THE EFFECTS OF COMPETITIVE PRESSURES ON LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE : A Cross-country comparative study

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[ABSTRACT]

Traditionally, industrial relations have been studied with relation to three fundamental theories: pluralism, unitarism and marxism. However, over the past decade there has been an increasing contribution to industrial relations emanating from the boundaries of other disciplines: principally economics, organizational behaviour and business strategy. Among economists, and to a lesser extent, business strategists, there has been a growing concern about the relationship between macro-economic performance across several countries and labour market institutions. This has manifested itself in discussion of how specific wage bargaining structures influence unemployment and inflation. In these discussions industrial relations specialists appear to lag behind their economist colleagues, tending to favour analysis of the intrinsic relations between employers and employees.

An important advantage, however, of these studies in employee relations has been in their ability to explain the *conduct* of an industrial relations system. This has not led to any consensus and few of the studies conducted in the past decade have investigated the strategic behaviour of both employers and employees. None have attempted to examine the macroeconomic implications of behaviourial changes and wage bargaining.

This thesis builds on work already in train in a number of disciplines: principally industrial relations, business strategy, organizational behaviour and labour economics. Cognisant of the work in these areas, the study develops a theory which explains how perceived and actual increases in international competition influence the choice which employers and employees make and which eventually shape their institutions.

By departing from the traditional theoretical constructs used in industrial relations, our "new" theory provides a basis for cross-country comparisons of macro-economic effects of labour relations behaviour. From our theory we devise testable propositions and draw a wide variety of time series data over a period of some twenty years, from seventeen O.E.C.D. economies to test these. These data, which lend themselves to econometric analysis, are augmented by qualitative evidence from case studies. Findings support our theory.

The thesis makes three distinct contributions. Firstly, it suggests a

"new" theoretical approach to the study of industrial relations which combines work from several disciplines. In this regard, it contributes a theory which explains labour market changes by recourse to macro-economic performance. Secondly, it makes a contribution, albeit modest, to policy, suggesting that some current Western policies for labour relations are inadequate since they do not clearly show employers and employees the actual implications of macro-economic performance. Thirdly, the thesis highlights some of the shortcomings of econometric studies which focus on a relatively narrow set of variables at the exclusion of qualitative data which is difficult to quantify.

To my dear father and
to the memory of my mother

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PART ONE - INTRODUCTION

One. INTRODUCTION

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4. The four hypotheses revisited: understanding their underlying mechanisms
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CHAPTER ONE
INTRODUCTION

1. THE STRUCTURE OF LABOUR MARKET INSTITUTIONS AND MACRO-ECONOMIC PERFORMANCE

Wage-setting institutions have increasingly been viewed as important in explaining cross-country variations in economic performance such as unemployment, inflation and growth rates. Discussions tend to focus on national differences in the structure of labour market institutions - for example, the degree of centralization in the level of collective bargaining and the extent of corporatism in wage-setting. Academic work in this area can be grouped around four established hypotheses: the liberal-pluralist hypothesis (see e.g., Lindbeck 1978), the corporatist hypothesis (see e.g., Bruno and Sachs 1985; Cameron 1984; Crouch 1985; McCallum 1983), the U-curve hypothesis (see e.g., Calmfors and Driffill 1988; Freeman 1988), and the interactive hypothesis (see e.g., Paloheimo 1990).

The liberal-pluralist hypothesis argues that economies with *limited* trade union and government involvement in industrial relations display better economic performance than similar economies with extensive trade union and government involvement in industrial affairs. The liberal-pluralist position contrasts sharply with that of the corporatist. The corporatist hypothesis suggests that consensus-prone interplay between interest groups and government is crucial to improved economic outcomes. These two competing arguments have contrasting views of economic mechanism. The former argues that competitive forces are essential to restrain wage increases, while the latter suggests that there are political gains from internalizing the external effects of wage increases within large encompassing organizations (see e.g., Calmfors and Driffill, 1988).

Falling somewhere between the liberal-pluralist and corporatist positions are the U-curve and the interactive hypotheses. The former suggests that nations with either highly centralized or decentralized structures exhibit improvement in terms of lower unemployment and inflation. The latter explains the economic benefit of interactive and conditional relations in collective action between different strategic actors, such as unions, employers and the government.

Empirical studies tend to favour these latter two hypotheses[1]. Empirical support for the corporatist hypothesis is open to some doubt. For example, the vagueness of the concept of "corporatism" makes it unclear what the studies actually capture. Moreover, studies of corporatism lack adequate theoretical underpinning, and therefore give little guidance for the empirical work[2].

In the 1980s wage-setting theory developed, as a micro-foundation of these macro-studies, and proliferated, (see e.g., Calmfors, 1990). This micro-foundation attempted to explain the occurrence of involuntary unemployment and addressed such questions as: why are real and/or nominal wages rigid? Why are prevailing market wages higher than competitive equilibrium wages? Why are there significant mismatches between job vacancies and job-seekers? Why does the duration of unemployment become longer or shorter over business cycles? (see e.g., Laidler and Estrin, 1989) Economic theorizing about unemployment tends to focus on relatively short-term unemployment fluctuations and eschews the broader issue of unemployment fluctuations across countries.

In addition to economics, other disciplines have contributed to the debate of labour management relations and economic performance. These include: industrial relations, business strategy and organizational behaviour, which tend to be more concerned than economics with micro-level aspects[3]. However, studies in these disciplines lack the robustness of economics since the association between employee relations and economic performance, at the firm or industry level, is too complex to formulate as a straightforward theoretical model. Nevertheless, since wage bargaining in

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[1] Studies concerning the role of corporatism largely estimated two types of equations (see e.g., Calmfors and Driffill, 1988). Bruno and Sachs (1985), and McCallum (1983) have used cross-country Phillips-type price equations introducing a measure of corporatism as one explanatory variable. Bean, Layard, and Nickell (1986), and Newell and Symons (1987) employed wage equations, based on union wage setting and bargaining models, on time series data for individual countries.

[2] For instance, no guidance is given as to whether money wages should be influenced by consumer prices or by output prices. Furthermore, these studies do not provide guidance on the kind of variables which should be included (and in which forms), in the equations to be estimated.

[3] For example, they study why the specialists in industrial relations and personnel management respond in the way they do.

the labour market may be significantly influenced by changes in product market conditions, these studies appear sufficient to fill the gap between labour market models and specific realities.

It has now become typical to preface research in business strategy and industrial relations with a chapter outlining, amongst other things, the competitive pressures faced by specific companies, industries or economies. It is often suggested that increased competition has influenced the recent changing nature of labour management relations.

From the late 1970s, employee relations have changed from being adversarial by nature, with a rigid and narrow formula of collective bargaining based on uniformity and consistency, to cooperative, based on flexibility and versatility in response to changes in product market conditions mainly arising from deregulation and increased international competition. This is especially the case in the U.S. (see e.g., Kochan, Katz and McKersie 1986). Other studies support this rapid and fundamental change in employee relations due to increased international competition, world recession and technological change. Indeed, Ray (1988) argues that successful labour management initiatives have frequently resulted from special and changing circumstances. He points particularly to when economic difficulties have threatened the survival of both trade unions and employers and when international tension has necessitated cooperation in the interest of national security. The catalyst in the latter situation is usually international competition where the issue is survival versus extinction, not union versus management conflicts.

These changes in product market environments and consequent labour management relations place the management of employee relations firmly within the corporate context. Control over the labour process is not the sole concern of employers, but is subsidiary to the achievement of broader company goals.

Over the last twenty years or so, management has been repeatedly encouraged to adopt a more proactive and strategic stance in relation to labour, and to integrate this with general business strategies wherever possible. This makes sense particularly since strategic decisions appear to be increasingly influenced by the interests and bargaining power of a unionized work-force. Academic studies which document these changes in

management strategy do not provide a systematic framework for the relationship between changes in product market conditions, labour relations strategies, and the conduct of industrial relations. However, they provide important insights for such a framework which we can enhance using the work of organizational adaptation theorists.

2. OBJECTIVE OF THE STUDY

A major purpose of this study is to provide such a framework by examining the influence of international product market competition on the relationship between labour market institutions and macro-economic performance across-countries[4]. Theoretically, an attempt will be made to construct a micro-foundation for increased product market competition and labour market institutional change by linking changes in product market conditions with the structure and conduct of labour market institutions. This will provide researchers with an *alternative* model of industrial relations.

An important reason for attempting this is the inability of existing studies to explain the relationship between labour relations and economic performance. To achieve our objective we will need to "borrow" appropriately from different disciplines. Several disciplines have something to contribute to our position but on their own fail to construct the holistic framework we are attempting. Labour economics, for instance, tends to focus attention on the relationship between a few structural variables of labour market institutions and macro-economic variables. Economists stress structure at the expense of conduct. Industrial organizational theorists, unlike labour economists, emphasize conduct. However, organizational specialists frequently view the conduct of labour market agents as a direct outcome of the structure of wage-setting institutions. Thus, it is argued structure influences performance. While this is helpful it falls short of providing a framework which explicitly considers the strategic and interactive nature of decision-making in the labour process.

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[4] This study was initiated by Bradley (1986; revised in 1991). He suggested an "intuitive theory" about the determinants and nature of institutional change as a component of long-run labour market adjustment. In particular, this study examines the possible links between changes in product market conditions and labour market institutions.

It is our contention that it is important to examine the relationship between labour relations and economic performance more dynamically. To achieve this, we need to construct a framework to examine explicitly relationships between product and labour market institutions[5].

Our alternative theoretical framework will be pursued in three parts and will "borrow" from business strategy, organizational behaviour and industrial relations, in addition to economics. Firstly, we will construct a theory to explain and predict employees' and employers' strategic responses to changes in competitive pressure arising mainly from changes in product market conditions. In our theory *perceptions* of competitive pressure will have an important role. Secondly, we will derive a typology for the conduct of labour management relations from strategic interactions between workers and managers. This will be a crucial factor in explaining differences in performance between firms. Thirdly, we will develop a transmission mechanism which will allow us to make an important bridge from the *conduct* of employee relations to economic performance.

From our alternative theory we will develop the *competitive pressure hypothesis*. This contends that employees and employers in a company facing relatively high competitive pressure from international markets will modify their chosen strategies to become more flexible and consensus-prone in collective bargaining rounds. The changes in employees' and employers' conduct will improve economic performance.

Our thesis does not stand or fall on the robustness of this theory alone. Indeed, the model which we develop can be regarded as a new attempt to study the conduct of industrial relations systems by explicitly introducing competitive pressure from international product markets into the collective bargaining framework. In addition our theoretical framework provides a micro-foundation for the cross-country comparative study of the effects of competitive pressure on labour market institutions and economic performance. The competitive pressure hypothesis will be empirically tested

[5] For example, firms can be considered to be on a continuum between 'Responsible Autonomy' and 'Direct Control' strategies and will be influenced by competitive conditions in product and labour markets and employee reactions to them (see e.g., Friedman 1984). Firms will not remain at the same point on the continuum forever. As competitive conditions change, pressures on managers to change their strategies will intensify, and these will also alter employee reactions to specific management intervention.

at an economy level for the seventeen O.E.C.D. economies. This adds a further contribution to the debate on the role of labour market institutions in explaining cross-country differences in macro-economic performance. Quantitative analysis will be augmented by qualitative data from case studies and these will be used to shed further light on our competitive pressure hypothesis.

3. ORGANIZATION OF THE STUDY

A fundamental question addressed by this thesis is: what is the influence of competitive pressure on the relationship between labour market institutions and economic performance? This quest is motivated by the debate on the relationship between labour market institutions and macroeconomic performance[6]. A crucial question of this debate asks whether it is the *structure* (centralization) and/or the *nature* (corporatism) of labour market institutions that matter for cross-country differences in economic performance.

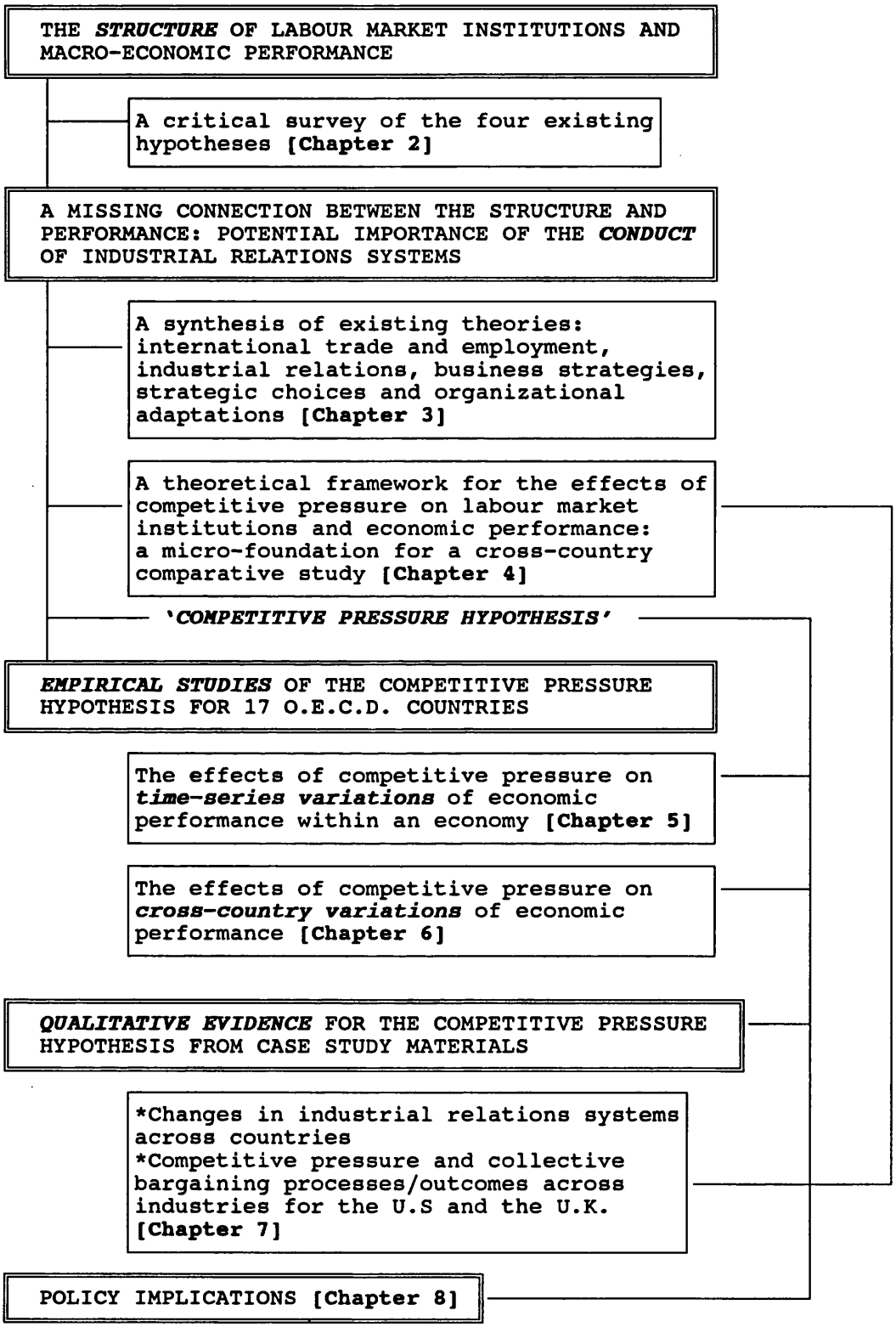
This thesis addresses these questions. It is organized as follows (see figure 1.1). Firstly, we examine the four established hypotheses outlined above on the relationship between the structure of labour market institutions and economic performance. Secondly, as a micro-foundation for the study, theoretical efforts are made to fill the missing connection between structure and performance. Finally, our theory concerning the effects of competitive pressure on the conduct of labour market institutions and economic performance is tested.

Chapter two is devoted to a critical survey of the existing four hypotheses on the relationships between indicators of labour market institutions (e.g., degree of centralization in the level of collective bargaining) and those of macroeconomic performance (e.g., changes in unemployment, inflation, and growth rates).

Chapter three investigates behaviourial aspects of labour market institutions. It introduces various fields of studies: international trade,

[6] This debate began in the mid-1970s and has become more active since the early 1980s. This is mainly due to persistently high unemployment in most major European countries in contrast to the experience of the Nordic economies.

Figure 1.1 Organization of the Study



employment and labour relations; changes in environmental conditions, strategic behaviour and organizational adaptation. Here, a synthesis of these diverse theories is attempted to construct a micro-foundation of labour relations and economic performance. As a first step, competitive pressure from international markets is suggested to be one of the most important environmental conditions influencing the strategic choices of workers and employers[7].

Chapter four constructs a theoretical framework of competitive pressure, labour market institutions, and economic performance by synthesising neglected and diverse theories. A concept of *competitive pressure* is defined from studies of international trade, employment and labour relations. This concept of competitive pressure is viewed as a crucial environmental influence on the strategic behaviour of employers and workers in collective bargaining.

Chapters five and six test our theory using data from seventeen O.E.C.D. countries. This focuses upon the relationship between labour market institutions and macroeconomic performance. Chapter five concentrates on the time-series variations in economic performance within a national economy, and chapter six on cross-country variations. Chapter seven supplements our quantitative study with findings from qualitative case studies at country and industry-specific levels. Conclusion follows in chapter eight.

[7] This is in line with traditional industrial relations research: that the influence exerted by product market competition on collective bargaining is structured by and may be mitigated by the existing arrangements for setting labour costs (see e.g., John R. Commons 1909; cited in Cappelli 1985; p.316). It is also motivated by the belief that over the past two or three decades the globalization of markets and the internationalization of national economies have greatly altered the context within which employment relations and policies must operate (see e.g., Marshall 1989; Burton 1989; Kruse 1988; Abowd and Lemieux 1990; Mills and Lovell 1985).

CHAPTER TWO

LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE

: A Critical Survey of Four Established Hypotheses

1. INTRODUCTION

The origins of high unemployment in the mid-1980s in many industrialized countries go back a long time. Tight labour markets in the 1960s and increased industrial conflict culminated in a wave of strikes and disputes which hit several European countries between 1968 and 1971. Largely because of the concern over wider social and political repercussions of industrial conflict, macroeconomic policy in many countries failed to resist, and in some cases actually worsened, inflationary pressure. At the same time, microeconomic policies increased structural rigidities in the labour market[1]. The overall result was that, in the late 1960s and 1970s, real wage costs grew faster than productivity[2].

There is no simple explanation why unemployment rose so far since the early 1970s, why it remained so high in many countries, and why there are sharp differences in individual country experiences. However, wage setting became increasingly important for macroeconomic performance[3].

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[1] 'While there is much we do not know about the details, the broad outlines of the origins of high European unemployment are familiar enough. Intransigent trade unions and well-intentioned but unintelligent governments have erected a web of microeconomic barriers to full employment that both make labour more expensive and transform wages from variable into fixed costs. These include (with different weights in different countries) high minimum wages, excessive severance pay, heavy fixed costs of employment, restrictions on hiring and firing, support for the closed union shop, meaningless licensing requirements, heavy-handed workplace rules, and impediments to geographic mobility. ... But there is also an important macro component to the slack we see in Europe today. And in the U.S., which has avoided the horror stories of European labour markets, restrictive policy is virtually the whole story behind the Great Recession of the 1980s. Put plainly, governments here and abroad have used high unemployment to exorcise the inflationary demon.' Blinder (1989; p.141).

[2] O.E.C.D. (1989; p.24).

[3] Some early answers to why unemployment rose so far placed particular stress on the deficiency of aggregate demand. After the first oil shock, the transfer of spending power to OPEC countries with only limited absorptive capacity was widely regarded as deflationary (so-called Keynesian Unemployment). But as unemployment persisted - and as wages in many countries showed no sign of moderation - attention shifted to other explanations. The simplest alternative was that wages were too high (so-called Classical Unemployment). These are regarded as focusing on a somewhat narrower question; the relative importance of demand and real wages in explaining unemployment, (see e.g., O.E.C.D. 1989; chapter 2).

Since the diverse nature of unemployment did not appear to be temporary, many researchers turned their attention to labour market institutions[4]. However, the relationship between wage setting institutions and economic performance still remained elusive in economics.

To-date economists have proposed four hypotheses which connect indicators of labour market institutions and macroeconomic performance, such as unemployment and inflation rates. These are, (i) the liberal-pluralist hypothesis which posits a negative monotonic relationship, (ii) the corporatist hypothesis which argues the reverse and suggests that there is a positive relationship between labour market institutions and macro-economic performance, (iii) the hump-shaped hypothesis which contends a U-curve relationship, and (iv) the interactive hypothesis. We refer to these throughout this thesis as the *established* hypotheses. Empirical works which emanate from these four hypotheses confirm that competitive forces restrain wages, and that there are potential gains from the internalization of the external effects of wage increases within large encompassing organizations.

This chapter critically examines cross-country studies of labour market institutions and economic performance. In the next section, we analyse the four established hypotheses developed in the economic literature. Their theoretical underpinnings are examined in the third section. In the fourth section, each of the four hypotheses is re-evaluated with a special focus on their underlying mechanisms. The final section will introduce the principal issues we will pursue in this study.

2. FOUR ESTABLISHED HYPOTHESES

The liberal-pluralist hypothesis[5] based on liberal economic theories of competitive markets emphasize the linear *negative* effect of organized interests. It suggests that economic performance is better in countries

[4] This research approach had its genesis with Bruno and Sachs (1985). Since then it has become a new tradition in economics to incorporate wage-bargaining institutions in theories. See e.g., studies of the Centre for Labour Economics (now, the Centre for Economic Performance), London School of Economics.

[5] This section borrows from Paloheimo (1990).

where the scope of trade unions and governments are limited. In competitive markets, where interest groups are weak, the price of labour and products fluctuate according to market conditions.

In organized markets, on the other hand, where employers and employees are members of interest groups, both wages and prices become rigid downwards. It is further argued that decision-making in organized markets is slow since groups cannot make decisions as fast as individuals. Thus the organized interests can restrain or prevent modernization of contemporary technologies. To the extent that over-extensive and intensive regulation disturbs the proper functioning of markets, large and over-active governments are also viewed as a source of contemporary economic maladies. Powerful government draws resources away from the market system and creates an overdeveloped welfare state which make people passive.

In contrast, the liberal political economy achieves order through the existence of a mass of atomized actors, each of which plays too small an individual part for its own autonomous decisions to have a general effect[6]. Here, *flexibility* and *speedy adjustment* are deemed important for economic performance. Under such circumstances there is little room for government to intervene in economic life. In modern industrial societies, however, economic and social relations are generally conducted through organizations which cannot be reduced to atomic market interactions alone. This tends to constrain the application of the liberal-pluralist hypothesis in the real world.

The corporatist hypothesis is derived from the idea that consensual decision-making guarantees that the interests of every collaborating group will be respected. The hypothesis claims that in organized economies, economic performance is better in countries with centralized organizational structures and mechanisms to promote consensual interplay between interest groups. Corporatist theories analyse the role of interest groups. The size of interest groups is significant in determining the style of group activity. Social interest groups organized on a small and localized scale receive gains they achieve from influencing market processes and bear only a minute proportion of the general costs. The position of encompassing

[6] See e.g., Crouch (chapter 5, pp.105-139) in Lindberg and Maier (eds) (1985).

interest groups, organized at a national or near-national level, is completely different. These directly experience the negative effects of their disruptions[7].

Both liberal-pluralism and corporatism compete with each other. The former emphasizes flexibility through a decentralized and free market mechanism, whereas the latter emphasizes cooperative solutions through centralized and consensus-type mechanisms. The U-curve hypothesis and the interactive hypothesis are somewhere on a continuum between these two competing hypotheses.

According to the U-curve hypothesis, see e.g., Calmfors and Driffill (1988), both intense centralization and far-reaching decentralization are conducive to real wage restraint. Intermediate degrees of centralization are harmful: hence the U or the hump[8]. If this hypothesis holds true, the most appropriate wage policy is either complete centralization with wages determined at the national level or extreme decentralization with wage bargaining at the level of the individual firm or plant. Calmfors and Driffill (1988) test the U-curve hypothesis by rank correlations between indices of centralization of the level of bargaining and economic performance. Eight indicators of economic performance are introduced. These include the average levels and changes of unemployment and employment; the Okun index and their own performance index. At first they examine the conventional wisdom of corporatism by rank correlations between country rankings of their own centralization index and those of eight measures of macroeconomic performance. Only one significant correlation is found. Thus, evidence is clearly against the hypothesis which suggests a

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[7] See e.g., Crouch (1985), *op cit*, pp.107-108. A similar argument has been developed by Olson (1982), to account for variations in national economic growth rates. Olson's thesis has its roots in the liberal-pluralist tradition, but there are some theorems which converge on corporatist ideas. His general thesis rests on the assumption that common-interest organizations, of which trade unions are an important example, will use their strength to inhibit changes hostile to their interests. However, he also points out that this will be less true to the extent that the organizations concerned are large in scope and small in number. As encompassing organizations of this kind will embody rigidities of decision-making, his preferred solution seems to be a reduction in the capacity of economic interests to organize at all.

[8] The hump-shaped pattern is related to Olson's (1982) idea that organized interests may be most harmful when they are strong enough to cause major disruptions but not sufficiently encompassing to bear any significant fraction of the costs for society of their actions in their own interests (see e.g., Calmfors and Driffill 1988; p.15).

monotonic relation.

Calmfors and Driffill directly test the hump-shaped hypothesis by developing a set of institutional rankings such that both centralized and decentralized economies rank above the intermediate ones. Their study displays strong statistical significance with respect to all measures of change in performance. With respect to the level of macroeconomic performance between 1974-85 however, only two correlations of unemployment and employment are significant. This prompts Calmfors and Driffill to rearrange their rankings of centralization, allowing for the possibility that although intermediate economies perform the worse, centralized countries may outperform the decentralized ones[9]. In most cases the corresponding correlations turn out higher than before. They are statistically significant for all measures of the level and change in performance.

The fourth hypothesis - the interactive hypothesis - attributed to Paloheimo (1990), also suggests that there are conditional relationships between the rate of unionization and the level of wage bargaining as well as between government's political complexion and the level of wage bargaining. Thus, it is argued there are *interactive*, collective action between different strategic actors, such as unions, employers and the government.

At first, Paloheimo presents four different types of interactive relationships between the level of wage bargaining and the level of unionization (see table 2.1). These are: (i) A highly unionised economy with centralised wage bargaining; (ii) A highly unionised economy with decentralised wage bargaining; (iii) A low unionised economy with centralised wage bargaining; and (iv) A low unionised economy with decentralised wage bargaining. In (i) pay rises are not the only goal of union wage policy since unions also keep price developments and unemployment in mind. There are favourable conditions to limit negative externalities,

[9] For this, they ranked the three most centralized economies first, followed by the three most decentralized ones, the three second most centralized ones, etc, (see e.g., Calmfors and Driffill 1988; pp.21-23, in particular, Table 3 of p.22 and Table 4 of p.23). For sensitivity analysis, they also used Cameron's ranking (refer to column 'C' of table 6.2 in p. 141) and obtained almost the same results. And considering an erroneous measure of unemployment in Switzerland, the case of Switzerland was used in another sensitivity analysis. By ranking Switzerland differently in the performance measure of unemployment, they found no serious change in results.

Table 2.1 Interactions between the Level of Wage Bargaining and the Level of Unionization

	High Unionization	Low Unionization
	(I)	(III)
Centralized		
Economic strategy	Growth-oriented	Pure redistributive
Negative effects	Limiting	High
Economic adjustment	Fair	Poor
	(II)	(IV)
Decentralized		
Economic strategy	Profit-seeking	Market-oriented
Negative effects	Externalizing	
Economic adjustment	(Sectoral interests)	(Market mechanism)

Source: A compiled table based on Paloheimo (1990).

which increases the possibility of fair economic adjustment. In (ii) there are a number of small groups looking mainly for their sectional interests. The lack of coordination in decision-making enables the different small groups to externalize the negative side effects of their redistributive policies. In (iii) it is easier to choose redistributive strategies which externalize negative side effects. Thus, there are favourable conditions for high negative externalities, pure redistributive strategies and poor economic adjustment. In (iv) trade unions with little power have a smaller effect on the functioning of the market system. This resembles the neo-classical model of perfect competition. In this instance, we can expect market-oriented economic strategies and economic adjustment by market mechanism.

In addition, there are also interactive relationships between the level of wage bargaining and the political complexion of the government. Strategies of Left-Wing governments are different in highly-organized economies compared to those with a low level of organization. Similarly, strategies of Right-Wing governments are different in highly organized economies than in those with poor organization.

Paloheimo (1990) tests these interactions using data from eighteen

Table 2.2 Testable Propositions in Paloheimo's study: Expected Signs of Simple Correlations

(1) Liberal-pluralist hypothesis			
	Economic Growth	Inflation	Unemployment
Unionization	-/-	+/+	+/+
Centralization	-/-	+/+	+/+
Left-wing office	-/-	+/+	+/+
(2) Corporatist hypothesis			
	Economic Growth	Inflation	Unemployment
Unionization	+/+	-/-	-/-
Centralization	+/+	-/-	-/-
Left-wing office	.	.	.
(3) U-curve hypothesis			
	Economic Growth	Inflation	Unemployment
Unionization	.	.	.
Centralization	+/-	-/+	-/+
Left-wing office	.	.	.
(4) Interactive hypothesis			
	Economic Growth	Inflation	Unemployment
Unionization	+/-	-/+	-/+
Centralization	+/-	-/+	-/+
Left-wing office	+/-	-/+	-/+

Source: A compiled table based on Paloheimo (1990; pp.121-133).
Note: Left-hand signs of each cell are for the group of centralized or intermediate economies, whereas the right-hand signs are those for decentralized countries.

Table 2.3 Actual Signs of Correlations in Paloheimo's Study

	Economic Growth	Inflation	Unemployment
Unionization	+/-	+/+	-/+
Centralization	+/-	-/-	-/-
Left-wing office	+/-	-/+	-/-

Source: A compiled table based on Paloheimo (1990; pp.121-133).
Note: Left-hand signs of each cell are for the group of centralized or intermediate economies, whereas the right-hand signs are those for decentralized countries.

countries[10]. Paloheimo uses both simple correlations and multiple regression techniques to analyze economic policy[11]. Further, he reorganizes countries into two groups using the Calmfors and Driffill index of centralization of bargaining[12]. Paloheimo suggests a set of testable propositions for the above-mentioned four established hypotheses: the liberal-pluralist, the corporatist, the U-curve, and his own interactive hypotheses (see table 2.2). Their related empirical results are reported in table 2.3. Data are mainly in favour of the interactive and U-curve hypotheses. However since unionization, centralization, and government complexion are highly correlated, it is not altogether clear whether it is the U-curve or the conditional relations hypothesis which is mainly supported by empirical analyses.

Paloheimo's conclusions approximate those of Calmfors and Driffill (1988) and suggest that there is no short-cut from highly centralized to highly decentralized industrial relations, or *vice versa*. Countries with moderate industrial relations systems should consider either decentralizing

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[10] Countries in his analysis were the same as the ones in Calmfors and Driffill (1988) with the exception of Ireland. Paloheimo studied the interactions over the two time periods of 1974-79 and 1980-85.

[11] As independent variables he employed: (i) union membership, (ii) centralization of wage bargaining, and (iii) political complexion of the government. These three independent variables are, in fact, highly correlated. [Paloheimo (1990) p.121]

Correlation coefficients between variables

	UM	WBL	PC
Union membership (UM)	1.00	0.74	0.43
Wage bargaining level (WBL)	0.74	1.00	0.69
Political complexion (PC)	0.43	0.69	1.00

Paloheima used the centralization index of Calmfors and Driffill (1988), although included Ireland as a decentralized country with some centralist tendencies. political complexion of the government is measured in average terms, with Left-Wing cabinet seats as a percentage of total cabinet seats in the two time periods. If political complexion of the cabinet has changed during the period under consideration, weighted averages are calculated using periods of office as weights. As dependent variables Paloheimo used data on economic growth and its components: consumer price inflation, unemployment as a percentage of the labour force, growth of employment and participation rate. In addition, Paloheima employed economic policy variables: fiscal policy measured with public sector borrowing requirement (PSBR) as a percentage of GDP; monetary policy, with the growth of money supply; wage policy with average increases in hourly earnings in manufacturing; and currency policy with changes in the effective exchange rate from 1973 to 1979 and from 1979 to 1985.

[12] Paloheimo regrouped countries with centralized or intermediate wage bargaining systems into one group. Hence, in his analysis, there are effectively only two groups of countries: (i) those with decentralized bargaining structures and (ii) those with centralized or intermediate structures.

or centralizing their labour relations and either liberalizing or corporatizing their economic policies, see e.g., Paloheimo (1990; pp.134-135).

In addition to these empirical efforts, there have also been related theoretical developments which we will now consider.

3. A BRIEF EXAMINATION OF SOME THEORETICAL DEVELOPMENTS

Most empirical studies concerning the relations between labour market institutions and economic performance have tested their hypotheses by using Phillips-curve type multiple regressions or rank correlation techniques. One crucial question is: Do inter-country variations really reflect fundamental differences in behaviour or are they due to spurious correlations or specification differences?

Traditional Phillips curve relations examine how various independent variables influence money wage increases, which, in turn, are assumed to have an important effect on unemployment. As for independent variables the following indicators have been used: unemployment, actual and/or expected price increases, vacancies, the differences between vacancy and unemployment rates, duration of vacancies, tax rate changes, productivity increases, and profit levels.

The main drawback of traditional analysis has been the lack of adequate theory, see e.g., Calmfors (1990; p.35). The underlying idea is usually that the rate of wage change should be related to the level of excess demand (supply) in the labour market. This is analogous to traditional assumptions in competitive markets where price adjustments are sluggish. Sometimes the Phillips curve has been interpreted to reflect bargaining behaviour, where the demand situation in the labour market is taken as an indicator of the relative bargaining strength of unions and employers. The absence of a theoretical basis gives little guidance as to whether money wages should be influenced by consumer prices (which matter to the purchasing power of wages) or by output prices (which influence employers' ability to pay). Further it provide neither guidance as to which other variables should be included and in which form.

The 1980s, however, have seen developments in wage-setting

theory in several directions: the proliferation of models of union and bargaining behaviour; the efficiency-wage models; and the insider-outsider theory[13]. There are two groups of insider-outsider theories: one is an extension of the union bargaining framework, according to which all wages are set by and in the interests of insiders; and the second focuses on explaining how labour turnover costs give insiders a market power which rules out wage underbidding by outsiders, see e.g., Blanchard and Summers (1986).

Blinder (1989) notes that too much traditional theoretical debate has taken place within the confined structures of homogeneous labour, where the question is reduced to whether and why 'the wage rate' is sticky. This is a reasonable question, but not the only one. Once we focus on the heterogeneity of labour, the concept of wage rigidity loses precision. Is it the *average level* of wages or the *structure* of relative wages which are sticky? According to Blinder it would be more fruitful to concentrate on such things as the relative status and the coordination failures.

The theories of unemployment based on imperfect information assume heterogeneity to be an essential part of the story. However, these new models have so far contributed little to an explanation of the changes in unemployment that we observe in time series data[14]. Indeed, these shed little light on why nominal shocks have strong real effects since each shock is fundamentally a story about relative prices or real wages. One way to transform a real rigidity into a nominal rigidity is to add the costs of changing nominal prices or wages[15].

In the following two sections, we will revisit the established four

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[13] Calmfors (1990) describes some of the developments in wage setting. For union bargaining models, see e.g., Oswald's paper in Calmfors and Horn (1986). The efficiency wage models are when employers are assumed to set wages by trading off the conventional negative profit effects of higher wages against positive productivity effects due to such factors as greater labour effort, low turnover, etc. For example, see e.g., Shapiro and Stiglitz (1984); Akerlof and Yellen (1986). The insider-outsider theory stresses the different impact of employed insiders and unemployed outsiders on wage-setting.

[14] Hysteresis models may be the most promising however.

[15] Akerlof and Yellen (1985) do this by adding the fixed costs of changing prices to a model with efficiency wages. They assume 'near rationality' which is equivalent to rationality in the presence of fixed costs. Blanchard and Kiyotaki (1987), building on the insights of Mankiew (1985), do the same in an monopolistic competition model.

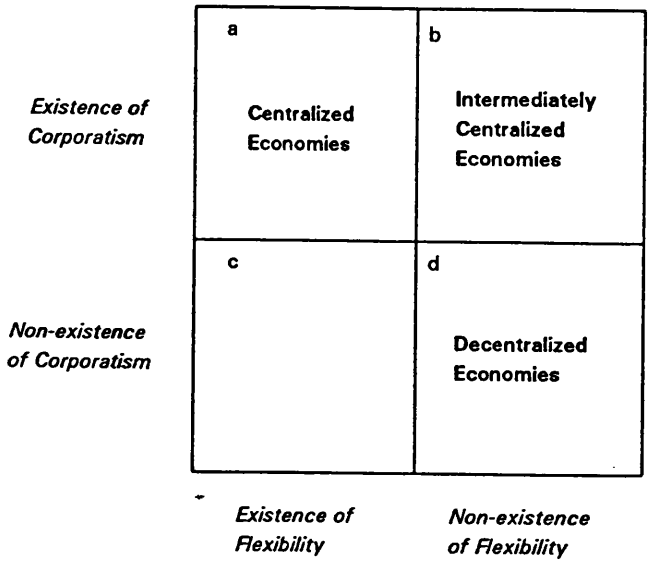
hypotheses in order to understand their underlying mechanisms and, thus, introduce the principal issue of our study.

4. THE FOUR HYPOTHESES REVISITED: Understanding their Underlying Mechanisms

Liberal-pluralism and corporatism are based on two fundamentally different mechanisms, see e.g. Calmfors and Driffill (1988). Pluralists contend that wage increases are restrained by market forces and wage flexibility results from decentralized wage bargaining. Decentralization is expected to act like competitive forces in a neo-classical market equilibrium. Corporatists, on the other hand, suggest that in a centralized bargaining system wage setters recognize broader, social interests. Calmfors and Driffill (1988) find that both extreme centralization and decentralization are conducive to real wage restraint, whereas intermediate degrees of centralization are harmful. Their hump-shaped pattern is related to Mancur Olson's idea that organized interests may be most harmful when they are strong enough to cause major disruptions but not sufficiently encompassing to bear any significant fraction of the costs for society incurred by their actions in their own interests. Further, Paloheimo (1990) contends that disagreements between liberal-pluralist and corporatist writers are partly due to a lack of understanding on the conditional relations in collective action. He suggests an interactive hypothesis as an alternative and attempts to capture how different institutional factors may interact with each other to influence economic performance. For this purpose, he studies three institutional factors: (i) The degree of unionization; (ii) The level of wage bargaining; and (iii) The party complexion of governments.

These two hypotheses of Calmfors & Driffill (1988) and Paloheimo (1990) seem to be based on more complicated mechanisms than the earlier two monotonic hypotheses of the liberal-pluralist and the corporatist. The hump-shaped U-curve hypothesis of Calmfors and Driffill mix the two arguments of flexibility and corporatism, depending on the degree of centralization of the level of bargaining (see figure 2.1). Calmfors and Driffill place greater emphasis on determining which of the two mechanisms

Figure 2.1 Flexibility and Corporatism Underlying the U-curve Hypothesis



(flexibility and corporatism) is dominant according to the degree of centralization in collective bargaining. There are four possibilities, A, B, C, or D which we represent the four quadrants in figure 2.1:

(i) When the level of bargaining is extremely decentralized, flexibility overrules corporatism resulting in better adaptability to changes in market conditions (C in figure 2.1);

(ii) When highly centralized corporatism supersedes flexibility giving society-wide consensus to restrain wages when needed (A in figure 2.1);

(iii) When intermediately centralized, those two competing mechanisms are in operation at the same time to produce the worst results in performance (B in figure 2.1);

(iv) Comparing two groups of economies at the extreme ends of centralization, Calmfors and Driffill assume that a corporatist regime outperforms a flexible one.

Taking into account interactions between the levels of unionization and centralization, Paloheimo (1990) mixes flexibility and corporatism, but in a more complicated way than Calmfors and Driffill, see table 2.4. Paloheimo introduces the possibility that not only positive but also negative effects may operate behind each of the two mechanisms.

Table 2.4 Interactions between Flexibility and Corporatism in the Interactive Hypothesis of Paloheimo (1990)

	High Unionization	Low Unionization
	(I)	(II)
Centralized		
Flexibility	High +ive/Low -ive	Low +ive/High -ive
Corporatism	High +ive/Low -ive	Low +ive/High -ive
Expected order*	1	4
	(III)	(IV)
Decentralized		
Flexibility	Low +ive/High -ive	High +ive/Low -ive
Corporatism	Low +ive/Low -ive	Low +ive/Low -ive
Expected order*	3	2

*: EXPECTED ORDER means expected order of economic performance from those hypothetical interactions. See the text for the exact meanings of negative and positive effects. The effects are based on Paloheimo (1990).

In highly-unionized economies with centralized bargaining structures, see table 2.4, (I) - social consensus almost nullifies the negative effect of flexibility. But in highly-unionized countries with decentralized bargaining structures, see table 2.4 (III), the negative effects of flexibility are predominant. In highly-unionized countries, unions may wield their negotiating powers for their sectoral interests only, but produce flexibility in wage negotiations as a whole. Some sectors will suffer from lower wages, resulting from the oversupply of unemployed from high-wage sectors. Further, in low-unionized economies with centralized structures, see table 2.4 (II), the negative effects of consensus will prevail. A few unions with centralized bargaining structures may obtain a consensus among themselves but without considering enough social effects. This will produce more severe segmentation of labour markets and therefore, negative flexibility with negative consensus. In low-unionized countries with decentralized structures, see table 2.4 (IV), which are most similar to competitive markets, flexibility repudiates the negative side-effects of consensus. Using this logic behind the table 2.4, Paloheimo (1990) orders the possible interactions between the levels of centralization and unionization, in terms of economic performance: in a descending order,

countries with (i) Highly-unionized and Centralized; (ii) Lowly-unionized and Decentralized; (iii) Lowly-unionized and Centralized; (iv) Highly-unionized and Decentralized collective bargaining structures.

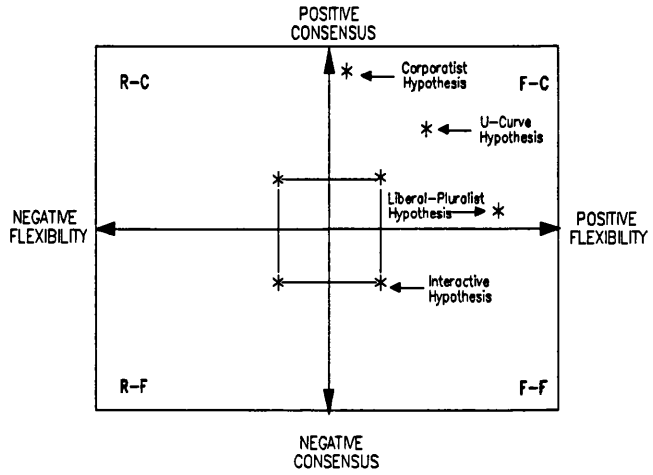
In a nutshell, Paloheimo, unlike any other, may have realized that there might be negative as well as positive effects in both mechanisms of flexibility and corporatism. The effects depend on the interactions of the levels of unionization and centralization. Others focused their attentions only on the implicitly assumed positive effects of those mechanisms and therefore regarded flexibility and corporatism as competing. In fact mechanisms do not compete but act simultaneously to produce inter-country differences in economic performance. Despite recent developments in economic theory, causality remains a problem since there is no systematic explanation for these potential interactions[16]. Understanding these interactions requires more in-depth study of bargaining behaviour at a more disaggregated level.

5. A BROADER PERSPECTIVE: the Missing connection between structure and performance

Disagreements about the role of labour market institutions in explaining economic performance seem to arise largely from the different views of the underlying mechanisms. It would be a significant contribution to the debate if we can clarify the driving force between them. We have suggested that both flexibility and consensus operate simultaneously and should not be viewed as competing. Thus, the liberal-pluralist and corporatist hypotheses are unsatisfactory since they put too much emphasis on either flexibility or consensus. The U-curve hypothesis considers both flexibility and consensus at the same time, but fails to explicitly recognize their negative effects. Meanwhile, Paloheimo (1990) suggests a conditional relationship in collective bargaining; i.e., interactive relations between the levels of unionization and centralization of wage bargainings as well as between party complexion of governments and the level of wage bargainings. The

[16] The next two chapters will attempt to redress this imbalance by attempting to develop a systematic and coherent explanation.

