}$  such that:  $E(u_i) = E(w_{it}) = 0$ ,  $E(u_i w_{it}) = 0$ ;  $E(u_i u_j) = \sigma_u^2$ , if  $i = j$  and otherwise 0;  $E(w_{it} w_{js}) = \sigma_w^2$ , if  $i = j$  and  $t = s$  and otherwise 0; and  $E(u_i X_{it}') = E(u_i Z_i') = E(w_{it} X_{it}') = E(w_{it} Z_i') = 0$ .

If the panel-specific effects and independent variables are still correlated even after the latter have been transformed, the random-effects model will be biased, and Hausman (1978) has produced a test for such correlation, based on the difference between the coefficients and covariance matrices of the fixed-effects and random-effects estimators. Since this test indicates potential bias in our random-effects model, we also develop a third set of estimates, employing an instrumental variables technique suggested by Hausman and Taylor (1981). It produces a standard fixed-effects estimator for all variables that vary over time and space. To produce coefficient estimates on the time-invariant variables, the technique utilizes the time-variant variables assumed to

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21 The test measures the difference between the ratio of the squared sum of residuals over time, summed over all panels, to the sum of the squared errors from equation 1.

**Table 4** The impact on economic growth of interaction between coordination in labor relations and corporate governance

	Random effects	H-T IV fixed effects	PCSE
International demand conditions ( <i>it</i> )	.416*** (.038)	.793*** (.057)	.574*** (.056)
Inflation ( <i>it</i> )	.212*** (.023)	.130*** (.028)	.133*** (.034)
Terms of trade ( <i>it</i> )	-1.02 (2.66)	.347 (2.69)	-1.76 (2.41)
Dependency ratio ( <i>it</i> )	-.573*** (.122)	-.468*** (.132)	-.403** (.168)
ln $GDP_0$ ( <i>i</i> )	-.453 (.424)	.477*** (.167)	-2.47*** (.914)
Coordination in labor relations ( <i>i</i> )	-4.20*** (1.58)	-4.89*** (1.83)	-7.80*** (2.72)
Coordination in corporate governance ( <i>i</i> )	-1.67*** (.640)	-1.10 (.743)	-2.55** (1.22)
Labor relations* corporate governance ( <i>i</i> )	5.81*** (1.64)	6.06*** (1.91)	8.75*** (2.76)
$\lambda_{LM}$	9.17	-	-
Hausman test	79.7	n.a.	n.a.
N	486	486	486

Note: \*\*\* indicates the coefficient is significant at the 99% level, \*\* at the 95% level, and \* at the 90% level. Standard errors are in parentheses.

be uncorrelated with panel-specific effects as instruments in a two-stage least-squares procedure.<sup>22</sup>

Table 4 reports the results of these estimations. The parameter estimates are broadly stable across the three models. The coefficient on the interaction term is positive, of considerable magnitude, and statistically significant. These results tend to confirm the presence of substantial complementarities between the spheres of labor relations and corporate governance of the sort postulated by varieties of capitalism theory.

Using the fixed-effects model for the purposes of simulation, Table 5 reports the rates of growth that could be expected under different combinations of coordination in labor relations and corporate governance when the control variables are at their means. Although one should be cautious about attributing significance to point estimates in such simulations, the broad patterns in the table are revealing. They show clear evidence of interaction effects between the character of coordination in the two spheres. Rates of growth are highest where competitive markets coordinate both spheres or where institutional support for strategic coordination is high in both.

22 This fixed-effects estimator is consistent, if less efficient than the alternative 2SLS random effects estimator suggested by Hausman and Taylor would be, but a random-effects estimator constructed in this way failed the Hausman specification test.