Figure 2.2 A Summary View of the Underlying Mechanisms Behind Four Established Hypotheses



Note: F-C = Flexibile-Consensus;
F-F = Flexible-Friction;
R-C = Rigid-Consensus;
R-F = Rigid-Friction.

interactive hypothesis attempts to incorporate both the positive and negative effects of the two mechanisms. Examination of the interactive relationships is still in its infancy and, as yet, does not have a coherent and systematic logic behind the suggested propositions.

Each quadrant in figure 2.2 can be labelled as follows: (i) Flexible-Consensus (F-C); (ii) Rigid-Consensus (R-C); (iii) Rigid-Friction (R-F); and (iv) Flexible-Friction (F-F). Figure 2.2 positions the four established hypotheses we have discussed according to how each considers the effects of flexibility and consensus. Three of the hypotheses - Corporatist, Pluralist andthe U-Curve Hypothesis - fall in the Flexible-Consensus quadrant. However, one of them - Paloheimo's Interactive Hypothesis - cannot be positioned in any specific quadrant. This is because the interactive hypothesis explicitly considers negative effects of corporatism and flexibility. Hence, Paloheimo's interactive hypothesis is the most satisfactory to the extent that it covers all the possible effects. In figure 2.2, this is represented by a smaller box straddling all four quadarants.

This study aims to add our own hypothesis. This will be achieved after a more in-depth consideration of flexibility and consensus. Indeed, we will endeavour to derive a typology for the conduct of labour relations which

displays both positive and negative effects of flexibility and consensus. We will achieve this by an in-depth study of the missing connections between labour market structures and economic performance. This will come closer to Friedman's (1984) call for a "framework that explicitly takes into account the strategic interactive nature of decision-making in the labour process".

The conduct of labour relations might be effectively uncovered by investigating how labour market agents respond to changing product market conditions. For example, in analyzing management strategies Friedman (1984) rightly notes that 'the point any firm is on the continuum between *Responsible Autonomy* and *Direct Control* strategies will be influenced by competitive conditions in product and labour markets, and worker reactions to them'. As competitive conditions change, pressure on managers to change their strategies will intensify, and pressure will also be exerted to alter worker reactions.

Economic performance such as unemployment, inflation, and growth, is, in fact, a result of the interrelationships of sub-markets in the economy. Also important are the *potential* relationships between structure and economic performance. However, the structure of labour market institutions is only one aspect of labour relations in an economy. Furthermore, structure might be regarded as influencing the behaviour of labour market agents. It should be noted that cross-country divergences in economic performance seems wider than expected from the established hypotheses which focus on structural differences in labour market institutions. For example, table 2.5 shows unemployment experience in specific economies according to the degree of centralization in collective bargaining. Our data show that cross-country variations are much wider in the group of decentralized economies. Over the period, standard deviations are increased significantly which cast more doubts on the established hypotheses. This alone suggests that further investigation is required.

In sum, from this brief review of the four established hypotheses we have suggested an *a priori* reason to examine the conduct of labour market institutions. Flexibility and consensus of labour market institutions have to be studied, explicitly considering their positive and negative effects at the same time. Evidence also suggests that their structural difference is not

enough to explain divergence in unemployment experience within the same group of economies. Having seen a need to go beyond the existing studies, the question arises, how can we analyse the behaviour of labour market agents? The next chapter will explore this question of conduct.

Table 2.5 Cross-country Differences in Average Standardized Unemployment Rates

	1960-9	1969-73	1973-9	1979-89	1960-89
Centralized economies					
Austria	1.61	1.20	1.40	3.02	2.02
Norway	2.00	1.73	1.77	2.68	2.16
Sweden	1.32	1.80	1.60	2.09	1.71
Denmark	1.98	1.48	4.83	8.65	4.89
Finland	1.84	2.58	4.13	4.95	3.45
MEAN	1.75	1.76	2.75	4.28	2.85
SD	0.29	0.52	1.61	2.67	1.32
Intermediate economies					
Germany	0.71	0.95	2.86	5.76	3.00
Netherlands	1.16	2.02	4.74	9.34	4.94
Belgium	2.34	2.50	5.80	10.53	5.95
New Zealand	0.18	0.35	0.74	4.17	1.73
Australia	2.17	2.00	4.63	7.39	4.50
MEAN	1.31	1.56	3.75	7.43	4.02
SD	0.93	0.88	2.00	2.57	1.67
Decentralized economies					
France	1.69	2.60	4.27	8.74	4.85
U.K.	2.63	3.35	4.77	9.49	5.68
Italy	3.82	4.17	4.53	6.80	5.07
Japan	1.36	1.22	1.84	2.45	1.83
Switzerland	0.11	0.00	0.81	1.72	0.82
U.S.	4.74	4.63	6.41	7.04	5.96
Canada	4.73	5.37	6.93	9.11	6.87
MEAN	2.73	3.05	4.22	6.48	4.44
SD	1.78	1.92	2.23	3.17	2.25
All 17 economies					
MEAN	2.02	2.23	3.65	6.11	3.85
SD	1.35	1.46	1.98	2.98	1.87

Source: Calculated from Layard, Nickell, and Jackman (1991), Annex table A4 without country weights. Country groups are based on Calmfors and Driffill (1988).
Note: SD stands for standard deviations.

PART TWO - THEORY

Three. **COMPETITIVE PRESSURE AND THE CONDUCT OF LABOUR RELATIONS: A Synthesis of Theories**

1. Introduction
2. International trade, employment and competitive pressure
3. Competitive pressure and strategic choices
4. Competitive pressure and the conduct of labour relations: a synthesis of theories

Four. **A THEORETICAL FRAMEWORK OF PRODUCT MARKETS, LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE**

1. Introduction
2. Competitive pressure and strategic responses
3. Strategic interactions and the conduct of labour relations
4. Hypotheses and an empirical framework

CHAPTER THREE
COMPETITIVE PRESSURE AND THE CONDUCT OF LABOUR RELATIONS: *A Synthesis of Theories*

1. INTRODUCTION

Existing studies on the role of labour market institutions in economic performance have emphasized the *structure* of collective bargaining. They assume away the behaviourial dimension as something which exists within a black box and therefore unquantifiable. The two competing liberal-pluralist and corporatist hypotheses seem to be rejected in favour of the U-curve and the interactive hypotheses.

Our work argues that there are complex interactions between flexible and consensus-type policies and that there exists a wide variance in economic performance across countries with similar collective bargaining structures. These differences can be explained by the *conduct* of employees and employers. These behaviourial variables are not represented in the four established hypotheses discussed in chapter 2.

Flexible and consensus-type policies have both positive and negative influences on an economy regardless of the structure of wage bargaining. Disagreements may occur as to how interactions behind structural differences can be analyzed. In this chapter we argue that these interactions might be more readily understood by examining both changes in product market conditions and in the structure of labour market institutions. Flexibility and consensus will increase in importance when changes in wage-setting behaviour are required in response to changes in competitive pressure from product and labour markets.

At least since the pioneering work by John R. Commons in 1909, industrial relations research has shown that the influence exerted by product market competition on collective bargaining is structured by existing arrangements for setting labour costs. The key pressure which changes industrial relations practice stems from the interaction between competitive market pressures and the structure of collective bargaining, (see e.g., Cappelli 1975; p.317). Indeed, there is much research - notably, Tyson and Zysman (1988) - which focuses on the relationship between international

trade and employment, and the implications of internationalization for labour market institutions and industrial relations systems - see eg, Abowd and Lemieux (1990), Kruse (1988) and Burton (1989). At a more micro-level, there is a variety of related work. This however is widely dispersed across various academic disciplines which include industrial relations, business strategy and organizational behaviour (see e.g., Marchington 1990; Marchington and Parker 1990; Cooke and Meyer 1990; Child 1972; Hrebiniak and Joyce 1985; and Whittington 1988).

These studies share an important denominator: the globalization of markets. They all highlight the increasing internationalization and the interpenetration of markets over the past two decades. They further suggest that this has greatly altered the context within which employment relations and policies operate[1]. The integration of global labour markets has significantly influenced industrial relations systems and management practice at the enterprise level, (see e.g., Marshall 1989: p.205). Studies which relate to these changes are still in their infancy and lack consistent theoretical frameworks and empirical investigation. This thesis goes some way to fill this gap. In the next two sections we review two groups of studies: (i) those concerned with the effects of international competition on employment and employee relations; and (ii) those detailing strategic behaviour and organizational adaptations in response to changes in product market conditions. The final section of this chapter will synthesize these studies and present a systematic explanation of labour relations and economic performance.

2. INTERNATIONAL TRADE, EMPLOYMENT AND COMPETITIVE PRESSURES

Since the Second World War economies have become much more interdependent with respect to their product, financial and labour markets, see e.g., Marshall (1989). Indeed since the Bretton Woods agreement began

[1] Although academic work supports this, these tend to be outside the realm of industrial relations. Studies on employment policies and labour relations are either rare or in their infancy: see e.g., Marshall (1988); Burton (1989); Mills and Lovell (1985); Abowd and Lemieux (1990); and Kruse (1988).

to undergo severe changes, uncertainties dramatically increased[2]. Changes in financial[3] and labour markets[4], as well as product markets, contributed to increased uncertainties. Here we focus on product markets[5].

The internationalization of markets has a number of important implications for employment policy. On the positive side, the increased efficiency and expanding knowledge that accompanies international economic integration has promoted higher standards of living for many of the world's people. On the negative side, such internationalization has brought many destabilizing influences. The nature of many economies has changed to such an extent that international economic rules effective in the 1950s and 1960s are no longer applicable. One important aspect is the enormous *fungibility* of world markets which causes a ballooning effect for countries that are relatively open to imports. Today countries are unable to

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[2] The Bretton Woods included, most importantly, GATT (General Agreement on Tariffs and Trades), IMF (International Monetary Fund), IBRD (International Bank for Reconstruction and Development), OECD (Organization for Economic Cooperation and Development), and aid programmes for the reconstruction of Europe and Japan.

The Bretton Woods system facilitated the growth of the international economy throughout the 1950s and 1960s, until events began to erode its basic institutions. The first such event was the U.S. decision, in 1971, to suspend the convertibility of U.S. dollars to gold, followed by the abandonment of the fixed exchange rate system in favour of floating exchange rates in 1973. Internationalization of markets and currencies have made it possible for speculators to play a larger role in a global economy with floating exchange rates, much larger supplies of money than needed for goods and services transactions, and stop-go national economic policies. All these combine to create considerable uncertainty; in particular, wide fluctuations in currency values. For more details, see Marshall (1979).

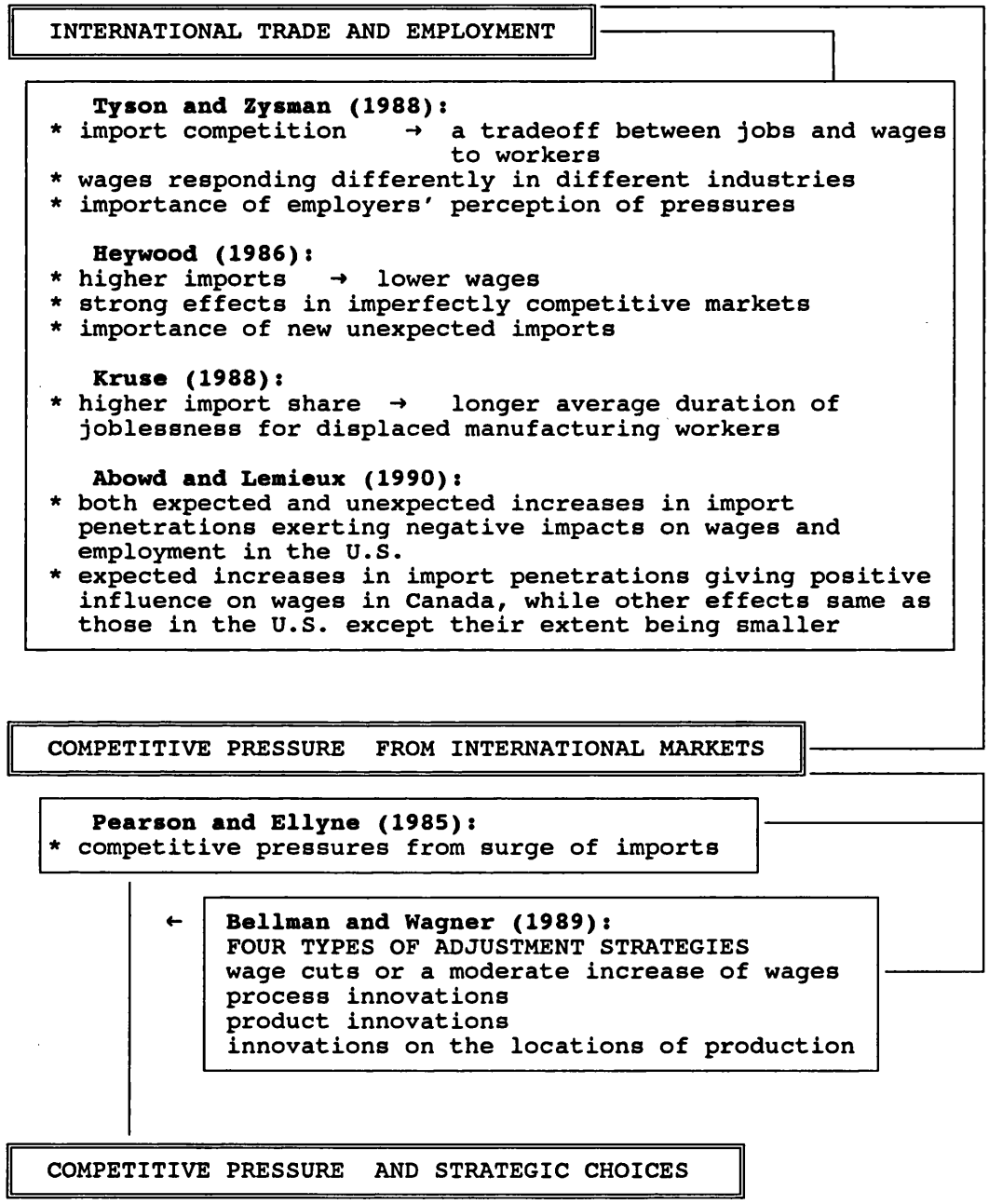
[3] Mitchell and Zaid (1990) duly noted the importance of wide fluctuations in currency value on human resource management and industrial relations:

> 'Especially in the eighties, wild swings in currency values created pressures in product markets which inevitably spilled over into labour markets. Internal human resource management policies aimed at raising productivity and cutting labour costs can easily be overwhelmed by a sharp change in exchange rates. Thus, employer pressures for flexibility may have originated in part from the financial side of the international economy rather than simply from the broadening of markets through the trade side.'

[4] The national labour market has been substantially affected by internationalization. Between 1965-85 there were large-scale international movements of workers, some legal, some illegal. For example, it has been argued that the postwar economic miracle in West Germany was partly due to labour market flexibility made possible by the importation of 'guest workers' from eastern and southern Europe.

[5] Even if international mobility of labour force has been increased, the importation of workers seems still far from being one of normal business decision-makings. Uncertainties from international financial markets appear to be alleviated by firms' financial activities. Therefore, so long as we are concerned with the strategic behaviour of workers and employers in response to changes in competitive pressures from international markets, we may not sacrifice too much if we only consider international product markets.

Figure 3.1 *Importance of Competitive Pressure from International Trade on the Processes and Outcomes of Labour Relations*



direct their international policy making as effectively as they did in the past. Perhaps more importantly, countries are unable to ensure the effectiveness of their domestic economic policies[6].

With hindsight, it is possible to examine how international competition has influenced the conduct of labour market institutions. Figure 3.1 provides an overview of a number of studies on the effects of international trade on employment, especially for the U.S. economy (see e.g., Tyson and Zysman 1988; Heywood 1986; Kruse 1988; Abowd and Lemieux 1990). These all agree that import penetration engenders competitive pressure on both employers and workers.

There is no consensus about the employment effects on manufacturing[7]. Although, it is possible to distinguish whether trade pressures on job opportunities have increased or decreased[8]. Import competition seems to give employees a choice between jobs and wages. According to Tyson and Zysman (1988), wages have responded differently in different industries with varying degrees of trade pressure. How employers perceive import competition (whether temporary or permanent) is more important in their choice of strategies. If they think competition is temporary, employers might reasonably retain employees and sacrifice a short-term decrease in profits, see table 3.1. Heywood (1986) for the U.S. found that higher imports tended to lower wages especially in imperfectly

[6] Similar argument can also be found in Seitz (1992).

[7] The dwindling share of manufacturing employment in the advanced countries suggests to some observers (like Abowd and Freeman for the U.S.) that fewer and fewer jobs are exposed to international competition. According to Tyson and Zysman (1988), this conclusion is misleading because at least one-quarter of U.S. GNP consists of services that are tightly linked to manufactured goods production. Therefore to the extent that the demand for domestic manufacturing is reduced by trade, the demand for such services and for the workers who provide them will also be curtailed.

[8] It might seem that a change in demand affected by imports or exports would directly affect output and employment levels. However, the relationships are not direct and their long-term consequences are not obvious and depend on the resulting changes in product price, wages, employer expectations, and production technology. See, e.g., Tyson and Zysman (1988)

This simple consensus about trade pressures might be sufficient to examine the strategic bargaining behaviour of employers and workers.

Table 3.1 Trade and Employment: Possible Effects from Different Responses of Managers and Employees

Factors	Responses	Effects
Product Price	* If falls in response to foreign competition	* Smaller than the case of constant price
e.g. **Semiconductor Industry** A drop in semiconductor prices caused by growing imports from U.S.-owned offshore plants in the 1970s actually increased the total demand for semiconductors in the U.S., with positive net effects on the employment levels of non-assembly jobs and with moderating effects on the number of assembly jobs lost as a results of imports.		
Wages	* If fall or fail to rise quickly	* Smaller than the other cases
e.g. **Apparel Industry** Subject to strong import competition for many years, hourly wages relative to the manufacturing average between 1972 and 1984 have declined from 68 per cent to 60 per cent, which has probably moderated the pace of employment decline. e.g. **Auto and Steel Industry** Relative wages actually increased between 1972 and 1984, despite growing import competition in the 1970s, most of which in autos occurred before the major thrust of import competition that began in 1978.		
Employer Expectations	* If expects a demand reduction caused by imports as temporary	* Smaller than the other cases (labour-hoarding with short-run decline in profits)
e.g. **Auto versus Apparel Industries** Between 1976 and 1978, when imports of small cars from Japan dramatically increased (partly in response to higher energy prices), U.S. producers might reasonably have expected the import surge to be *temporary*, which might be changed after five years of rapid increase by 1980. In the apparel industry, where substantial import pressure has been a long-term problem and where many of the jobs threatened by import competition are low-skill jobs that require little investment in training, it is reasonable to assume that employers view a reduction in output demand caused by rising imports as *permanent*.		

Source: A compiled table based on Tyson and Zysman (1988)

competitive markets[9]. According to Kruse (1988) the average duration of joblessness in the U.S. varied directly with the rise in their primary industry's import share with about an 8-year lag. Based on the comparative study of U.S. and Canada, Abowd and Lemieux (1990) uncover consistent relationships between international trade and collective bargaining outcomes (see table 3.2). Most of all, employment growth is slowed more severely by import penetration than a comparable change in real shipments. For the U.S., unexpected change in import penetration is more sensitive to employment. The effects of expected changes in international competition on real wage rates show opposite signs between the two countries. Import penetration decreased real wages in the U.S. while increasing them in Canada[10].

These studies confirm that changes in international manufacturing trades influence employment and wages in a consistent manner, but their actual effects differ between countries. There is no systematic explanation for this[11]. The underlying logic between international competition and collective bargaining behaviour is as follows:

> 'During the negotiations that accompany the expiration of an existing collective bargaining agreement, management and union use current information to form an estimate of the total value of the productive enterprise for which they represent competing interests. A collective

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[9] While studying the influence of the degree of competition on the internal allocation of corporate resources, Heywood, (1986), found the association of higher imports with lower wages, using both aggregate (industry level) and micro (individual level) data for the U.S.

[10] Abowd and Lemieux (1990) measure the expected effects of increased foreign competition on the future value of the firm using the relationship between future revenues of organized employers and current information on domestic shipments, apparent domestic consumption, exports and imports in the employer's product market. The quasi-rents are measured as the difference between net revenue and the cost of employment, giving the present value by discounting. In order to specify relationships connecting the exogenous economic factors, such as industry output, value-based trade measures, import prices and export prices, to the total quasi-rent, employment, and wage rate outcomes, Abowd and Lemieux estimate the models using vector autoregressions which link the annualized rates of change in the dependent and exogenous variables. It is worth noting that they distinguished between the effects of expected and unexpected changes in the exogenous variables. The latter is captured by including the forecast error among the explanatory variables.

[11] A few theoretical studies explain how international trade may affect wages and employment in an open economy. See e.g., Kemp and Shimomura (1985 and 1990); Brecher and van Long (1989); Hill (1984); Brander and Spencer (1988); Staiger (1988); Grossman (1984) and Alogoskofuis (1990).

Table 3.2 The Effects of International Competition on Collective Bargaining Outcomes

	U.S.		Canada	
Effects on	Wages	Employment	Wages	Employment
Expected				
log IS	+	+	-	< +
log ADC	+	+	<-	< +
log exports	+	+	<-	< +
IPR	-	-	> +	>-
Unexpected				
log IS	+	+	+	+
log ADC	-	+	<-	< +
log exports	+	+	+	< +
IPR	-	-	>-	>-
log employment	+	-	< +	<-
log real wages	+	+	-	> +

Source: A compiled table based on Abowd and Lemieux (1990).

Notes: (1) IS and ADC respectively mean real industry shipments and real apparent domestic consumption. Exports are also in real terms.

(2) IPR stands for import penetration ratio.

(3) Log employment and real wages are in fact based on changes in each factor during previous contract.

(4) For Canada, the effects are compared with those of the U.S. and the differences in their absolute magnitude are expressed as < or >, while no such sign means almost comparable magnitude.

bargaining outcome consists of explicit and implicit rules concerning the allocation of resources (employment) and the division of the resulting quasi-rent (wage rates) between union members and shareholders that is expected to remain in force for some fixed term. If international competition is expected to have an adverse effect on the firm's future profitability, then the current collective bargaining agreement will reflect that expectation. If the expected effects of international competition are too severe, the bargaining unit may disappear so that the evidence on surviving bargaining unit settlements will not reflect a complete analysis of either employment or wage effects. If the international competition is expected to improve the firm's future profitability, current bargaining units should be favourably affected.' (Abowd and Lemieux 1990; p.5)

Before tackling a more detailed study on how competitive pressure is generated from international markets and how such pressure may affect the behaviour of employees as well as employers, we need to clarify the concept of competitive pressure. Studies mentioned above implicitly assume

that competitive pressure is generated largely from the effects of import and export competition on employment and profitability. The most frequently used indicators for empirical studies are import and export shares and/or import penetration ratios. Competitive pressure, however, might be more effectively captured by the *surge* of imports - a rapid increase in the import of a narrowly defined product range relative to domestic production or consumption of the same or similar product range in the market in question[12]. Pearson and Ellyne (1985) highlighted five characteristics of import surges: frequency, intensity, sector, source and nature (temporary/permanent)[13]. They arbitrarily chose an increase in the import penetration ratio of at least five percentage points in a period of one, two, or three years as the criteria for a surge of imports[14]. Pearson and Ellyne also define the intensity of import surges as the numerical value by which the increase in the import penetration ratio exceeds five percentage points. While two measures of import penetration are used in the literature - imports relative to total supply and imports relative to domestic consumption - Pearson and Ellyne chose the first measure on theoretical and practical

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[12] According to Pearson and Ellyne (1985), "the economic policy problem posed by surges of imports arises from the need for adjustment in the allocation of domestic resources and the desire to minimize the costs of adjustment."

[13] Originally, Pearson and Ellyne (1985; p.300) studied the effects of manufactured import surges for eleven O.E.C.D. countries during the period 1970-1980 with disaggregation of 129 four-digit and five-digit ISIC (International Standard Industry Classification) product groups. Their objectives were as follows:
(i) to determine whether surges of imports are becoming more frequent and intense (which would suggest that the pace of change in comparative advantage is accelerating and adjustment problems are becoming more acute);
(ii) to find which manufacturing industries are most vulnerable to surges of imports and which manufacturing industries are responsible for surges; and
(iii) to determine whether surges of imports result in a permanent or temporary increase in import penetration.

They also examined long-term changes in trade patterns in manufactures. Those chosen eleven countries accounted for 85 percent of trade in manufacturing of O.E.C.D.

[14] Pearson and Ellyne (1985; p.303): "To be operational as a measure of surges of imports, an increase in the import penetration ratio requires a minimum value and a time criterion. Ideally, these would be determined by the capacity of the industry to adjust without involuntary unemployment of capital and labour, but the capacity to adjust varies across industries and with the business cycle. Thus a single numerical criterion cannot be derived from information on adjustment capacity."

grounds[15]. Next, they classified import surges into three classes: A, B or C according to the apparent severity of the adjustment problem.

- Class A pressure arises when domestic output declines and imports increase;
- Class B pressure arises when domestic output declines more rapidly than import decline;
- Class C pressure arises when domestic output increases less rapidly than imports increase.

Class A surges, with imports and domestic production moving in opposite directions, suggest that the surge is caused by a shift in relative supply schedules between domestic and foreign producers. Class B and C surges, with imports and domestic production moving in same direction, suggest that the surges arise from demand factors. A surge of imports is defined to be permanent if, in the three years following the surge, the import penetration ratio exceeds its pre-surge level by at least five percentage points.

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[15] See Pearson and Ellyne (1985), p. 303 and "endnote no. 10".

$\delta R_1 = \delta(M/Q+M)$ and $\delta R_2 = \delta(M/Q+M-X)$, where
δR_1 = surge of imports based on total supply
δR_2 = surge of imports based on domestic consumption
M = imports
Q = domestic production
X = exports

δR_1 is preferred to δR_2 on theoretical grounds
"if domestic production for the domestic market is reasonably interchangeable with domestic production for exports. The reason is that δR_2 can be positive with constant imports and constant domestic production (that is, no need for adjustment) if products are merely shifted to the export market and can be zero if exports decline *pari passus* with domestic production, again with imports constant. Thus δR_2 can indicate an adjustment problem when none exists and can fail to capture all instances where adjustment is required. As a practical matter, δR_2 does not have an upper-bound value of one, making comparisons among surges difficult."

Pearson and Ellyne conducted their analysis for both δR_1 and δR_2 and found an extensive overlap in their results.

Table 3.3 Characteristics of Import Surges

	Frequency				Intensity			
	Total	Class			Total	Class		
		A	B	C		A	B	C
Sweden	188	70	14	104	7.8	8.8	10.3	6.8
Germany	146	36	0	110	6.5	7.2	na	6.3
Netherlands	170	53	2	115	6.9	7.9	6.4	6.5
Belgium	231	91	1	139	7.4	8.9	5.7	6.4
Australia	193	62	2	129	8.1	8.8	8.3	7.8
France	47	9	2	36	6.6	7.5	5.7	6.4
U.K.	187	49	3	135	7.0	8.5	8.9	6.4
Italy	211	93	1	117	8.6	10.4	16.7	6.6
Japan	63	20	2	115	9.1	13.1	9.0	7.2
U.S.	83	27	0	56	7.3	9.0	na	6.4
Canada	143	39	0	104	7.7	9.8	na	6.9
Total	1662	549	27	1086				
Average	1151.1	49.9	2.5	98.7	7.6	9.2	9.4	6.7

Source: Pearson and Ellyne (1985; p.309; table 3).
Notes: (1) "na" denotes "not defined" (no surges).
(2) See text for definitions of Class A, B, and C.

Using regression analysis, Pearson and Ellyne examine time trends in surge frequency by class and country. They find that Class A surges show a statistically significant increasing time trend. Table 3.3 suggests that there are significant differences in the experience of import competitions across countries. For example, Sweden, Netherlands, Belgium, Australia, and Italy have been faced with higher frequency of Class A import surges which required more acute structural adjustment. This, in turn, may have generated significant competitive pressure on the *conduct* of labour market institutions.

These three classes of import surges can be interpreted as differentially affecting the strategic behaviour of workers and managers. Indeed, there might be four types of adjustment strategies in response to these import surges, e.g. see Bellman and Wagner (1989):

(i) When domestic outputs decline and imports increase - Class A pressure - wages might either be cut or moderately increased.

(ii) When domestic output declines more rapidly than the decline of

imports - Class B pressure - or when domestic output increases less rapidly than the increase in imports - Class C pressure - the following might result: Process innovation; Product innovation; and Innovation in location of production.

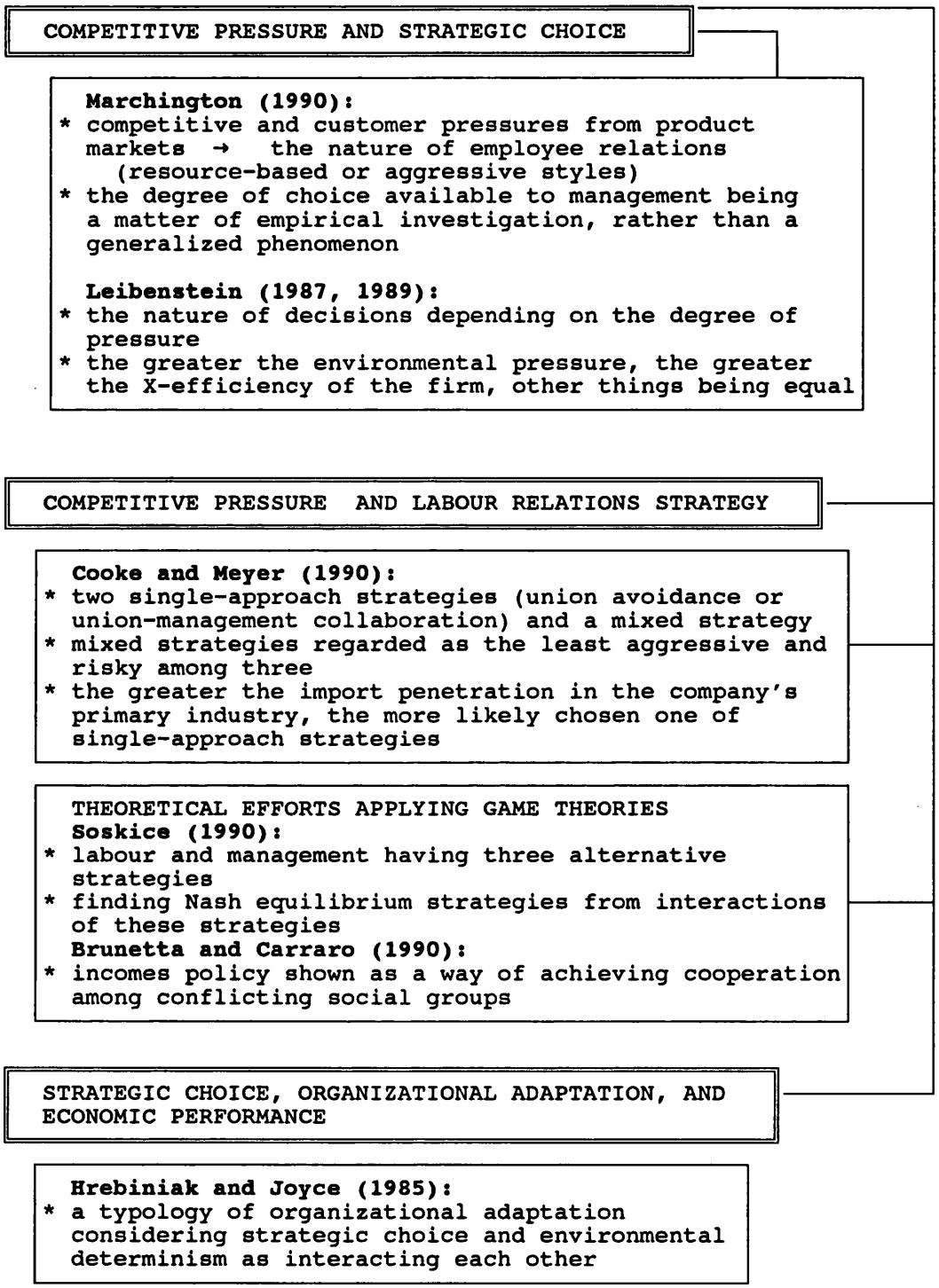
3. COMPETITIVE PRESSURE AND STRATEGIC CHOICE

What importance has been given to the relationship between these competitive pressure and the conduct of labour market institutions? During the past few years, studies of employee relations have made increasing reference to product markets in order to explain changes in management style. It is now relatively common practice to preface a research report or textbook with a chapter outlining the competitive pressure faced by companies, industries, or economies[16]. However, these discussions have not produced an adequate theory which links product markets and the management of employee relations. Thus, there is no framework which allows researchers to compare market pressure between different industries or companies and evaluate the degree of choice which appears to be available to senior managers when devising employee relations policies. Equally, little consideration has been given to the way in which employees may influence the markets within which their companies compete. Furthermore few studies explicitly notice the strategic behaviour of employees.

What is needed, therefore, is a model which enables us to compare different product market circumstances and to analyze the links between product markets and the management of employee relations in a more systematic and comprehensive manner. The rest of this section will synthesize diverse research which shed light on these relationships. Figure 3.2 gives a brief but comprehensive view of studies on possible relationships between competitive pressure, strategic choice and economic

[16] See e.g., Marchington (1990). Examples of textbooks which include early reference to competitive pressures include: Edwards (1987); Marginson, Edwards, Martin, Purcell, and Sisson (1988); Marchington and Parker (1990).

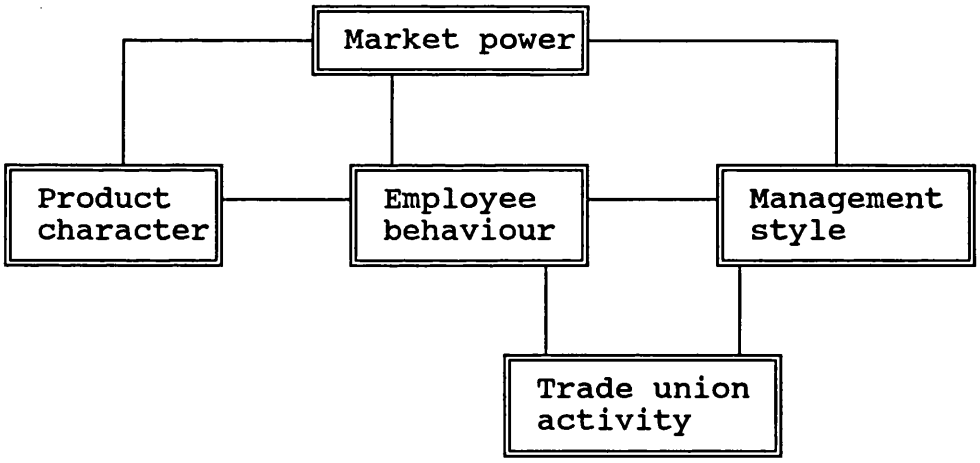
Figure 3.2 Competitive Pressure, Strategic Choice, and Economic Performance



performance. Very recently some researchers have started to examine ways of applying such strategic theories to labour relations (notably, see Cooke and Meyer 1990; Marchington 1990).

Although there are few explicit links between product market conditions and collective bargaining, Marchington (1990) suggests a tentative framework, (see figure 3.3). Marchington collapses the range of the different aspects of the product market into two separate components: (i) competitive pressure (or the degree of monopoly); and (ii) customer pressure (or the degree of monopsony). Both types of pressure are viewed to contribute to the overall power of the market. Marchington also notes that the product markets within which companies compete, directly influences the nature of enterprise employee relations and influences them indirectly through the responses of managers.

Figure 3.3 Management, Employee Relations and Market Power



Source:Marchington (1990)

Employee relations do not develop in isolation away from the influence of trade unions. Further the willingness of management to make concessions to employees is also dependent upon the actual, potential, or anticipated power of trade unions. From Marchington's case studies of four U.K. companies, when competition is intense, management is likely to feel under considerable pressure from the market and might see little option but to adopt a more aggressive approach to employee relations. However, it is also

feasible that employers may choose to adopt a similar approach in a more favourable market situation, although none of the companies in Marchington's study did. Thus, he concluded that the degree of choice available to management is itself a matter for empirical investigation, rather than a generalized phenomenon.

In this regard, it is worth mentioning Leibenstein's study on X-inefficiency, (see e.g., Leibenstein 1989). The essence of his model can be seen in terms of the following five variable causative scheme:

$$E_i \rightarrow PR_i \rightarrow CH_i \rightarrow T_i \rightarrow C_i$$

where

E_i = environment
PR_i = pressures
CH_i = choice of effort
T_i = a specific technique or translation of inputs into outputs
C_i = cost per unit of output

A given environment implies a certain amount of pressure, which, in turn, implies a specific choice, especially choice of effort, which in its turn implies a specific translation of inputs to outputs. This, in turn, implies a certain cost per unit. The theory of X-inefficiency argues that there is a tendency for costs to rise and pressure is required to keep costs down. We would expect, *ceteris paribus*, that the greater the environmental pressure, the greater the X-efficiency of a firm. Although the primary purpose of Leibenstein's X-inefficiency theory is different to what we are aiming for, his structure and arguments provide us with the idea of putting competitive pressure into the context of strategic choice. Indeed it would be feasible to employ similar decision functions which link competitive pressure to the degree of procedural rationality[17].

[17] "The nature of the decision depends on the degree of pressure. At low pressure levels decisions fall far short of the effectiveness of the completely calculated decision, while at some fairly high level the result approximates maximization. Also, there is a possibility that at exceptionally high pressures individuals are no longer capable of carrying out completely calculated decisions and the degree of effectiveness falls thereafter. Of course, every individual will have a different type of decision-response function. In any event, if we knew the response function and the degree of pressure in a particular situation, we would be able to assess the degree of calculatedness of decision." (Leibenstein 1989) Later we will use

During the past 25 years the concept of business strategy has gained wide currency and attracted a veritable legion of researchers. The fascination with strategy has attracted scholars with many different perspectives, (see e.g., Lewin 1987). According to Lewin it appears that industrial relations researchers are also jumping on the strategy bandwagon. But the most recent development in this regard is the application of strategic planning notions applied to union-management relations and collective bargaining. Some researchers, such as Kochan *et al* (1986), have gone so far as to claim that we now have a new theory of industrial relations: one that is grounded in the concept of strategic choice. It is not altogether clear however to what extent the concept of strategic choice can or does provide the linchpin for the theoretical development of industrial relations.

In a similar vein, Cooke and Meyer (1990) have provided what seems to be the first systematic attempt to apply a strategic choice framework to corporate labour relations strategy. They suggest three industrial relations strategies: (i) union avoidance; (ii) union-management collaboration; and (iii) a mixed strategy of (i) and (ii) as the least aggressive and the least risky. Cooke and Meyer presume: (i) the greater/lesser market pressure to improve performance is associated with greater/lesser need to choose an aggressive labour relations strategy; (ii) Corporate executives prefer a non-union environment. Thus executives will tend to choose union avoidance strategies; (iii) Managers have either experienced or perceived sufficient market pressure to engender a re-evaluation of labour relations strategies.

Cooke and Meyer employ the multinominal logit maximum likelihood estimation technique to test these hypotheses[18]. Table 3.4 summarizes

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this logic to analyze relations between actual and perceived competitive pressure.

[18] For the statistical properties of MNL, (multinominal logit) maximum likelihood estimation technique, see Hensher and Johnson (1981). Basically this technique is used for testing discrete unordered alternatives. For example, in the case of Cooke and Meyer (1990), one of their three labour relations strategies cannot be chosen over the other two in a strict sense. In other words, whereas some of the exogenous factors determining strategy choice can be expected to affect employers' choice between emphasizing collaboration and emphasizing union avoidance, other factors can be expected to affect their choice between adopting one of the more aggressive single-approach strategies, on the one hand, and adopting the less aggressive mixed strategy, on the other, but with no greater probability of choosing one of the single-approaches over the other. So they cannot order three alternatives in a strict sense, but they can only test either the relative probability of choosing the union avoidance strategy to that of selecting the mixed strategy, or the relative probability of choosing the collaborative strategy. Further they can test the relative probability of choosing

their findings. When the markets worsen (measured by changes in import penetration and industry employment) companies become more inclined to choose one of the more aggressive single-approach strategies (union avoidance or collaboration) and less inclined to choose the mixed strategy, which combines elements of union avoidance and collaboration. Companies appear particularly likely to choose union avoidance (see table 3.4 I).

With respect to collective bargaining structure, the higher the proportion of plants which are unionized, the more likely company managers will choose collaboration rather than union avoidance or a mixed strategy (see table 3.4 III). Higher labour intensity and higher average investment in plants are both associated with an increased probability of choosing a mixed strategy. Where lower levels of labour intensity prevail and there exist only average plant investment, the more likely companies will choose one of the single-approach strategies (with a somewhat greater likelihood of choosing union avoidance than collaboration) (see table 3.4 IV-VI). Furthermore, the greater the number of plants in a company, the more likely it is for that company to choose the mixed strategy, especially in preference to the collaboration strategy (see table 3.4 VII). Finally, the higher the ratio of the cost of goods to sales, the more likely companies will choose collaboration. Specifically, as the cost-to-sales ratio rises, companies move away from the mixed strategy toward collaboration (see table 3.4 VIII).

Cooke and Meyer overcome most of the shortcomings commonly noticed from other similar studies, see e.g., Lewin (1987: p.33). They identify three major labour relations strategies and specify testable hypotheses linking corporate structural and market predictors with strategic choices related to labour relations[19]. Cooke and Meyer set up a robust research design to operationalize data and employ suitable econometric techniques. They conclude that their basic hypotheses, about the effects of company attributes and market conditions on executive strategic choice, is

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the collaborative strategy over the union avoidance strategy. These three relative probabilities are represented as A, B, and C in Table 3.4.

[19] For a taxonomy of managerial strategies and industrial relations approach, see also Nuttal (1989). As discussed earlier, Marchington (1990) also attempted to theorize the links between product markets and labour market institutions. He notes that there have been two separate attempts to theorize about these links: Thurley and Wood (1983) and Thomason (1984).

Table 3.4 Structural and Market Predictors and Corporate Labour Relations Strategies

Measured variables and hypotheses	Results A	Results B	Results C
I Changes in Import Penetration Ratio (1978 - 1981) The greater the import penetration in the company's primary industry, the more likely it is that company executives will choose either union avoidance or collaboration strategy. We cannot, however, predict *a priori* which of two single approach strategies will be chosen.	(+) + ***	(+) +	- **
II Changes in Employment (1978 - 1981) The healthier the industry employment trends, the less likely it is that a company will choose the mixed strategy over either the collaboration or union avoidance.	(-) - ***	(-) - **	+
III Unionization Ratio at 1975 The greater the proportion of facilities unionized, the less likely it is that a company will choose the union avoidance strategy over either the collaboration or mixed strategy, and also the more likely the collaboration over the mixed.	(-) +	(+) + **	(+) + **
IV Ratio of Labour Cost to the Total Value of Shipments at 1981 The more labour-intensive the production process, the less likely companies will choose either of the single-approach strategies.	(-) - ***	(-) - **	+
V Average Value-Added per Employee at 1981 (for capital-intensity)	(+) + ***	(+) + **	-
VI Average Employment per Plant and Average Sales Volume per Plant (for the extent of capital investments) The greater the capital investments in a plant, the greater the potential loss from failed strategies, and, hence, the greater the risk in applying either of the more aggressive single-approach strategies.	(-) EM: - SA: - **	(-) - - **	- +

Source: A compiled table based on Cooke and Meyer (1990)

Note: (1) Indicated signs are based on Multinominal logit maximum likelihood estimation. Those in () are expected signs from the hypotheses.

(2) A = Union avoidance over mixed strategy
B = Collaboration over mixed strategy
C = Collaboration over union avoidance strategy

(3) * = statistically significant at 10% level
** = statistically significant at 5% level
*** = statistically significant at 1% level

Table 3.4 Cont'd

Measured variables and hypotheses	Results		
	A	B	C
VII Number of Plants Holding percentage unionized constant, the choice of the mixed strategy will become more likely the greater the number of plants company wide.	(-) - **	(-) - **	-
VIII Cost-of-Goods/Sales Ratio (1981) The larger the cost of goods relative to sales, the more like the collaboration strategy will be chosen.	+	(+) + ***	(+) + **

Source: A compiled table based on Cooke and Meyer (1990)
Note: (1) Indicated signs are based on Multinominal logit maximum likelihood estimation. Those in () are expected signs from the hypotheses.
(2) A = Union avoidance over mixed strategy
B = Collaboration over mixed strategy
C = Collaboration over union avoidance strategy
(3) * = statistically significant at 10% level
** = statistically significant at 5% level
*** = statistically significant at 1% level

generally valid. Although a significant contribution to industrial relations, Cooke and Meyer's study does not consider explicitly the strategic behaviour of employees and trade unions and their theoretical framework and implicit model seem to be *ad hoc*[20]. In these respects their study is wanting.

Definitions and taxonomies of industrial relations strategies are dependent upon how we treat strategic choices in the context of labour relations. For example, Streeck (1987) relates strategic choice to decisions promoted by crisis:

> 'A crisis, according to the original Greek meaning of the word, is a time of decision - a time in which past decisions that are sedimented in present structures are reviewed and new decisions can no longer be avoided that may result in fundamental structural change. Decisions of this kind are referred to as 'strategic choices' that differ from routine decisions in that they are directly concerned with the

[20] Strategic choice theory in industrial relations is still unsatisfactory. Recently however, Soskice (1990) and Brunetta and Carraro (1990) have developed formal and more robust theoretical frameworks, mainly by applying a game theoretic approach. See e.g., Appendix I.

> identities, the structures of, and the institutionalized relations between, social actors. Where strategic decisions are at stake, internal lines of differentiation within social aggregates may become potential points of departures for a re-formation of interest structures and identities, and holistic concepts that disregard such differentiations become outdated and misleading.' (Streeck 1987; p.283)

Earlier, Child (1972) argued that 'strategic choice' should extend to the context within which the organization is operating, to the standards of performance against which the pressure of economic constraints has to be evaluated, and to the design of the organization's structure itself. From these exemplary definitions of strategic choice, we can better understand the relationships between manager's decisions and strategies, day-to-day business operation and external constraints. We need to refine these relationships.

The most important area to be refined is the relationship between environmental structures and strategic choice. The prevailing assumption is that strategic choice and environmental determinism represent mutually exclusive, competing explanations of organizational adaptation[21]. In contrast, Hrebiniak and Joyce (1985) argue that choice and determinism are independent variables that can be positioned on two separate continua to develop a typology of organizational adaptation. The interactions of these variables result in four principal types:

(i) *Natural selection*, with minimum choice and adaptation;

(ii) *Differentiation*, which constitutes strategic choice, environmental determinism and adaptation with constraints;

(iii) *Strategic choice*, with maximum choice and adaptation by design;

(iv) *Undifferentiated choice*, with incremental choice and adaptation by chance.

[21] The term *adaptation* in the current literature is employed in a number of ways, ranging simply from *change* - including both proactive and reactive behaviour - to a more specific denotation of *reaction* to environmental forces or demands. In their paper, Hrebiniak and Joyce (1985) use the term consistent with the former meaning, indicating change that is aligning organizational capabilities with environmental contingencies. This view allows for proactive or reactive organizational behaviour in anticipation of, or reaction to, exogenous variables.

Figure 3.4 *Strategic Choices and Environmental Determinism in Organizational Adaptation*

High Strategic Choice

(III) * Strategic choice * Maximum choice * Adaptation by design	(II) * Differentiation or focus * Differentiated choice * Adaptation within constraints
(IV) * Undifferentiated Choice * Incremental choice * Adaptation by chance	(I) * Natural selection * Minimum choice * Adaptation or selection out

Low Environmental Determinism — High ED

Low Strategic Choice

Source: Hrebiniak and Joyce (1985; p.339; figure 1).

These four types are represented diagrammatically in figure 3.3: the horizontal axis represents the degree of environmental determinism, and the vertical axis, strategic choice. Most of the literature on adaptation focuses on Quadrants I and III. Examples in Quadrant I (Natural Selection) include organizations under perfect competitive conditions and also organizations in imperfect competitive niches. In Quadrant III (Strategic Choice) organizations confront a pluralistic environment in which movement within and between niches or market segments is not severely constrained by exit or entry barriers.

In addition to these there are two additional but relatively neglected sets of conditions that can expand our understanding of decision making and the organizational adaptation process; Quadrants II and IV. Perhaps the clearest examples of organizations in Quadrant II are large firms in highly regulated industries in which individual choice of strategy is paradoxically high due to factors such as size, highly-concentrated market structure, multiple means of achieving desired outcomes and low resource dependency on external sources. It also includes organizations involving multiple niches, with each characterized by a different set of constraints, opportunities, and competing organizations; i.e., a multi-product or multi-divisional organization. The parts or subsystems of the

whole organization may be placed in different quadrants in figure 3.4, wit h the net effect that strategic choice and environmental factors determine the placement of the whole organization or system of which the subsystem is part. The essential point is that external constraints and high environmental determinism need not necessarily prevent individual choice which impacts on strategic adaptation.

Quadrant IV is a relatively *placid* situation characterized by low strategic choice and low environmental determinism, which is essentially unstable, forcing the organization to seek movement to another domain. It is likely that organizations in Quadrant IV may have an array of internal strengths and competencies that are inappropriate to external opportunities and conditions[22]. In this case, the task of an organization may be to develop the capabilities or distinctive competencies needed to take advantage of environmental conditions and thereby alter or escape from the conditions of Quadrant IV.

From a systematic analysis of organizational adaptation, Hrebiniak and Joyce (1985) suggest that the adaptation process is dynamic. Over time, an organization's position may shift as a result of strategic choices or changes in the external environment. Here, control over scarce resources is central to the relationship between choice and determinism. Strategic choice is possible in all quadrants of figure 3.4, although the qualitative nature and impact of the decision process varies with the environmental context of an organization.

This kind of analysis for organizational adaptation in response to internal resource constraints and environmental conditions seems to have significant explanatory power for labour relations as a strategic business strategy. In particular, we can apply the logic developed by Hrebiniak and Joyce to the strategic behaviour of workers and managers in response to changes in competitive pressure and organizational conditions. At least, it can provide us with criteria to distinguish the strategic behaviour of employees and managers which will help us understand their interactions. However, setting strategic choice and organizational adaptation in the

[22] When organizations have no apparent strategic thrust, it is possible to dismiss rationality as a guiding principle of organizational behaviour and to replace it with irrationality and even capriciousness to explain action over time (see Hrebiniak and Joyce 1985; p.342).

context of labour relations remains less than straightforward:

> 'In sum the structure is inescapably involved in how agents both construct their strategic goals and then realize them in their strategic choices. Environmental structures, then, are not necessarily antagonistic to strategic choice; rather they both form its precondition and inform its content. Indeed, the greater threat to strategic choice is a neglect of social structure that, motivated by an exclusive preoccupation with environmental determinism, mistakenly denudes actors of the inner complexity and the external resources upon which their agency depends.' (Whittington 1988)

So far we have seen how existing studies which we have abstracted from various academic disciplines can help us to set the strategic choices of employees and managers into the labour relations framework. Even with Whittington's caveat above, it would be interesting to see if we can employ strategic choice theories to provide a meaningful framework to analyze the links between product markets and the management of labour relations. As a pre-requisite of attempting this in chapter 4, the concluding section of this chapter synthesizes existing studies referred to above.

4. COMPETITIVE PRESSURE AND THE CONDUCT OF LABOUR RELATIONS: *A synthesis of theories*

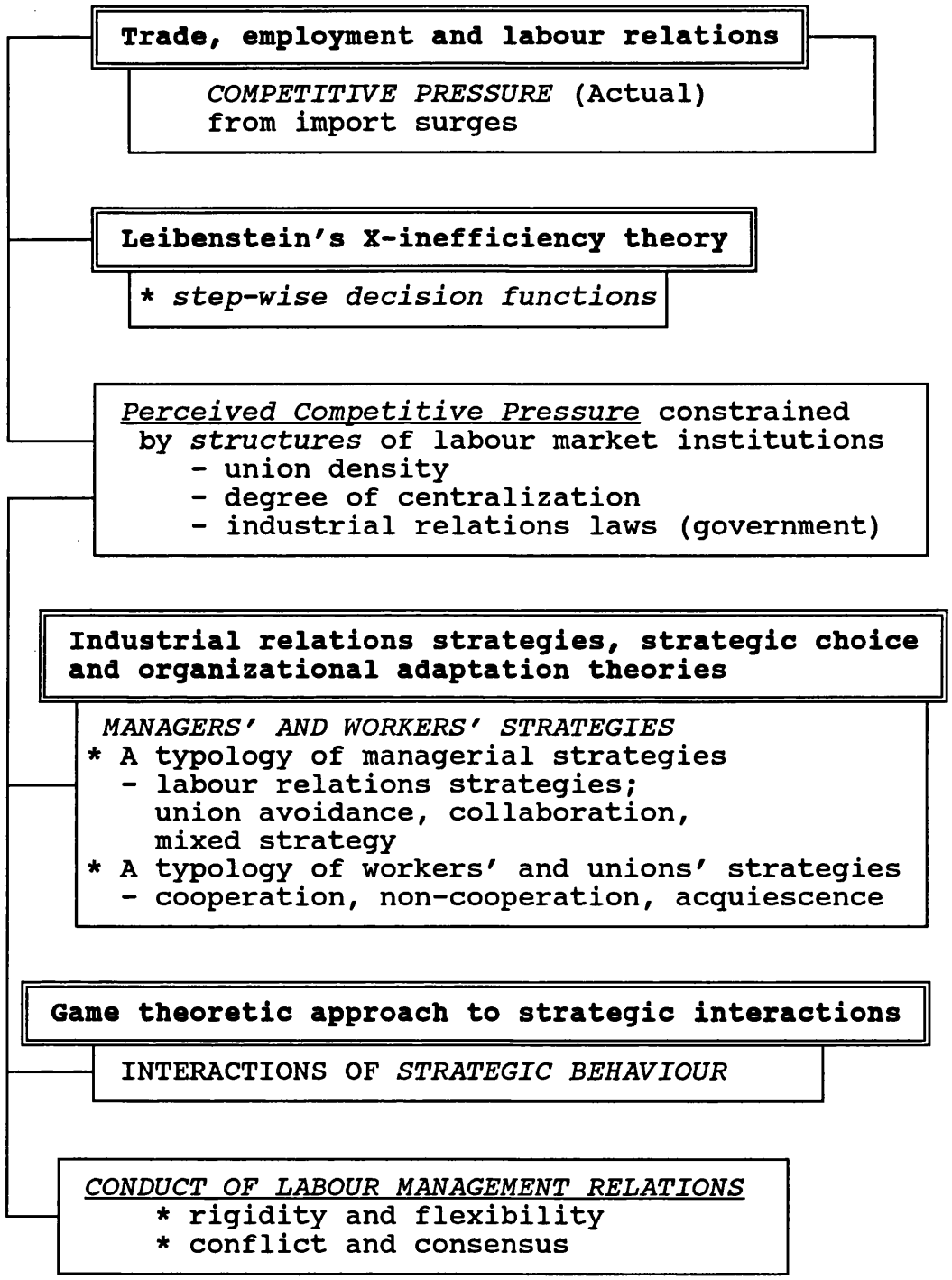
The previous two sections examined two groups of studies as a preliminary step for our attempt to provide a new theoretical approach to industrial relations which we will undertake in the next chapter. One group focuses on trade, employment and labour relations; the other is concerned with strategic choice, organizational behaviour, and industrial relations strategies. Figure 3.5 provides an outline of how these studies can be combined to give a consistent framework for the relationship between competitive pressures, labour market institutions and economic performance.

As shown in the first half of figure 3.5, studies on trade and employment imply that import surges tend to generate pressure on employees as well as employers in collective bargaining. Import competition would give workers a conflicting choice between jobs and wages. Employers also may face a tradeoff between short-run and long-run profitability, depending on how they perceive competitive pressures. If they perceive it

as *temporary* with little significance, employers will be more willing to concede terms in collective bargaining for future profitability. Tyson and Zysman (1988) show that wages respond differently across industries. Studies in the first half of figure 3.5 address the potential importance of international competition in explaining the conduct of labour market institutions. In these, *perceptions* of competitive pressure matter more than the *actual* pressure. Perceptions of competitive pressure may depend on various structural conditions of labour market institutions such as union density and the degree of centralization.

On the other hand, studies of strategic choice and organizational behaviour provide a clue of how to link changes in product market conditions with the conduct of labour market institutions. According to Cooke and Meyer (1990), when the product market worsens through intensified import penetration, companies become more inclined to use an aggressive single-approach strategy (union avoidance or collaboration) and less inclined to use a mixed strategy of the two. Even if they have not investigated underlying mechanisms, environmental pressure would change the conduct of employees as well as employers. In the next chapter we will establish our own theoretical framework which will allow us to explicitly investigate the conduct dimension.

Figure 3.5 A Schematic View of Synthesis



CHAPTER FOUR
A THEORETICAL FRAMEWORK OF PRODUCT MARKETS, LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE

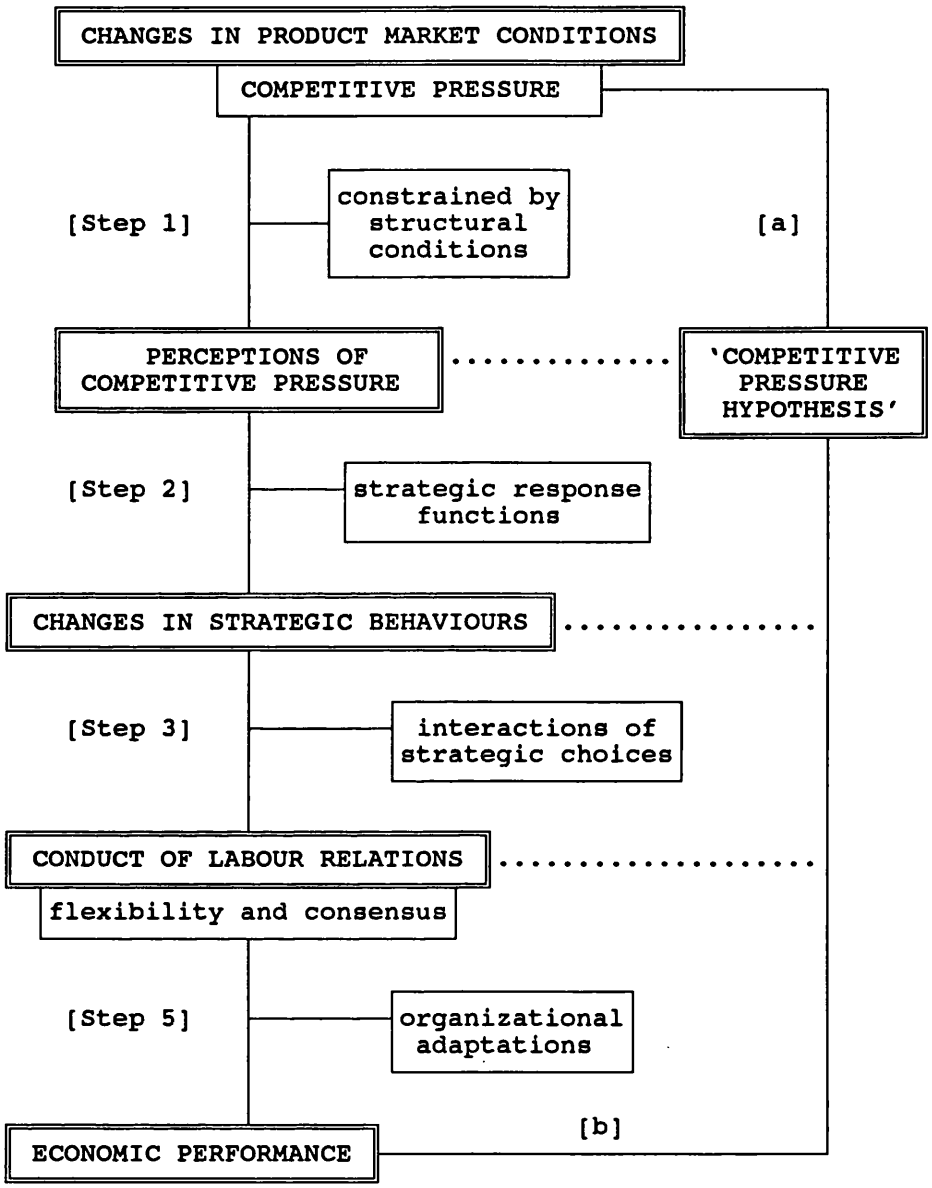
1. INTRODUCTION

The four established hypotheses discussed in the preceding chapters focus on the structural differences of labour market institutions - e.g., the extent of centralization in collective bargaining and/or the degree of corporatism. Our discussion showed the potential importance of the behaviourial dimension between the structure of labour market institutions and macro-economic performance. In this chapter we will construct a theoretical framework and generate an hypothesis by examining the behaviour of labour market agents in a simulated world. Propositions from our hypothesis will be empirically tested in later chapters.

Our objectives in this chapter are threefold. Firstly we will *showcase* a new construct for *competitive pressure*. Secondly, we will develop a systematic theoretical framework which will generate an hypothesis to be tested in later chapters. Our theoretical framework is informed by a number of disciplines, examined in chapter 3, and include: international trade, employment and labour relations; business strategy; strategic choice and organizational behaviour; and game theoretic approaches to wage bargaining. This establishes a setting for our third objective: to provide a catalyst for dispersed studies in this area.

A brief overview of our theoretical framework is provided in figure 4.1. A concept of competitive pressure is derived from studies in international trade, employment, and labour relations. Changes in competitive conditions are viewed as a crucial environmental pressure in collective bargaining which influences the strategic choices of employers and employees. The rest of this chapter comprises three sections: the next two will construct the micro-framework, and the last will develop a framework for cross-country empirical studies. In section two, competitive pressure will be defined as a crucial environmental pressure which influences the strategic behaviour of economic agents. The strategic choices of employees as well as employers can be examined through the perception

Figure 4.1 The Theoretical Framework: An Overview



and response functions. Section three will investigate interactions of managers' and workers' strategic choices. In the final section, we provide a framework for cross-country empirical examination.

2. COMPETITIVE PRESSURES AND STRATEGIC RESPONSES

2.1 Competitive pressure from international competition: a formal definition

From studies of trade, employment and collective bargaining[1], we have noted that competitive pressure from international trade might have an important impact on the strategic behaviour of employees as well as their employers. Import competition seems to give workers a choice of tradeoffs between jobs and wages. Further, once employees are laid off, the average duration of unemployment varies directly with the rise in their primary industry's import share (see e.g., Kruse 1986). Employers' perceptions of import competition (e.g., is it temporary or permanent?) influences their choice of strategies. Believing competitive pressure to be temporary, employers might sacrifice a short-term decrease in profits by retaining employees even if this means an increase in wages (see e.g., Tyson and Zysman 1988). However, wages respond differently in different industries with varying degrees of trade pressure. Higher import penetration tends to lower wages, especially in imperfectly competitive markets (see e.g., Heywood 1986). Abowd and Lemieux (1990) find that employment growth is slowed more severely by import penetration than a comparable change in real shipments like domestic production and exports. Moreover, unexpected changes in import penetration seem to be more sensitive to employment.

These findings suggest that competitive pressure from international trade may be one of the most crucial factors in influencing the strategic choices of economic agents in collective bargaining. Related studies, however, have employed different definitions of international competition for different analytical purposes. Thus our first objective is to carefully conceptualize competitive pressure in order to facilitate its operationalization.

The most frequently used indices for trade pressure are the *level* of

[1] For details, see section 2 of chapter 3.

and *changes* in the import penetration ratio and/or simply import share[2]. Those industries or economies facing the same level of and/or changes in import penetration may experience different degrees of competitive pressure according to their export competitiveness. Those with high and increasing export shares and/or trade surpluses may be said to face less competitive pressure than otherwise. Hence, in general, actual competitive pressure (ACP) depends on the *level* of and *changes in* import penetration, export share and trade balances. In formal terms, this can be expressed as follows:

$$ACP_i = f(\delta IPR_i, IPR_i, \delta SEX_i, SEX_i, \delta BOP_i, BOP_i) \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

where

ACP = Actual Competitive Pressure
IPR = Import Penetration Ratio
SEX = Export Share in Total Domestic Production
BOP = Trade Balance
i = Industries or economies
δ = Percentage changes, otherwise meaning levels of each variable.

In practice, we could have several indices for competitive pressure, depending on how many factors we consider. For example:

$$ACP^1_i = f^1(\delta IPR_i) = \delta IPR_i \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

$$ACP^2_i = f^2(\delta IPR_i, \delta SEX_i) \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$
$$= W^m_i * \delta IPR_i - W^x_i * \delta SEX_i$$

where $W^m_i + W^x_i = 1$ in which

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[2] There are two different ways to define import penetration ratios: (i) Imports as a proportion to total supply (i.e., domestic production plus imports). (ii) Imports in relation to domestic consumption which is equal to domestic production plus imports minus exports (the so-called apparent consumption). On theoretical grounds the former definition is preferred to the latter if domestic production for the domestic market is reasonably interchangeable with domestic production for exports. The reason is that the latter definition can be positive with constant imports and constant domestic production if products are merely shifted to the export market and can be zero if exports decline *pari passu* with domestic production, again with imports constant. See e.g., Pearson and Ellyne (1985; p.303).

W^m_i = imports/(imports + exports)

W^x_i = exports/(imports + exports).

$$ACP^3_i = f^3(\delta IPR_i, \delta SEX_i, \delta BOP_i) \quad . \quad . \quad . \quad . \quad . \quad . \quad (4)$$
$$= Q^m_i * \delta IPR_i - Q^x_i * \delta SEX_i - Q^\circ_i * \delta BOP_i$$

where $Q^m_i + Q^x_i + Q^\circ_i = 1$ in which

Q^m_i = imports/(2*exports)

Q^x_i = exports/(2*exports)

Q°_i = (exports - imports)/(2*exports).

Among equations 2, 3, and 4, equation 2 seems to be the most widely used, presuming changes in import penetration reflect competitive pressure proportionately, see e.g., Pearson and Ellyne, (1985). The other two indices incorporate those opposing forces to import penetration by a simple, linear weighting scheme (W's and Q's in equations (3) and (4))[3].

In addition to the *intensity* as defined above, we have to consider characteristics such as the *permanency* and *unexpectedness* of competitive pressure. These qualitative characteristics seem to have significant influence, in particular, on employers' strategic choices (see e.g., Tyson and Zysman 1988; Heywood 1986; and Abowd and Lemieux 1990). However, these characteristics are much harder to define and operationalize[4].

2.2. Perceptions of competitive pressure

Over the past two to three decades, behaviourial and social sciences have become more cognitive[5]. Interest in organizational choice is part of a much

[3] It is worth noting here that we have made actual competitive pressure operational only by explicitly including percentage changes of those variables to be considered in equation (1), and that those levels are just implicitly taken in as weights.

[4] For example, competitive pressure can be defined as *permanent* if two sub-periods (e.g., each of five years) show the same signs as that of the overall period (e.g., ten years), otherwise being *temporary*. We regard as *expected* if the first sub-period shows the same sign not only as those of the last sub-periods but also as that for the overall period in question, otherwise being *unexpected*.

[5] New disciplines have emerged while others have decreased in importance. An example of an important emerging area is artificial intelligence which is an amalgam of philosophy and information systems. An example of a declining discipline is social philosophy.

broader intellectual movement concerning how individuals and institutions interpret information and act wilfully in an uncertain world, see e.g., March (1981). Often, in actual disputes, differences in perceptions among participants drastically affects the decision-making process and sometimes leads to unexpected results, see e.g., Wang *et al.* (1988).

It is important, therefore, to construct how competitive pressure is perceived by employers and employees. Perceptions of competitive pressure might be different from the actual pressure. This could result from specific structural conditions of the different groups. Borrowing from Leibenstein (1989), perception functions can be established, with three basic assumptions:

(i) Imperfect information and bounded rationality with a short memory;

(ii) Constrained by structural conditions (implicitly assuming no significant difference in perceptions due to individual agent's characteristics and subjectivities);

(iii) Asymmetric information implying informational advantage of employers and managers over workers and unions;

Following assumption (iii), employers and managers might reasonably perceive the *permanency* and *expectedness* of competitive pressure differently to workers and unions. This might simply follow from the fact that competitive pressure manifests itself largely through the profitability of the organization. Thus, market power - understood by fluctuations in trade and profits - would be the most important structural condition influencing managers' perceptions. In addition, the degree of market openness and centralization of collective bargaining levels are supposed to influence managers' perceptions. Thus, we might reasonably conclude that employers' perceptions are dependent on: (i) The intensity; (ii) The permanency; and (iii) The expectedness of competitive pressure. These product market conditions are constrained by the other three structural conditions: (i) The market power; (ii) The market-openness of the economy; and (iii) The level of centralization in collective bargaining. Formally this can be expressed as:

$$PCP_m = f_m(IACP_i, PACP_i, UACP_i \mid MP_i ; MOP_i, CEN_i) \quad . \; . \; . \; . \quad (5)$$

where

IACP = Intensity of Actual Competitive Pressure

PACP = Permanency of Actual Competitive Pressure

UACP = Unexpectedness of Actual Competitive Pressure

MP = Market Power

CEN = Level of Centralization in Collective Bargaining

MOP = Degree of Openness in the Industry or the Economy

Here, each structural condition[6] can be operationally defined as follows:

(i) **Market power**[7] can be categorized into three: like High, Medium and Low, which are determined by the number of employees[8]. This assumes that large firms have more market power.

(ii) **Market-openness**: (exports + imports) /production[9].

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[6] For the common national structural conditions, we could add as many variables as we want if they can be appropriately operationalized. In particular, there are two additional factors we should take into account; namely, *labour market healthiness* of an economy or a sector in question and the *government's stance towards labour relations* as a whole. The former could be captured by the level of and changes in aggregate unemployment rates or percentages of long-term unemployment. But one of the dependent variables to be explained is unemployment experience itself. So we could be faced with an econometric problem if we use aggregate unemployment rate as one of the independent variables. Therefore, as long as we can get a series of data for long-term unemployment across countries, it would be better to employ it as an index for the labour market healthiness. For the government's stance, we may consider labour legislation or party complexion, again as long as we can obtain internationally comparable time-series data for these variables.

[7] For cross-country studies, market power could be represented by manufacturing export share of an economy in total world exports, assuming market share can give some approximation for price-control in international markets. This implies that we assume that large firms are more export-oriented.

[8] For example, Low for less than 300, Medium for between 301-999, High for more than 1000 employees.

[9] The definition of market-openness corresponds to the so-called 'trade-income ratio' to measure 'real openness' of an economy where production means GNP. However, there is a problem with this index, as noted by Beenstock and Warburton (1986), to the extent that it moves with both trade volumes and price changes. By devising an alternative index which abstracts entirely from the effects of price movements, Beenstock and Warburton found a positive trend rather than a negative trend as argued by Grassman (1980), for the period of 1870 to 1979 in the U.K. This cautions against using the trade-income ratio as an index for market-openness. Also there might be another problem if we intend to classify it into discrete degrees such as High, Medium, and Low for comparability with other structural conditions, since we could be trapped into another arbitrariness. However, for cross-country comparisons, these problems would be averaged out so that we could set 20 per cent and

(iii) **Centralization:** the level at which collective bargaining is formed[10].

Among these three structural conditions, market power is presumed to be the most important determinant of employers' perceptions. For *unexpected changes*, employers with the less market power are assumed to have less ability to distinguish *permanent* from *temporary* pressures, implying more risk-averse behaviour. For example, **employers with medium market-power** might reasonably perceive actual *temporary* competitive pressure to be *permanent* pressure with less intensity (e.g., temporary high → permanent medium; temporary medium → permanent low).

Figures 4.2, 4.3 and 4.4 are an attempt to represent figuratively employers' and employees' perception of market conditions for different sized and unionized companies. The horizontal axis refers simply to an interval for three different intensities of competitive pressure. For heuristic reasons these are presumed to be maintained for the same interval of five units: 0-5 corresponds to low; 5-10 medium; and 10-15 high competitive pressure. The vertical axis of each box represents degrees of intensity of actual and perceived competitive pressure. In order to distinguish permanent from temporary pressure, we make following conventions: 2 for temporary-low; 5 for permanent-low; 7 for temporary-medium; 10 for permanent-medium; 12 for temporary-high; and 15 for permanent-high competitive pressure[11]. The left-hand side column of three boxes in figures 4.2 and 4.3 represents employers' perception functions in response to the actual *permanent* pressure, while the corresponding three boxes in the right-hand side column represent those in response to the actual *temporary* pressure. Each of three boxes reports differences in perceptions among employers

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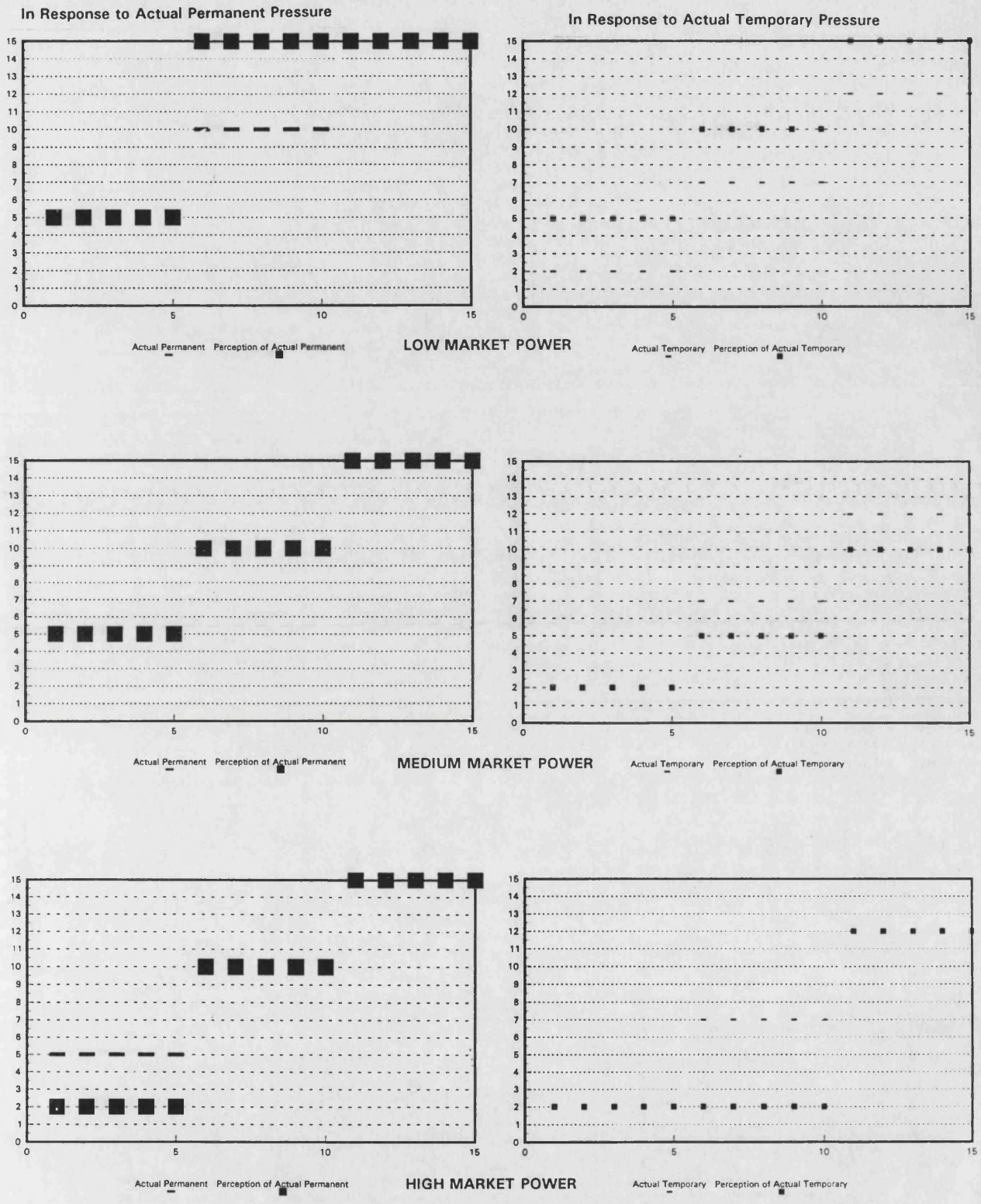
50 per cent as boundaries for the classification.

[10] We will use indices made by Calmfors and Driffill (1988), classifying into three such as 'High, Medium, and Low-centralization'.

[11] For workers' perception functions, we use only conventions of permanent pressure to indicate different degree of competitive pressure: 5 for low; 10 for medium; and 15 for high pressure. This is due to the assumption that workers do not respond to the expected pressure. More on this see the text on workers' perception function.

*Figure 4.2 Employers' Step-wise Perception Functions for **Unexpected Changes** in Competitive Pressure*



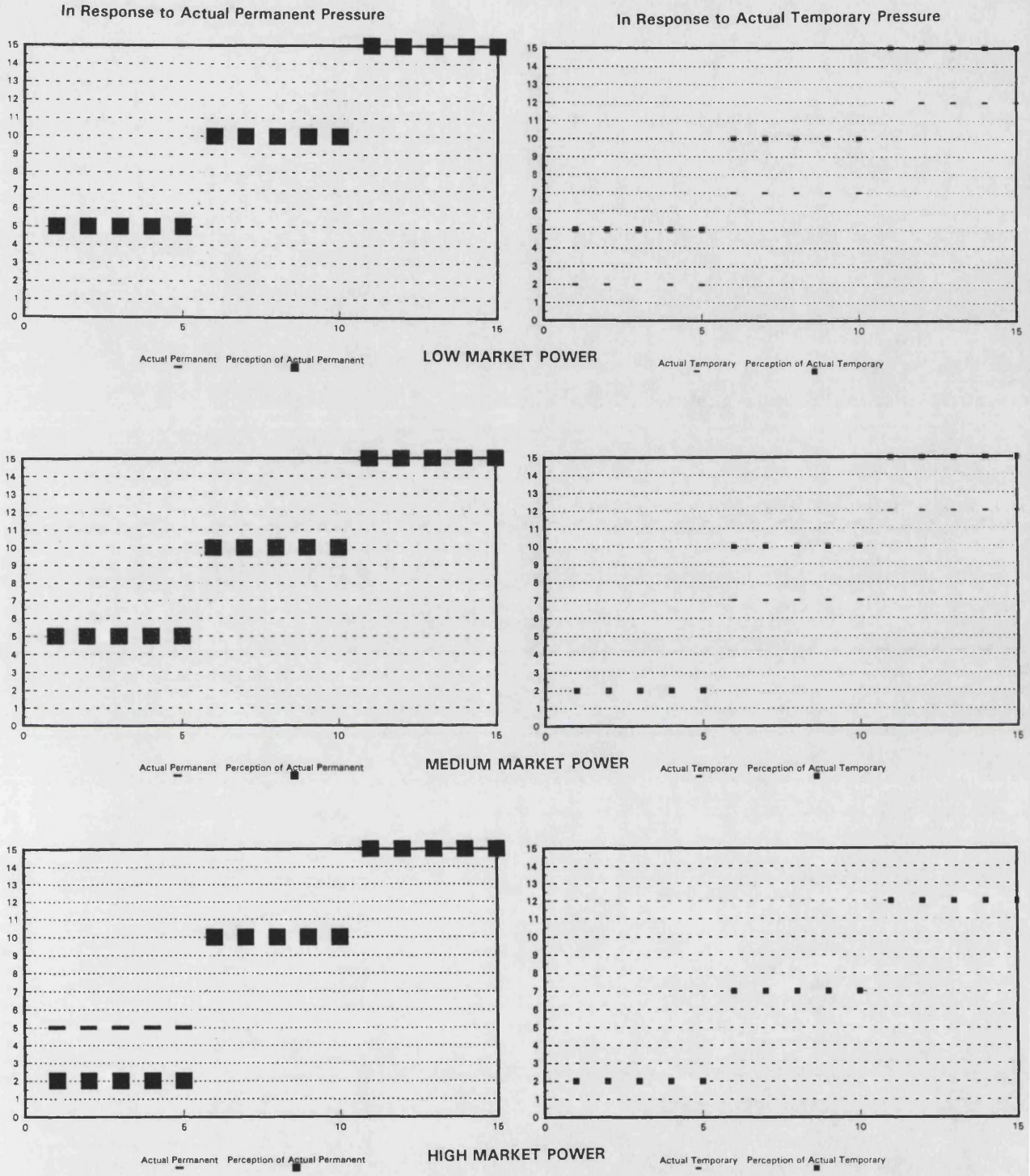
Notes:

(1) Step-wise perception functions in the first column are in responses to *Actual Permanent Competitive Pressure*, while those in the second column are in responses to *Actual Temporary Competitive Pressure*.

(2) The horizontal axis consists of three intervals representing the period, during which a specific competitive pressure lasts. For simplicity, the same durations are assumed for three different intensities of competitive pressure: i) **1-5** for **Low** Competitive Pressure; ii) **6-10** for **Medium** Competitive Pressure; iii) **11-15** for **High** Competitive Pressure. Thus, numbers in the horizontal axis simply refer to *three distinct periods*.

(3) Numbers in the vertical axis indicate different degrees of Actual and Perceived Intensity of Competitive Pressure. Vertical differences between Actual and Perceived Competitive Pressure (in a specific period) implies a "*misperception of the Intensity and/or the Nature of Actual Competitive Pressure*".

Figure 4.3 Employers' Step-wise Perception Functions
*for **Expected Changes** in Competitive Pressure*



Notes:

(1) Step-wise perception functions in the first column are in responses to *Actual Permanent Competitive Pressure*, while those in the second column are in responses to *Actual Temporary Competitive Pressure*.

(2) The horizontal axis consists of three intervals representing the period, during which a specific competitive pressure lasts. For simplicity, the same durations are assumed for three different intensities of competitive pressure: i) **1-5** for **Low** Competitive Pressure; ii) **6-10** for **Medium** Competitive Pressure; iii) **11-15** for **High** Competitive Pressure. Thus, numbers in the horizontal axis simply refer to *three distinct periods*.

(3) Numbers in the vertical axis indicate different degrees of Actual and Perceived Intensity of Competitive Pressure. Vertical differences between Actual and Perceived Competitive Pressure (in a specific period) implies a "*misperception of the Intensity and/or the Nature of Actual Competitive Pressure*".

who have low; medium; and high market powers[12] (see also notes of each figure).

In figure 4.2 (see the right-hand box of the second row), the perception function - represented by the line (▪ ▪ ▪) - indicates misperceptions as vertical differences below the representation of the actual pressure (- - -). **Managers with the least market power** might reasonably overestimate the intensity as permanent-high when actual competitive pressure is permanent-medium. In figure 4.2 (see the left-hand box of the first row), upward vertical difference between the perceived intensity (■ ■ ■) and the actual (- - -) indicates this misperception. Additionally, managers will tend to wrongly perceive *temporary* as *permanent* pressure [see vertical differences between the perceived (▪ ▪ ▪) and the actual (- - -) competitive pressure in the right-hand box of the first row in figure 4.2]. **Employers with the highest market power** are assumed to misjudge the intensity when pressure is *temporary-medium* [see downward vertical difference between the perceived (▪ ▪ ▪) and the actual (- - -) competitive pressure in the right-hand box of the third row in figure 4.2] , and also employers are expected to make the mistake of regarding *permanent* as *temporary* when the intensity is low [see upward vertical difference between the perceived (■ ■ ■) and the actual (- - -) competitive pressure in the left-hand box of the third row in figure 4.2]. In fact, we implicitly presume that *the less market power, the greater the propensity to misjudge competitive pressure, with different degrees of error depending on the intensity and permanency of unexpected changes in actual competitive pressure*.

Furthermore, the other two structural conditions might reasonably be treated as shifting variables[13]:

(i) *The more open to international competition the industry (company) has been, the greater its* employers' *ability to accurately perceive competitive pressure*. Market openness may affect the perception of the permanent/temporary nature of competitive pressure;

---

[12] In figure 4.4, each of three boxes reports differences in perceptions among workers who belong to low; medium; and high unionized firms.

[13] For the sake of convenience, they can be treated as *ceteris paribus* conditions.

(ii) The more centralized the level of collective bargaining is in an economy, the more accurately managers' perceive the intensity of competitive pressure. High centralization is assumed to reduce inter-firm variations in the intensity of perceived pressure by one step towards the actual pressure.

On the other hand, for **the expected changes in competitive pressure** (see figure 4.3), the intensity might reasonably be perceived correctly but its permanency misjudged[14] (compare figure 4.2 and 4.3).

In a similar way, we can establish perception functions for workers and unions. However, employees' perceptions are assumed not to be dependent on the *permanency* of competitive pressure. This is due to the assumption of asymmetric information.

Employees' perceptions can, thus, be expressed as the following functional form:

$$PCP_w = f_w(IACP_i, UACP_i \mid UD_i ; MOP_i, CEN_i) \quad . \quad . \quad . \quad . \quad . \quad (6)$$

where:

UD = Union Density
IACP = Intensity of Actual Competitive Pressure
UACP = Unexpectedness of Actual Competitive Pressure
CEN = Level of Centralization in Collective Bargaining
MOP = Degree of Openness in the Industry or the Economy

Union density is defined as three categories: High, Medium, and Low, based on the number of union members as a percentage of total employees[15]. Again, based on specific assumptions, we can operationalize step-wise perception functions for employees, see figure 4.4.

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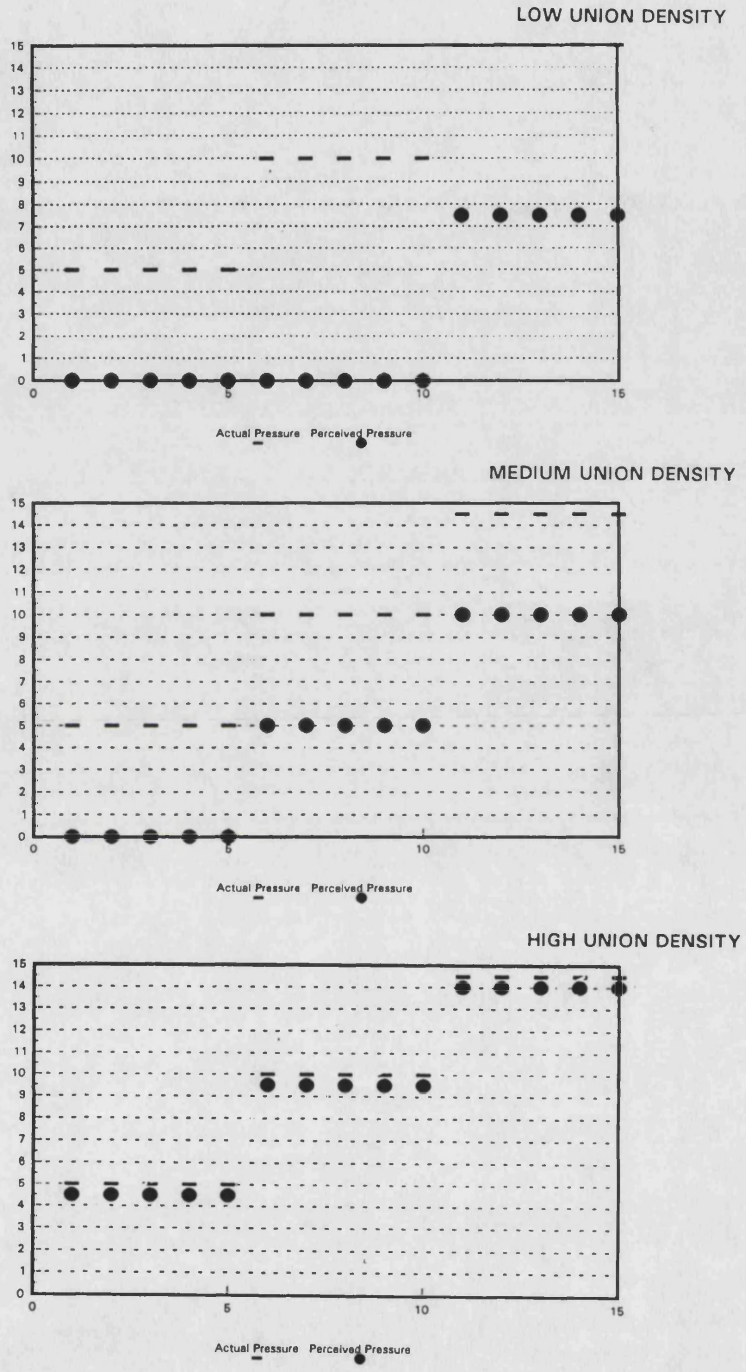
[14] Although there might be some arbitrariness in these assumptions they tend to relate to basic common sense. One way to overcome this arbitrariness would be to see how sensitive deductive logic may be when we change some of these assumptions. Or one could make perception functions as continuous by assuming arbitrary functional forms.