**Table 5** Estimated rates of economic growth at different levels of coordination in labor relations and corporate governance

		Corporate governance				
		0	.25	.5	.75	1
Labor relations	0	8.2 (5.5, 10.8)	7.9 (5.2, 10.5)	7.7 (4.8, 10.4)	7.4 (4.5, 10.3)	7.1 (4.1, 10.2)
	.25	7.0 (4.2, 9.8)	7.1 (4.3, 9.9)	7.2 (4.5, 10.0)	7.3 (4.7, 10.1)	7.4 (4.5, 10.4)
	.5	5.7 (2.5, 8.9)	6.2 (3.3, 9.2)	6.7 (3.9, 9.5)	7.2 (4.4, 10.0)	7.7 (4.8, 10.5)
	.75	4.9 (.76, 8.3)	5.4 (2.1, 8.7)	6.3 (3.3, 9.2)	7.1 (4.3, 9.9)	8.0 (5.2, 10.8)
	1	3.3 (-1.2, 7.8)	4.5 (.80, 8.3)	5.8 (2.6, 9.0)	7.0 (4.1, 9.8)	8.2 (5.4, 11.1)

Note: 95% confidence intervals in parentheses.

Where labor relations are strategically coordinated, substantial efficiencies seem to be available from strategic coordination in the sphere of corporate governance. Where corporate governance is dominated by fluid equity markets, however, rates of growth are substantially higher when labor markets are also fluid and competitive.

Although it is beyond the scope of this paper to test for the presence of specific complementarities across the many other spheres where varieties of capitalism theory predicts they may lie, we conduct one other test at an aggregate level to assess the plausibility of these contentions about complementarities in the macroeconomy. Given the emphasis it places on such complementarities, the varieties of capitalism approach strongly implies that aggregate economic performance should be better in nations whose institutionalized practices correspond more closely to relatively pure types of LMEs or CMEs, i.e., in nations where market or strategic coordination is highly developed in multiple spheres of the political economy. Over the long term, rates of growth should be higher in countries where market or strategic coordination is high across spheres, compared to those where coordination is mixed or where either type of coordination is secured but in a less fully developed form. This implication yields the following hypothesis:

**H7:** *Rates of economic growth should be higher in nations where levels of market coordination or levels of strategic coordination are high across spheres of the political economy but lower in nations where neither type of coordination is well-developed or market and strategic coordination are combined.*

If this is correct, estimates for rates of growth when other relevant factors are controlled should show higher rates of growth in nations where levels of market or strategic coordination are consistently high across spheres and lower rates in other nations.

In order to test this hypothesis, we use the coordination index developed in Section 2 to measure levels of market and strategic coordination across these two spheres of the political economy. We estimate the effect of coordination on annual rates of per capita economic growth for OECD nations from 1971 to 1997 using a model of the following form:

$$Y_{it} = \beta_0 + \beta_1 C_i + \beta_2 C_i^2 + \beta_3 \ln GDP_i + \beta_4 Int_{it} + \beta_5 \pi_{it} + \beta_6 ToT_{it} + \beta_7 D_{it} + \varepsilon_{it} \quad (3)$$

where  $C_i$  is the value of the coordination index measuring the balance of market and strategic coordination in the political economy for country  $i$ . If the relationship between growth and coordination is U-shaped,  $\beta_1$  should be negative and  $\beta_2$  positive. The controls are the standard ones used previously and, once again, we estimated the model using three specifications to cope with the potential for bias arising from collinearity between the time-invariant measure of coordination and panel-specific effects.