[15] For example, Low for less than 29 per cent, Medium for between 30 and 64 per cent and High for more than 65 per cent of union density.

Figure 4.4 Workers' Step-wise Perception Function



Notes:

(1) The horizontal axis consists of three intervals representing the period, during which a specific competitive pressure lasts. For simplicity, the same durations are assumed for three different intensities of competitive pressure: i) **1-5** for **Low** Competitive Pressure; ii) **6-10** for **Medium** Competitive Pressure; iii) **11-15** for **High** Competitive Pressure. Thus, numbers in the horizontal axis simply refer to *three distinct periods*.

(2) Numbers in the vertical axis indicate different degrees of Actual and Perceived Intensity of Competitive Pressure. Vertical differences between Actual and Perceived Competitive Pressure (in a specific period) implies a "*misperception of the Intensity and/or the Nature of Actual Competitive Pressure*".

Employees and unions may have less ability to gather and analyze information than employers and managers. Generally, permanency of competitive pressure does not matter for employees as it does for employers. Instead it is the intensity which concerns employees the most, especially when it threatens their job security. However, employees and unions are predisposed to underestimate the intensity of competitive pressure. Only unexpected changes are important to employees' perceptions. This is because employees regard reasonably expected changes to have already been considered by employers at a previous bargaining round (implicitly assuming no significant difference in perceiving the expectedness of competitive pressure between employees and employers). Here we assume union density to be the most important determinant of employees' perceptions. Thus, employees in less unionized companies might reasonably have less ability to correctly interpret the intensity of competitive pressure (see figure 4.4). The other conditions influencing workers' perceptions might be treated as shifting variables as in the case of managers' perception functions:

(i) *The more open an industry (company) is to international competition, the greater employee abilities are to accurately perceive the intensity of competitive pressure*. The higher market-openness the more accurate employees' perceptions of competitive pressure - their perceived intensity will increase by one step towards the actual pressure;

(ii) *The more centralized the structure of trade unions, the greater are employees' abilities to accurately perceive the intensity of competitive pressure*. Similar to market-openness, greater centralization is assumed to upgrade the perceived intensity by one step towards the actual pressure.

For the expected changes in competitive pressure, employees reasonably might not change their strategies except when they belong to a highly centralized bargaining system.

In sum, these perception functions imply that *even if there is the same degree of competitive pressure in a sector, employers and employees perceive them differently*. In turn, these differences in perceptions might

reasonably influence strategic choices of the respective groups.

2.3 Strategic responses of employers and employees

For heuristic reasons we assume managers and workers to have three basic strategies in collective bargaining: (i) Non-cooperation (N); (ii) Acquiescence (A); and (iii) Cooperation (C). From (i) to (iii) aggressiveness decreases. These three strategies have specific implications for each group, see e.g., table 4.1. Cooperative strategies imply flexibility and consensus in the bargaining process and outcomes. Acquiescent strategies show consensus but less flexibility and Non-cooperative strategies engender less consensus and flexibility.

The strategic choices of one group is contingent upon other groups' chosen strategies which, in turn, depends on how each group perceives competitive pressure. Hence strategic decisions of employers and employees are interactive: each side's decisions will depend on the choices (or predicted choices) of the others.

In a general form, these strategic responses can be expressed as follows:

$$SR_m[N,A,C \mid SR_w(N,A,C), T] = f_m[PCP^u_m \text{ or } PCP^e_m \mid SR_w(N,A,C), T] \quad (7)$$

$$SR_w[N,A,C, \mid SR_m(N,A,C), T] = f_w[PCP_w \mid SR_m(N,A,C,), T] \quad (8)$$

where:

N = Non-cooperative strategy
A = Acquiescent strategy
C = Cooperative strategy
m = Managers
w = Workers
T = Survival Threatening Point

Table 4.1 Implications of Alternative Strategies

	Employers	Employees
Non-cooperation	* Hierarchic with specific rules for individual employees with different skills * Rules enforced by sanctions on workers	* Strike or other actions if employers are cooperative or non-cooperative * Imposing job control if employers are acquiescent in it
Acquiescence	* Acquiescence in job control by the workforce	* Following management instructions
Cooperation	* Allowing a degree of employee participation in decision-making on work organization * Allowing workers autonomous responsibility	* Accepting autonomous responsibility as well as instructions * Engaging in team-work with or without management involvement

Source: A compiled table based on Soskice (1990; pp. 187-188).

Each group is assumed to change its strategic choice when it perceives sufficiently intense competitive pressure. A group's strategies may change as its perception of competitive pressure changes.

To operationalise step-wise strategic response functions, we must develop a specific set of assumptions for each group similar to those referred to in tables 4.2 and 4.3. We can establish step-wise strategic response functions, again based on Leibenstein (1989), for both managers and workers (see e.g., figures 4.5, 4.6 and 4.7). When employers perceive competitive pressure as *permanent*, they will choose more aggressive strategies unless they consider that workers might be *cooperative* [see figure 4.5, page 87 and compare the strategic response function (• • •) for

cooperative workers with the other two functions (for non-cooperative workers: ▲ ▲ ▲ and for acquiescent workers: ■ ■ ■]. Once workers are presumed to be *non-cooperative*, employers' strategies tend to become less aggressive especially when they perceive the intensity of competition to be high [see the step-wise function represented by ▲ ▲ ▲ of figure 4.5, page 87]. If workers are regarded as *acquiescent*, employers will tend to exploit bargaining by choosing *non-cooperative* strategies. This employers will do until they perceive competitive pressure to be extremely intense [see the function represented by ■ ■ ■ of figure 4.5, page 87]. When managers perceive competitive pressure to threaten profits, they will react by *non-cooperativeness* (see strategic responses in the last column of figure 4.5, page 87).

As long as employers perceive competitive pressure as *temporary*, they will sacrifice short-term declines in profits regardless of workers' strategies. The exception to this is when employers' profitability is threatened by severe competition (compare figures 4.5 and 4.6, page 87).

Traditionally, workers and unions are assumed to be intrinsically prone to take aggressive stances and less flexible to external competitive pressure. Unless managers show some concessions, workers will choose *non-cooperative* strategies until their job security is threatened. Once employers are considered *cooperative*, employees' strategies will be more cooperative according to their perceived intensity of competitive pressure [see figure 4.7, page 87 and compare the strategic response function (● ● ●) for cooperative employers with the other two functions (for non-cooperative managers: ▲ ▲ ▲ and for acquiescent mangers: ■ ■ ■].

Table 4.2 Assumptions for Employers' Strategic Response Functions

Workers' Chosen Strategy	Assumed Strategic Response
	(1) With the perception of **permanent** competitive pressure, employers' strategy would be less aggressive in proportion to the intensity
Non-cooperation	Employer's choice would start from N
Acquiescence	Employers' choice would change, if they perceive intensity as High, from N directly to C
Cooperation	Employers' choice would start from C and only change to N if they perceive the intensity of pressure as threatening
	(2) With the perception of **temporary** competitive pressure, employers would choose less aggressive strategies than the case of permanent pressure
Non-cooperation	Employers' choice would start from A and change to C when the intensity is perceived as High
Acquiescence	Employers' choice would be C until the survival threatening point (T)
Cooperation	Employers' choice would remain C even after the survival threatening point (T)
	(3) After the survival threatening point, employers will choose N, except when they regard workers as choosing C strategy

Note: N = Non-cooperative strategy
A = Acquiescent strategy
C = Cooperative strategy
T = Survival threat point

Table 4.3 Assumptions for Workers' Strategic Response Functions

Employers' Chosen Strategy	Assumed Strategic Response
	(1) Workers' strategic choices are more aggressive than their employers'
	(2) Workers change their strategies less frequently in response to their perception of competitive pressure
Non-cooperation	Workers would change their choice only when their job security is threatened, from N to A
Acquiescence	Workers would not change their strategy from N to A up to the threat point (T)
Cooperation	Workers would respond most frequently by changing from N to A and to C in accordance with their perceived intensity

Note: N = Non-cooperative strategy
A = Acquiescent strategy
C = Cooperative strategy
T = Survival threat point

Figure 4.5 Employers' Strategic Response Function in Response to Perceived Permanent Competitive Pressure

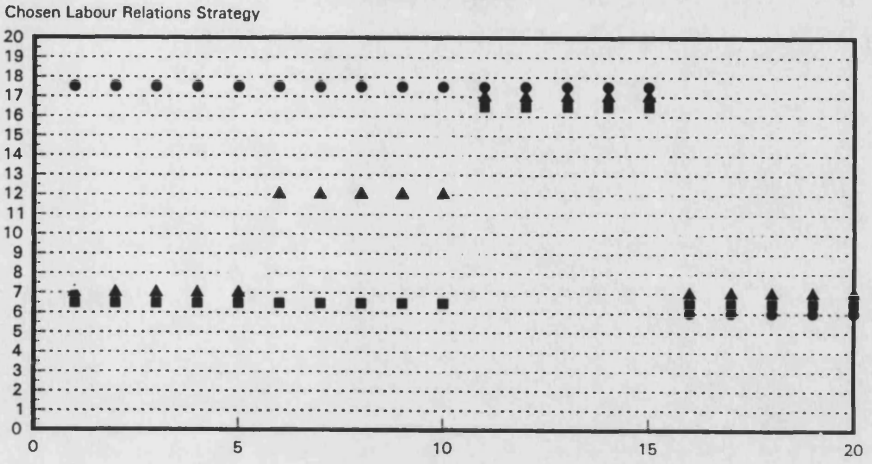


Figure 4.6 Employers' Strategic Response Function in Response to Perceived Temporary Competitive Pressure

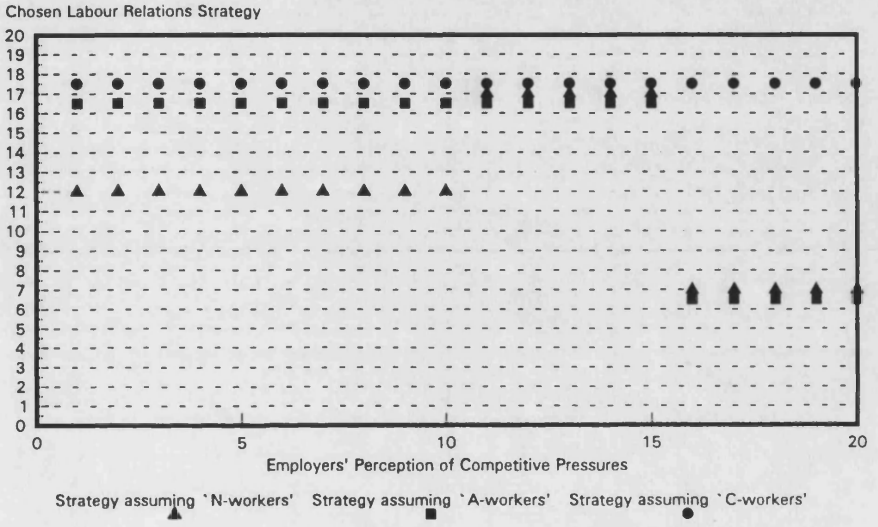
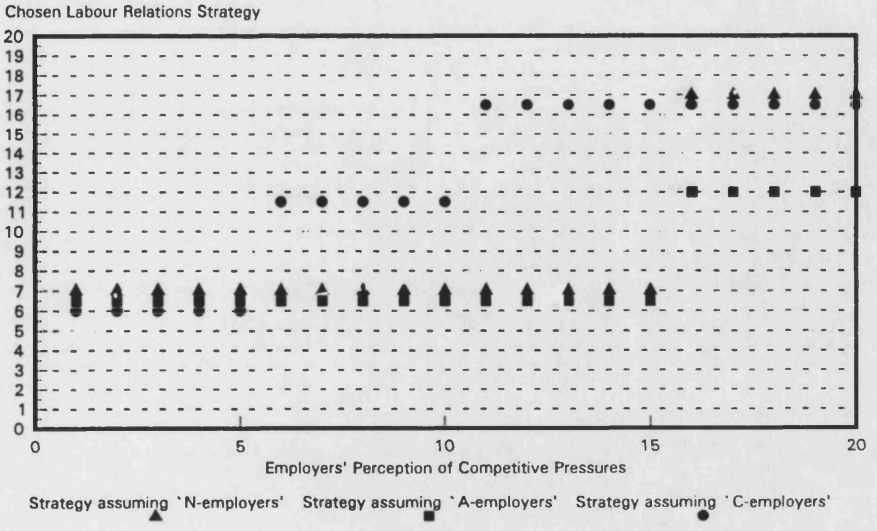


Figure 4.7 Employees' Strategic Response Function



Notes: (1) The horizontal axis consists of four distinct categories of *Perceived Competitive Pressure*: i) **1-5** for **Low** Perceived Competitive Pressure; ii) **6-10** for **Medium** Perceived Competitive Pressure; iii) **11-15** for High Perceived Competitive Pressure; iv) **16-20** for Perceived Competitive Pressure as Survival-threatening.

(2) Numbers in the vertical axis indicate different Strategic Alternatives of Labour Relations: i) 5-8 for Non-cooperative Strategy; ii) 11-13 for Acquiescent Strategy; iii) 16-18 for Cooperative Strategy.

3. STRATEGIC INTERACTIONS AND THE CONDUCT OF LABOUR RELATIONS

3.1 Interactions of strategic behaviours

We have now established a transmission mechanism from changes in product market conditions to changes in labour market behaviour. We have achieved this by way of step-wise perceptions and strategic response functions. The structure of labour market institutions[16] is believed to distort perceptions of actual competitive pressure. And *perceptions*, rather than actual levels, determine the strategic choices of workers as well as managers. Thus, in addition to the actual competitive pressure (ACP in the equations), strategic responses are dependent upon four other structural conditions:

(i) Centralization in the level of collective bargaining (CEN);

(ii) The degree of market-openness, which distorts both employers' and employees' perceptions (MOP);

(iii) Market power of managers (MP);

(iv) Union density (UD).

In other words, we have derived five functional forms (equations 9 to 13) which are assumed to be unidirectionally causative, so that response functions, themselves shown in equations (12) and (13) can be represented by those in equations (9), (10) and (11).

$$ACP_i = f(IPR_i, \delta IPR_i, SEX_i, \delta SEX_i, BOP_i, \delta BOP_i) \quad . \quad . \quad . \quad . \quad (9)$$

$$PCP_m = f_m(IACP_i, PACP_i, UACP_i \mid MP_i ; MOP_i, CEN_i) \quad . \quad . \quad . \quad (10)$$

$$PCP_w = f_w(IACP_i, UACP_i \mid UD_i ; MOP_i, CEN_i) \quad . \quad . \quad . \quad . \quad (11)$$

[16] They used to be the most frequently employed indicators for explaining differences in macroeconomic performance across countries.

$$SR_m[N,A,C \mid SR_w(N,A,C), T] \quad . \quad . \quad . \quad . \quad . \quad (12)$$
$$= f_m[PCP_m \mid SR_w(N,A,C), T; UACP \text{ or } EACP]$$
$$= f_m(ACP_i, MP_i, UD_i, MOP_i, CEN_i \mid SR_w)$$

$$SR_w[N,A,C, \mid SR_m(N,A,C), T] \quad . \quad . \quad . \quad . \quad . \quad (13)$$
$$= f_w[PCP_w \mid SR_m(N,A,C,), T]$$
$$= f_w(ACP_i, MP_i, UD_i, MOP_i, CEN_i \mid SR_m)$$

In the functional forms of (12) and (13), SR_m and SR_w respectively mean equilibrium strategies of managers and workers.

However, it has to be noted that the strategic responses of workers are dependent on the equilibrium strategies of managers and *vice versa*. Therefore, equilibrium pairs of chosen strategies can be determined only if we consider interactions of each possible combination of strategic choices of the two groups[17]. For example, via the assumed step-wise strategic response functions in the previous section, let us suppose that those alternative strategies distorted by structural conditions are [Acquiescence (A), Non-cooperation (N), Cooperation (C)] for managers and [Non-cooperation (N), Non-cooperation (N), Acquiescence (A)] for workers[18]. In this case, they may end up with an acquiescent strategy for managers and a Non-cooperative strategy for workers. Only the pair (A,N) is stable in the sense that each group will not deviate from the chosen equilibrium pair of strategies. The detailed logic behind this is explained in table 4.4[19].

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[17] In game-theoretic terms, this means that we are searching for the Nash-equilibrium strategic pair, which are Pareto-optimal in the sense that no other group can improve their rewards by changing their strategies from those equilibrium pairs, given the other group may choose their own equilibrium strategies. Recently, there have been a number of studies analyzing these interactive decision problems which involve conflict, uncertainty, and differences in perception, see e.g. Bennett *et al.* (1989).

[18] (a,b,c), where a,b,c = N or A or C, stands for a set of corresponding strategic alternatives given that the other group chooses (N,A,C), respectively.

[19] In this example, we implicitly assume that both employers and workers have perceived competitive pressure at 'Medium' level.

This kind of game can be more formally constructed as a first-level hypergame. In fact, hypergame analysis is a comprehensive method for systematically studying a conflict in which one or more players have misunderstandings about the dispute. When the participants are not fully informed about the situation, all the information about the game is perceived by each player in an individual manner. Unlike simple games, all the players are not

Table 4.4 An Example of Strategic Interactions
when employers' and workers' sets of strategic alternatives are (A,N,C) and (N,N,A), respectively[16]

	Employers' Strategic Choices		
	Acquie-scence	Non-cooperation	Cooperation
Workers' Strategic Choices			
Non-cooperation	1(A,N)	2(N,N)	3(C,N)
Non-cooperation	4(A,N)	5(N,N)	6(C,N)
Acquiescence	7(A,A)	8(N,A)	9(C,A)

Notes: (1) (i,j), where i,j = A or N or C, means a pair of chosen strategies, in which 'i' for managers and 'j' for workers.
(2) 'WU' and 'EM' stand for workers/unions and employers/managers respectively.

First, if employers try to choose a cooperative strategy, C, assuming workers may have chosen C as well, then the equilibrium pair would be cell 9 in table 4.4. This will be true so long as employees have actually chosen cooperative strategy, C. But workers, in fact, will choose to acquiesce instead of being cooperative, if they presume employers to have chosen to cooperate (e.g., see employees' strategic response functions described in figure 4.7, page 87). Accordingly, managers will change their choice to Non-cooperation (N), presuming workers to acquiesce. This may lead to an equilibrium pair of cell 5 in table 4.4. But again workers will change their own strategy to Non-cooperation instead of Acquiescence, once they know employers have chosen Non-cooperation. This forces managers to change their strategy and acquiesce. Now the equilibrium pair may be cell 1 in table 4.4. However, the pair of strategies in cell 1 is also unstable because workers may have an incentive to change their strategic choice. It is more plausible for workers not to cooperate assuming employers have acquiesced, leading to a stable pair of cell 4 in table 4.4. [Acquiescence (A), Non-cooperation (N)] is the only stable pair since no group has any incentive

seeing the same game. Each player constructs his perceptual game according to what he believes the other players' viewpoints to be, see e.g., Wang *et al.* (1988; pp.207-223). Nevertheless, we will not attempt to employ the hypergame analysis here.

to modify their choice.

Using similar logic, we can establish a pattern reported in table 4.5 which provides us with potential equilibrium pairs of specific strategies. There could be other possible specific combinations of alternative strategies. Those reported in table 4.5 are based on the potential influences of environmental conditions such as actual competitive pressure, degree of market-openness and centralization of bargaining[20].

Table 4.5 Equilibrium Pair of Strategies Derived from the Assumed Strategic Interactions

Employers' Choices	Workers' Choices	Equilibrium Pairs
(A,N,C)	(N,N,A)	(A,N)
(A,N,C)	(A,N,C)	?(C,C)or(A,N)or(N,A)
(A,N,C)	(N,N,N)	(A,N)
(A,N,C)	(C,A,C)	(C,C)
(A,C,C)	(N,N,A)	?(A,N,)or(C,A)
(A,C,C)	(A,N,C)	(C,C)or(A,N)
(A,C,C)	(C,A,C)	(C,C)
(A,C,C)	(N,N,N)	(A,N)
(C,C,C)	(A,N,C)	(C,C)
(C,C,C)	(N,A,C)	(C,C)
(C,C,C)	(C,A,C)	(C,C)
(C,C,C)	(N,N,A)	(C,A)
(C,C,C)	(N,N,N)	(C,N)
(N,N,C)	(N,N,A)	(N,N)
(N,N,C)	(A,N,C)	?(N,A)or(C,C)
(N,N,C)	(N,N,N)	(N,N)

Notes: (1) (a,b,c), where a,b,c = N or A or C, in columns 1 and 2 stands for the actual alternative strategies, ordered by the presumed strategies of other group (N,A,C).

(2) (d,e), where d,e = N or A or C, in column 3 is an equilibrium pair of strategies by managers and workers respectively.

(3) ? stands for the indeterminacy of equilibrium due to multiple possibilities.

[20] There are 108 cases to be considered according to changes in environmental conditions, [i.e., 12 different combinations of actual competitive pressure, depending on their unexpectedness (expected or unexpected), permanency (permanent or temporary) and intensity (high, medium or low) times 9 different combinations of market-openness (high, medium or low) and centralization (high, medium or low) = 108.] For each of these 108 cases, as a first step, we derive perceived competitive pressure via the assumed perception functions. Then we determine the possible alternative strategies of each group via the assumed strategic response functions. Finally, we can get what would be equilibrium pairs of strategies by the logic we describe. For example, see table 4.7 in page 97 (These will be provided by application in a separate form).

3.2. Equilibrium strategic pairs and a typology of labour relations behaviour

According to our theory, there could be nine possible pairs of equilibrium strategies[21], see table 4.5. With our suggested environmental conditions, however, there are only six equilibrium pairs. The other three [(A,A); (A,C); (N,C)] are not found. Which pair of strategies would improve economic performance? In general, macro-economic performance such as growth, unemployment and inflation can be supposed to be dependent on two underlying characteristics of collective bargaining: (i) The extent of *flexibility* in collective bargaining with respect to changes in environmental conditions; and (ii) the degree of *consensus* in bargaining processes. We assume that *more flexible and less conflictual collective bargaining outcomes enhance economic performance.*

Four assumptions underlie these characteristics of bargaining behaviour. These are:

(i) If the chosen strategy is *non-cooperation*, the implied conduct of labour relations would be *rigid* and *friction*, with more weight on the latter, see figure 4.8, N;

(ii) If the chosen strategy is *acquiescence*, the implied conduct would be *rigid* and *consensus*, with more weight on *consensus*, see figure 4.8, A;

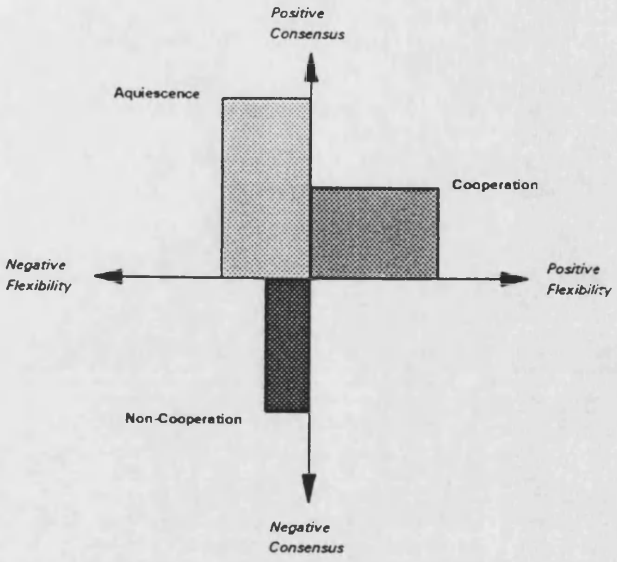
(iii) If the chosen strategy is *cooperation*, the implied nature would be *flexible* and *consensus*, carrying more weight on *flexible*, see figure 4.8, C;

(iv) The implied nature of an *acquiescent* strategy can be overruled by a cooperative one, but can overrule that of a non-cooperative strategy.

Figure 4.8 shows the three labour relations strategies. The different arrow lengths represent the extent of each underlying characteristic of flexibility

[21] Assuming that both employers and workers have three alternative strategies of non-cooperation, acquiescence, and cooperation, we would have the following nine pairs: (C,C), (C,A), (C,N), (A,N), (A,A), (A,C), (N,N), (N,A), and (N,C).

Figure 4.8 Industrial Relations Strategies and their Implied Characteristics : Cooperation (C), Acquiescence (A), and Non-cooperation (N)



and consensus[22]. In particular, assumption (iv) above can be clarified using figure 4.8. Suppose strategic interaction terminates with a pair of *cooperative* and *acquiescent* strategies. Then the conduct of that particular equilibrium strategy can be defined as *flexible-consensus*.

Based on these assumptions, we can interpret the equilibrium pairs of chosen strategies as implying a certain kind of conduct in their labour relations. We propose following functional relationships:

$$\text{CONDUCT(F-C, F-F, R-C, R-F} \mid SR_m, SR_w) \quad . \quad . \quad . \quad . \quad (14)$$

$$= f(SR_m, SR_w)$$

$$= f(ACP_i, MP_i, UD_i, MOP_i, CEN_i)$$

[22] We will assume *relative difference* in the length of arrows as follows: (i) Cooperative strategy having three units of positive flexibility and two units of positive consensus. (ii) Acquiescence having two units of rigidity and four units of consensus. (iii) Non-cooperative having one unit of rigidity and three units of conflict. Absolute values do not have any significant meaning.

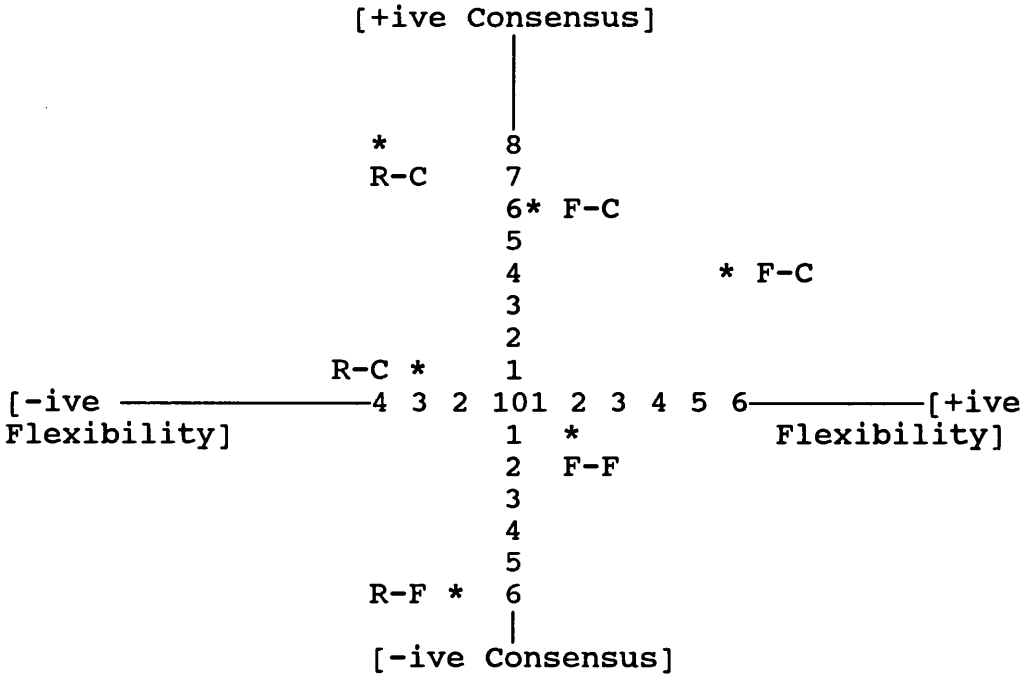
Table 4.6 Typologies for the Conduct of Labour Relations Derived from the Equilibrium Strategy Pairs

Equilibrium Pairs (SR_m, SR_w)	Derived Typologies (F-C, F-F, R-C, R-F)
C-C	F-C
C-A	F-C
C-N	F-F
A-C	F-C
A-A	R-C
A-N	R-C
N-C	F-F
N-A	R-C
N-N	R-F

Note: F-C = Flexible-Consensus
F-F = Flexible-Friction
R-C = Rigid-Consensus
R-F = Rigid-Friction

Table 4.6 gives the assumed relationship between the equilibrium pairs of strategies and their implied typologies for the conduct of labour relations[23].

[23] Each type of labour relations conduct can be also represented by arrows with different length, using those assumptions in Footnote 20: (i) *Flexible-Consensus* having six units of positive flexibility and four units of positive consensus. (ii) *Flexible-Friction* having two units of positive flexibility and one unit of negative consensus. (iii) *Rigid-Consensus* having four units of negative flexibility and eight units of positive consensus. (iv) *Rigid-Friction* having two units of negative flexibility and four units of negative consensus. Only relative differences in these lengths are meaningful. Each of these labour relations conduct can be shown in the following graph:



There remains one more question: How do these typologies of the labour relations conduct relate to differences in economic performance? We need one more *ad hoc* assumption for the definitive ordering[24]. Assuming that positive effects of *flexibility* have a stronger influence in wage bargaining, we can rank the conduct of labour relations in terms of economic performance in descending order as follows:

(i) *Flexible-Consensus*;

(ii) *Flexible-Friction*;

(iii) *Rigid-Consensus*;

(iv) *Rigid-Friction*.

Let us now move on to an example of how we can analyze, in practice, the relationship between changes in environmental conditions and strategic interactions leading to labour management relations behaviour in an organization. Suppose an abrupt, sustained and substantial increase in import penetration (high competitive pressure) during a specific period, say, 1971-80, in a specific industry, say, automobiles, in an economy. For heuristic reasons, imagine two firms in the same industry: Firm X (large and highly unionized) and firm Y (small with relatively low levels of unionization). Both firms are assumed to have been fairly open to international competition, and are operating in the economy with a medium level of centralization in their bargaining structure. Our previous discussion allows us to predict how these two firms will end up with different equilibrium pairs of labour relations strategies, and in turn, with different labour relations behaviours.

Based on perception functions described above, employers and managers in both firms might reasonably perceive competitive pressure with

[24] As assumed in the previous footnote, each type of labour relations conduct has certain units of both positive and negative effects. As far as the ordering in terms of economic performance is concerned, we need to compare these units. For certain, we have the following ordering: (i) F-C > F-F > R-F. (ii) R-C > R-F. But we cannot tell which effects are greater between F-C and R-C, or between F-F and R-C. We need to add one more *ad hoc* assumption for a definitive chain-like ordering. Common sense suggests that positive effects of flexibility may bear greater influence on economic outcomes than those of consensus. With this assumption, the rank-ordering of our labour relations conduct in terms of the influences on economic performance is as follows: F-C > F-F > R-C > R-F. However, as we will see, neither the *ad hoc* assumption nor the rank-ordering makes a crucial difference in deriving hypotheses from our theoretical framework.

which they are faced as *permanent high* (e.g, see figure 4.2, page 76). Workers and unions, however, in the same company will perceive these pressures differently. Employees in firm X will perceive the intensity of competitive pressure as *high*, while those in firm Y will perceive the pressure to be *medium* or *low* (e.g, see figure 4.4 in page 80). According to our assumed strategic response functions (defined as Equations 12 and 13), employers in both firms will choose a *cooperative strategy* (e.g., see figure 4.5 in page 87). Due to differences in perceptions, however, employees will respond differently. For workers in firm X, there are three plausible strategies. Those in firm Y may decide either *not to cooperate* or *to acquiesce*, but the former is dominant (e.g., see figure 4.7 in page 87).

The interactions of strategic responses of employees as well as employers in each firm will be as follows. In firm X, even if workers have three available strategies, given that employers choose to cooperate, employees will also choose C (*cooperative*). This will lead to the strategic pairing (C,C): *flexible-consensus*. In firm Y, given that managers choose a *cooperative* strategy, the employees' dominant strategy will be *non-cooperation*. Firm Y will end up with the strategic pairing (C,N): *rigid-consensus*. Thus, even if the actual competitive pressure experienced by both firms is the same, the conduct of labour relations in the same firm or economy, with an identical bargaining structure, can be different.

4. HYPOTHESES AND AN EMPIRICAL FRAMEWORK

Having set up the theoretical framework, we can now investigate the potential role of competitive pressure as well as the structural conditions distorting the strategic choices of workers and employers. For this we need to analyze all the different combinations of environmental conditions. Even if we set aside the role of the government's stance towards labour relations and labour market healthiness, we have to examine 108 cases with only five environmental conditions: (i) Actual competitive pressure; (ii) Market-openness; (iii) Centralization of collective bargaining; (iv) Market power; and (v) union density.

Table 4.7 The Effects of Competitive Pressure on Labour Market Institutions and Economic Performance: An Example

[For the case of a company facing unexpected permanent high increase in competitive pressure, in an economy with medium-centralized bargaining structure and with medium market-openness to international competition]

(1) Perceptions of competitive pressure

	Market Power					
	High		Medium		Low	
	Managers' Perceptions	Workers' Perceptions	Managers' Perceptions	Workers' Perceptions	Managers' Perceptions	Workers' Perceptions
Union Density						
High	PH	H	PH	H	PH	H
Medium	PH	M	PH	M	PH	M
Low	PH	M.L	PH	M.L	PH	M.L

(2) Strategic responses and derived conduct of labour relations

	Market Power		
	High	Medium	Low
Union Density	**1** C / A.N.C	**2** C / A.N.C	**3** C / A.N.C
High	C/C	C/C	C/C
Medium	F-C	F-C	F-C
Low	**4** C / N.N.A	**5** C / N.N.A	**6** C / N.N.A
	C/A or C/N	C/A or C/N	C/A or C/N
	F-C or F-F	F-C or F-F	F-C or F-F
	7 C / N(A)	**8** C / N(A)	**9** C / N(A)
	C/N	C/N	C/N
	F-F	F-F	F-F

Note: The left-hand of each cell in the first rows is for managers' strategic responses and the right-hand for workers'. The second rows are equilibrium pairs of strategies. And the third rows are the typology of labour relations conduct, implied by the equilibrium pairs of strategies.

We could examine perceptions of competitive pressure, strategic responses and their interactions leading to a specific kind of labour relations conduct using the same logic as in table 4.7. The example mentioned in the final part of the previous section can be represented by the first and ninth cells in table 4.7 (2). In the case of an unexpected permanent high increase in actual competitive pressure, union density tends to determine the conduct of labour relations regardless of the employers' market power: the higher unionization, the better economic performance [e.g., compare three rows in table 4.7 (2)]. With the same kind of logic for the rest of cases, we construct a data set, from the simulated world, see e.g., Appendix II[25].

Simple correlations between environmental conditions, equilibrium strategies, and labour relations conduct are shown in table 4.8. There may be no large difference in signs and sizes of correlations either by using the *ad hoc* economic performance ranking or by using equilibrium pairs of strategies, except, that is, for the case of *permanency*. If marginal, we could obtain the following contributions for each environmental condition in determining the conduct of labour relations:

(i) Higher intensity of actual competitive pressure and higher market-openness tend to produce more flexible and consensus-prone strategic interactions;

(ii) Higher centralization and lower union density marginally improves the harmony of labour relations;

(iii) Higher market power is also helpful for flexible-consensus labour relations. But in some cases, market power shows no significant role at all[26];

(iv) If competitive pressure is unexpected, labour relations tend to be more flexible and consensus-prone;

(v) Permanent competitive pressure produces more flexible-consensus labour relations, but worse economic performance.

---

[25] Those 108 cases analyzed in the form of the table 4.6 will be supplied by application.

[26] We gave value 4 when union density or market power has no significant role in explaining labour relations conduct (see Note of table 4.7). Hence, negative correlation coefficients can be interpreted in both ways as in the text.

Multiple regression results are shown in table 4.9 for the conduct of labour relations and the equilibrium pair of strategies. Marginal effects for each environmental condition are not very different from those of simple correlations except in the case of union density. Contrary to conventional wisdom, *higher union density contributes to more cooperative and flexible labour relations. Or, as in the case of the market power, difference in union density has no significant role at all. However, union density, permanency of competitive pressure, and market-openness tends not to be statistically significant.*

From these contributions, we can see the relative importance of competitive pressure, especially its intensity and unexpectedness, in explaining differences in economic performance. As can be seen in table 4.9, the intensity of competitive pressure seems to have the most significant effect on labour relations behaviours. Import penetration

Table 4.8 Simple Correlation Coefficients between Environmental Conditions, Equilibrium Strategies, and the Conduct of Labour Relations

	Conduct	Strategies
Centralization	-0.143	-0.145
Union Density	0.253	0.122
Actual Competitive Pressure		
Intensity	-0.576	-0.478
Unexpectedness	0.210	0.173
Permanency	-0.007	0.014
Market-openness	-0.119	-0.180
Market power	-0.308	-0.328

Notes: (1) Each variable has the following values and for convenience all variables are transformed by natural logs: **Centralization, Market-openness** and **Intensity of Actual Competitive Pressures** have 1 (low), 2 (medium), and 3 (high); **Union density** and **Market power** have 1 (low), 2 (medium), 3 (high), 4 (no significant role); **Permanency** have 1 (permanent) and 2 (temporary); **Unexpectedness** have 1 (unexpected) and 2 (expected); **Strategies** have 1 [(C,C)], 2 [(C,A) & (A,C)], 3 [(C,N) & (N,C)], 4 [(A,A)], 5 [(A,N) & (N,A)], and 6 [(N,N)]; **Conduct** have 1 (F-C), 2 (F-F), 3 (R-C), and 4 (R-F).

(2) Correlation coefficient between the conduct and equilibrium strategies is 0.933.

(3) In total, there are 242 cases for each variable.

itself might have a negative impact on domestic economic growth and unemployment. This influences the conduct of managers and workers in collective bargaining to the extent that companies faced with high import penetration may end up with less increase or even a decrease in wages. Furthermore, they might also be forced to introduce more flexible production processes (see figure 4.9). From these simulations, therefore, we can suggest the following hypothesis:

> *"If the **intensity of competitive pressure** is high, strategic choices of employees and employers will be more cooperative."*

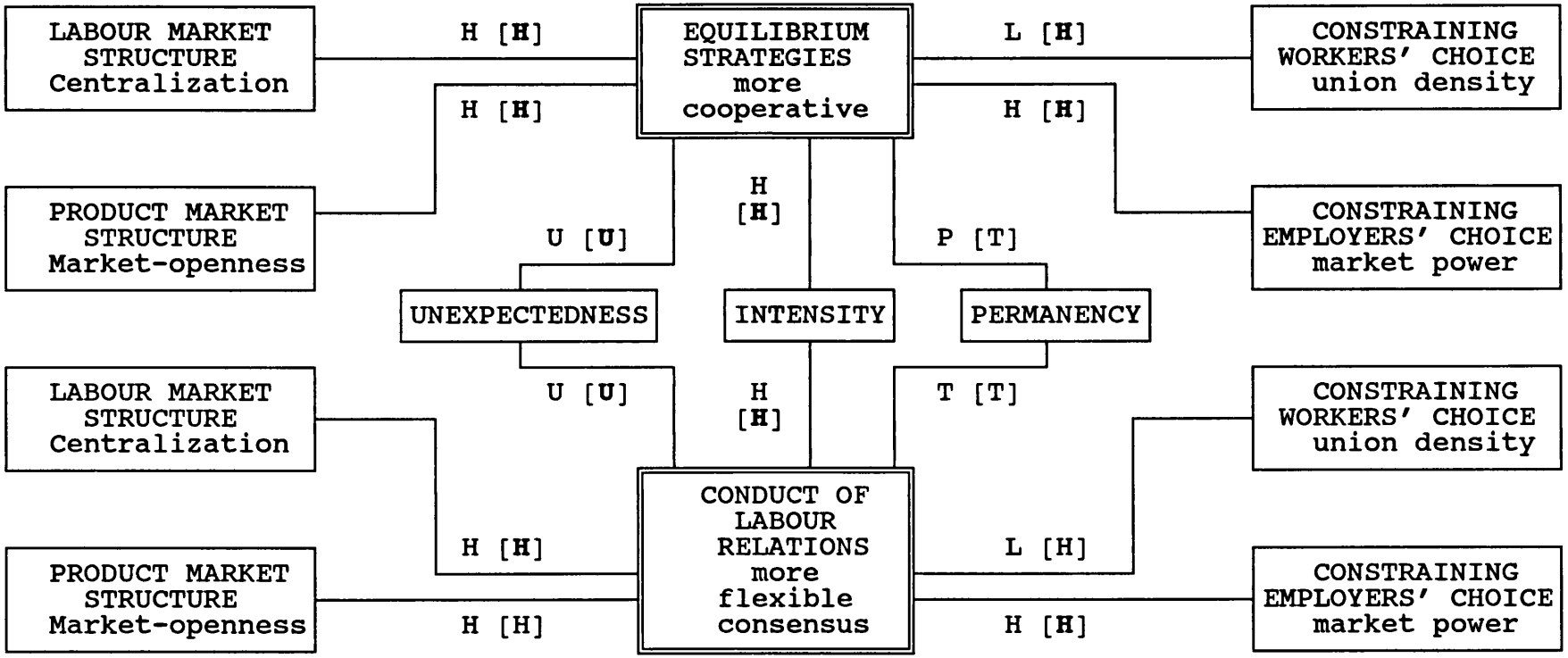
The same hypothesis holds true for the conduct of labour relations, and hence for differences in economic performance. Hereafter, we refer to this theoretical construct as the *'Competitive Pressure Hypothesis'*.

Table 4.9 Multiple Regression Coefficients between Environmental Conditions, Equilibrium Strategies, and the Conduct of Labour Relations

Dependent	Conduct	Strategies
Centralization	**-0.164**	**-0.199**
	(-2.929)	(-2.848)
Union Density	-0.036	-0.214
	(-0.553)	(-2.645)
Actual Competitive Pressure		
Intensity	**-0.558**	**-0.612**
	(-8.681)	(-7.606)
Unexpectedness	**0.229**	**0.325**
	(2.680)	(3.039)
Permanency	-0.031	-0.019
	(-0.426)	(-0.205)
Market-openness	-0.107	-0.243
	(-1.804)	(-3.264)
Market power	**-0.193**	**-0.238**
	(-3.668)	(-3.601)

Notes: (1) For the variables, see table 4.8.
(2) Numbers in () mean t-values for the coefficient.
(3) Adjusted R^2 and standard error of regressions are 0.40 and 0.38 for the equation with the conduct as dependent variable, while 0.34 and 0.48 for that with equilibrium strategies as dependent variable.

Figure 4.9 Hypotheses Derived from the Theoretical Framework: A Comparison of Simple and Multiple Correlations[27]



[27] For Figure 4.9 followings should be noted: (i) H or L means 'the higher' or 'the lower', respectively. (ii) U, P or T stand for 'unexpected', 'permanent' or 'temporary' competitive pressures. (iii) [ ] for correlations from multiple regressions, otherwise from simple correlations. For example, top left hand corner of the diagram should be read: "the higher centralization in labour market structure is related with the more cooperative strategic interactions in collective bargaining".

One of the major purposes of this thesis is to examine the role of labour market institutions and how these might explain cross-country differences in economic performance. Thus it would be meaningful only if the theoretical framework became an established micro-foundation of these macro-studies. However, there are several problems in devising a macro from an established micro-framework. For example, there is the problem of aggregation and unobservable variables at an aggregated level. However, our theory is deliberately constructed so that we can avoid direct measurement of such qualitative variables as perceived competitive pressure, equilibrium pairs of strategies, and the conduct of labour relations, see e.g., figure 4.1. Indeed, if sufficient evidence is found, the behaviourial dimension can be explained by the relationships between competitive pressure and differences in economic performance[28].

In the next two chapters, we will carry out empirical tests for the hypothesis we derived from our theoretical analyses. Particular emphasis will be given to the potential relations between competitive pressure and economic performance. The theory has shown that the intensity of competitive pressure is the most important factor in changing the strategic behaviour of employees as well as employers. Thus it is the most important determinant of differences in macro-economic performance.

As an example, figure 4.10 gives an idea of the relationships between annual percentage changes in import penetration ratios and annual changes in unemployment rates across O.E.C.D. countries. All seventeen economies, which will be examined in detail later, show negative relations between the two variables[29]. These seemingly spurious correlations have a sound theoretical underpinning from our *competitive pressure hypothesis*. Also the relationship is modestly consistent across all advanced countries.

---

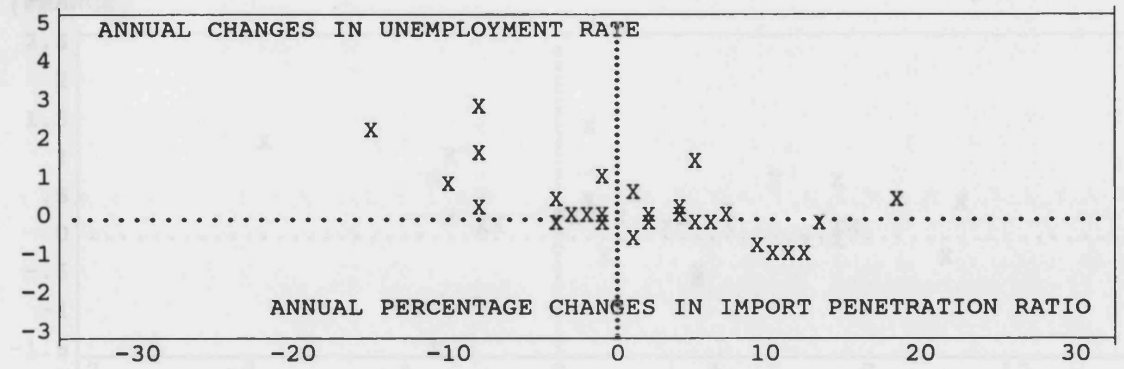
[28] To properly validate our theory developed in this chapter, we may need more detailed case studies, directly asking questions relevant to the behaviourial dimension. This thesis depends on other existing literature from various disciplines (see chapter 3) to give the theoretical framework a partial validity.

[29] Plots were drawn over the period from 1961 to 1989 in each country. Except for New Zealand and Switzerland, negative relations are statistically meaningful at more than 10 per cent significance levels (for details, see Appendix IV).

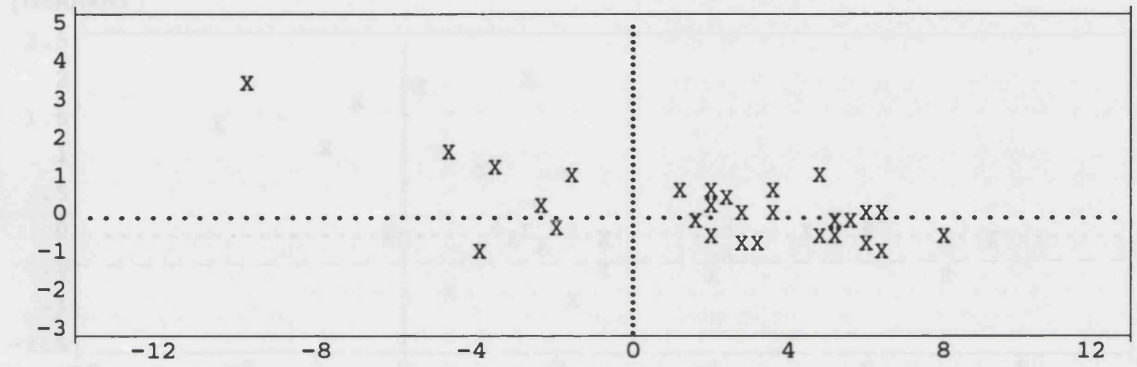
For the more detailed macro-economic effects of labour relations conduct, in the next chapter, four propositions will be set up based on our competitive pressure hypothesis.

Figure 4.10 Competitive Pressure and Changes in Unemployment

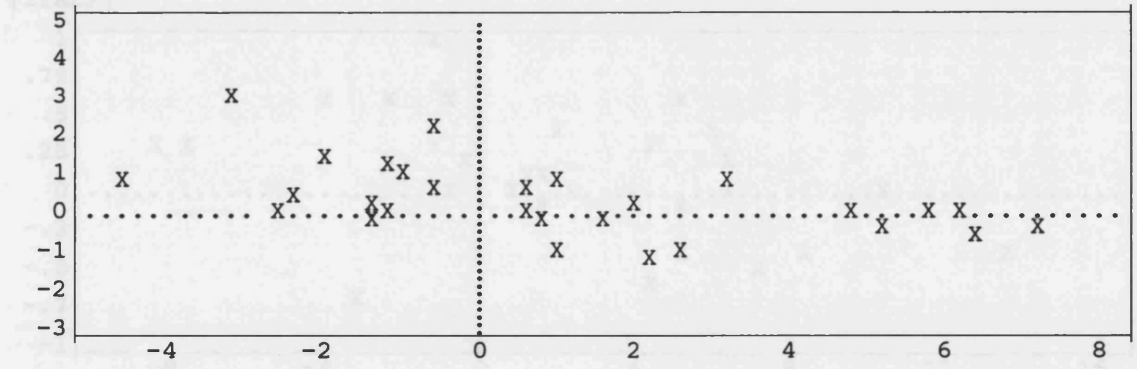
[AUSTRALIA]



[CANADA]



[DENMARK]



[FINLAND]

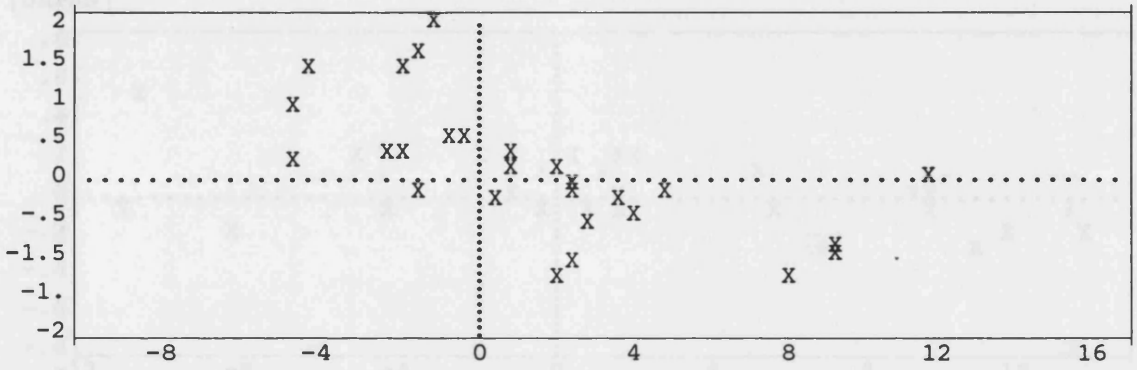
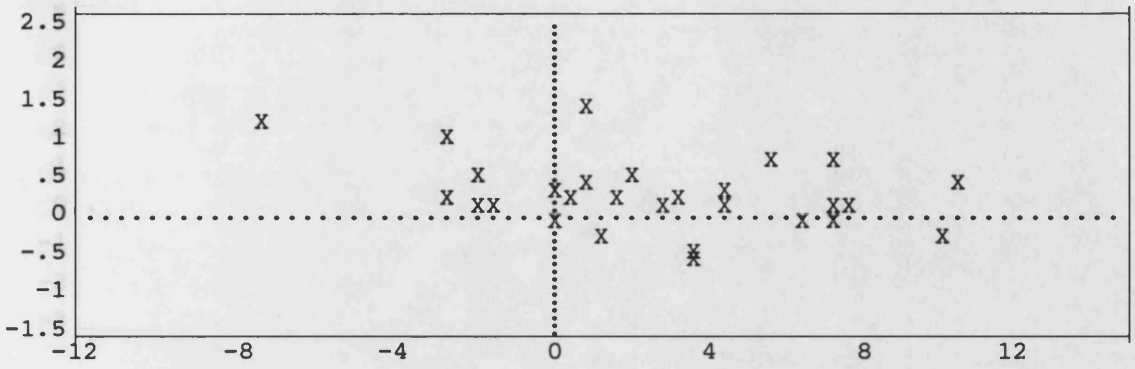
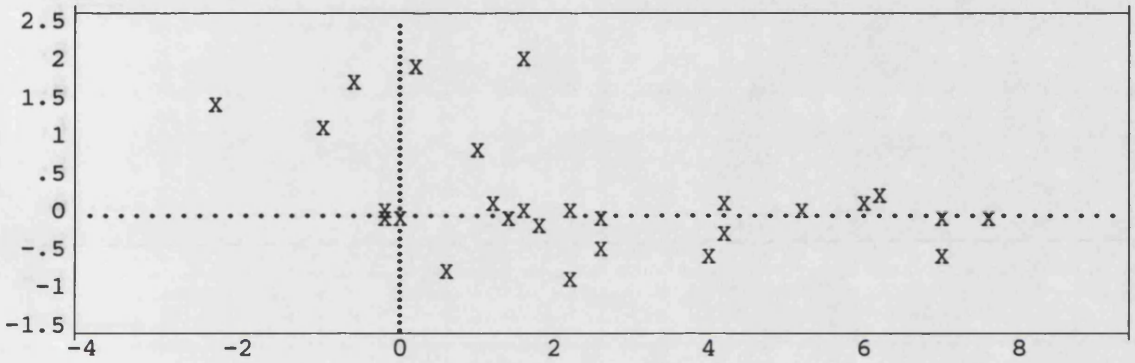


Figure 4.10 (continued).

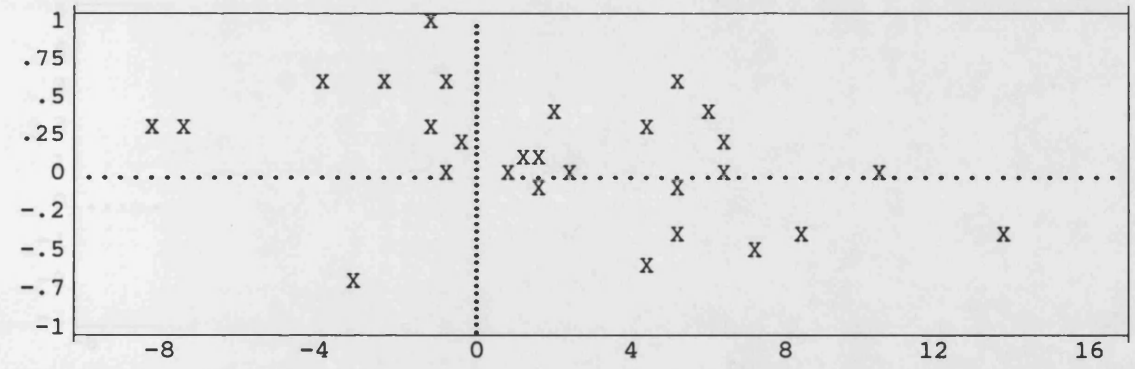
[FRANCE]



[GERMANY]



[ITALY]



[JAPAN]

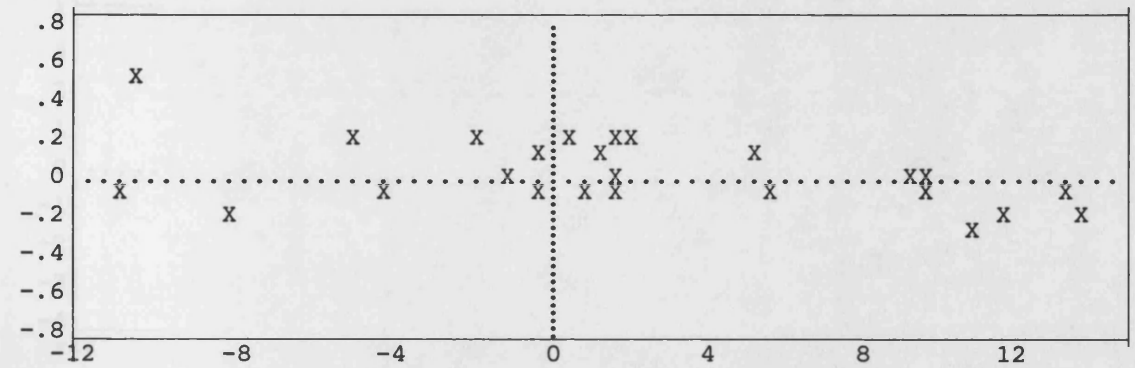
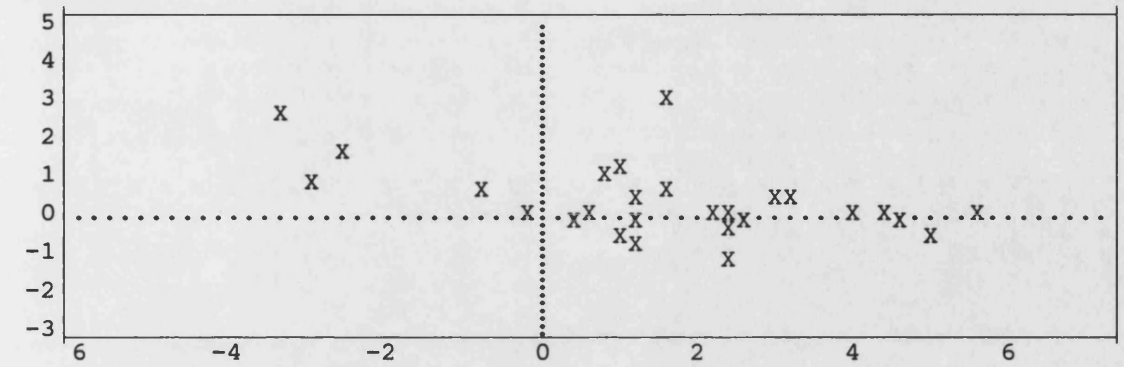
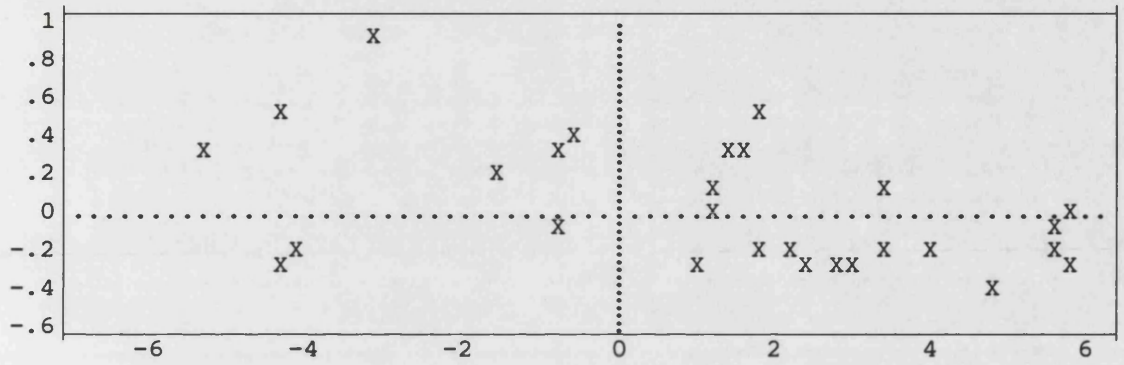


Figure 4.10 (continued).

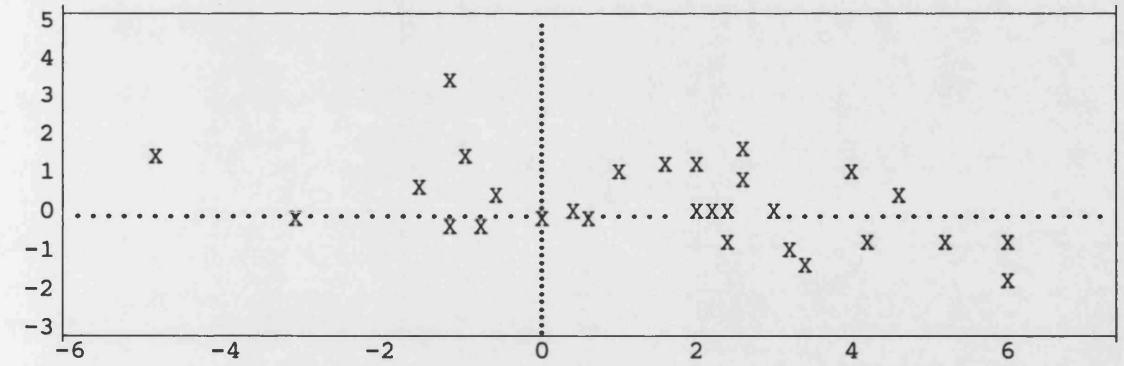
[NETHERLANDS]



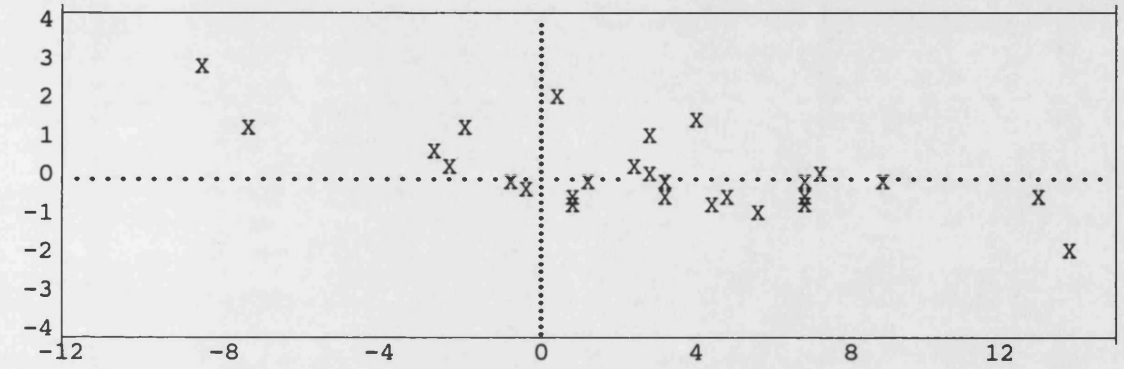
[SWEDEN]



[U.K.]



[U.S.]



PART THREE - EMPIRICAL STUDY

Five. THE EFFECTS OF COMPETITIVE PRESSURE ON LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE: A Comparative Study on Time-Series Variations

1. Introduction
2. Import penetration and macro-economic performance: A wider within-group variations than expected from existing hypotheses
3. Data and methodology
4. Competitive pressure and variations in economic performance over time
5. Summary and conclusion

Six. THE EFFECTS OF COMPETITIVE PRESSURE ON LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE: A Cross-country Comparative Study

1. Introduction
2. Data and methodology
3. Competitive pressure and cross-country differences in economic performance
4. Summary and implications

Seven. COMPETITIVE PRESSURES, LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE: Supplementary evidence from case studies

1. Introduction
2. The effects of competitive pressure on labour market institutions and economic performance: a recapitulation of empirical findings
3. Changes in European industrial relations systems
4. Perceived environmental pressures and changes in collective bargaining outcomes for the U.K.
5. Changes in collective bargaining pressures, processes and outcomes: a cross-sector study for the U.S.A.
6. Summary and implications

Eight. SUMMARY AND CONCLUSION

CHAPTER FIVE
THE EFFECTS OF COMPETITIVE PRESSURE ON LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE
: A Comparative Study on Time-Series Variations

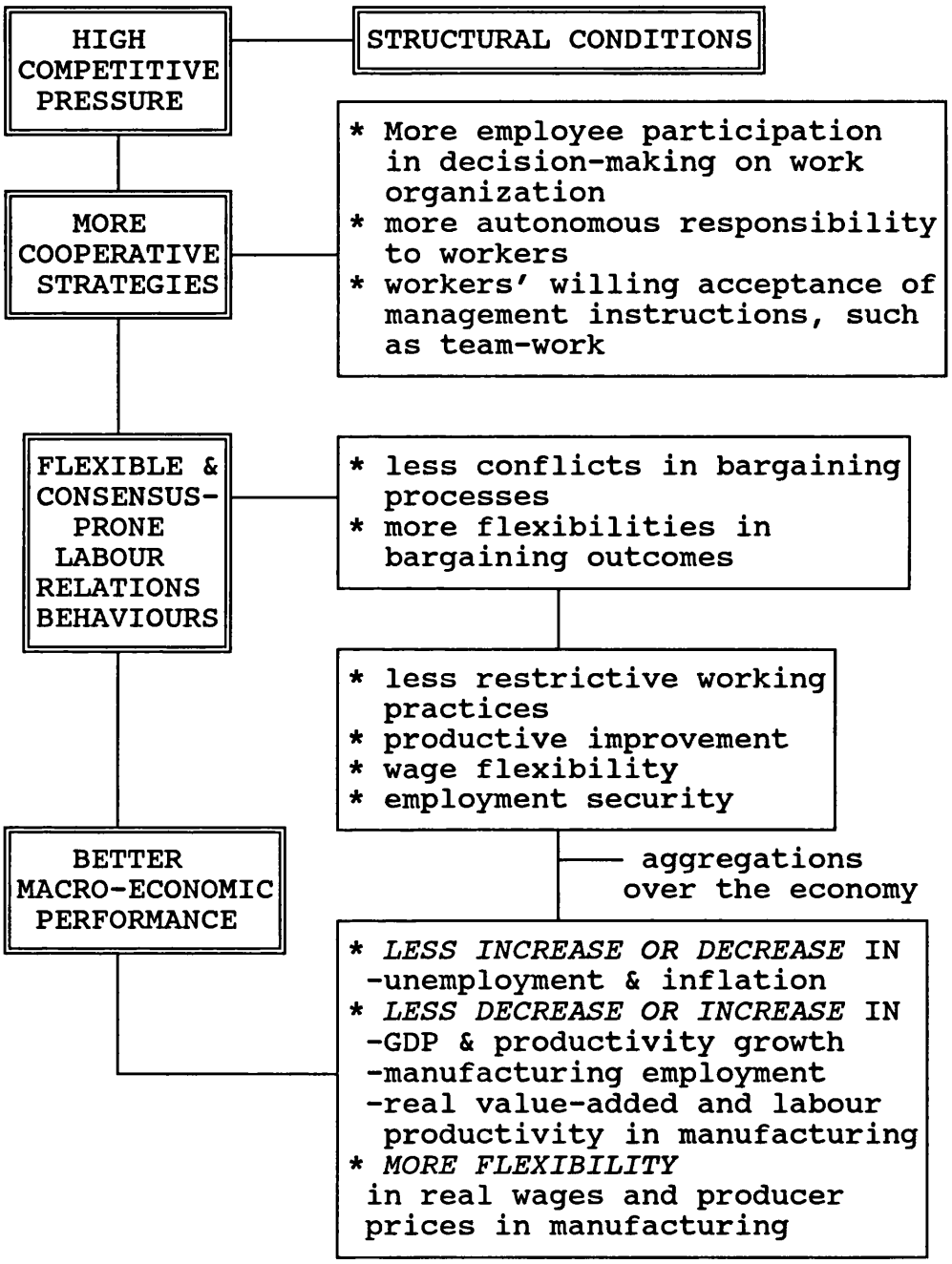
1. INTRODUCTION

Our *competitive pressure hypothesis* places a greater emphasis on external pressure from international competition. Our theory considers five environmental conditions (see figure 4.8): (i) The degree of centralization in collective bargaining; (ii) The extent of market-openness to international competition; (iii) Union density; (iv) Market power as a principal influence of workers' and employers' strategic choices; (v) The intensity, permanency, and expectedness of competitive pressure. Through step-wise perception and strategic response functions, each groups' strategic choices are examined. Their interactions result in a pair of equilibrium strategies. Four types of industrial relations behaviours are derived from these strategic interactions. Finally, we devise an *ad hoc* mechanism to interpret these behaviourial types in terms of economic performance.

After a simulated study, our theoretical framework is reduced to a set of potential relationships between environmental conditions and labour relations conduct. Our hypothesis, derived from these, provides us with a rationale to examine the role of environmental conditions concerning the differences in economic performance. Our theory is developed to avoid having to directly quantify behaviour and thereby we are able to avoid the pitfalls that this might raise. It should be stressed that without our theory, there would be insufficient grounds to investigate the potential effects of competitive pressure from international competition on economic performance.

Figure 5.1 shows how the suggested theoretical framework can constitute a micro-foundation for a cross-country comparative study at an economy level. More intense pressure from international competition will induce workers and employers to choose more cooperative strategies. This is the case only when competitive pressure is *correctly* perceived by each group.

Figure 5.1 *Suggested Logic of the Empirical Framework for the Competitive Pressure Hypothesis*



Even if various structural conditions may have their special influences, the marginal effects of competitive pressure are found to be the most influential. Interactions of strategic choices, in response to perceived competitive pressure, will lead to more flexible and consensus-prone industrial relations behaviour. Thus, more intense competitive pressure may result in less conflict and greater flexibility in bargaining processes and outcomes. Our hypothesis presumes that these characteristics of labour relations will produce the following outcomes: (i) Less restrictive working practices; (ii) Wage flexibility; (iii) Employment security; (iv) Productivity improvements. There might be a few sectors showing more conflict and less flexibility. On average, however, macro-economic performance tends to reflect cooperative labour relations.

The rest of this thesis will test our *competitive pressure hypothesis*. This will be achieved in three steps. Firstly, we will test for significant relationships between changes in competitive pressure and economic performance over time at the economy level. To the extent that there are differences we will then examine whether there is any difference in those relationships between country groups with different degrees of centralization in levels of collective bargaining. Secondly, we will assess whether these findings could survive with more explicit cross-country studies; and thirdly, we will assemble qualitative evidence for the competitive pressure hypothesis from case studies.

This chapter will concentrate on *the effects of competitive pressure on the variances of economic performance over time within an economy*. The following section will give a brief description of competitive pressure and economic performance for seventeen O.E.C.D. countries. In section three, four propositions will be set up, based on our competitive pressure hypothesis. Our data and our methodology will be also explained. Section four reports empirical results of these propositions. And the last section will summarize relevant arguments.

2. IMPORT PENETRATION AND MACRO-ECONOMIC PERFORMANCE: A Wider Within-Group Variations than Expected from Existing Hypotheses

Since the 1960s, the levels of import penetration in the O.E.C.D. economies have been steadily increasing (see appendix tables). Even if the levels of import penetration ratios[1] exhibit no large differences, their percentage changes show remarkable variations over time. Indeed, average levels of import penetration might be more closely related to the size of the economy and specific trade policies. In smaller open economies, import penetration levels are generally higher than in other economies. Standard deviations of import penetration levels over time are only of second-order degree and are very similar between countries. However, there appears to be a larger fluctuation in their percentage changes *viz a viz* the previous years' levels (see figure 5.2). Those countries such as the U.S. and Japan, facing less severe import penetration levels, show larger fluctuations in their percentage changes. Figure 5.2 also demonstrates that there are also significant differences in the fluctuations in percentage changes of import penetration within the same country grouping which has similar collective bargaining structures.

On the other hand, average macroeconomic performance reported in figure 5.3 also shows notable differences not only across countries but also across economy groups. Experience of unemployment and inflation rates tend to show little consistency specifically across different country groupings[2]. If we compare figures 5.2 with 5.3, changes in import penetration seem to have better correlations not only with cross-country variances but also with cross-group differences in economic performance.

---

[1] There are, in general, two ways of measuring import penetration ratios (see e.g., chapter 2). Here, we employ the definition: imports relative to total supply, i.e. imports / (imports + GDP).

[2] Besides, if we use average data, a fluctuation is easy to be blurred over time. Each average period would also exhibit different patterns across countries, depending on how we divide those periods. So we should be careful to use average data and also need cautions for their interpretation.

Figure 5.2 Cross-country Comparisons of Import Penetration Over Time

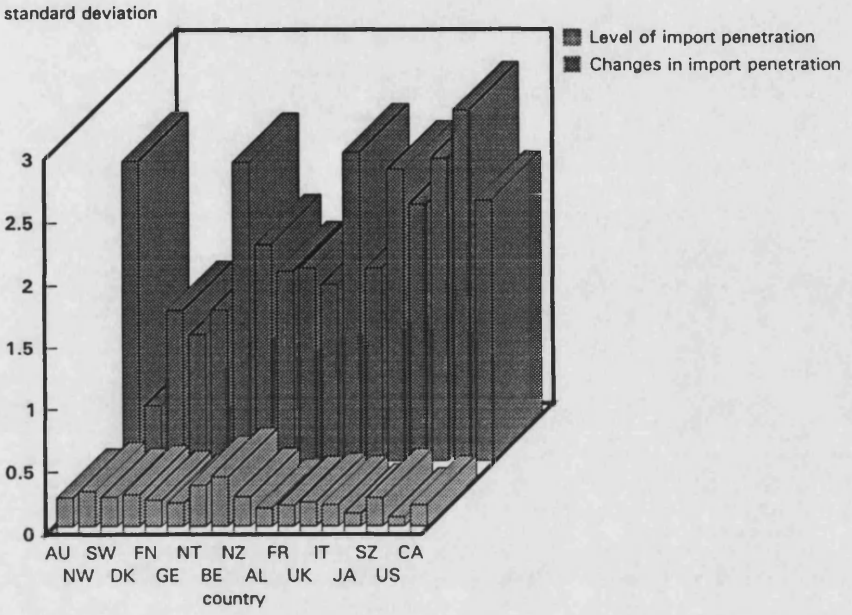
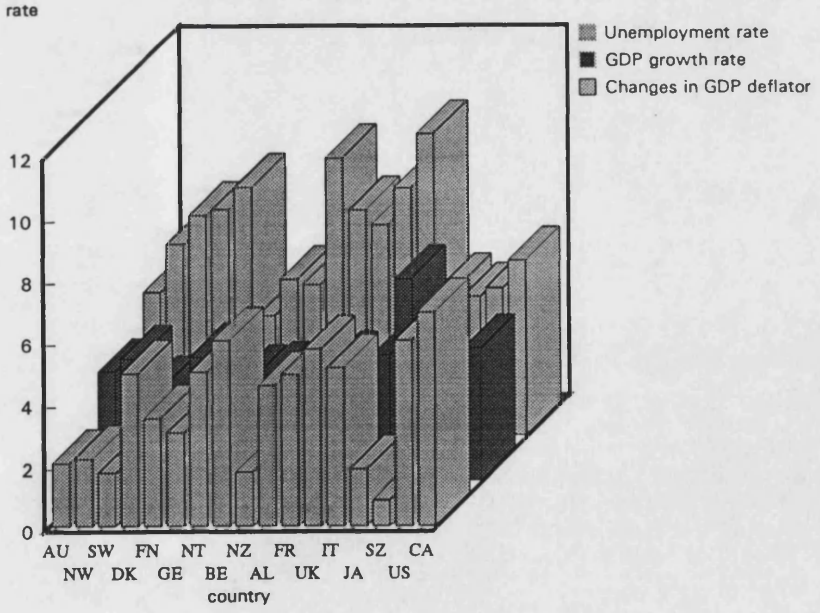


Figure 5.3 Cross-country Comparisons of Average Macro-economic Performance, 1961-89



Notes: (1) Letters in the horizontal line stand for seventeen countries from Austria to Canada in decreasing order of centralization: Austria (AU), Norway (NW), Sweden (SW), Denmark (DK), Finland (FN), Germany (GE), Netherlands (NT), Belgium (BE), New Zealand (NZ), Australia (AL), France (FR), United Kingdom (UK), Italy (IT), Japan (JA), Switzerland (SZ), United States of America (US), Canada (CA).

3. DATA AND METHODOLOGY

A principal purpose of this chapter is to see if we can find any significant relationships between competitive pressure and economic performance over time at the economy level. Our competitive pressure hypothesis suggests the following three propositions:

Proposition 1

The intensity of competitive pressure is negatively related to unemployment and inflation.

Proposition 2

Competitive pressure is positively related to gross domestic production and productivity growth.

Proposition 3

Intense competitive pressure will show positive correlations with employment, real value-added and labour productivity in the manufacturing sector.

In addition to these propositions, we will test to see if there exists any significant role of cross-country structural differences in labour market institutions; the relationships between the degree of centralization in collective bargaining levels and economic performance. Our hypothesis suggests a proposition for this:

Proposition 4

There will be neither positive (e.g., the corporatist hypothesis) nor negative (e.g., the liberal-pluralist hypothesis) linear correlations between the structure of labour market institutions and economic performance.

Proposition 4 is largely due to the interactions of competitive pressure and structural conditions that determine cross-country differences in economic performance. Hence, our competitive pressure hypothesis departs from the four established hypotheses discussed in chapter 2. At best, our hypothesis implies a *non-linear relationship between the structural differences and economic performance across countries.*

Data from seventeen O.E.C.D. economies are studied over the last three decades: from 1961 to 1989. Countries are chosen based on the degree of centralization in collective bargaining levels, see e.g., Calmfors and Driffill (1988). There are five centralized economies: Austria, Norway, Sweden, Denmark, and Finland. Five intermediate countries: Germany, Netherlands, Belgium, New Zealand, and Australia. And seven decentralized economies: France, U.K., Italy, Japan, Switzerland, U.S.A., and Canada.

As an indicator of competitive pressure from international product markets, we employ the level of, and percentage changes in, import penetration ratios[3]. Import penetration is based on O.E.C.D (1990) data for cross-country comparisons. We use two groups of economic performance indicators: one for the traditional macro-economic performance and the other for the manufacturing sector. For the former group, we have the standardized unemployment rate and annual changes in GDP deflator drawn from Layard *et al.* (1991). GDP growth rates are calculated using data from O.E.C.D. (1990). Additionally, annual percentage changes in real GDP *per capita* and consumer price index are employed. For the manufacturing sector, annual percentage changes are used for real hourly wages, employment, real value-added and real value-added per employee, and producer price index (O.E.C.D., 1990).

We examine the simple and rank correlations between these indicators of competitive pressure and economic performance. Rank correlations are used to analyze the potential effects of ordinal differences in both indicators. For unemployment, we also employ multiple regression techniques, including the indicator of competitive pressure. To examine combined impacts, Multiple Canonical Correlation methods are employed for

[3] Import penetration is defined as total imports divided by total domestic supply (imports plus domestic production). For a detailed reason for this indicator, see chapter 4 and also Pearson and Ellyne (1985).

separate sets of indicators[4]. Our empirical studies are undertaken on a yearly bases over time within an economy. For comparative purpose signs and sizes of correlation coefficients are compared across different groupings of countries .

4. COMPETITIVE PRESSURE AND VARIATIONS IN ECONOMIC PERFORMANCE OVER TIME

4.1 Proposition 1: The intensity of competitive pressures is negatively related to unemployment and inflation

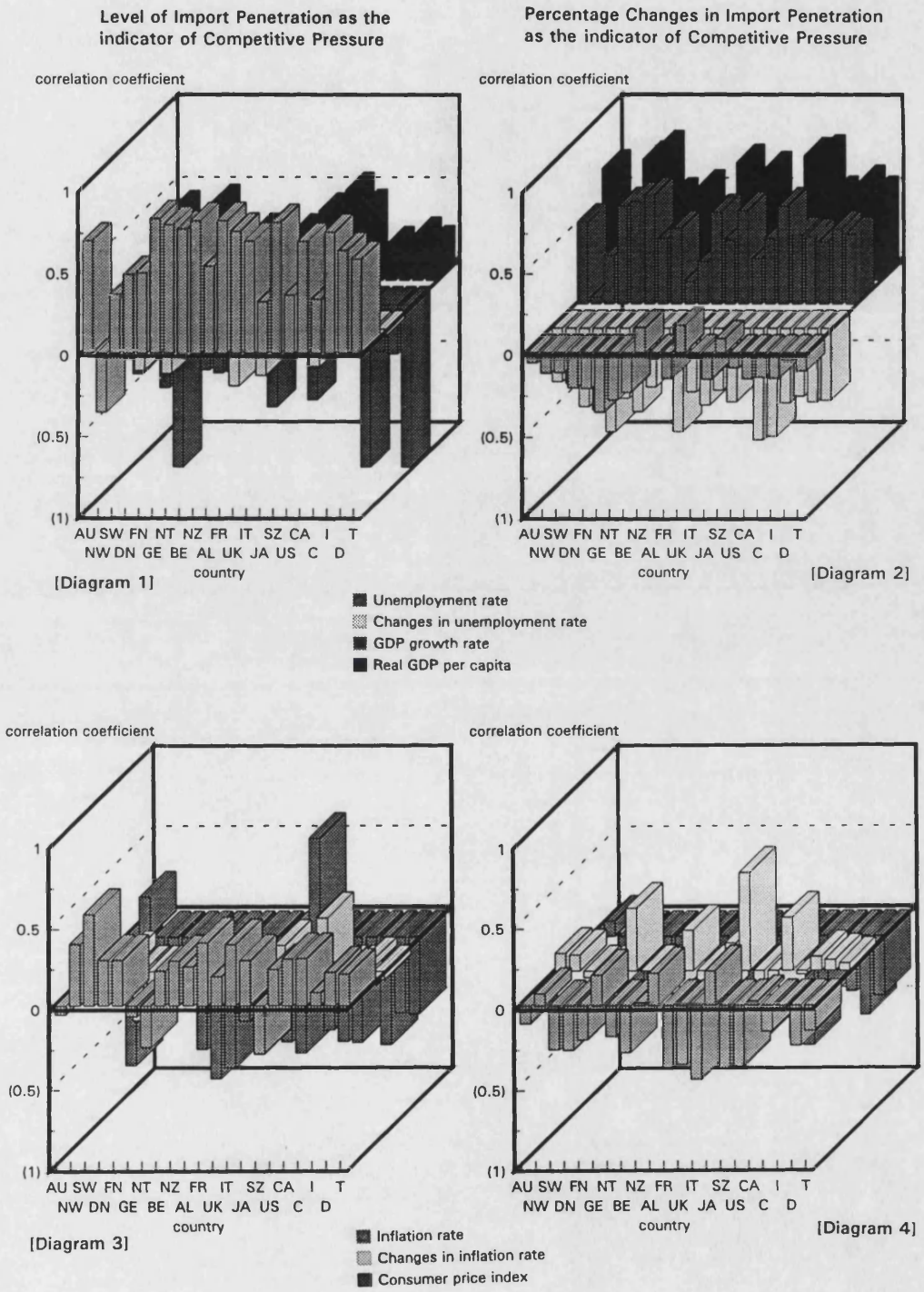
Our competitive pressure hypothesis suggests that increased competition would, on average, force employers and workers to change their bargaining strategies, which results in more flexible and consensus-prone labour relations. This reduces conflict and increases production. In turn, increased production may encourage managers to maintain and/or increase their employment levels. Existing workers tend not to risk their job security by demanding excessive wage increases but they do sometimes engage in concession bargaining. Thus, Proposition 1 follows: "The intensity of competitive pressure is negatively related to unemployment and inflation"

We test this Proposition against data from seventeen O.E.C.D. countries over the period of 1961-89. Five economic performance indicators are correlated with the level of, and percentage changes in, import penetration, for each country: (i) standardized unemployment rates and (ii) their annual changes; (iii) inflation rates (measured by changes in GDP

[4] Canonical correlation analysis is employed to study relationships between two variable sets when each set consists of at least two variables. Some of the research questions that can be addressed using this analysis are as follows: (i) To what extent can one set of two or more variables be predicted or explained by another set of two or more variables? (ii) What contribution does a single variable make to the explanatory power of the set of variables to which the variable belongs? (iii) To what extent does a single variable contribute to predicting or explaining the composite of the variables in the variable set to which the variable does not belong? (iv) What different dynamics are involved in the ability of one variable set to explain in different ways different portions of the other variable set? (v) What relative power do different canonical functions have to predict or explain relationships? (vi) How stable are canonical results across samples or sample subgroups? (vii) How closely do obtained canonical results conform to expected canonical results? For a full explanation of canonical correlation analysis, see e.g., Thompson (1984).

Here we focus on the first question of these research possibilities; i.e., (i) how the combined indicator of the level and percentage changes in import penetration predicts or explains various economic indicators, and (ii) how much of the variations of economic performances can be explained by the composite variable of competitive pressure.

Figure 5.4 Cross-country Comparisons of Simple Correlation Coefficients between Time-Series Variations in Competitive Pressure and Economic Performance (I)
: Level & Changes in Unemployment and Inflation Rates, GDP Growth Rate, Real GDP per capita and Consumer Price Index



Notes:

(1) Letters in the horizontal line stand for seventeen countries from Austria to Canada in decreasing order of centralization: Austria (AU), Norway (NW), Sweden (SW), Denmark (DK), Finland (FN), Germany (GE), Netherlands (NT), Belgium (BE), New Zealand (NZ), Australia (AL), France (FR), United Kingdom (UK), Italy (IT), Japan (JA), Switzerland (SZ), United States of America (US), Canada (CA).

(2) 'C, I, and D' in the horizontal line indicate unweighted average for country groups of centralized (AU, NW, SW, DK, FN), intermediate (GE, NT, BE, NZ, AL), decentralized (FR, UK, IT, JA, SZ, US, CA), respectively. And 'T' for the unweighted average of all seventeen economies.

(3) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

deflator); (iv) changes in inflation rates; (v) annual percentage changes in consumer price index. Rank and simple correlation coefficients tend to support this proposition.

As generally accepted, the level of import penetration shows strongly positive correlations with unemployment levels over time, and also with inflation levels, albeit slightly weaker (see figure 5.4, diagram 1). However, percentage changes in import penetration exhibit consistently negative correlations with unemployment levels and changes, with three exceptions: particulary strong significance with changes in unemployment levels over time, but less consistent with the inflation levels and changes (see figure 5.4, diagram 3). Figure 5.4 gives a striking contrast between the effects of import penetration levels and their percentage changes on unemployment and inflations (compare diagrams 1 & 2 with 3 & 4, respectively). Thus, time-series variations of economic performance show that percentage changes in import penetration tend to generate expected pressure on workers and employers suggested by our theory. More detailed expositions will follow.

UNEMPLOYMENT

From simple and rank correlation analyses[5], the level of import penetration is highly correlated with the increase in the level of unemployment rates, with strong statistical significance in most countries except Denmark and Japan. The size of simple correlation coefficients shows that the level may have relatively less effect on increasing unemployment in the highly-centralized economies. Higher percentage changes in import penetration seems to exert decreasing pressure on unemployment in most countries except New Zealand, U.K. and Switzerland. Unweighted average marginal effects across country groupings are least in decentralized economies (compare C, I, & D in figure 5.4, diagram 2). All seventeen O.E.C.D. countries show negative correlations with annual changes in unemployment rates. Marginal effects are weakest in intermediate economies, see figure 5.4. diagram 2.

[5] For more on these results, see Appendix IV.