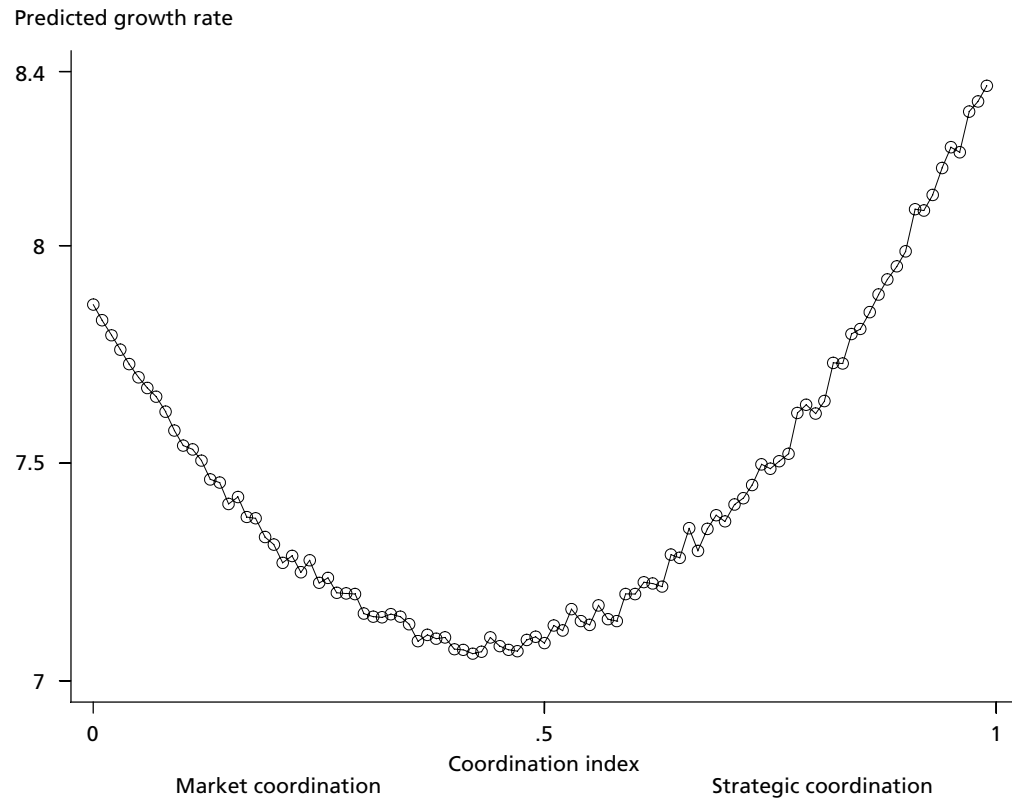
**Table 6** The relationship between coordination and economic growth

	Random effects <sup>a</sup>	H-T IV fixed effects <sup>b</sup>	PCSE
International demand conditions ( <i>it</i> )	.467*** (.037)	.822*** (.055)	.576*** (.049)
Inflation ( <i>it</i> )	.177*** (.024)	.132*** (.026)	.115*** (.035)
Terms of trade ( <i>it</i> )	-3.22 (2.40)	-.776 (2.42)	-.676 (2.51)
Dependency ratio ( <i>it</i> )	-.413*** (.113)	-.368*** (.121)	-.335*** (.157)
ln $GDP_0$ ( <i>i</i> )	-1.82*** (.540)	.490** (.210)	-2.20*** (.792)
Coordination (overall) ( <i>i</i> )	-5.72*** (1.52)	-3.63*** (1.47)	-6.74*** (2.21)
Coordination squared ( <i>i</i> )	5.40*** (1.45)	4.19*** (1.45)	6.17*** (2.09)
$\lambda_{LM}$	36.4	-	-
Hausman test	103.0	n.a.	n.a.
N	540	540	540

a Specification is random effects with panel-specific (time-invariant) independent variables.

b Specification is Hausman and Taylor's (1981) instrumental variables fixed effects estimator. Standard errors in parentheses.

Table 6 reports the results of these three estimations. In all, the coefficients on coordination are significant, of the same sign, and of similar magnitude, increasing our confidence in the results. The significance and signs of the coefficients on  $C$  and  $C^2$  indicate that the relationship between coordination and economic growth is nonlinear. Using the fixed-effects model for the simulation, Figure 3 shows the estimated relationship between coordination and growth when the control variables are at their means. The U-shaped relationship is apparent. Where the institutional structure of

**Figure 3** The estimated relationship between coordination and economic growth

the political economy allows for higher levels of market coordination or higher levels of strategic coordination, estimated growth rates are higher than they are when there is more variation in the types of coordination present in the political economy.

These results suggest that the varieties of capitalism approach to institutional complementarities, built on the distinction between market and strategic coordination, has real merit. When complementary institutions are present across spheres of the political economy, rates of economic growth are higher. The institutional complementarities identified by this perspective appear to offer general efficiencies.

## 6 Political and economic adjustment paths

We conclude by turning to issues of institutional change. As any such analysis must be, the varieties of capitalism theory of institutional complementarities is based on observation of the developed political economies over an extended period of time. Although its grounding in historical experience lends credibility to the account, international pressures for change now raise questions about the stability of the cross-

national differences this analysis identifies (cf. Berger/Dore 1996; Milner/Keohane 1996). One central issue is whether the broad patterns of coordination that have differentiated political economies will persist in the face of such pressures.