Table 5.1 Multiple Regression Results between Competitive Pressure and Unemployment Rates

	Constant	Import Penetration		Inflation	Adjusted	
		Level	% changes	(% changes)	R^2	Prob
Austria	-1.23	14.3	-0.02	-0.42	0.44	0.0005
	(0.098)	(0.000)	(0.685)	(0.281)		[0.830]
Norway	5.66	-12.9	-0.00	-0.09	0.06	0.2240
	(0.005)	(0.062)	(0.986)	(0.480)		[0.389]
Sweden	-0.24	8.6	-0.03	-0.40	0.19	0.0439
	(0.794)	(0.034)	(0.328)	(0.076)		[0.650]
Denmark	-12.3	69.2	-0.27	-1.96	0.22	0.0249
	(0.202)	(0.068)	(0.148)	(0.344)		[0.861]
Finland	-6.13	46.9	-0.14	-1.01	0.33	0.0042
	(0.075)	(0.006)	(0.033)	(0.122)		[0.567]
Germany	-7.32	56.4	-0.12	-0.38	0.67	0.0001
	(0.000)	(0.000)	(0.343)	(0.595)		[0.771]
Netherlands	-16.0	64.4	-0.24	-0.76	0.60	0.0001
	(0.002)	(0.000)	(0.258)	(0.317)		[0.832]
Belgium	-18.4	63.0	-0.33	-1.35	0.60	0.0001
	(0.000)	(0.000)	(0.100)	(0.259)		[0.810]
New	-13.8	66.7	-0.08	0.02	0.67	0.0001
Zealand	(0.000)	(0.000)	(0.054)	(0.851)		[0.647]
Australia	-15.8	141.4	-0.16	-0.31	0.38	0.0019
	(0.004)	(0.000)	(0.018)	(0.728)		[0.7041]
France	-8.70	82.6	-0.07	-3.38	0.70	0.0001
	(0.000)	(0.000)	(0.408)	(0.024)		[0.755]
U.K.	-13.0	101.5	-0.26	-1.71	0.61	0.0001
	(0.000)	(0.000)	(0.135)	(0.029)		[0.658]
Italy	-2.00	41.4	0.04	-1.36	0.56	0.0001
	(0.170)	(0.000)	(0.312)	(0.009)		[0.614]
Japan	0.20	15.8	-0.02	-0.08	0.07	0.2001
	(0.811)	(0.056)	(0.313)	(0.528)		[0.877]
Switzerland	-3.26	17.6	0.04	-0.08	0.64	0.0001
	(0.000)	(0.000)	(0.198)	(0.155)		[0.619]
U.S.	4.00	32.0	-0.04	-2.43	0.34	0.0036
	(0.001)	(0.043)	(0.391)	(0.003)		[0.466]
Canada	-1.61	51.6	-0.11	-0.29	0.58	0.0001
	(0.302)	(0.000)	(0.156)	(0.033)		[0.628]

Notes: (1) Inflation is percentage changes from the previous years. For Canada, instead of this, changes in inflation rates are used.

(2) [] in the second row of each country means the probability of rejecting the significance of coefficients.

(3) 'Prob' at the last column stands for the probability of rejecting the null hypothesis that F-value for the regression model is too low to be appropriate. [] in the same column indicate the degree of first-order auto-correlations.

When we estimate simple Phillips-type equations introducing the level and changes in import penetration as independent variables, we can draw

the same implications as for the simple and rank correlations[6]. As common sense suggests for, the level of import penetration increases unemployment (except in the case of New Zealand). Furthermore, in every country except Italy, changes in import penetration seem to have depressionary pressure on changes in unemployment rates, although the statistical significance is not high. Marginal effects of changes in import penetration are largest in the medium-centralized countries and smallest in the decentralized economies (see table 5.1). In sum, economies facing higher changes in import penetration experience less increase (or even a decrease) in unemployment. Thus, our theory is supported since the intensity of competitive pressure tends to be negatively related to unemployment.

INFLATION

The level of import penetration is highly correlated with the increase in inflation. This is less consistent than in the case for unemployment. Percentage changes in import penetration ratios seem to have some significant deflationary pressure on changes in inflation. The effects are less consistent across country groupings but with greater statistical significance than in the case for unemployment. Deflationary pressures appear to be most consistent among the highly-centralized economies and least so among the medium-centralized economies. Decentralized economies show stronger negative relationships, but with less consistency across countries (see Diagram 4 of figure 5.4). Changes in inflation rates tend to be positively correlated with percentage changes in import penetration except for a few economies. Marginal effects between country groupings have the same pattern as those of inflation rates.

Thus, greater competitive pressure does not seem to have consistently negative effects on inflation rates and their changes. However, with consumer price inflation, both indicators of competitive pressure show relatively strong negative correlations as expected, and these relations seem to be consistent across countries (see figure 5.4, diagrams 3 and 4). Hence,

[6] The same implications stand although the model's explanatory powers are not so good for time-series variations in unemployment, and in most of the cases, shows first-order auto-correlations. The R^2 is improved significantly from 0.44 to 0.88 when we include quadratic and interactive terms for the independent variables.

it is reasonable to say that competitive pressure does engender relatively significant deflationary pressure on inflation rates in both centralized and decentralized economies.

4.2 Proposition 2: Competitive pressure is positively related to gross domestic production and productivity growth

Using similar logic as for Proposition 1, our competitive pressure hypothesis predicts that when faced with severe competition, labour relations behaviour becomes more flexible and cooperative so that production and productivity growth rates may be increased. Empirical studies for the seventeen economies show strong support for Proposition 2.

Import penetration levels are negatively related with GDP and productivity growth rates, as commonly expected. Percentage changes of import penetration, however, show positive relations. These correlations are statistically significant and also consistent across countries. Competitive pressure tends to have positive effects on GDP growth rates, see Diagrams 1 & 2 of figure 5.4.

Therefore, on time-series variations in macro-economic performance competitive pressure from international competition seems to have potentially two important influences:

(i) Levels of import penetration are positively related to unemployment and inflation, and negatively to GDP growth rates, as one commonly expects;

(ii) Percentage changes in import penetration work in an opposite way to their levels, which, in turn, implies that they affect collective bargaining behaviour in a systematic manner as our theoretical framework suggests.

It follows from the second influence that increased competitive pressure from international competition might constrain workers as well as employers during collective bargaining. Thus, increased import penetration does not necessarily result in more job losses and less domestic production as usually believed. Perceived correctly - as a potential external threat to labour management relations - employers and unions might co-operate and mutually agree concessions on wages, employment, and industrial relations

practices. However the partners' behaviour might reasonably also be affected by the actual structure of bargaining. For instance: (i) Decreasing effects on unemployment seem to be stronger in the high to medium-centralized countries; (ii) Deflationary pressures are least powerful in the intermediate economies; and (iii) Strongest increasing pressures on GDP growth rates appear in the decentralized economies.

Thus, structural differences in labour market institutions seem to have a significant influence, but none of the four established hypotheses can consistently explain these variations in economic performance within an economy. Rather there appears to be complicated interactions between structural differences and changes in product market conditions like competitive pressure. These interactions can be more clearly defined for the manufacturing sector. This will occupy the Proposition 3. Before examining this proposition, the next sub-section will revisit Propositions 1 and 2 applying multivariate analyses.

4.3 Multivariate analyses of Propositions 1 and 2

It would be interesting to see if the above implications drawn from univariate and marginal analyses can be sustained in a multivariate framework. We perform Multivariate Canonical Correlation analysis, for each country for the period 1961-89, between competitive pressure (the level and percentage changes in import penetration) and macroeconomic performance (unemployment, inflation and GDP growth rates).

With the exception of Norway, the Canonical correlation model fits extremely well and explains between 10 and 50 per cent of the variance in macro-economic performance. In five of the seventeen countries: Denmark, Finland, Japan, U.S., and Canada, competitive pressure appears to have the expected effects on all three chosen indicators of macroeconomic performance, albeit not very strong. All of intermediate-centralized economies exhibit decreases in their GDP growth rates and significant increases in their unemployment rates. Both of these are associated with increased competition. Centralized and decentralized countries reveal mixed effects. However, centralized economies on the whole are the best performers in terms of adjustments to competitive pressure. Across all three indicators, three out of five countries show decreases in unemployment and

Table 5.2 Canonical Correlation Analyses between Competitive Pressure and Macroeconomic Performance: Within-country Variations

	Growth	Inflation	Unemploy -ment	CC	F	R
Austria	-0.558	-0.021	0.680	0.78	0.0001	0.258
Norway	0.179	0.380	-0.373	0.49	0.3335	0.105
Sweden	-0.666	0.697	0.413	0.78	0.0007	0.367
Denmark	0.711	-0.340	-0.490	0.78	0.0002	0.302
Finland	0.572	-0.383	-0.538	0.74	0.0001	0.254
Germany	-0.474	-0.090	0.835	0.88	0.0001	0.310
Netherlands	-0.490	-0.183	0.788	0.83	0.0001	0.298
Belgium	-0.524	-0.287	0.789	0.85	0.0001	0.326
New Zealand	-0.182	0.300	0.842	0.86	0.0001	0.277
Australia	-0.296	0.128	0.662	0.67	0.0036	0.181
France	-0.766	0.484	0.808	0.89	0.0001	0.492
U.K.	-0.109	0.330	0.744	0.83	0.0001	0.225
Italy	-0.560	0.550	0.606	0.80	0.0001	0.328
Japan	0.711	-0.171	-0.387	0.73	0.0005	0.228
Switzerland	-0.160	-0.376	0.808	0.82	0.0001	0.273
U.S.	0.631	-0.456	-0.214	0.64	0.0078	0.217
Canada	0.704	-0.286	-0.697	0.82	0.0001	0.354

Note: CC = Canonical correlation coefficients
F = Wilks' Lambda
R = the standardized variance explained by the first canonical variable of the level and percentage changes in import penetration ratios.

inflation rates and increases in GDP growth rates. Thus, from the multivariate correlations, the U-curve hypothesis seems to be favoured, at least for the within-economy time-series variations in macro-economic performance. High centralization in collective bargaining structures seem more helpful in reducing costs of the adjustments required from increased competitive pressure, whereas the intermediate structures appear to be more costly.

It should also be noted that when the level and percentage changes in import penetration ratios are combined to increase the relationship with economic performance indicators, the expected effects of competitive pressure tend to be weaker than when using only their (percentage) changes. One of the reasons for this might be that the combined canonical variable of competitive pressure assigns more weight to the level of import penetration ratios, which seems to be influenced in an opposite way to their

changes, in order to increase relationships[7].

Even if we employ another set of economic performance indicators (Real GDP *per capita* and Consumer price inflation), Propositions 1 and 2 can still survive. Except for Norway and New Zealand, the Canonical correlation model fits extremely well, and explains 10-60 percent of the variance in macro-economic performance. In most of medium to decentralized countries, competitive pressure seems to have strong expected effects on economic performance. When the level and percentage changes in import penetration ratios are combined, the effects of competitive pressure tend to be stronger in this case than when using only their percentage changes.

---

[7] Coefficients of the Canonical variable for competitive pressures are:
defined by A*IPR + B*δIPR
where IPR = level of import penetration
δIPR = percentage changes in import penetration

Coefficients	A for IPR	B for δIPR
Australia	+1.19	-0.80
Austria	+0.96	-0.29
Belgium	+0.94	-0.28
Canada	+1.01	-0.24
Denmark	-0.69	+0.74
Finland	-0.71	+0.86
France	+0.93	-0.31
Germany	+0.95	-0.14
Italy	+0.66	-0.49
Japan	-0.97	+0.49
Netherlands	+0.91	-0.27
Norway	+0.98	+0.09
New Zealand	+1.09	-0.29
Sweden	+0.94	-0.60
Switzerland	+0.99	+0.20
U.K.	+1.08	-0.37
U.S.A.	-0.33	+1.00

In most of the cases, percentage changes in import penetrations (δIPR) had a role of decreasing pressure and their level (IPR) of increasing pressure. For those countries having expected effects of competitive pressure, percentage changes of import penetration had a role of increasing pressure and their levels of decreasing pressure. In Norway and Switzerland, both had increased pressure.

Table 5.3 Canonical Correlation Analyses between Competitive Pressure and Macroeconomic Performance: Within-country Variations of Productivity and Consumer Price Inflation

	Real GDP *per capita*	CPI	CC	F	R
Austria	0.344	0.773	0.83	0.0001	0.358
Norway	0.456	0.242	0.58	0.2392	0.133
Sweden	0.106	0.472	0.61	0.0412	0.117
Denmark	0.780	-0.350	0.78	0.0096	0.365
Finland	0.804	-0.263	0.81	0.0066	0.358
Germany	0.060	-0.697	0.72	0.0075	0.245
Netherlands	0.269	-0.881	0.92	0.0001	0.424
Belgium	0.455	-0.817	0.87	0.0002	0.438
New Zealand	0.308	-0.514	0.54	0.1672	0.179
Australia	0.046	0.405	0.53	0.2500	0.083
France	0.682	-0.559	0.78	0.0025	0.389
U.K.	0.393	-0.717	0.72	0.0219	0.334
Italy	0.635	-0.723	0.90	0.0001	0.463
Japan	-0.268	0.730	0.76	0.0083	0.303
Switzerland	0.643	-0.805	0.92	0.0001	0.531
U.S.	0.774	-0.796	0.89	0.0002	0.617
Canada	0.731	0.073	0.85	0.0001	0.270

Note: CPI = Consumer Price Index.
CC = Canonical correlation coefficients
F = Wilks' Lambda
R = the standardized variance explained by the first canonical variable of the level and percentage changes in import penetration ratios.

As a whole, decentralized countries seem to be the most influenced by competitive pressure[8].

From the two sets of experiments on the relationships between competitive pressure and macroeconomic indicators, we can understand how sensitive the structural hypotheses are by examining different sets of variables. We can conjecture that structural differences could have different impacts on various economic variables. The most obvious conclusion drawn from this is that there might be significant roles played by competitive pressure on within-country variations in macroeconomic performance and consequent changes in collective bargaining behaviour: hence, (i) less increase or decrease in unemployment and inflation rates; (ii) less decrease or increase in GDP and productivity growth rates.

---

[8] Coefficients of the Canonical variable for competitive pressures are:
defined by A*IPR + B*δIPR
where IPR = level of import penetration
δIPR = percentage changes in import penetration

Coefficients	A for IPR	B for δIPR
Australia	-1.15	+0.53
Austria	-0.98	+0.47
Belgium	+0.79	+0.39
Canada	-0.70	+0.97
Denmark	-0.38	+1.18
Finland	+0.06	+0.97
France	+0.27	+0.84
Germany	+1.00	+0.00
Italy	+0.47	+0.64
Japan	+1.18	-0.53
Netherlands	+0.88	+0.23
Norway	+1.07	-0.23
New Zealand	+0.72	+0.41
Sweden	-1.08	+0.16
Switzerland	+0.69	+0.65
U.K.	+0.67	+0.45
U.S.A.	+0.44	+0.76

4.4 Proposition 3: Intense competitive pressure will show positive correlations with employment, real value-added and labour productivity in the manufacturing sector

Generally speaking, industrialized economies are concerned about the effects of import penetration on employment and labour relations, particularly in the manufacturing sector. Indeed, structural hypotheses are more relevant to adjustments in the manufacturing sector. However, since manufacturing and services are inextricably linked and since unionization in the latter sector is growing, conventional macro-indicators should show similar consequences in both sectors. Thus, Proposition 3 follows from propositions 1 and 2 above.

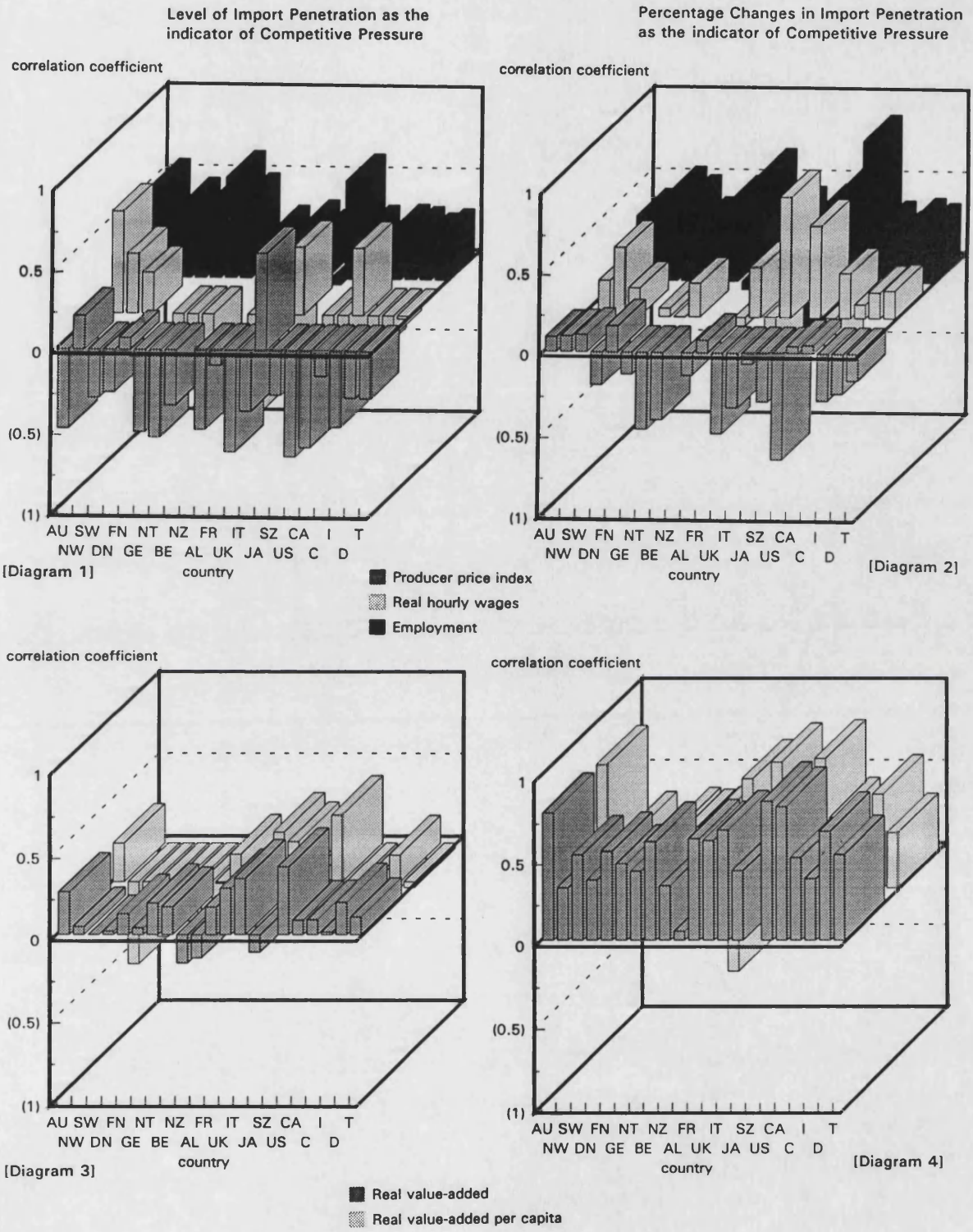
Five performance indicators of the manufacturing sector are chosen here from the O.E.C.D. Historical Statistics for the period of 1973-89: (i) Real hourly wages; (ii) Producer price index; (iii) Employment; (iv) Real value-added; and (v) Real value-added per person employed[9]. The first two indicators capture changes in wage and price-setting behaviour. The other three grasp the following respectively: (i) Changes in employment; (ii) Changes in the overall pie for dividend bargaining; and (iii) Changes in labour productivity[10]. Except for real hourly wages, the other four indicators for manufacturing economic performance supports Proposition 4. Similar to the other propositions, percentage changes in import penetration show stronger correlations than import penetration levels. When faced with intensified competition from abroad, most of the seventeen countries show less decrease or increase in employment, real value-added, and labour productivity in their manufacturing sectors (see figure 5.5).

In centralized countries, competitive pressure significantly increases real wages in manufacturing. For medium-centralized economies, the level of import penetration seems to decrease wages, whereas percentage changes in import penetration increases them (see figure 5.5, diagrams 1 and 2). In decentralized countries the effects are mixed. For instance, in

[9] See appendix tables for the data. These are based on 1985 exchange rates and prices. The data indicate annual percentage changes of each variable.

[10] Manufacturing labour productivity might reflect changes in wages and competitiveness. Also, if indirect, productivity could be increased from other aspects of labour management relations such as new technology agreements and the reduction in restrictive work practices.

Figure 5.5 Cross-country Comparisons of Simple Correlation Coefficients between Time-Series Variations in Competitive Pressure and Economic Performance (III) : Employment, Real Value-Added, Labour Porductivity, Real Hourly Wages, and Producer Price Index in the Manufacturing Sector



Notes:

(1) Letters in the horizontal line stand for seventeen countries from Austria to Canada in decreasing order of centralization: Austria (AU), Norway (NW), Sweden (SW), Denmark (DK), Finland (FN), Germany (GE), Netherlands (NT), Belgium (BE), New Zealand (NZ), Australia (AL), France (FR), United Kingdom (UK), Italy (IT), Japan (JA), Switzerland (SZ), United States of America (US), Canada (CA).

(2) 'C, I, and D' in the horizontal line indicate unweighted average for country groups of centralized (AU, NW, SW, DK, FN), intermediate (GE, NT, BE, NZ, AL), decentralized (FR, UK, IT, JA, SZ, US, CA), respectively. And 'T' for the unweighted average of all seventeen economies.

(3) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

France, Italy and Canada, competitive pressure has decreasing effects on real hourly wages, while in the other economies competitive pressure has increasing effects. Regarding annual changes in the producer price index of the manufacturing sector: in medium-centralized and decentralized economies, competitive pressure tends to decrease producer prices. Centralized economies show mixed effects. Only Denmark has experienced decreasing producer prices (see figure 5.5, diagrams 1 & 2). Thus we can reasonably suggest that even in those countries experiencing increases in real hourly wages, producer prices could be lowered by (i) greater increases in labour productivity and/or (ii) eliminating restrictive work practices. The latter could be initiated by changes in bargaining behaviour in response to growing competitive pressure. Is this the case?

In centralized economies, competitive pressure increases real value-added in manufacturing. For the other economies, the levels of import penetration seem to give mixed effects but their (percentage) changes tend to increase it. The size of the marginal effects seem to be greater in decentralized countries, and least in intermediate economies (see figure 5.5, diagrams 3 & 4).

For labour productivity in manufacturing, the effects are less consistent than for the case of real value-added. In decentralized economies, competitive pressure increases real value-added per person employed in manufacturing with stronger marginal effects. For medium-centralized economies, the level of import penetration seems to give mixed effects but their percentage changes increase it. The centralized economies show mixed effects: i.e., Norway and Denmark experience decreases in productivity. Contrary to commonly held beliefs, competitive pressure tends to be positively related with changes in manufacturing employment, albeit slightly. Marginal effects are greater in centralized and decentralized economies (see figure 5.5, diagrams 1 & 2).

In general, the Canonical correlation models do not fit well. They only explain 10-40 per cent of the variance in manufacturing-economic performance. Only in France, competitive pressure appears to have the expected effects on all the indicators of manufacturing economic performance, although not very strong. Otherwise, similar implications can be drawn from the multivariate analyses. However, when the level and

percentage changes in import penetration ratios are combined, the effects of competitive pressure tend to be weaker than when using them in separate[11].

[11] Coefficients of the Canonical variable for competitive pressures are:
defined by A*IPR + B*δIPR
where IPR = level of import penetration
δIPR = percentage changes in import penetration

Coefficients	A for IPR	B for δIPR
Australia	+0.42	+0.73
Austria	-0.01	+1.00
Belgium	+0.18	+0.91
Canada	-0.35	+1.05
Denmark	+0.44	+0.66
Finland	-0.19	+1.09
France	+0.97	+0.05
Germany	+1.03	-0.21
Italy	-0.53	+1.23
Japan	+0.91	+0.18
Netherlands	+0.94	+0.13
Norway	+1.05	-0.14
New Zealand	-0.84	+1.13
Sweden	-0.85	+1.18
Switzerland	+0.90	+0.32
U.K.	+0.52	+0.65
U.S.A.	+0.62	+0.54

Table 5.4 Canonical Correlation Analyses between Competitive Pressures and Economic Performance in the Manufacturing Sector

	Real Wages	Employ ment	Value Added	VA per capita	Producer Prices	CC	F	R
Austria	na	-0.10	0.78	0.75	0.10	0.81	0.0092	0.296
Norway	0.61	0.54	-0.03	-0.50	0.34	0.71	0.3560	0.206
Sweden	0.19	0.26	0.62	0.60	0.38	0.76	0.1939	0.200
Denmark	0.20	0.56	0.38	-0.29	-0.28	0.72	0.5046	0.132
Finland	na	0.49	0.57	0.21	0.17	0.62	0.4582	0.161
Germany	-0.27	0.42	-0.04	-0.32	-0.54	0.85	0.0619	0.129
Netherlands	-0.34	0.58	0.27	-0.14	-0.47	0.84	0.0295	0.154
Belgium	0.14	0.52	0.58	0.34	-0.48	0.82	0.0956	0.194
New Zealand	na	0.02	0.55	0.37	na	0.69	0.4364	0.146
Australia	na	0.55	-0.02	-0.50	-0.31	0.82	0.0571	0.163
France	-0.60	0.11	0.20	0.20	-0.08	0.91	0.0006	0.092
U.K.	0.42	0.22	0.54	0.45	-0.58	0.69	0.5338	0.212
Italy	-0.24	-0.50	0.65	0.81	-0.22	0.93	0.0001	0.287
Japan	0.52	0.05	-0.02	-0.02	0.63	0.92	0.0003	0.134
Switzerland	na	0.61	na	na	-0.35	0.79	0.0276	0.247
U.S.	0.32	0.53	0.71	0.68	-0.81	0.97	0.0001	0.401
Canada	-0.18	0.84	0.83	0.47	0.26	0.96	0.0001	0.344

Note: CC = Canonical Correlation Coefficients
F = Wilks' Lambda
R = standardized variance explained by the first canonical variable of the level and percentage changes in import penetration ratios.

5. SUMMARY AND CONCLUSION

In this section we summarize the arguments derived from our empirical tests of time-series variations by referring to our theoretical framework outlined in chapter 4. With a few exceptions, most of the O.E.C.D. countries time-series changes in unemployment rates are positively related with the level of import penetration and related negatively to their percentage changes. Economies with higher import penetration may be assumed to suffer more in terms of employment. This is mainly due to required structural adjustment. However, increased competitive pressure from higher percentage changes in import penetration would have some substantial influences on the strategic responses of employees as well as employers. In turn, these might lead to changes in collective bargaining behaviour which would then become a countervailing force to those negative impacts.

For example, it can be inferred that sectors directly affected by foreign competition might respond by: (i) increasing job-losses and experiencing consequential resistance from workers and unions; (ii) facing further increases in import penetration, which raises concern among workers and employers about their survivability. This fear may restrain labour shedding and increase workers' concessions on cost-reducing measures such as pay-cuts, short-time working, removing restrictive work practices, and introducing new production technologies, etc.; (iii) when moderately hit by foreign competition employers might ask for workers' concessions on labour relations as well as wages in return for promises of security of employment[12]. These pressures easily spill over to the non-affected sectors with higher changes in import penetration, which may have possibly contributed to reducing unemployment at an aggregate economy level. Similar reasoning can be found in Ingram (1991): '... Initially, companies had to cut costs and increase productivity in the face of falling demand for output. Inefficient plant had to be closed and capacity reduced, resulting in a sharp increase in redundancies. Since these immediate responses to the recession in the early 1980s, companies had to continue to focus attention on maximising the effectiveness with which they used their resources, not least labour, and on maintaining a competitive position in their product market. The effect of increased competition in the product market has therefore reinforced the need for companies to look continually for possible improvements in their organisation of working practices. ...' Ingram (1991; pp.3-4).

This explanation can be, even if partly, confirmed by the relationship between GDP growth and competitive pressure: GDP growth is negatively related with the level of import penetration, but positively with their percentage changes. Contrary to the generally accepted view, in every O.E.C.D. country percentage changes of foreign competition exhibit positive

[12] Similar arguments can be found in numerous case studies. For example, one of the most accepted views of the effects of recession on collective bargaining behaviours is: 'With European unemployment topping over 12 million and unemployed in the U.S. numbering around 10 million, job security has overtaken pay levels as the number one priority of union negotiators. In the U.K. and other European countries, this trend is illustrated by pay standstill and pay settlements below the rate of inflation. In the U.S., however, key manufacturing sectors are in crisis, and employees have gone even further to take pay cuts to preserve their jobs and keep the company afloat.' I.L.O. (1984, pp.123-124)

relationships. Also without exception, real GDP *per capita* is positively related with competitive pressure. Hence, when faced with higher foreign competition, employers in most O.E.C.D. economies seem to have made the greatest effort in increased productivity while minimizing layoffs. They achieve this by inducing concessions from workers and unions and rationalising productive operations.

We might expect that these effects would be more prominent in manufacturing since it has been the most affected by international competition. Further, in many O.E.C.D. countries collective bargaining results of major industries such as automobile and steel, are more or less followed by other sectors in the economy. Annual percentage changes in manufacturing employment show positive relationships with the level of, and changes in, import penetration with fewer exceptions in the former case. The reasons are clearer when we examine employment together with other related indicators such as real wages, producer prices, real value-added and real value-added *per capita* (see table 5.5).

From the simple correlations with percentage changes in import penetration, regardless of centralization, most O.E.C.D. countries exhibit positive signs for manufacturing performance indicators with the exception of producer prices. In only two decentralized countries - France and Canada, changes in competitive pressure seems to be negatively related with real wages and positively with employment. Netherlands and Italy show negative correlations in both cases. In the six other O.E.C.D. economies, when faced with higher competitive pressure, manufacturing employment tends to have suffered less even with greater increases in real hourly wages in manufacturing. Meanwhile, time-series variations in manufacturing value-added are positively correlated with competitive pressure without exception. Furthermore, labour productivity (real value-added per worker employed in manufacturing sector) is also positive, except in the cases of Norway, Denmark, and Australia. Therefore, the influence of competitive pressure on collective bargaining behaviour is supported.

In other words, in most of the O.E.C.D. countries, higher competitive pressure seems to make workers' and unions' attitudes more cooperative and/or concessionary. Also they tend to induce employers to make more effort to increase productivity by means other than shedding labour. There

Table 5.5 *The Effects of Competitive Pressure on Annual Percentage Changes in Economic Performance Indicators of the Manufacturing Sector: a summary*

	Real Wages	Employment	Producer Prices	Real Value Added	Real VA *per capita*
Centralized Economies	+	+ [AU]	+ [DK]	+	+ [NW,DK]
	+	+ [AU]	+ [DK]	+ [NW]	+ [NW,DK]
Intermediate Economies	+ [NT]	+ [NT,NZ]	-	+	+ [AL]
	- [BE]	+	-	+ [GE,AL]	- [BE,NZ]
Decentralized Economies	+ [FR,IT,CA]	+ [IT]	- [FR,CA]	+	+
	- [FR,IT,CA]	+ [IT,JA]	- [JA,CA]	+ [JA]	+ [JA]

Notes: (1) Signs in the second row of each group are from the multivariate Canonical correlations with the level of and percentage changes in import penetrations as indicators of competitive pressure. Others from simple correlations with percentage changes in import penetrations.

(2) [] for exceptions. Country abbreviations should be read;

AU: Austria	NW: Norway	SW: Sweden
DK: Denmark	FN: Finland	GE: Germany
NT: Netherlands	BE: Belgium	NZ: New Zealand
AL: Australia	FR: France	UK: U.K.
IT: Italy	JA: Japan	SZ: Switzerland
US: U.S.	CA: Canada	

is no significant changes in those effects from the Multivariate Canonical correlation analysis where: (i) Netherlands, Germany and Japan are added to the neo-classical paradigm in terms of real wages and employment; (ii) exceptions in real value-added and labour productivity are made.

Thus, our *competitive pressure hypothesis* is empirically supported by the relationship between time-series variations of economic performance and indicators of competitive pressure[13]. Over the period 1961-89, contrary to conventional wisdom, economic indicators seem to improve with increases in import penetration. At least, in most of the countries analyzed, more intense competitive pressure is related with economic performance as follows: (i) Less increase in unemployment and inflation rates; (ii) Less

[13] We do not however infer causality.

decrease in production and productivity growth rates; (iii) Less decrease in manufacturing employment, manufacturing real value-added, and manufacturing labour productivity. Hence, propositions 1, 2 and 3 in section three, also derived from our competitive pressure hypothesis, are supported by empirical analysis of 17 O.E.C.D. economies.

With regard to the four established hypotheses discussed in chapter 2, which focus on cross-country differences in the structure of labour market institutions, we tested them by investigating empirical results of our three propositions for three different country groupings: (i) Centralized; (ii) Intermediate; (iii) Decentralized economies. Interestingly, against our data from 17 O.E.C.D. countries the established hypotheses were found wanting. Indeed, definitive support cannot be given to any one of them. This is clear from table 5.6. The U-curve and liberal-pluralist hypotheses are partly verified however. As far as the relationship between competitive pressure and economic performance over time is concerned, a revised U-curve hypothesis tends to be favoured. Namely, economic performance is better in those countries with extremely centralized or decentralized bargaining structures. The latter tends to be more functional compared to the former. So our proposition 4 is partly supported:

"There will be neither positive (e.g., the corporatist hypothesis) nor negative (e.g., the liberal-pluralist hypothesis) linear correlations between the structure of labour market institutions and economic performance."

More on these will be undertaken by direct cross-country studies in the next chapter.

Table 5.6 *How Four Hypotheses on Structural Differences of Labour Market Institutions can be Related with the Effects of Competitive pressure on Economic Performance?*

Favoured Hypothesis by	Simple Correlations	Multivariate Canonical Correlations
Macro-economic indicators		
Unemployment (-)	I>C>D	U-curve (C>D>I)
GDP deflator (-)	D>C>I [RU]	I>D>C [IU]
GDP growth (+)	D>C>I [RU]	D>C>I [RU]
Real GDP per capita (+)	D>C>I [RU]	D>C>I [RU]
Consumer price index (-)	Liberal (D>I>C)	I>D>C [IU]
Manufacturing sector indicators		
Real hourly wages (-/+)	I>D>C [IU]	I>D>C [IU]
Employment (+)	D>C>I [RU]	I>C>D
Real value added (+)	D>C>I [RU]	U-curve (C>D>I)
Real value added per capita (+)	Liberal (D>I>C)	D>C>I [RU]
Producer price index (-/+)	I>D>C [IU]	I>D>C [IU]

Notes: (1) () for expected signs from competitive pressures hypothesis.
(2) C,D, and I are for centralized, decentralized, and intermediately-centralized economy groups.
(3) > for the size difference from the simple average of the relevant correlation coefficients of each economy in the same group.
(4) IU and RU are for 'Inverse-U' and 'Revised-U' hypotheses respectively.

CHAPTER SIX

THE EFFECTS OF COMPETITIVE PRESSURE ON LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE:

A Cross-country Comparative Study

1. INTRODUCTION

In the previous chapter we have shown that time-series variations of economic performance indicators tend to support our competitive pressure hypothesis. Over the period of 1961-89 most of the O.E.C.D. countries have not been hurt too much by increases in import penetration. Simple and rank correlations suggest that higher annual percentage changes in import penetration might have produced pressure on labour relations. Workers and employers may have chosen less aggressive strategies in response to higher competitive pressure. At least, industrial relations processes and outcomes may have become less conflictual and less rigid. On average, these behaviourial changes should have resulted in the following outcomes at an economy level: (i) Less increase in unemployment and inflation rates; (ii) Less decrease in total production and productivity growth rates; and (iii) Less decrease in manufacturing employment, manufacturing real value-added, and labour productivity in manufacturing. Although these correlations do not prove underlying causality of our hypothesis, they display a marked consistency across seventeen O.E.C.D. economies. Thus, they can be interpreted as a partial and an indirect support for the assumed causality between competitive pressure, changes in industrial relations behaviour, and changes in economic performance indicators.

Comparisons of the different country groupings do not lend support to any of the four established hypotheses which focus on cross-country differences in the structure of labour market institutions. Our empirical analysis in the previous chapter favoured a revised U-curve hypothesis. Namely, those countries with extreme-centralized or decentralized bargaining structures tend to show enhanced economic performance in response to competitive pressure. But, unlike the original U-curve hypothesis, the group of decentralized countries are more adaptable than their centralized counterparts.

This chapter will directly examine these cross-country experiences,

and will compare the existing four hypotheses with our own competitive pressure hypothesis. As we noted in chapter two, the four existing hypotheses emphasize the differences in industrial relations structures across countries. The liberal-pluralist and the corporatist arguments tend to favour either decentralized or centralized collective bargaining structures. The so-called U-curve hypothesis lends support to both extreme centralized and decentralized structures, while the interactive argument does not defend any particular form of collective bargaining structure but stresses the interactions between the structure of collective bargaining and other influential factors such as party complexion of governments and the degree of union coverage (see table 6.1). Together these four hypotheses seem to provide a comprehensive set of arguments for the possible relationships between the structure of labour market institutions and macro-economic performance.

Table 6.1 *Four Hypotheses on the Relationship between Cross-country Difference in the Structure of Labour Market Institutions and Macro-economic Performance*

Hypotheses	Main Arguments
Liberal-Pluralist	Economic performance and economic adjustment are better in countries where the scope of both trade unions and governments is highly limited.
Corporatist	Economic performance is better in countries with centralized organizational structures and the mechanism of consensus-prone interplay between interest groups and government.
U-curve	Both heavy centralization and extreme decentralization are conducive to real wage restraint, whereas intermediate degrees of centralization are harmful.
Interactive	There are interactive and conditional relationships between the rate of unionization and the levels of wage bargaining as well as between the party complexion of governments and the level of wage bargaining.

The first three hypotheses have their own theoretical frameworks according to beliefs or disbeliefs in the *invisible hand* of competitive markets. Those disbelieving the *invisible hand* either have developed models of imperfect competition or have tried to incorporate some arguments from other fields of academia. For example, corporatists introduce the concept of "encompassing organizations" from the political science literature to emphasize their internalization of external effects. On the other hand, combining imperfect competition in product and labour markets has resulted in various models of wage setting behaviour, such as monopoly union models, efficiency wage theories, search and mismatch explanations, etc[1]. The interactive hypothesis also does not support the *invisible hand* but in a different sense. Rather than constructing any serious attempt to make a distinctive theoretical framework, Paloheimo (1990) emphasizes plausible non-linear and interactive relationships between explanatory variables.

Our own competitive pressure hypothesis, focusing on industrial relations behaviour, also partly relies on structural differences of labour market institutions. These are assumed to distort workers' and employers' perceptions of competitive pressure. From our theoretical framework developed in chapter four, we found that if labour market structures are highly centralized, the conduct of labour relations may be more cooperative. However, their marginal effect is relatively weaker than that of competitive pressure. Hence, our hypothesis suggests, at best, that centralized economies would be more adaptable to changes in competitive pressure. More generally, our hypothesis proposes that there will be complicated interactions between labour market structures and competitive pressure. Together these act upon behaviourial changes in labour relations. Thus, a corollary of Proposition 4 follows: *Cross-country structural differences may not be the most important factor to explain different experiences of macro-economic performances across countries.*

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[1] One of the most widely accepted models is that of Layard, Nickell and Jackman (1991), which is based on price-setting and wage-setting equations. According to Carlin and Soskice (1990), economists such as Blanchard, Dreze, Layard, Nickell, Rowthorn, Sachs, and Summers developing the "New Keynesian Macroeconomics" which: 'roots macroeconomics in the micro-foundation of imperfectly competitive labour and product markets. Bargaining between unions and oligopolistic employers matches the institutional context of Western European economies, and the approach lies behind the analysis of changing rates of unemployment (NAIRUs) and the persistence of high unemployment in Europe.'

In order to compare the four established hypotheses with our own competitive pressure hypothesis, this chapter will comprise three sections. In section two, we will describe the data and methodologies used in our empirical tests. Section three is devoted to examining the effects of competitive pressure and labour market structural indicators on cross-country differences in economic performance. A major aim of this section is to find if the four propositions of our competitive pressure hypothesis can survive these cross-country empirical studies. Propositions suggested by our own competitive pressure hypothesis are:

Proposition 1

The intensity of competitive pressure is negatively related to unemployment and inflation.

Proposition 2

Competitive pressure is positively related to gross domestic production and productivity growth.

Proposition 3

Intense competitive pressure will show positive correlations with employment, real value-added and labour productivity in the manufacturing sector.

In the last section, we will summarize the major findings and outline some implications.

2. DATA AND METHODOLOGY

Data for competitive pressure and economic performance indicators are the same as those used in the previous chapter. Differences in the structure of labour market institutions will be pursued in two ways. Firstly, we will

employ the centralization and the U-curve indices of Calmfors and Driffill (1988). Table 6.2 shows various indices for the structure of labour market institutions. Except the revised centralization index for the U-curve hypothesis (CD in the first column), indices are closely related with each other. Secondly, we will also use a complementary set of indicators (see the last three columns of table 6.2) which underlie the centralization index. These are borrowed from Layard *et al.* (1991).

Generally speaking, indices of labour market structural differences are based on a few institutional factors. The concept of corporatism seems vaguely to capture the extent to which some broader interests influence the determination of individual wages. Besides the degree of centralization of wage bargaining, the corporatist concept appears to incorporate: (i) The degree of government involvement in wage negotiations; (ii) The existence of 'consensus' between labour and firms with shared perspectives on the goals of economic activity; and (iii) The aims of wage setting systems to obtain lower wages than would otherwise be the case.

The most frequently quoted classification is the Bruno and Sachs' ranking; see column E, table 6.2. This is based on an index involving central union influence on wage setting, employer coordination, shop floor union power, and the presence of works councils within firms. The first three factors are closely related to centralization but the *works council* variable is designed to measure consensus between labour and employers.

Calmfors and Driffill attempt an index of centralization of wage bargaining, column A, table 6.2, by ranking countries according to the extent of coordination both within and between various central organizations. Schmitter's and Cameron's rankings - columns B & C respectively, table 6.2 - consider only the union side, but the latter also takes into account the extent of unionization. This is an attempt to measure cooperation among workers in general rather than only among unions. The main problem associated with this approach is judging the extent to which variations in unionization rates reflect differences in the formal and informal coverage of union contracts. Finally, Blyth's index, column D, table 6.2, ordered countries according to two criteria: (i) The extent to which unions and employers are joined into central bodies with executive negotiating

Table 6.2 Rank Orderings of Countries According to their Structures of Labour Market Institutions

	Centralization Indices						Separate Indicators		
	CD	A	B	C	D	E	UD	WC	EC
Austria	1	1	1	3	1	1	3	3	3
Norway	2	2	2	2	2	4	3	3	3
Sweden	3	3	2	1	3	4	3	3	3
Denmark	7	4	4	6	4	7	3	3	3
Finland	8	5	4	5	5	8	3	3	3
Germany	9	6	8	8	8	2	3	2	3
Netherlands	13	7	6	7	10	3	3	2	2
Belgium	14	8	7	4	9	9	3	2	2
New Zealand	15	9	.	.	6	11	2	2	1
Australia	17	10	.	10	7	15	3	2	1
France	16	11	12	15	12	13	3	2	2
U.K.	12	12	13	9	13	12	3	1	1
Italy	11	13	14	12	14	14	3	2	1
Japan	10	14	.	16	11	10	2	2	2
Switzerland	6	15	9	11	.	6	2	1	3
U.S.	5	16	10	14	15	17	1	1	1
Canada	4	17	11	13	16	16	2	1	1

Source: A compiled table based on Calmfors & Driffill (1988) and Layard, Nickell & Jackman (1991).

Notes: (1) A is from Calmfors and Driffill (1988).
(2) B is from Schmitter (1981).
(3) C is from Cameron (1984).
(4) D is from Blyth (1979).
(5) E is from Bruno and Sachs (1985).
(6) With the exception of column CD, low numbers indicate higher centralization.
(7) CD is a revised ranking of column A.
(8) UD = the degree of union density
WC = the level of workers' coordinations
EC = the level of employers' coordinations
These are from Layard, Nickell, and Jackman (1991): 1 represents low; 2 represents medium; and 3 represents high.
(9) Correlation coefficients between indices are as the following table.

	CD	A	B	C	D
A	0.27				
B	0.57	0.86			
C	0.38	0.88	0.87		
D	0.33	0.94	0.93	0.82	
E	0.39	0.77	0.76	0.71	0.74

powers; and (ii) The level at which bargaining takes place.

All of these classification are inevitably subjective[2]. We may use each of these institutional factors separately in order to understand the development of labour markets more directly. Even though the relative rankings do not change significantly over time, (unless it is a very long-run period), we can detect important changes in each factor which, in turn, will influence bargaining outcomes and, hence economic performance.

As before, our main empirical methodologies are rank and simple correlations between competitive pressure and economic performance indicators, and between the structure of labour market institutions and economic performance. Multiple regressions for cross-country difference in unemployment rates and Multiple Canonical Correlations will also be studied for seventeen O.E.C.D. economies. Unlike other studies, we will carry out cross-country comparative empirical studies on an annual basis from 1961 to 1989[3].