The varieties of capitalism literature is attentive to such questions. Many contributors to it explore reform initiatives, shifts in the operation of institutions, and the response of firms and governments to pressures for change (Wood 2001, 2000; Culpepper forthcoming, 2001; Thelen 2001; Hancke 2001; Lehrer 2001). Moreover, there is an explicitly dynamic element to the overarching theory, designed to explain how existing institutions structure processes of change. This aspect of the theory generates a set of predictions about national adjustment paths that we now examine empirically with a view to establishing the continuing relevance of the distinctions drawn in this paper.

### *Economic Dynamics*

Analyses of change in the political economy should be attentive to both economic and political dynamics. The principal economic issue in this case is whether institutions that appear to have been complementary in previous decades continue to be complementary as secular developments, such as the shift from manufacturing to services, technological change, and international liberalization, alter the character of economic challenges (Hall 1999, 1997). There are reasons for thinking such developments could alter the efficiencies available from existing combinations of institutions. If the potential for productivity growth is lower in services, the growing importance of that sector may undercut the efficiency gains available from systems of coordinated wage bargaining or social protection that compress wage differentials and sustain high wage floors (Iversen/Wren 1998; Scharpf/Schmidt 2000). In epochs of rapid technological advance that increase the opportunities for radical innovation, the market-oriented complementarities of liberal market economies, which lend themselves to this type of innovation, may offer higher returns than they otherwise would relative to those of coordinated market economies, which are better at incremental innovation (Hall/Soskice 2001a; Hall 1997; Soskice 1994).<sup>23</sup> International integration may alter the value of an economy's comparative institutional advantages by improving access to production sites offering other kinds of complementarities (cf. Frieden/Rogowski 1996).

If developments such as these alter the returns available from existing institutions, pressures to change those institutions are likely to increase. It is beyond the scope of this paper to consider the effects of each secular economic development on institutional stability. However, a summary impression can be formed by comparing the economic impact of these institutional complementarities in recent years with their

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23 On this point, our thinking has been influenced by conversations with Robert Fannion and Gavyn Davies.

**Table 7** The Impact on economic growth of interaction between coordination in labor relations and corporate governance in 1971–1984 and 1985–1997

	1971–1984			1985–1997		
	RE	H-T IV FE	PCSE	RE	H-T IV FE	PCSE
International demand conditions ( <i>it</i> )	.325*** (.044)	.685*** (.067)	.374*** (.058)	.504*** (.078)	.971*** (.120)	.660*** (.091)
$\pi$ ( <i>it</i> )	.012 (.035)	-.085** (.042)	.018 (.042)	.049 (.054)	-.004 (.063)	.032 (.066)
Terms of trade ( <i>it</i> )	-2.21 (2.9)	-.951 (2.94)	-1.08 (2.88)	9.10** (4.55)	9.38** (4.65)	-5.31 (3.83)
Dependency ratio ( <i>it</i> )	.496*** (.172)	.456** (.200)	.226 (.204)	-.644*** (.188)	-.553** (.238)	-.422** (.211)
$\ln GDP_0$ ( <i>i</i> )	-.756 (.644)	.988*** (.219)	-1.30 (1.07)	-2.18*** (.654)	.388** (.167)	-3.32*** (.887)
Coordination in labor relations ( <i>i</i> )	-8.75*** (2.39)	-8.92*** (2.55)	-7.38** (2.96)	-4.15* (2.21)	-4.08* (2.26)	-5.53* (3.31)
Coordination in corporate governance ( <i>i</i> )	-.993 (.907)	-.348 (.982)	-1.39 (1.29)	-1.26 (.962)	-.468 (.968)	-2.11 (1.42)
Labor relations* corporate governance ( <i>i</i> )	9.64*** (2.49)	9.57*** (2.67)	8.22*** (3.05)	4.48* (2.35)	4.16* (2.41)	6.04* (3.11)
$\lambda_{LM}$	1.23	-	-	.025	-	-
Hausman test	53.0	n.a.	n.a.	30.4	n.a.	n.a.
N	252			234		

Note: Standard errors in parentheses.

impact in an earlier period. For this purpose, we estimated the models for the economic impact of complementarities between coordination in labor relations and corporate governance over two time periods, 1971–1984 and 1985–1997 (see equation 1). Once again, three estimation techniques were employed to accommodate the potential for panel specific effects, although a  $\lambda_{LM}$  indicates that estimates based on panel-corrected standard errors are relatively unbiased by such effects. These estimations are used to test the following hypothesis:

**H8:** *Secular economic developments over the past two decades have not altered the efficiency of the institutional complementarities posited by the varieties of capitalism perspective between labor relations and corporate governance.*

If this is correct, the coefficient on the interaction term between coordination in labor relations and corporate governance,  $C_i^{LR*} C_i^{CG}$ , should be positive and statistically significant across both periods.

The results of the estimation are presented in Table 7. For the 1971–1984 period, the coefficients on the interaction term are positive, statistically significant, and larger than those for the entire 1971–1997 period (see Table 4). In the 1985–1997 period, the coefficients on the interaction term diminish in size but they remain positive and just miss statistical significance at the .05 level, as does the coefficient on coordination in

labor relations. These findings do not strongly confirm the hypothesis but neither do they show it should be rejected. Institutional complementarities of the sort posited by the varieties of capitalism perspective seem to have had a larger impact on levels of economic growth in earlier decades and a smaller impact in recent years but one that remains nonnegligible.

Two broad lines of explanation could account for this trend. Secular developments may have reduced the returns available from these complementarities. Alternatively, the complementarities may still be operative but their impact on cross-national differences in growth overwhelmed by recent developments for which we do not control in these equations. The latter could include cross-national differences in economic policy, confidence effects arising from asset booms, or technology races that privilege first movers. We cannot currently discriminate between these explanations. However, these results lend some credence to the view that secular economic changes may be diminishing the effectiveness of existing institutions, which should increase pressures for institutional change.

### *Political Dynamics*

In this context, the political dynamics of institutional change become especially important, and the varieties of capitalism literature advances a particular view of such dynamics, built on the view that the market-oriented settings of liberal market economies encourage firms, holders of capital, and workers to invest in switchable assets, whereas institutional support for strategic interaction in coordinated market economies encourages higher levels of investment in specific assets (Hall/Soskice 2001a; Iversen/Soskice 2000). In LMEs, fluid markets that facilitate the transfer of resources among uses enhance the returns to switchable assets. In CMEs, better institutional support for the formation of credible commitments reduces the risks of investing in co-specific assets whose value depends on the cooperation of others and that cannot readily be switched to other uses if that cooperation is not forthcoming.

This divergence in patterns of investment is significant because each generates a different politics. In the face of an exogenous shock threatening returns to existing activities, holders of mobile assets will be tempted to 'exit' those activities to seek higher returns elsewhere, while holders of specific assets have higher incentives to exercise 'voice' in defense of existing activities (Hirschman 1964). The argument is analogous to the distinction often drawn between a Heckscher-Ohlin world, where factors are mobile and shifts in relative prices (of the sort associated with increasing economic openness) generate conflict between the holders of basic factors, such as capital and labor, and a Ricardo-Viner world, where factors of production are sector-specific and shifts in relative prices inspire intersectoral conflict that unites employers and workers in defense of sectoral interests (cf. Hiscox 2001; Frieden/Rogowski 1996; Alt et al. 1996; Rogowski 1989).