These data and methodologies are similar to existing empirical studies. This is important in order to facilitate comparisons between our model and the established ones. Table 6.3 summarizes data of three such studies: Calmfors and Driffill (1988), Paloheimo (1990) and Layard *et al.* (1991). Mainly due to the lack of internationally comparable data on labour market structures, existing studies used rank correlations and/or ordinal variables in multiple regressions. Their primary concern is to explain cross-country differences in macroeconomic performance, especially unemployment rates. In addition to this, they examine employment, economic growth, inflation, etc. As explanatory variables, all studies employ the centralization index of Calmfors and Driffill (1988), in addition to their own other structural variables. Layard *et al* (1991) set of variables on labour market institutions is the most extensive and includes unemployment benefit and government spending on labour market programmes, in addition to

[2] Calmfors and Driffill (1988; p.18 and pp. 24-25).

[3] In the Appendix III, we will report empirical findings for the average economic performance over specific periods. To enable us to do this, we divide thirty years into four separate periods: 1961-69, 1969-73, 1973-79, and 1979-89, based on O.E.C.D. (1990). This is largely to keep comparability of international data. These four periods represent economic performance of: (i) The 1960s; (ii) The first oil-price shock; (iii) The 1970s with further supply-side shocks; and (iv) The 1980s.

conventional variables relating to union coverage and centralization / coordination of trade unions as well as employers associations. Paloheimo (1990) includes various economic policy variables such as one which indicated the effect of the government's complexion. Calmfors and Driffill and Layard *et al* neglect this area. Paloheimo measures party complexion of governments by the average number of Left-wing cabinet seats in proportion to total cabinet seats[4]. For economic policy, Paloheimo makes crude proxy variables for monetary, fiscal, and wage policies which include: (i) Fiscal policy by PSBR (the difference between total outlays of government and current receipts of government) as a percent of GDP; (ii) Monetary policy by the growth of money supply (M1 plus quasi money); and (iii) Wage policy by average increases in hourly earnings in manufacturing. These three important studies focus on similar time-frames and countries to the ones we have employed.

[4] Political science literature often includes variables on government complexion. See e.g., Schmidt (1983; pp.1-26); Lange and Garrett (1985; pp.792-827).

Table 6.3 Summary of Three Studies

	Calmfors & Driffill (1988), Paloheimo (1990)	Layard, Nickel & Jackman (1991)
Testing Method	Rank correlations Regressions *Simple correlations	Regressions (static and dynamic)
Countries	17 O.E.C.D. *18 O.E.C.D. (Ireland)	Static: 20 O.E.C.D. Dynamic: 19 O.E.C.D. (except Portugal)
Data Periods	1974-85/1963-73 *1974-79/1980-85 (Averages)	Static: 1983-88 (average) Dynamic: 1956-88 (pooled time-series cross-section data)
Dependent Variables	Unemployment rate Employment Okun index Performance index *Economic growth *Consumer Price Index	Unemployment rate
Independent Variables	Rank orderings of centralization *Union membership (1975 and 1980) *Average number of left-wing cabinet seats/total seats *Economic policy variables	Benefit duration Replacement ratio Active labour market spending/GDP Coverage of collective bargaining Union coordination Employer coordination Changes in inflation of GNP/GDP deflator
Sources	O.E.C.D. Historical Statistics and Main Economic Indicators	O.E.C.D. Economic Outlook Employment Outlook, Country Reports and other various sources

Notes: * indicates only for Paloheimo (1990).

3. COMPETITIVE PRESSURE AND CROSS-COUNTRY DIFFERENCES IN ECONOMIC PERFORMANCE

3.1 Proposition 1: The intensity of competitive pressure in negatively related to unemployment and inflation

In order to compare this proposition based on our own competitive pressure hypothesis with existing structural hypotheses, we introduce two sets of indicators in addition to competitive pressure: (i) centralization and U-curve indices based on Calmfors and Driffill (1988); and (ii) the degree of union coverage as well as workers' and employers' coordinations based on Layard *et al* (1991). Table 6.4 gives expected signs of correlation coefficients for the validity of each hypothesis.

Our competitive pressure hypothesis seems to be neither supported nor rejected. As shown in figures 6.1, 6.2 and 6.3, indicators of competitive pressure exhibit less consistent correlations over time, although not strongly opposite to the expected negative signs. In contrast to the time-series studies of the previous chapter, cross-country variations in unemployment and inflation rates show negative correlations more consistently with the level of import penetration (IPR), see Diagram 1 & 2 of figure 6.1. Consumer price inflation is also explained better by cross-country difference in import penetration levels, see figure 6.2. However, it should be noted that any of the established structural hypotheses cannot be strongly supported, either. Rank correlations favour the corporatist hypothesis as far as unemployment is concerned: Centralization index consistently shows positive relations only with cross-country differences in unemployment rates. The U-curve index also consistently exhibits positive correlations since the 1970s (see Appendix IV table C1). The same holds true for consumer price inflation, but only for the 1970s (see Appendix IV table C2). Economies with higher levels of employers' coordinations show relatively consistent negative correlations with unemployment and inflation rates, while countries with higher union coverage show positive signs (see figures 6.1 and 6.2). All in all, empirical studies of Proposition 1 does not strongly support any of the hypotheses described in table 6.4. Detailed explanations for each indicator of macro-economic performance will follow.

Table 6.4 *Expected Signs of Correlations for Five Alternative Hypotheses*

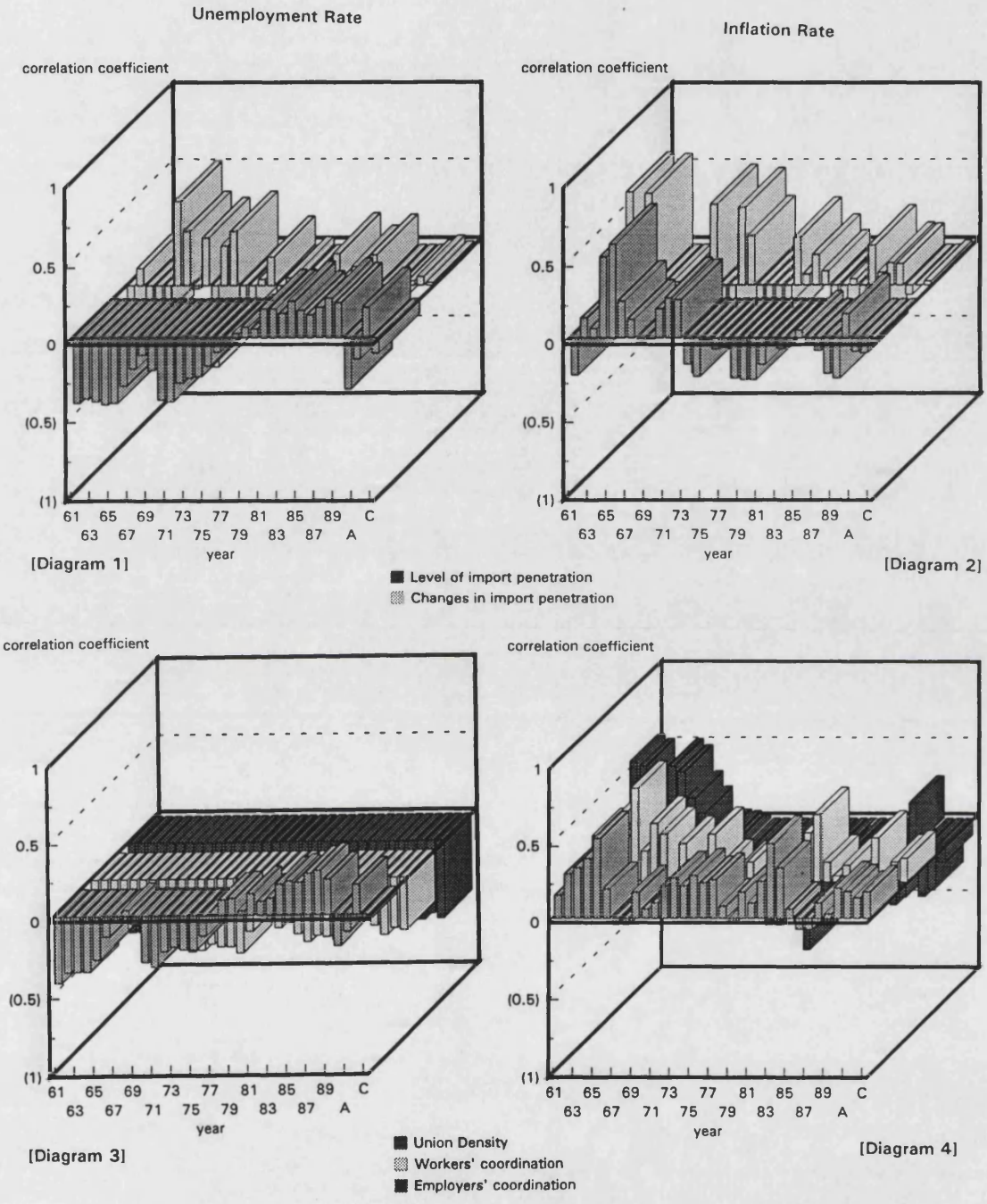
Hypothesis	Unemployment rate	Inflation rate	Consumer Price Index	Indicator
Competitive Pressure Hypothesis	- -	- -	- -	IPR DIPR
Liberal-Pluralist Hypothesis	- + + +	- + + +	- + + +	C UD WC EC
Corporatist Hypothesis	+ - - -	+ - - -	+ - - -	C UD WC EC
U-curve Hypothesis	+	+	+	CD
Interactive Hypothesis	- - -	- - -	- - -	UD WC EC

Note: IPR = Level of import penetration
DIPR = Percentage changes in import penetration
C = Centralization index
CD = U-curve index
UD = Union coverage
WC = Workers' coordination
EC = Employers' coordination

UNEMPLOYMENT RATES

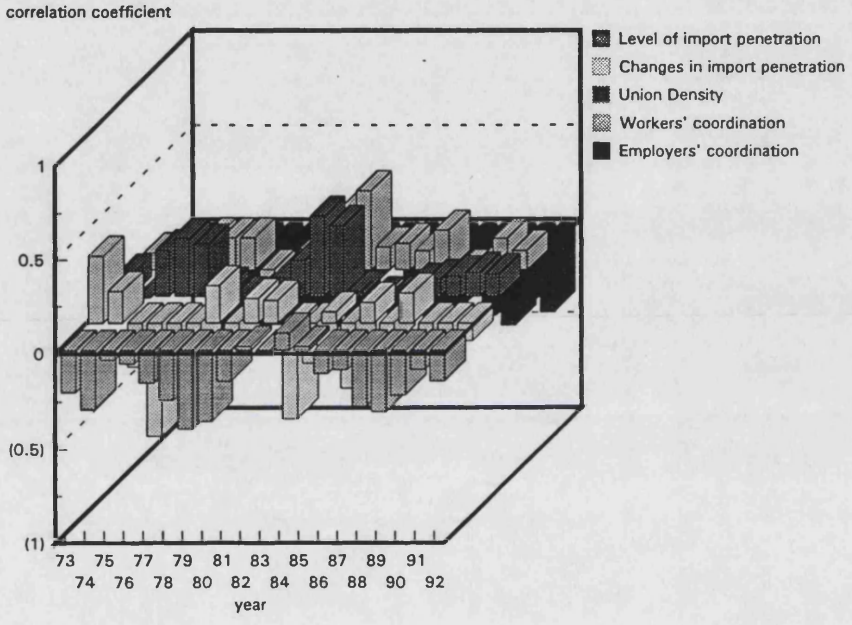
Contrary to within-economy time-series variations, rank correlations suggest that even if not significant, the level of import penetration tends to exert decreasing pressure on the differences in unemployment rates across countries, except for the period after the mid-1980s (see Appendix IV table C1, column 1). Percentage changes in import penetration give mixed and seemingly inconsistent explanations especially before the early 1970s. In the 1970s economies faced with increases in import penetration experience relatively less increase in unemployment rates whereas in the 1980s these

Figure 6.1 Simple Correlation Coefficients between Environmental Conditions and Cross-country Differences in Unemployment and Inflation Rates, 1961-89



Notes: (1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.
(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

Figure 6.2 Simple Correlation Coefficients between Environmental Conditions and Cross-country Differences in Consumer Price Index Changes, 1973-89



Notes: (1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.
(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

increase far more[5]. Simple correlations show a similar, but clearer picture. Up to the 1970s, levels of import penetration are negatively related with the unemployment rate and afterwards related positively. Interestingly, the size of the correlation coefficients increases over time. Percentage changes in import penetration are not significantly related with cross-country differences in unemployment rates, see figure 6.1, diagram 1.

As far as unemployment is concerned, indices of labour market structural differences appear to have more consistent explanatory power than those of competitive pressure (see Appendix IV table C1, columns 4 & 5). During the years from 1961 to 1989, the more centralized economies seem to be less subject to increases in unemployment rates relative to the decentralized ones. This is especially the case in the early to mid-1970s when the relationships are statistically significant. After the 1970s, the index employed by the U-curve hypothesis works well in explaining cross-country differences in unemployment experience. However, its explanatory powers are weak for the period before the 1970s. In fact, the U-curve index shows statistical significance only after the mid-1980s. From these results, it seems reasonable to conjecture that in the years before the oil-price shocks had some significant influences on economic activities, corporatism worked reasonably well. However, once some kind of adjustments were introduced to absorb these shocks, the economies at both extreme ends of centralization seemed to perform better than medium-centralized economies as the U-curve hypothesis suggests.

When union coverage, and workers' & employers' coordinations are separately related to cross-country differences in unemployment rates, a clearer picture emerges. Contrary to the commonly held belief, before the mid-1970s, economies with higher union coverage seem to experience lower rates of unemployment - though with decreasing marginal effects over time. However, after the mid-1970s, unemployment rates in economies with relatively high union coverage conform to the commonly held belief and interestingly show increasing marginal coefficients. Economies with greater cooperation between workers and managers seem to suffer less

[5] For details, see appendix table C1, column 2 and 3. Although this is the case it is not statistically robust.

unemployment, but with larger coefficients on employers' cooperation, see figure 6.1, diagram 3. In the 1960s, cross-country differences in workers' coordinations become less influential over time but experience their strongest effects before the mid-1970s. Their marginal influence become stronger before losing it in the late 1980s. During the 1970s, cross-country differences in employers' coordinations become less powerful in explaining divergences in unemployment rates across countries.

Multiple regressions which include changes in the rates of inflation in addition to competitive pressure and structural indices seem to shed doubt on these interpretations. The best models in each year, with different combinations of competitive pressure indicators, have relatively little explanatory power[6] with regard to cross-country differences in unemployment rates throughout the period from 1961 to 1989. Table 6.5 summarizes the overall picture: (i) Inflation-unemployment tradeoffs are not well confirmed[7]; (ii) Throughout the period, employers' coordinations show negative effects; (iii) Only after 1975, workers' coordinations show consistently negative relations only after 1975; (iv) Since 1978, union coverage is positively related with unemployment rates, but before that show mixed signs; and (v) Indicators of competitive pressure do not show decreasing effects in many of the cases. After the early 1970s, the levels of import penetration, when included, show positive signs since the early 1970s. However, unlike rank and simple correlations, multiple regressions indicate that economies facing higher percentage changes in import penetration experience less increase in unemployment rates, especially in the 1980s.

[6] Adjusted R^2 span from -0.02 to 0.70. In most of the case multiple regression models explain just around 30 per cent.

[7] Even in five years of the 1960s changes in inflation rates are positively related with unemployment. It is surprising to find that five years in every decade exhibit positive relationships with these explanatory variables of competitive pressure and labour market institutions.

Table 6.5 Multiple Regression Results for Cross-country Differences in Unemployment Rates

	Constant	Import Penetration			Structure Indices					
		IPR	DIPR	CP	UD	WC	EC	DDP	R^2	P
1961	6.96		-0.12		-1.15	0.12	-0.98	0.30	0.24	0.157
	(1.93)		(0.10)		(0.88)	(0.90)	(0.73)	(0.32)		
1962	6.49			1.80	-0.93	0.47	-1.56	-0.28	0.36	0.073
	(1.56)			(0.82)	(0.68)	(0.65)	(0.54)	(0.20)		
1963	5.09			-1.14	-0.28	0.51	-1.41	-0.11	0.34	0.085
	(1.42)			(0.54)	(0.66)	(0.66)	(0.55)	(0.27)		
1964	4.34		-0.01		-0.58	0.27	-0.74	-0.06	-0.0	0.478
	(1.56)		(0.08)		(0.72)	(0.70)	(0.51)	(0.21)		
1965	4.04			-1.17	-0.54	0.96	-1.13	0.21	0.25	0.144
	(1.27)			(0.63)	(0.59)	(0.67)	(0.43)	(0.19)		
1966	1.09	-4.10	0.22		0.68	0.79	-1.15	0.36	0.65	0.007
	(0.89)	(2.97)	(0.05)		(0.40)	(0.41)	(0.29)	(0.18)		
1967	3.16			0.47	-0.06	0.47	-0.94	-0.11	0.19	0.202
	(1.20)			(0.38)	(0.59)	(0.61)	(0.41)	(0.23)		
1968	2.26		0.01		0.54	-0.01	-0.73	0.28	0.07	0.356
	(1.51)		(0.11)		(0.61)	(0.69)	(0.44)	(0.19)		
1969	2.54	-1.65	0.13		0.23	0.32	-0.97	-0.02	0.10	0.340
	(1.32)	(4.68)	(0.08)		(0.75)	(0.67)	(0.45)	(0.14)		
1970	5.70		-0.16		-0.77	0.50	-0.88	-0.04	0.38	0.062
	(1.47)		(0.09)		(0.68)	(0.68)	(0.44)	(0.15)		
1971	5.17		0.17		-0.27	0.22	-1.24	-0.14	0.28	0.124
	(1.67)		(0.20)		(0.81)	(1.13)	(0.69)	(0.17)		
1972	3.94		0.12		0.18	0.17	-1.21	0.34	0.37	0.065
	(1.77)		(0.09)		(0.72)	(0.74)	(0.50	(0.21)		
1973	6.57	5.11	-0.27		-0.64	0.09	-1.47	0.34	0.60	0.013
	(1.39)	(4.07)	(0.09)		(0.61)	(0.58)	(0.42)	(0.11)		
1974	4.47			-0.65	-0.19	0.08	-1.00	0.16	0.39	0.056
	(1.40)			(0.38)	(0.64)	(0.64)	(0.49)	(0.09)		
1975	9.66			1.29	0.01	-1.27	-1.94	-0.02	0.38	0.063
	(2.39)			(0.52)	(0.94)	(0.93)	(0.75)	(0.08)		
1976	4.66		0.10		0.42	-0.37	-1.05	-0.20	0.11	0.294
	(2.53)		(0.13)		(1.27)	(1.37)	(0.81)	(0.24)		
1977	6.49			-1.39	0.92	-1.32	-0.78	0.16	0.03	0.413
	(3.10)			(1.34)	(1.31)	(1.25)	(0.90)	(0.49)		
1978	4.61		-0.06		1.39	-0.70	-1.10	-0.01	-0.0	0.685
	(3.36)		(0.23)		(1.60)	(1.65)	(1.22)	(0.50)		
1979	4.83		-0.07		1.48	-0.35	-1.59	-0.14	-0.0	0.496
	(3.02)		(0.17)		(1.20)	(1.16)	(1.26)	(0.44)		
1980	4.36			-0.56	1.83	-0.95	-1.33	-0.05	0.10	0.315
	(3.03)			(0.99)	(1.40)	(1.36)	(0.95)	(0.23)		
1981	5.20	14.1	-0.21		1.07	-0.56	-2.30	-0.08	0.12	0.314
	(3.61)	(11.7)	(0.31)		(2.09)	(1.60)	(1.46)	(0.42)		
1982	6.93	13.5	-0.09		1.66	-1.17	-2.39	0.40	0.18	0.242
	(4.42)	(12.4)	(0.29)		(2.06)	(1.78)	(1.32)	(0.47)		
1983	4.75		0.41		4.10	-1.17	-2.64	0.04	0.40	0.053
	(4.63)		(0.23)		(1.62)	(1.55)	(1.19)	(0.37)		
1984	9.80	16.5	-0.22		0.87	-1.27	-2.65	-0.49	0.41	0.068
	(6.30)	(11.0)	(0.31)		(2.12)	(1.53)	(1.28)	(0.36)		
1985	5.65			1.19	3.65	-2.72	-1.74	-0.16	0.39	0.058
	(3.24)			(2.02)	(1.38)	(1.36)	(1.05)	(0.36)		

(continued)

Table 6.5 Cont/d

	Constant	Import Penetration			Structure Indices					
		IPR	DIPR	CP	UD	WC	EC	DDP	R^2	P
1986	-0.32		0.83		5.52	-1.36	-2.50	0.59	0.60	0.008
	(3.48)		(0.35)		(1.33)	(1.14)	(0.85)	(0.38)		
1987	4.54		-0.12		3.60	-1.78	-1.89	-0.28	0.43	0.042
	(3.62)		(0.34)		(1.31)	(1.24)	(0.99)	(0.40)		
1988	5.46		-0.31		2.95	-0.85	-2.12	0.23	0.40	0.054
	(2.88)		(0.22)		(1.22)	(1.23)	(0.89)	(0.32)		
1989	6.70		-0.27		1.63	0.07	-2.04	-0.41	0.30	0.110
	(2.90)		(0.17)		(1.16)	(1.24)	(0.98)	(0.49)		

Notes: (1) R^2 is adjusted with the degree of freedom.
(2) P is for the probability that the model does not fit.
(3) Numbers in () are t-statistics for each coefficient.
(4) Independent variables are as follows:
IPR = level of import penetration
DIPR = percentage changes in import penetration
CP = difference (simple changes) in import penetration
UD = union-density index
WC = workers' coordination index
EC = employers' coordination index.

INFLATION RATES

With regard to cross-country differences in the experience of inflation, the levels and changes in import penetration also do not have significant and consistent explanatory power. Nevertheless, according to rank correlations, the levels of import penetration seem to exert deflationary pressure particularly from the mid-1970s onwards. Percentage changes in import penetration yields so many mixed effects on inflation across countries that no suitable exposition can be provided (see Appendix IV table C2, columns 1 & 2). Simple correlation coefficients appear to give similar but somewhat clearer explanations. From 1973 onwards, except for 1985, those countries with higher levels of import penetration are related, albeit weakly, with lower increases in inflation, see Diagram 2 of figure 6.1. During the late 1970s percentage changes in import penetration appear to exert larger deflationary pressure, but not after that.

Further, the centralization index does not suggest any consistent interpretation. This is also the case for the revised centralization index of the U-curve hypothesis. Though, those economies with intermediately centralized bargaining structures might suffer more inflation (see Appendix IV table C2, final two columns). When structural differences are broken

down into three components, we find partial reasons why combined indices do not fit well. Countries with high union coverage and coordination between workers are more or less related with high inflation. Even countries with higher coordinations between employers had experienced higher inflation up to the early 1970s, since then however, these countries have had less increase in inflation, see Diagram 4 of figure 6.1. Cross-country differences in union coverage have notably lost their marginal influences since the mid-1980s, and even show negative correlations in 1986 and 1987. Over the early to mid-1980s, workers' coordinations have influenced cross-country differences in the experience of inflation with increasing force. Largely, employers' coordinations have been a crucial factor to restrain inflation since the mid-1970s.

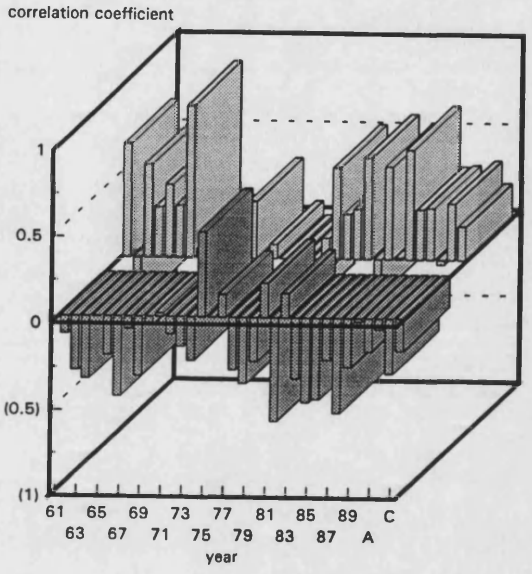
If we take annual percentage changes in the consumer price index as an alternative inflation indicator, a rather different picture emerges. Economies with higher levels of import penetration exhibit less increase in consumer prices, except in a few cases, see figure 6.2. However, changes in their levels give mixed correlations. Until the early 1980s, centralized economies are subject to a higher increase in consumer prices. Since then they have experienced less increase. Except for the late 1980s, intermediate economies seem to be the worst performers in terms of consumer price inflation, see appendix, table C9. When labour market structural conditions are separately considered, those countries with higher union coverage and workers' coordinations are more susceptible to greater increases in consumer prices, whereas those with higher employers' coordinations are more susceptible to lower increases. These relationships are consistent over time, see figure 6.2.

3.2 Proposition 2: Competitive pressure is positively related to gross domestic production and productivity growth

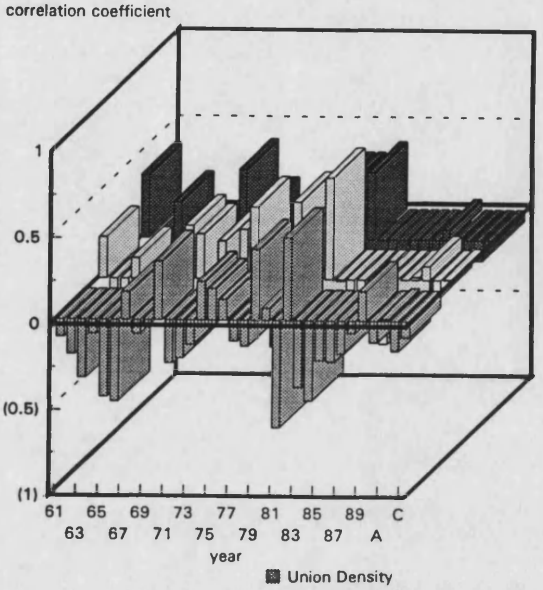
Similar to Proposition 1, each alternative hypothesis of table 6.4 is empirically tested by investigating correlations with the growth rates of Gross Domestic Production (GDP) and real GDP *per capita*. Expected signs are exactly opposite to those in table 6.4. Empirical studies of Proposition 2 favour our own competitive pressure hypothesis, see figure 6.3.

Figure 6.3 Simple Correlation Coefficients between Environmental Conditions and Cross-country Differences in GDP Growth Rates and Real GDP per capita, 1973-89

GDP Growth Rate



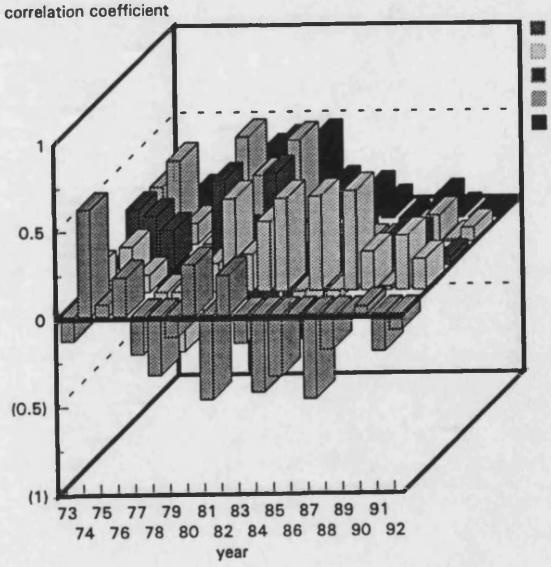
[Diagram 1]



[Diagram 2]

Level of import penetration
Changes in import penetration
Union Density
Workers' coordination
Employers' coordination

Real GDP *per capita*



Level of import penetration
Changes in import penetration
Union Density
Workers' coordination
Employers' coordination

[Diagram 3]

Notes: (1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.
(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

Percentage changes in import penetration seem to exert significant pressure on workers and employers so that their strategic behaviour in labour relations may have become more cooperative and resulted in increased productivity. Any other structural hypothesis cannot be supported by the evidence of Proposition 2.

Regarding the growth rate of gross domestic production, percentage changes in import penetration show positive correlations, whilst their levels are negative. These relationships are statistically significant in the 1960s and late 1980s, see e.g., appendix, table C3. Similarly, univariate correlations tell us that economies faced with higher import penetration levels seem to suffer slower growth with larger marginal effects in the 1980s, see figure 6.3, diagram 1. Increased competitive pressure on the other hand, tends to be positively related with production growth rates, except in the 1970s. The marginal influence of competitive pressure over time decreases in the 1960s and in the mid to late 1970s, while increases in the 1980s. Structural indices do not appear to perform well. The centralization index, when significant, displays positive relations, which means that decentralized economies may perform better in terms of growth rates. This unexpectedly supports the liberal-pluralist hypothesis, see appendix, table C3, column four. For the 1960s the U-curve index tells an opposite story to what it is intended to, whereas after 1970s there does not appear to be any consistent explanation, see appendix, C3, column five. Further structural differences in labour market institutions do not appear to give coherent interpretations even if separately studied, see figure 6.3, diagram 2: (i) Most of the time countries with high union coverage seem to suffer greater decreases in growth rates, except in the period from the mid-1970s to the early 1980s; (ii) Higher coordinations do not seem to help increase growth rates, especially in the 1980s. Interestingly, in the 1980s the marginal effects of cross-country differences in union coverage become greater over time, while those in workers' coordinations become smaller.

For most of the period between 1973 and 1989, with few exceptions, economies faced with higher levels of import penetration seem to suffer more losses of annual percentage changes in real GDP *per capita*. This is especially so since the mid-1980s, see appendix, table C6. Those

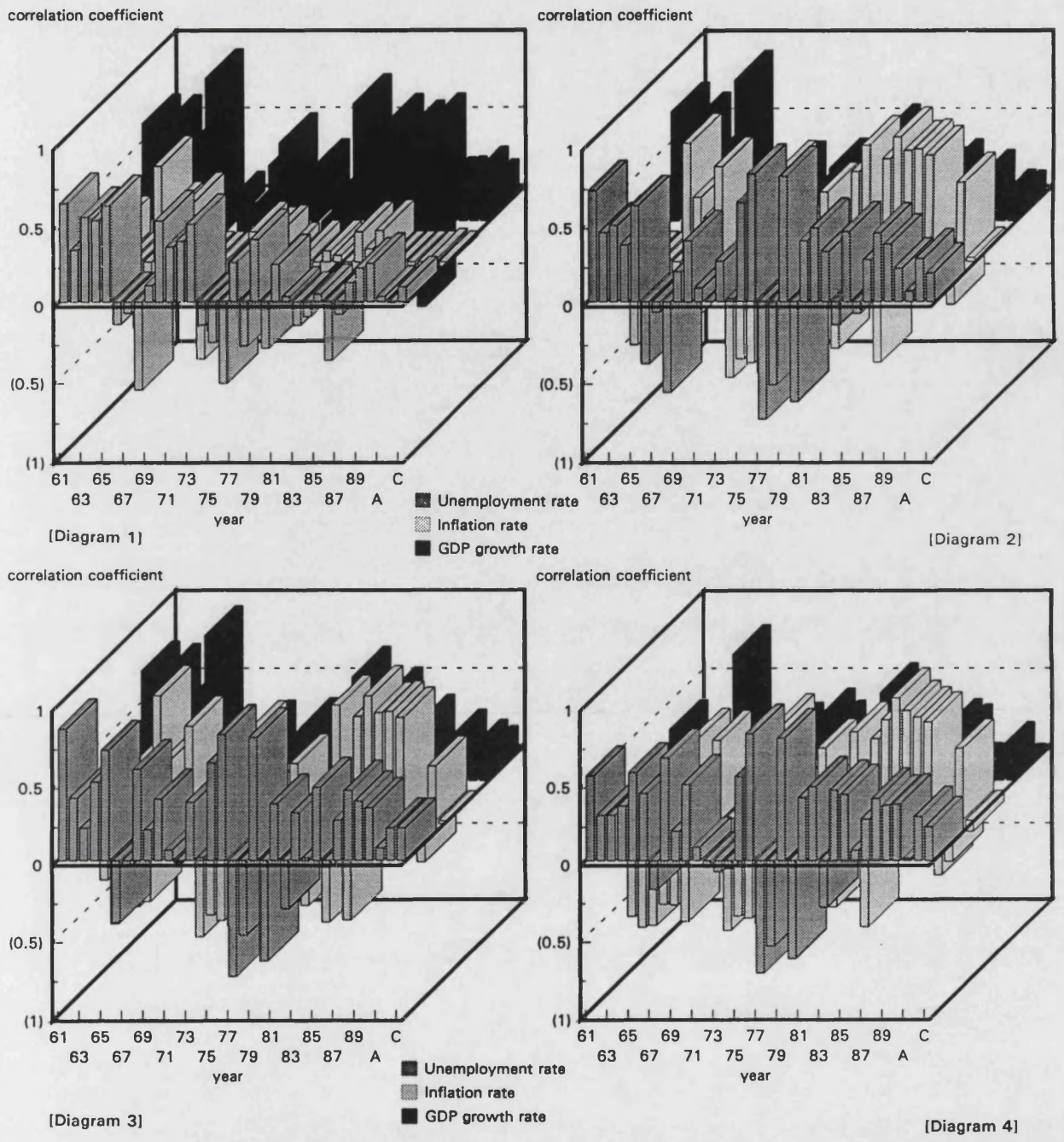
with higher changes in import penetration levels, however, seem to experience higher growth rates in their productivity except for a few years. In the 1980s, their marginal effects were growing, see figure 6.3, diagram 3. Intermediately centralized economies are the worst performers in terms of productivity growth rates, see appendix, table C6, final column. It is not so obvious, as sometimes popularly believed, that countries with higher union coverage suffer slower growth of real GDP *per capita*. Since the mid-1980s, their marginal effects show growing influences, although not significantly so. Up to the early 1980s cross-country differences in workers' coordinations are positively related with productivity growth rates. Since then their marginal influence becomes smaller and shows negative correlations. Higher coordinations between employers do not provide any consistent explanation.

3.3 Multivariate evidence on Propositions 1 and 2

Even if the Canonical models do not fit well and explain only up to 30 percent of variance, multivariate correlations can account for up to 94 per cent of variance. Implications to be drawn include: (i) Since 1973, it seems rather exceptional for economies facing increased competition to suffer in terms of GDP growth and inflation rates; (ii) During the early 1970s, countries facing intense competitive pressure seem to experience less increase in unemployment, while after the 1970s it is common for these countries to experience higher increases in unemployment rates, see figure 6.4, diagram 1.

When combined with the variables for structural differences in labour market institutions, Canonical multivariate models show much better statistical fitness. They show high and significant F-values in 15 cases across 29 years. Also they explain variances in economic performance across countries to the degree of 20 to 46 per cent with high combined correlation coefficients. For each macro-indicator, even if it is not so coherent, rather better inferences are available, see figure 6.4. Economies with the most intense competitive pressure, higher union coverage and coordinations are positively related with GDP growth and inflation rates, and negatively related with unemployment rates. Up to the mid-1970s, it is

Figure 6.4 Multiple Canonical Correlations between a Set of Macro-economic Performance Indicators and a Combined Indicator of Environmental Conditions (II), 1961-89
: Unemployment, Inflation, and GDP Growth Rates



Notes:

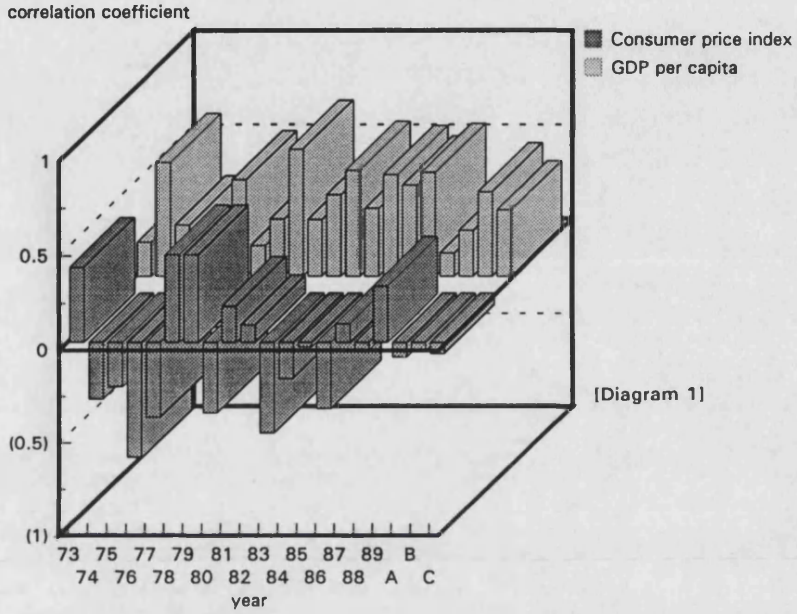
(1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.

(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

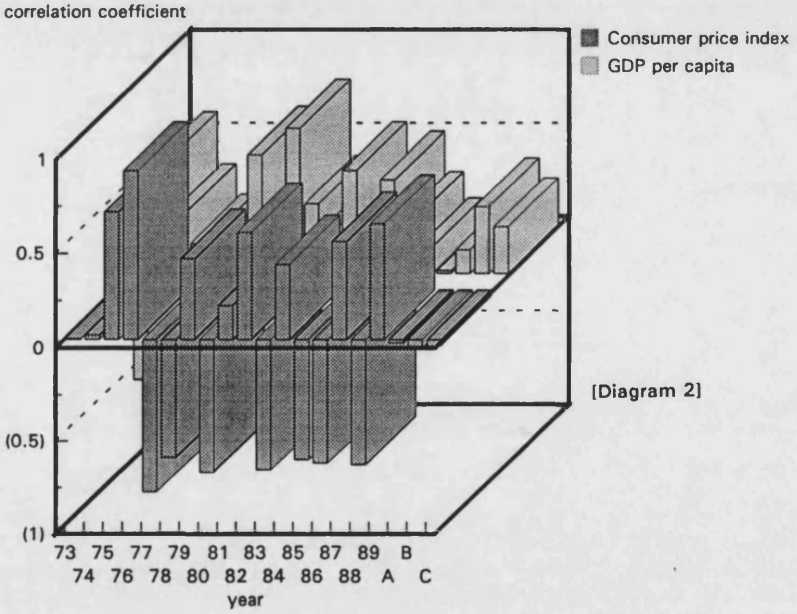
(3) For the environmental conditions we used different combination of competitive pressure and labour market structural indicators as follows.

- **Diagram 1**; only Competitive Pressure Indicators (both the level of and percentage changes in import penetrations)
- **Diagram 2**; Competitive Pressure Indicators (both the level of and percentage changes in import penetrations) combined with Labour Market Structural Indicators (union coverage, workers' and employers' coordinations)
- **Diagram 3**; Percentage Changes in Import Penetrations combined with Labour Market Structural Indicators (union coverage, workers' and employers' coordinations)
- **Diagram 4**; Annual Changes in Import Penetrations combined with Labour Market Structural Indicators (union coverage, workers' and employers' coordinations).

Figure 6.5 Multiple Canonical Correlations between a Set of Macro-economic Performance Indicators and a Combined Indicator of Environmental Conditions (II), 1973-89
: Annual Percentage Changes in Real GDP per capita and Consumer Price Index



[Diagram 1]



[Diagram 2]

Notes: (1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.
(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.
(3) For the environmental conditions we used different combination of competitive pressure and labour market structural indicators as follows.

- **Diagram 1**; only Competitive Pressure Indicators (both the level of and percentage changes in import penetrations)
- **Diagram 2**; Competitive Pressure Indicators (both the level of and percentage changes in import penetrations) combined with Labour Market Structural Indicators (union coverage, workers' and employers' coordinations)

exceptional for such economies to suffer increases in unemployment rates. Once either percentage or simple changes in import penetration is included as an indicator of competitive pressure, there is no real difference in interpretations, see figure 6.4, diagrams 3 & 4.

Using an alternative set of macro-economic indicators, correlations from multivariate models are not improved. Even if they do not fit well and explain little, correlation coefficients imply that those economies with increased competitive pressures seem to suffer less decrease in productivity and less increase in consumer prices. Canonical models with indicators for labour market structural difference and competitive pressure do not provide significantly different implications, see figure 6.5. As a whole, Propositions 1 & 2 tend to be supported, if weak, by cross-country multivariate analyses for 17 O.E.C.D. economies.

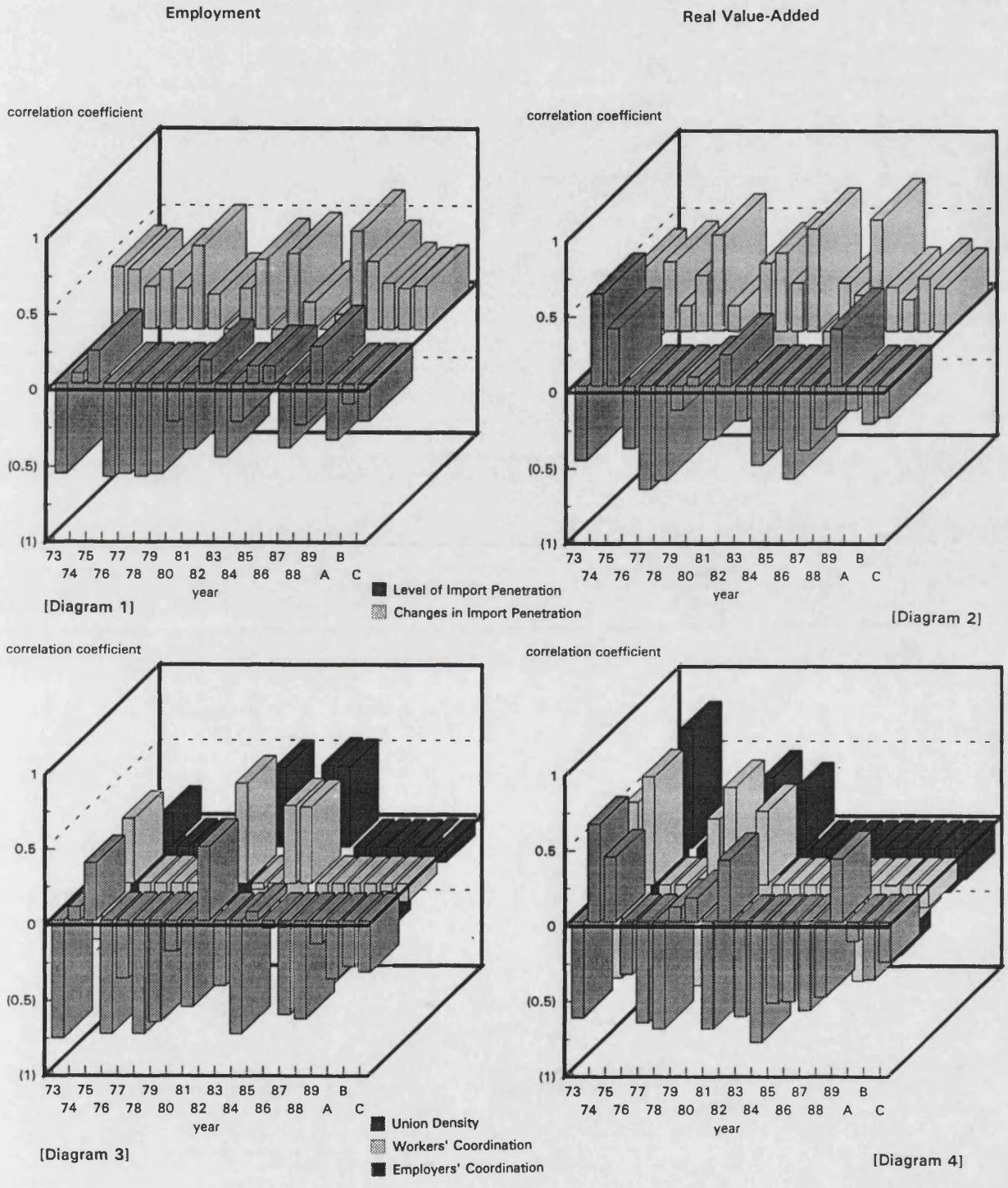
3.4 Proposition 3: Intense competitive pressure will show positive correlations with employment, real value-added and labour productivity in the manufacturing sector

With the same logic as Proposition 2, figures 6.6 and 6.7 strongly support our competitive pressure hypothesis. With few exceptions, percentage changes in import penetration show relatively consistent positive correlations with annual percentage changes in employment, real value-added and labour productivity of the manufacturing sector across countries. By contrast, empirical results for the other hypotheses show little significance. However, real wages and producer prices of the manufacturing sector do not lend strong support to our competitive pressure hypothesis (see figures 6.7 and 6.8). Multivariate analyses also show similar supports for this proposition (see figure 6.9). Each of these manufacturing performance indicators will be explained below.