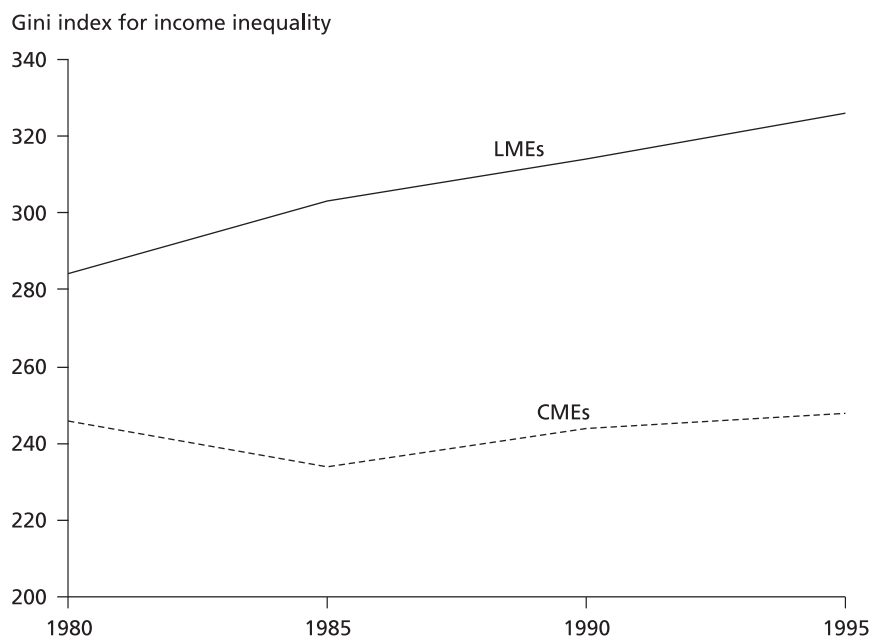
From this perspective, the varieties of capitalism literature argues that the initial political response to contemporary economic challenges will vary across liberal and coordinated market economies. In LMEs, the response will be highly market-oriented. When returns to existing activities are threatened, holders of mobile assets, such as workers with general skills or owners of capital on fluid equity markets, will tend to shift to new activities. In general, they will be interested in rendering markets even more fluid. Where nations respond to shocks by relying on markets to adjust prices and wages, however, substantial shifts in the distribution of income may occur of the sort reflected in increasing income inequality. Such distributive effects are likely to increase conflict between those with and without market-power, namely conflict of a “class” character, notably in arenas responsible for the regulation of income, such as the sphere of industrial relations.

In coordinated market economies, by contrast, the varieties of capitalism perspective expects similar economic challenges to inspire a different political response, mediated by higher levels of asset specificity. When returns to existing activities are threatened, holders of specific assets, such as workers with industry-specific skills and owners of enterprises deeply invested in co-specific assets, will find it difficult to shift to new activities. As a result, they will be less inclined to favor deregulatory initiatives that increase market competition and more inclined to demand institutional support for existing activities. The result is likely to be a politics of regulatory defense that may well also be conflictual but will unite workers and employers more often in ‘cross-class’ coalitions of sectoral defense (cf. Swenson 1995; Wood 2001; Thelen/Kume 2000).

These postulates about political dynamics are important because they suggest that the response to contemporary economic shocks is likely to produce quite different institutional outcomes in liberal and coordinated market economies. Although all capitalist economies use markets to adjust and will render some more flexible in the face of economic shocks, this analysis anticipates more and more-rapid deregulation in liberal market economies, where there should be more political support for it, than in coordinated market economies, where cross-class coalitions arise to support existing regulatory regimes. The perspective anticipates some conflict and change in all nations, including some liberalization in CMEs, but it also expects divergent institutional adjustment paths across different types of political economies.

In order to assess whether this perspective accurately models the response to recent economic challenges, we examine a number of indicators. As the approach predicts, levels of income inequality are not only higher in liberal than coordinated market economies; they have also increased much more rapidly there in recent years (see Fig-

**Figure 4** Changes in income inequality in liberal and coordinated market economies, 1980–1995



Source: Luxembourg Income Data Studies.

ure 4).<sup>24</sup> This is what would be expected if LMEs respond to economic challenges by relying more heavily on competitive markets to reset wages and prices.

We find similarly divergent outcomes in the sphere of industrial relations. Between the 1970s and 1990s, trade unions were dramatically weakened in liberal market economies. The proportions of the labor force belonging to a union or covered by collective bargaining agreements fell by a third. By contrast, trade unions remained relatively robust in coordinated economies, where 76 percent of the workforce was covered by a collective bargaining agreement on average in the late 1990s, compared with 38 percent in liberal economies (see Table 8). In the crucial sphere of labor relations, the response to recent economic challenges has reinforced, rather than undermined, institutional differences between liberal and coordinated market economies.

To what extent have such differences declined in other spheres over this period? To form an assessment, we assemble indicators for the character of institutional practices in six spheres relevant to the varieties of capitalism arguments. The observations are

<sup>24</sup> For the empirical analysis in this section of the paper, we adopt the classification of political economies that Hall and Soskice (2001a) use, terming those that they do not classify definitively as liberal or coordinated market economies, mixed market economies. Portugal, Spain, France and Italy are in the latter category.

**Table 8** Patterns of institutional adjustment in the developed political economies

	CMEs			LMEs			MMEs		
	1980s	1990s	% Δ	1980s	1990s	% Δ	1980s	1990s	% Δ
<b>Industrial relations</b>									
Trade union density	55	53	-4	46	31	-33	33	28	-15
Bargaining coverage	76	76	0	58	38	-34	79	89	13
Bargaining level	1.7	1.8	6	2.3	2.5	9	1.8	2	11
<b>Social protection</b>									
Employment protection	2.3	2.3	0	1.0	1.0	0	3.5	3	-14
Benefit entitlements	29	36	24	24	23	-4	15	31	107
Social spending/GDP	23	28	22	15	19	27	17	24	41
<b>Labor market flexibility</b>									
Part-time employment	18	22	22	16	20.2	26	8	11	38
Avg. hours worked	1713	1633	-5	1810	1831	1	1812	1728	-5
Income inequality	.24	.25	4	.28	.33	16	.31	.31	0
<b>Firm structure</b>									
Average job tenure	9.7	10.1	4	7.3	7.4	1	11.0	10.6	-4
CEO compensation	343	506	48	414	801	93	332	570	72
<b>Corporate governance</b>									
Stock mkt. capitalization	36	61	69	51	96	88	14	31	121
Debt/equity ratio	2.4	2.0	-17	.66	.91	38	2.7	2.1	-22
<b>Earnings and employment</b>									
Real earnings	22	26	18	22	23	4	24.2	27.9	15
Unit labor costs	100	115	15	100	118	18	100	166	66
Total employment	68	69	1	64	67	5	55	56	2

Sources: Ebbinghaus/Visser (2000); Traxler et al. (2000); OECD (1994: 65, 179; 1995: 42, 52; 1997a: 5, 7, 138; 1998: 18; 1999: 57, 241); MacFarlan/Oxley (1996: A1); Schludi et al. (1998: 2.3.1); LeMaitre et al. (1997: 141, A1); Luxembourg Income Data Studies (2001); Economic Policy Institute 2000; Financial Times 8 Sept (2000: 11).

drawn from the mid-1980s and the latest point in the 1990s for which data were available. They are reported in Table 8. We distinguish among liberal market economies, coordinated market economies, and a third group of nations possessing many of the institutional features associated with strategic coordination but termed here 'mixed market economies' because they are not definitively classified into the other two categories by the varieties of capitalism literature.<sup>25</sup>

25 As labeled here, mixed market economies include those that fall clearly below the regression line on the right hand side of Figure 1, i.e. Spain, Portugal, Italy and France.

In Table 8, the cells for the 1980s reveal substantial differences between CMEs and LMEs of the sort associated with different types of coordination. Of most interest here, however, are the changes that took place from the 1980s to the 1990s. Is there a narrowing in the differences between LMEs and CMEs of the sort that might reflect institutional convergence? In the realm of social protection, differences between the two types of economies remain pronounced. Most striking is the increase in benefit entitlements in CMEs compared to a slight decline in LMEs, suggesting that the latter sharpened market mechanisms, while the former tended to cushion citizens against the effects of market adjustment, moving more slowly to make changes to social protection even though we can expect some reductions in the coming years. In the labor market, increases in part-time employment indicate a movement toward greater flexibility across all nations, but increasing cross-national divergence in levels of income inequality and average annual hours worked per person in employment suggest different adjustment strategies across economies, at least in this initial period of adjustment.

Especially interesting are indicators for the institutional practices associated with firm strategy and finance. Here, much has been made of recent changes in CMEs that seem to reflect convergence on the practices of LMEs. However, these figures tell a more nuanced story. In CMEs, the compensation of chief executive officers and the size of stock markets have increased, taking the figures for the 1990s to levels characteristic of LMEs during the 1980s – undoubtedly changes of significance. But the analogous increases in LMEs have been substantially greater, leaving significant gaps between the two types of economies on indicators of institutional practices, apparent in the debt-to-equity ratios of nonfinancial enterprises, despite modest convergence there.

The figures for earnings and employment tell a classic story of the different adjustment paths followed by CMEs and LMEs. Strategically-coordinated wage bargaining systems push real earnings up steadily in CMEs, while market-led adjustment induces some decline in LMEs. But effective forms of coordination in the workplace and high levels of investment keep the increase in unit labor costs in CMEs below that of LMEs. However, the price paid for labor-saving investment and high real wages is a smaller increase in employment in CMEs compared with LMEs.

On balance, we read these figures as an indication that institutional practices did not converge dramatically across political economies during the 1980s and 1990s. CMEs made modest efforts to improve flexibility, liberalizing some markets, and the institutions supporting strategic coordination there have undergone some changes. No doubt, there will be further reforms in the coming years. But the absence of wholesale convergence in the face of the substantial economic pressures experienced during the 1980s and 1990s suggests that the distinctions drawn by the varieties of capitalism literature between different types of political economies are likely to be relevant for some time to come.

## 7 Conclusion

We entered this project uncertain about whether we could find indicators for the relevant variables and what the tests of the hypotheses would reveal. We leave it impressed with the uniformity of the results. The weight of the evidence suggests that the varieties of capitalism literature has identified important differences among political economies. In the spheres of labor relations and corporate governance, there are systematic differences among nations that correspond well to the underlying dimension of market-oriented versus strategic coordination that lies at the heart of the varieties of capitalism approach. The contention that institutional complementarities operate across these two spheres of the political economy is also borne out by the evidence. The persistence of cross-national differences in institutional practices in the face of intense pressures for convergence suggests that, despite some liberalization, the distinctions central to the varieties of capitalism approach are likely to be of continuing importance.

Our findings about complementarities have especially important implications for reform proposals now being considered in many nations. Proposals to deregulate labor markets have become increasingly popular in the developed world. However, our evidence suggests that labor-market deregulation is likely to produce large economic gains only in nations where financial markets are similarly fluid (see Table 5). Otherwise, the growth effects are relatively small. Similarly, many nations have come under increasing pressure from international agencies or global financial actors to expand equity markets and enhance competition in markets for corporate governance. However, these estimates suggest that, in the developed economies, such steps may have only small positive effects on growth and ones that are available only where labor markets are also highly fluid. Where labor market institutions are not so market-oriented, the effects on economic growth of deregulating corporate governance may be deleterious.

The broader lesson here is that those seeking to understand the economic impact of institutions should pay careful attention to the potential for institutional complementarities across spheres of the political economy. Most proposals to reform labor or capital markets are based on econometric estimates about the effects of reform that consider historical data only for the sphere being reformed. If the distribution of institutions across national cases is random, cross-national studies of this sort can produce accurate results. But our evidence indicates that this distribution is far from random: nations with particular types of institutions in one sphere tend to have particular types of institutions in other spheres, as a varieties of capitalism analysis predicts. As a result, models that do not take interaction effects across institutional spheres into account may attribute to one set of institutions effects that are actually generated by interaction among several sets of institutions.

Accordingly, these results set a research agenda, but they do not leave it entirely open: ours is not a counsel of despair that finds complementarities everywhere. Although there are undoubtedly more complementarities in the political economy than we have examined, the varieties of capitalism literature specifies some precise complementarities that can be explored in more detail. The range of institutional indicators available for doing so is expanding, and our results indicate that such analyses can be fruitful (cf. Amable et al. 2000; Ernst 2002; Nicoletti et al. 2000; La Porta et al. 1998a; Kenworthy 1995).

In the most general terms, this analysis lends empirical weight to the theoretical perspective advanced by the varieties of capitalism literature. It suggests that a varieties of capitalism approach to comparative capitalism need not be pertinent only to relatively pure types of LMEs or CMEs but that the types of institutional differences to which it draws our attention, based on the concepts of market-oriented and strategic coordination, are central to the operation of many developed political economies. This analytical framework can be used to locate many nations vis-à-vis one another and it yields important insights about their economic performance.

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