PERCENTAGE CHANGES OF EMPLOYMENT IN MANUFACTURING

If not strong and consistent through time, countries with a higher levels of import penetration, especially in the second half of the 1970s, seem to suffer more in employment terms, while those with higher (percentage) changes suffer less; compare two bars in figure 6.6, diagram 1. Except in

Figure 6.6 Simple Correlation Coefficients between Environmental Conditions and Cross-country Differences in Employment and Real Value-Added in the Manufacturing Sector, 1973-89

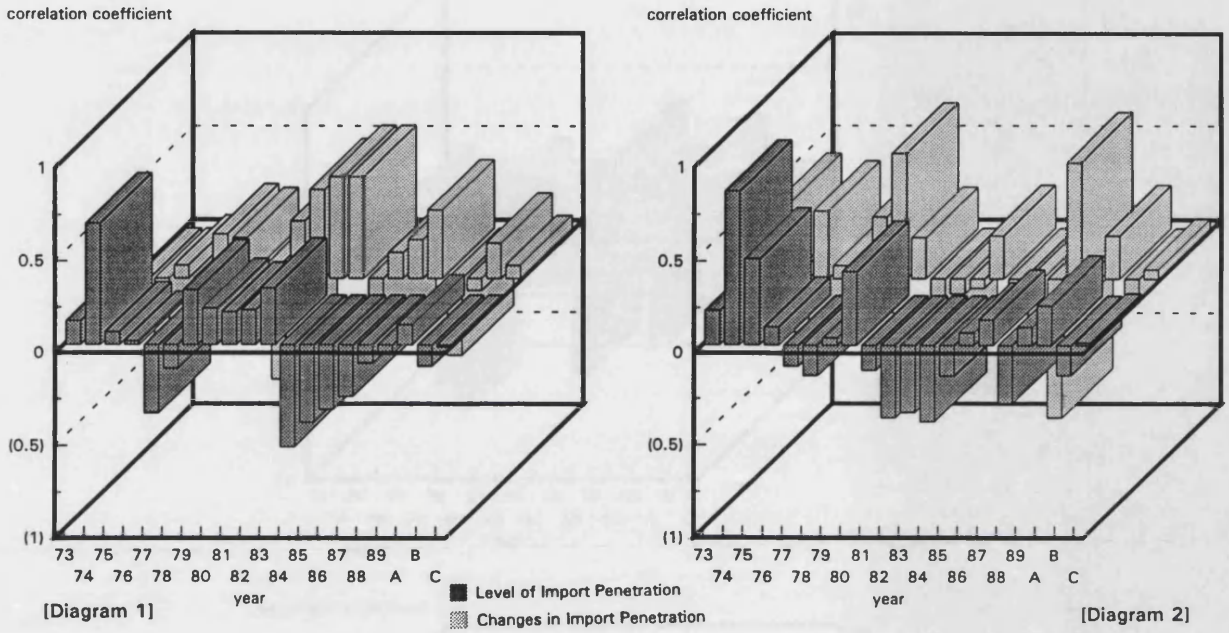


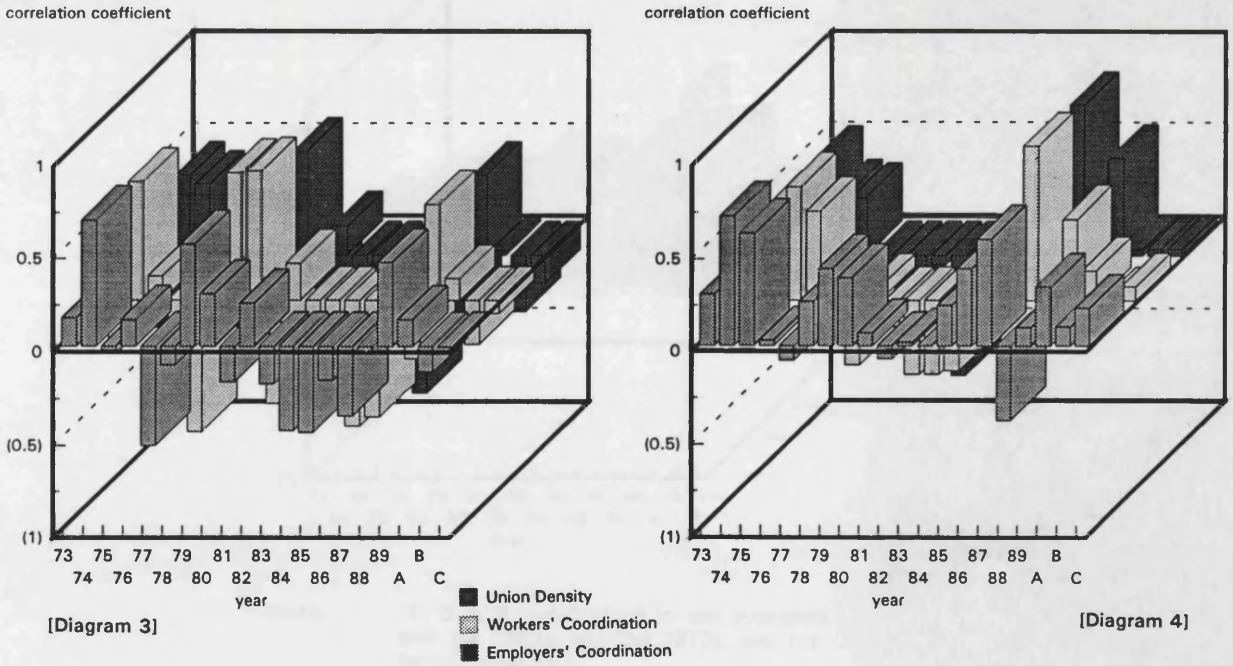
Notes: (1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.
(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

Figure 6.7 Simple Correlation Coefficients between Environmental Conditions and Cross-country Differences in Real Value-Added per capita and Real Hourly Wages in the Manufacturing Sector, 1973-89

Real Value-Added *per capita*

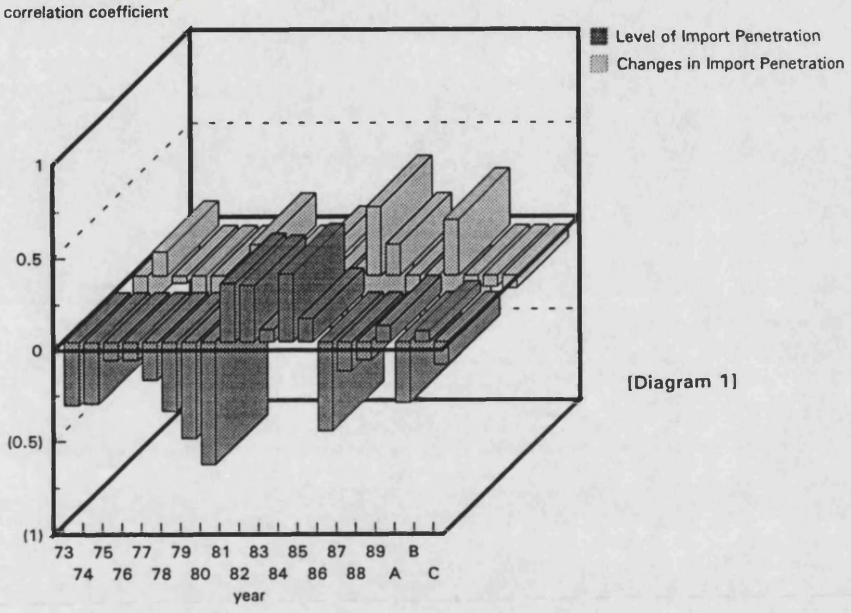
Real Hourly Wages



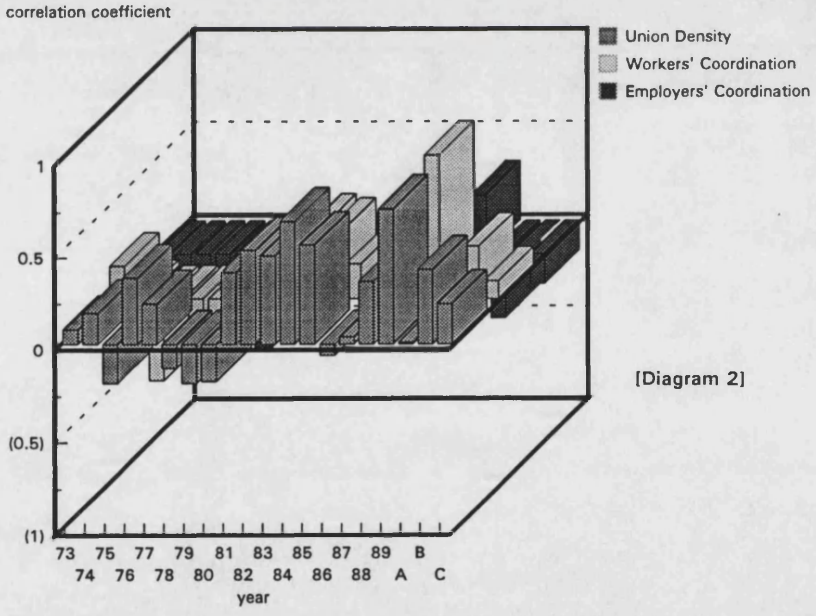


Notes: (1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.
(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

Figure 6.8 Simple Correlation Coefficients between Environmental Conditions and Cross-country Differences in Producer Price Index in the Manufacturing Sector, 1973-89



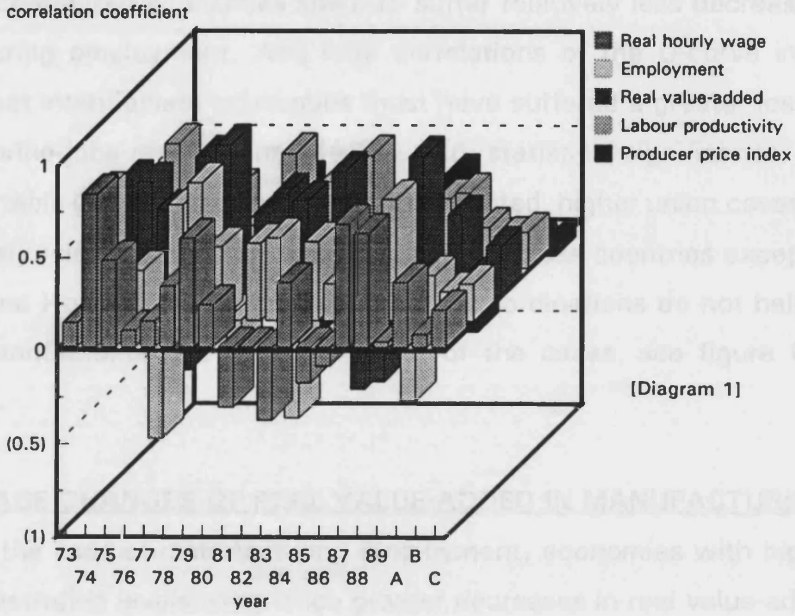
[Diagram 1]

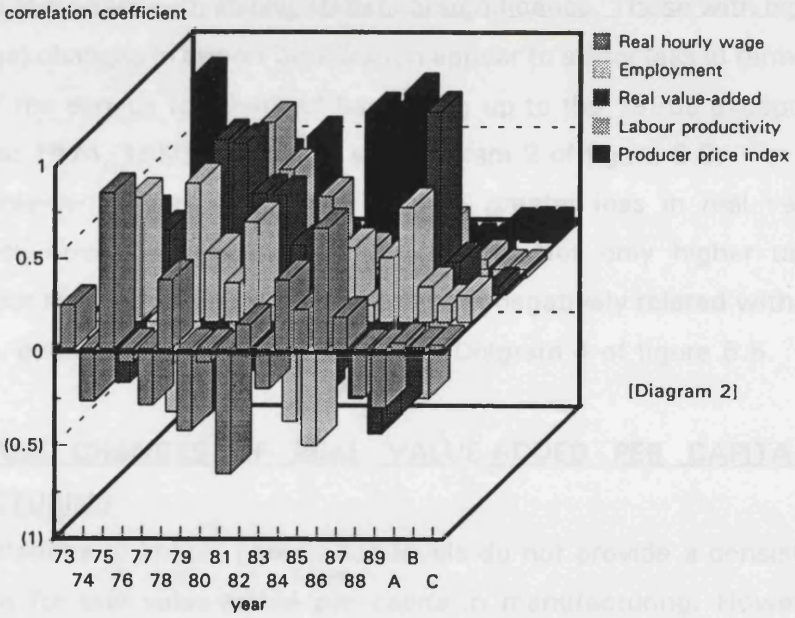


[Diagram 2]

Notes: (1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.
(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

Figure 6.9 Multiple Canonical Correlations between a Set of Manufacturing Economic Performance Indicators and a Combined Indicator of Environmental Conditions, 1973-89





Notes:

(1) 'S, A, B, and C' stand for the unweighed averages of the coefficients over the 1960s, over the 1970s, over the 1980s, and over the whole period, respectively.

(2) Figures are made as they are in order to indicate size and consistency of correlation coefficients more efficiently. For example, if most of the bars are above the floor, two variables are positively correlated. If those bars are taller than 0.5, correlations may be regarded as statistically significant.

(3) For the environmental conditions we used different combination of competitive pressure and labour market structural indicators as follows.

- **Diagram 1**; only Competitive Pressure Indicators (both the level of and percentage changes in import penetrations)
- **Diagram 2**; Competitive Pressure Indicators (both the level of and percentage changes in import penetrations) combined with Labour Market Structural Indicators (union coverage, workers' and employers' coordinations)

(4) For the manufacturing economic performance indicators, we employed annual percentage changes in: i) Real Hourly Wages; ii) Employment; iii) Real Value-Added; iv) Real Value-Added *per capita*; v) Producer Price Index.

1980 and 1983, economies facing higher percentage changes in import penetration suffer less decreases in manufacturing employment.

Decentralized economies seem to suffer relatively less decrease in manufacturing employment. And rank correlations of the U-curve index indicate that intermediate economies must have suffered a greater loss of manufacturing jobs after the mid-1980s, with statistical significance, see appendix, table C5, last three columns. As expected, higher union coverage is negatively related with employment changes across countries except in a few years. However, it is notable that high coordinations do not help to reduce manufacturing job losses in most of the cases, see figure 6.6, diagram 3.

PERCENTAGE CHANGES OF REAL VALUE-ADDED IN MANUFACTURING

Similar to the case of manufacturing employment, economies with higher import penetration levels experience greater decreases in real value-added except in a few years with strong statistical significance. Those with higher (percentage) changes in import penetration appear to suffer less in terms of the size of the surplus for dividend bargaining up to the 1980s except for three years: 1974, 1980 and 1985, see Diagram 2 of figure 6.6.

Highly-centralized economies undergo greater loss in real value-added, with strong significance in the 1970s. Not only higher union coverage but also higher coordinations are both negatively related with the size of pie, especially in the late 1980s, see Diagram 4 of figure 6.6.

PERCENTAGE CHANGES OF REAL VALUE-ADDED PER CAPITA IN MANUFACTURING

Rank correlations of import penetration levels do not provide a consistent explanation for real value-added *per capita* in manufacturing. However, when rank correlations of import penetration are significant, economies with higher import penetration levels appear to suffer more in terms of manufacturing labour productivity, see appendix, table C8. Simple correlations give positive signs for the 1970s and negative for the 1980s. In particular, this is the case since the mid-1980s. Since the mid-1980s, however, marginal coefficients are increasing towards the positive, see

figure 6.7, diagram 1. Percentage changes in import penetration tends to be related with less suffering in terms of manufacturing productivity, even if not consistent through time, see appendix, table C8. The first and second halves of the 1980s show increasing marginal correlations with positive signs, see Diagram 1 of figure 6.7. Both high and low-centralized countries seem to perform better in terms of labour productivity in manufacturing, in some cases with statistical significance, see appendix, table C8, last three columns. Similar to the case of real value-added, since the mid-1980s, higher coordinations of both employers and workers have not helped to boost the manufacturing labour productivity, see Diagram 3 of figure 6.7. Though, economies with higher union coverage seem to have suffered less decrease in labour productivity in the 1970s.

PERCENTAGE CHANGES OF REAL HOURLY WAGES IN MANUFACTURING

From the late 1970s to the mid-1980s - except 1980 economies with higher levels of import penetration seem to have experienced lower increases in real hourly wages. Percentage changes, meanwhile, show negative relations in the 1980s - except 1984, 1988 and 1989. One plausible interpretation might be that industrialized countries faced with more intense competitive pressure could not afford to pay higher real wages in the 1980s, see appendix, table C4, columns one and two. Simple correlations suggest a similar picture, even if weak, for the effects of import penetration levels and their percentage changes, see figure 6.7, diagram 2.

With regard to the degree of centralization, rank correlation signs are almost opposite to those for the levels of import penetration: i.e., higher centralized countries seem to show higher increases in real wages during the late 1970s to the mid-1980s. But from 1985 onwards, these economies have experienced less increases. The revised U-curve index exhibits almost the same signs as those of the centralization index, but with greater statistical significance. Therefore, it seems reasonable to infer that intermediate economies might be more susceptible to increases in real hourly wages for the manufacturing sector, see appendix, table C4, last three columns.

From the simple correlation coefficients, those economies with higher

union coverage seem to experience increases in real wages except for a few years. Their marginal effects become stronger in the late 1980s. High coordinations of both workers and employers tend to reduce real wages in the period from the mid-1970s to the mid-1980s, but not always as presumed. In the late 1980s, economies with higher coordinations in both parties tend to show positive correlations with real hourly wages, see figure 6.7, diagram 4.

Even if regression models do not fit very well in most of the years[8], multiple regression results give a clear picture, see table 6.6. Cross-country differences in import penetration levels are the most important determinant in explaining different experiences of changes in real hourly wages. Although they are the most significant explanatory variable, they are not statistically significant. With the exception of two cases, import penetration levels are negatively related with real hourly wages. Their percentage changes show mixed signs and have relatively small marginal coefficients. The degree of union coverage is positively related except in 1976. Interestingly, cross-country differences in workers' and employers' coordinations give opposite signs in most years. In the 1980s, workers' coordinations may have resulted in real wage increases but lower than otherwise, whereas employers' coordinations are higher. Once interaction terms between independent variables are included in the regression models (see the lower half of table 6.6), the implications become more complicated and significantly different from those based on regressions without interaction terms. At least they show that there might be more than a linear relationship between competitive pressure, structural differences in labour market institutions, and changes in real wages.

[8] Only in four out of seventeen years do generalized linear regression models show statistical fitness (this includes levels and percentage change in import penetration as well as labour market structural indicators as independent variables). Nevertheless, with the exception of three years the models explanatory power span more than 40 per cent of all variations.

Table 6.6 *Generalized Linear Models for the Effects of Competitive Pressure and Labour Market Institutions on Annual Percentage Changes of Real Hourly Wages in Manufacturing*

(I) Without Interaction Terms

Constant	Import-penetrations			Structural-indices			R^2	P
	IPR	DIPR	CP	UD	WC	EC		
1973 -5.48	-6.54	0.62		3.67	3.82	-4.15	0.56	0.298
(5.74)	(15.3)	(0.36)		(2.72)	(3.20)	(2.52)		
1974 -4.35	19.8	-0.21		1.10	-1.05	1.33	0.79	**0.049**
(2.54)	(8.45)	(0.19)		(1.31)	(1.74)	(1.44)		
1975 2.02	-4.29	0.44		1.01	6.07	-4.83	0.74	0.801
(4.25)	(9.64)	(0.27)		(1.39)	(2.08)	(1.92)		
1976 2.81	-0.23	-0.04		-1.43	3.56	-1.27	0.37	0.637
(4.04)	(11.3)	(0.25)		(1.79)	(2.28)	(1.84)		
1977 -0.04	-8.59	0.38		1.45	2.65	-2.91	0.14	0.950
(8.69)	(23.8)	(0.93)		(4.45)	(4.08)	(3.30)		
1978 -0.49	-10.2	0.03		2.93	-0.97	-0.77	0.57	0.285
(2.48)	(7.58)	(0.17)		(1.24)	(1.81)	(1.31)		
1979 -3.09		0.42		0.73	1.67	-1.30	0.66	**0.078**
(1.81)		(0.16)		(0.85)	(1.25)	(0.98)		
1980 -4.29			-1.00	2.41	-3.36	1.63	0.48	0.276
(2.34)			(0.98)	(1.07)	(1.69)	(1.29)		
1981 0.68	-7.24	-0.20		1.33	0.78	-2.36	0.60	0.253
(2.56)	(8.05)	(0.30)		(1.41)	(1.61)	(1.30)		
1982 1.09	-7.38	0.02		1.11	-0.43	-0.41	0.42	0.548
(1.80)	(5.31)	(0.13)		(0.88)	(1.09)	(0.89)		
1983 0.91	-10.7	-0.10		1.72	-1.83	0.31	0.49	0.433
(2.95)	(7.59)	(0.22)		(1.31)	(1.62)	(1.20)		
1984 -5.90	-10.3	0.35		2.68	-0.69	0.76	0.44	0.515
(6.89)	(6.86)	(0.36)		(1.63)	(1.38)	(1.37)		
1985 -0.45	-8.31	-0.06		1.71	-1.18	0.63	0.32	0.728
(2.12)	(6.95)	(0.24)		(1.14)	(1.44)	(1.18)		
1986 -3.13	-7.93	0.20		2.18	-2.57	2.61	0.62	0.214
(3.38)	(6.00)	(0.39)		(1.32)	(1.30)	(1.06)		
1987 -2.48	-10.9	-0.49		2.79	-0.10	0.39	0.84	**0.023**
(2.09)	(5.72)	(0.17)		(1.02)	(1.28)	(1.10)		
1988 -3.20	-0.38	0.42		1.07	-0.69	0.94	0.72	**0.099**
(1.68)	(4.58)	(0.13)		(0.79)	(0.99)	(0.79)		
1989 -3.33	4.22	0.29		0.29	-0.08	0.67	0.59	0.257
(1.82)	(5.34)	(0.12)		(0.85)	(1.06)	(0.86)		

(continued)

Table 6.6 Cont/d

(III) With Interaction Terms

	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89
CON	+	+	-	+	-	+	-	-	-	-	+	-	-	-	-	+	-
IPR(1)	+	-	+	-	+	-	+	+	+	+	-	+	-	+	+	-	+
DIPR(2)	-	+	-	-	-	-	+	-	-	+	+	+	+	+	+	-	+
(1*2)	+	-	+	+	+	+	-	+	+	+	-	-	+	-	-	+	-
UD(3)	-	-	+	+	+	+	-	+	-	+	+	-	-	-	+	+	+
(1*3)	+	+	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-
(2*3)	+	-	+	-	-	+	+	+	-	-	+	+	-	+	-	-	+
WC(4)	+	-	+	-	+	-	+	+	+	-	-	+	+	+	+	-	+
(1*4)	-	+	-	+	-	+	-	-	-	+	+	-	-	-	-	+	-
(2*4)	+	-	+	+	+	+	-	+	+	+	-	-	+	-	-	+	-
(1*2*3)	-	+	-	-	-	-	+	-	-	-	+	+	-	+	+	-	+
EC(5)	-	+	-	-	-	-	-	-	-	-	+	+	-	+	-	+	+

Notes: (1) For the interaction terms, numbers on the right-hand side of each variable are used for briefness sake:

IPR = level of import penetration
DIPR = percentage changes in import penetration
CP = difference (simple changes) in import penetration
UD = union density index
WC = workers' coordination index
EC = employers' coordination index
CON = constant
* = interactions between variables
R^2 = explained variance
P = probability of the model-inappropriateness

(2) Throughout the period, cross-country general linear models with interaction terms can explain 100 percent of variance in annual percentage changes of real hourly wages in manufacturing. And all the F-values are large enough to reject the null hypothesis of model inappropriateness.

PERCENTAGE CHANGES OF PRODUCER PRICE INDEX IN MANUFACTURING

Levels of, and percentage changes in, import penetration tend to be negatively related with changes in manufacturing producer prices, even if not so consistent through the period in question, see appendix, table C10. During the first half of the 1980s, economies with higher import penetration levels experience increases in producer prices. But in the 1970s, they have stronger marginal effects of depressing producer prices over time. Percentage changes in import penetration generate decreasing pressure on

producer prices, albeit not very strong, see figure 6.8, diagram 1.

Decentralized economies tend to have been relatively less volatile to increases in producer prices in the 1980s. Intermediate countries might have been faced with more increases in producer prices for the manufacturing sector, see appendix, table C10, last three columns. Not surprisingly, high union coverage is positively related with producer prices except for a few years. Workers' coordinations seem to work as desired by showing negative correlations with producer prices in the late 1970s, but in most of the 1980s produced positive correlations, see figure 6.8, diagram 2. Further, employers' coordinations tend to decrease producer prices except for a few years in the 1980s, but with smaller and smaller marginal effects.

4. SUMMARY AND IMPLICATIONS

Tables 6.7, 6.8, 6.9 and 6.10 summarize the effects of competitive pressure and the structure of labour market institutions on cross-country differences in economic performance. Differences in competitive pressure across economies tend to give expected influences on cross-country differences in economic performance, albeit not strong. With the unemployment and inflation rates, import penetration levels show negative correlations, whereas their percentage changes give inconclusive effects. This implies that economies with higher import penetration levels tend to have experienced less increase in unemployment and inflation rates than those with lower levels. However, with regard to the GDP growth rate, economies with higher import penetration levels exhibit negative correlations, while their percentage changes are positive. These countries would not have performed better in terms of growth rates. Cross-country differences in import penetration levels, thus, do not give consistent explanations for economic performance across countries, see table 6.7.

Although relatively weak, percentage changes in import penetration, like in the case of time-series variations within an economy, tend to show expected signs in about a half of all relevant cases. Economies facing higher changes in import penetration tend to show: (i) less increase or decrease in unemployment, inflation, and consumer price changes; (ii) less decrease or

increase in production and productivity growth rates, see tables 6.7 and 6.8.

Similarly, for cross-country differences in economic performance in the manufacturing sector, our competitive pressure hypothesis is partly confirmed. Economies faced with higher competitive pressure show less decrease or increase in manufacturing employment and labour productivity relative to the others with lower pressures, see table 6.9. Canonical multi-variate correlations, including both levels of and percentage changes in import penetration as a combined indicator of competitive pressure, support those findings for cross-country difference in economic performance, except for unemployment and real hourly wages in manufacturing, see table 6.10.

Economies faced with higher competitive pressure show less decreases or increases in production growth rates. However this is less obvious for unemployment and inflation rates. Comparing economies facing intense competition with those facing lower competitive pressure, the economic performance of the former is better in terms of productivity and consumer price inflations. For the manufacturing sector, our evidence suggests that competitive pressure might have helped to increase employment, real value-added, and labour productivity. In sum, both simple and rank correlations and multi-variate correlations imply that economies experiencing high levels of competitive pressure may have suffered less in terms of economic performance. These results, however, should be interpreted with some caution since correlations are, in some cases, insufficiently strong to be statistically significant. Nonetheless, the overall thrust and direction of the relationships support our findings in chapter five and three propositions of our competitive pressure hypothesis.

Using annual data, we also tested the two conventional hypotheses - the corporatist and the U-curve, see tables 6.7, 6.8 and 6.9. Rank correlations with the index of centralization in bargaining levels tend to be *positively* related to: (i) Unemployment and production growth rates; (ii) Annual changes in real GDP *per capita* and consumer price inflation; (iii) Annual changes in real hourly wages, employment, and labour productivity in manufacturing. They tend to be *negatively* related to: (i) Inflation; and (ii) Changes in manufacturing producer prices.

Most correlations provide evidence against the corporatist hypothesis. Except for the three correlations which include: (i) Cross-country differences in unemployment rates; (ii) Changes in consumer price inflation; and (iii) Manufacturing real hourly wages. Nevertheless, centralization of bargaining levels are found to be helpful at least in preventing unemployment increases and in restraining rapid wage rises. Except for production growth rates and changes in manufacturing labour productivity, rank correlations for the revised index of centralization exhibit expected signs, but again with little statistical significance. Thus, the U-curve hypothesis of Calmfors and Driffill (1988) seems to be partly supported by our study.

When indicators for the structure of labour market institutions are broken down into three components, we discovered interesting implications for the degree of union coverage, see tables 6.7, 6.8, and 6.9. Those economies with higher union coverage tend to experience lower rates of unemployment up to the mid-1970s, and higher rates since then. Also in many cases, these economies show less variation in real GDP *per capita*. Conventional wisdom can be applied to the other indicators. But workers' and employers' coordinations, which are important determinants of the centralization index are inconsistent. Multi-variate correlations including the structural indicators as well as competitive pressure suggest similar implications with those including only competitive pressure, see table 6.10. Signs are reversed for consumer price inflation, changes in real hourly wages and labour productivity of the manufacturing sector.

All in all, our analyses supports, if partly, our competitive pressure hypothesis. Those economies facing higher pressures tend to show better economic performance compared to the others facing lower pressures. The underlying logic behind this phenomena is addressed in the previous two chapters. However, cross-country empirical findings do not overwhelmingly support our hypothesis compared to the U-curve hypothesis, for example. One message might be that cross-country differences in economic performance can be more fully explained by looking at competitive pressures and the structure of labour market institutions at the same time. The other reason may be that cross-country analyses are more limited by the inter-

country data compatibility. The fact that our competitive hypothesis is strongly supported by time-series variations within an economy, but not sufficiently by cross-country studies, reflects this data problem.

Table 6.7 Summary of Findings on the Effects of Competitive Pressure on Cross-country Variations (I)

	UNEMPLOYMENT		INFLATION		GDP GROWTH RATE	
	simple corr.	rank corr.	simple corr.	rank corr.	simple corr.	rank corr.
COMPETITIVE PRESSURE						
Level of IPR	- [17/29] + (1978-89) - (1961-77)	- [25/29] - (1961-83) (1986-87)	- [19/29] - (1973-84 1986-89)	- [19/29] 0/-(1973-89) + (1962-67)	- [23/29] - (1961-69 1983-89)	- [22/29] - (1962-68 1983-89)
Percentage changes in IPR	+ [15/29] + (1983-87)	+ [17/29] 0/+(1981-88)	+ [16/29]	- [17/29]	+ [19/29] + (1963-69 80-84, 86-89)	+ [22/29] + (1963-70) 0/+(1973-84)
Changes in IPR	- [15/29] + (1983-89)	- [16/29] - (1976-81)	+ [17/29]	+ [15/29] + (1961-66)	+ [20/29] + (1963-69)	+ [21/29] + (1963-69)
STRUCTURES OF LABOUR MARKET INSTITUTIONS						
Centralization of bargaining levels		+ [29/29] (1961-89)		- [17/29] - (1961-67)		+ [19/29] + (1983-89)
U-curve index		+ [21/29] + (1970-89) * (1984-89)		+ [19/29] +/0(1971-82)		+ [17/29] + (1962-71)
Union density	- [15/29] (1961-67, 1968-76) + (1977-89)		+ [24/29]		- [20/29] - (1961-66 1983-88)	
Workers' coordination	- (1961-89)		+ [24/29]		- [17/29] - (1983-89)	
Employers' coordination	- [29/29] (1961-89)		- [18/29] - (1973-89)		- [18/29] - (1983-89)	

Notes: * = statistical significance at 10 per cent level.

Table 6.8 Summary of Findings on the Effects of Competitive Pressures on Cross-country Variations (II)

	REAL GDP PER CAPITA		CONSUMER PRICE INDEX		PRODUCER PRICE INDEX IN MANU.	
	simple corr.	rank corr.	simple corr.	rank corr.	simple corr.	rank corr.
COMPETITIVE PRESSURE						
Level of IPR	- [12/17] - (1983-89)	- [12/17]	- [14/17] - (1973-81 1986-89)	- [16/17] + (1984)	- [11/17] - (1973-80)	- [13/17] - (1977-80 1985-88)
Percentage changes in IPR	+ [12/17] + (1979-84)	+ [12/17] 0/+(1973-77)	- [9/17] - (1975-78)	- [9/17]	+ [11/17] - (1975-78)	- [11/17]
STRUCTURES OF LABOUR MARKET INSTITUTIONS						
Centralization of bargaining levels		+ [9/17] + (1984-88)		+ [10/17] 0/+(1973-82)		- [9/17] -(1980-85)
U-curve index		- [13/17] - (1974-81) 1983-87)		+ [12/17] + (1973-80)		+ [14/17] 0/+(197486)
Union density	+ [9/17] - (1983-87)		+ [13/17] + (1975-78 1980-85)		+ [12/17] + (1981-85)	
Workers' coordination	+ [9/17]		+ [14/17] + (1981-88)		+ [11/17] - (1975-79)	
Employers' coordination	+ [10/17]		- [17/17] - (1973-89)		- [12/17] - (1973-81)	

Table 6.9 *Summary of Findings on the Effects of Competitive Pressure on Cross-country Variations (III): For the Annual Percentage Changes in Manufacturing Sector Economic Performance*

	REAL HOURLY WAGES		EMPLOYMENT		REAL VALUE-ADDED PER CAPITA	
	simple corr.	rank corr.	simple corr.	rank corr.	simple corr.	rank corr.
COMPETITIVE PRESSURE						
Level of IPR	+ [9/17] - (1981-85)	+ [10/17] + (1973-76 1985-89)	- [11/17] - (1976-81)	- [12/17] - (1976-81)	+ [9/17] - (1984-89)	+ [9/17] -*(1984-87)
Percentage changes in IPR	+ [9/17]	+ [10/17] + (1975-80)	+ [15/17] + (1973-79 1984-89)	+ [12/17] + (1977-81)	+ [10/17]	+ [13/17] + (1981-89)
STRUCTURES OF LABOUR MARKET INSTITUTIONS						
Centralization of bargaining levels		+ [9/17] + (1977-84) - (1985-89)		+ [12/17] + (1976-79)		+ [10/17] + (1984-88)
U-curve index		+ [11/17] + *(1977-83)		- [11/17] -*(1983-88)		+ [11/17] + *(1975-78 1985-88)
Union density	+ [14/17]		- [13/17] - (1976-81 1986-89)		- [10/17] - (1983-88)	
Workers' coordination	- [9/17] - (1980-85)		- [12/17]		- [11/17] - (1983-88)	
Employers' coordination	- [9/17] - (1977-84)		- [12/17]		- [11/17] - (1983-88)	

Notes: * = Statistical significance at 10 per cent level.

Table 6.10 Summary of Findings from Canonical Multivariate Correlation Analyses

	Competitive Pressure		Plus Labour Market Structures	
Unemployment	+ [17/29] - (1966-68, 83-84,	74-76, 86-87)	+ [22/29]	
Inflation	- [15/29]	(1970-74)	- [15/29]	(1970-74)
GDP growth rate	+ [20/29]	(1979-83)	+ [19/29]	(1979-82)
Real GDP *per capita*	+ [16/17]	(1978-89)	+ [15/17]	(1979-89)
Consumer price index	- [10/17]	(1974-77 1983-86)	+ [10/17] - [10/17]	(1973-76) (1975-77 1986-89)
Producer price index in manufacturing	- [9/17]	(1974-76)	- [10/17]	(1976-77 1979-81)
Real hourly wages in manufacturing	+ [13/17] - (1981-83,	1985)		
Employment in manufacturing	+ [13/17]	(1984-88)	+ [11/17]	(1978-82 1986-89)
Real value-added in manufacturing	+ [11/17]	(1977-82)	+ [9/17] - (1983-87)	(1978-82)
Real value-added *per capita* in manufacturing	+ [12/17] - (1985-87)	(1974-78 1980-84)	- [10/17]	(1975-77 1985-87)

Notes: (1) Competitive pressure is comprised of the level and percentage changes in import penetration ratios, while the labour market structure is comprise of the degrees of union density, workers' and employers' coordinations.

(3) Multiple indicators for economic performance are in two groups; one for unemployment, inflation, and GDP growth rate; the other for economic performance indicators for the manufacturing sector plus real GDP *per capita* and consumer price index, all of which are based on their annual percentage changes.

CHAPTER SEVEN
COMPETITIVE PRESSURE, LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE
: Supplementary evidence from case studies

1. INTRODUCTION

Our *competitive pressure hypothesis* developed in chapter 4 has been, in part, confirmed by our empirical studies based on data from seventeen O.E.C.D. countries. Our theory suggests that sectors or economies which experience increased competitive pressure are more likely than not to increase their economic performance. Both time-series and cross-country variations in economic performance show expected relationships with competitive pressure. Although we deliberately develop our theory to avoid directly measuring behaviourial variables, the behaviourial dimension can be indirectly examined by studying the potential effects of competitive pressure on economic performance. This way, we can also contribute to the debate on the role of labour market institutions in explaining cross-country differences in economic performance. However, our arguments would be significantly strengthened if we could find direct supportive evidence for these behaviourial changes.

This chapter is devoted to this endeavour. We do this by synthesizing data from a number of case studies, especially those on specific countries[1]. In the first section major empirical results regarding our theory are recapitulated. The second section will briefly examine a cross-country comparative study on the changes in industrial relations systems. The following two sections assess supportive evidence for in the U.K. and the U.S.[2] The last section will summarize our qualitative evidence and suggest

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[1] Industry or company-level case studies would be more appropriate for our purpose. Even if many studies are available, they have little common ground which makes comparisons difficult. Thus in this section, we focus our attention on country-specific case studies using industry and company level data.

[2] One reason to investigate these two economies is that there are more studies about the possible effects of environmental pressure on wage bargaining processes and outcomes for the U.K. and U.S. Also the British experience represents an example of economies which have faced with many changes in their formal system, while that of the U.S. represents economies which have had less change: 'Changes that need consideration, however, are those that have taken place in the 1980s in France, Britain, Sweden and Australia, in contrast to the United States and Japan where there have been few systematic changes'

implications for research in the future.

2. THE EFFECTS OF COMPETITIVE PRESSURE ON LABOUR MARKET INSTITUTIONS AND ECONOMIC PERFORMANCE: *A recapitulation of empirical findings*

One of our most important findings is that import penetration has two significant effects. Higher *levels* of import penetration has a negative influence on time-series changes in employment within an economy. Larger *changes* in import penetration, on the other hand, tends to generate countervailing pressure to employment[3]. The latter finding supports the underlying logic of our theoretical framework. That is, more intense competitive pressure may elicit changes in the behaviour of workers, as well as employers, at the bargaining table in such a way that bargaining processes and outcomes might be more supportive of economic performance. These countervailing competitive pressures on unemployment rates turn out to be strongest in those economies with intermediately-centralized bargaining structures. This is contrary to Calmfors and Driffill (1988), widely accepted, U-curve hypothesis. However, once both the level and percentage change in import penetration ratios are included together, multivariate correlations exhibit positive signs with unemployment due to the larger positive effect of the levels. In this case, the U-curve hypothesis seems to be favoured.

Cross-country variations in unemployment do not tend to be explained consistently by any indicator of competitive pressure. Nevertheless, those economies facing higher import penetration levels tend to have suffered less in terms of unemployment rates up to the mid-1970s. Also it is interesting to note that almost the same implications can be drawn

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Clarke and Niland (1991; p.165)

[3] Differences in the size of coefficients tell us that the marginal effects of import penetration levels are a lot stronger than those of countervailing forces from their changes. Also those coefficients for the level of import penetration are statistically significant in all the 17 countries, while for the percentage changes they are significant only in Finland, New Zealand, and Australia. However, for the purpose of this thesis the finding that signs of percentage changes in import penetration on unemployment rates are negative except in Italy and Switzerland among 17 countries cannot but be emphasized enough.

for inflation measured by the GDP deflator, since 1973. Inflation measured by the consumer price index consistently shows negative signs across time as well as across countries. Is this mainly due to lower prices of imported consumer goods? Not necessarily, because the producer price index is also negatively related with competitive pressure. Thus, there is a strong case in favour of our own hypothesis that *perceptions* of competitive pressure may engender a slower increase in inflation: either from wage restraint or from greater increases in productivity. Despite the fact that differences in the size of marginal effects cannot be proved, it is significant that all the indicators for production and productivity growth rates are positively related with percentage changes in import penetration. This is the case for the time-series variations within an economy as well as cross-country variations especially in the 1980s, see table 7.1.

Table 7.1 *The Effects of Competitive Pressure on Economic Performance: Comparisons Between Time-series and Cross-country Variations*

	Time-series Variations			Cross-country Variations		
	Level	% change	MCC	Level	% change	MCC
Macro-economic Indicators						
GDP growth*	-	+	-	-	+	+
Inflation*	+	-	-	-	-	-
Unemployment*	+	-	+	-	+/-	+
Real GDP *per capita*	+	+	+	-	+	+
Consumer price index	-	-	-	-	-	-
Indicators for Manufacturing Sector						
Real wages	+	+	+	-/+	-/+	+
Employment	+	+	+	-	+	+
Real value-added	+	+	+	-	+	+
Real value-added *per capita*	-	+	+	-/+	+	+
Producer price index	-	-	-	-	-	-/+

Notes: (1) * = Data not based on annual percentage changes.
(2) Sings are not consistent across country or over time. Correlations with each variable tend to show the above signs in more than half of the cases. If both signs have similar number of cases, then we treat it as ambiguous (-/+).
(3) MCC: Multiple Canonical Correlations

Percentage changes in import penetration tend to generate pressure on workers and employers which influences their strategic choices. This is predicted by our theory. Indeed, not only over time but also across country, these choices tend to show consistent relationships with economic performance indicators. Employer and employee choices are[4]:

(i) Negatively related with unemployment and inflation rates[5];
(ii) Positively related with production and productivity growth rates;
(iii) Positively related with annual changes in employment, real value-added, labour productivity of the manufacturing sector.

These findings lend support, if not complete, to our competitive pressure hypothesis derived from changes in industrial relations.

Direct qualitative evidence on behaviourial changes behind these relationships lend significant support to our arguments for the competitive pressure hypothesis. To do this we must examine whether there has been any changes in labour relations in the industrialized countries over the last two or three decades. And if so, explain why and judge whether these have been influenced by international competitive pressure. To do this we review changes in European labour relations systems during the last two decades. This will be carried out in section 3. Sections 4 and 5 will examine industrial relations processes and outcomes of the U.K. and the U.S.

3. CHANGES IN EUROPEAN INDUSTRIAL RELATIONS SYSTEMS

Broadly speaking, the 25 years of unprecedented and sustained economic growth and, to a large extent, full employment that started in the late 1940s, enabled workers to receive regular improvements in their living standards and working conditions, see e.g., Clarke and Niland (1991). Accordingly labour relations have been pretty receptive to changes in the

[4] These correlations are not strong enough to be statistically significant in some cases (see, for details, chapters 5 and 6).

[5] Inflation is measured in three different ways: By changes in GDP deflator; Consumer prices; and Manufacturing producer prices.

economic climate before the Second World War, and also relatively peaceful until the 1960s:

> 'Before the war, the determination of wages and working conditions reflected the state of trade: improvement when business was good and no improvement or even cuts when business was bad...At least up to the time that economic growth faltered, near the end of the 1960s, such improvement helped ensure a high degree of industrial peace in most of the countries.' Clarke and Niland (1991; p.3)

However, many industrial relations systems had not really adjusted to the changed economic environment when, in 1979, the second major rise in oil prices hit the non-oil-producing countries. It is regarded as unprecedented in the history of industrial relations that during the 1970s the trend in income distribution and in industrial relations was favourable to labour and its representatives, even when the long post-war expansion had finally come to an end[6].

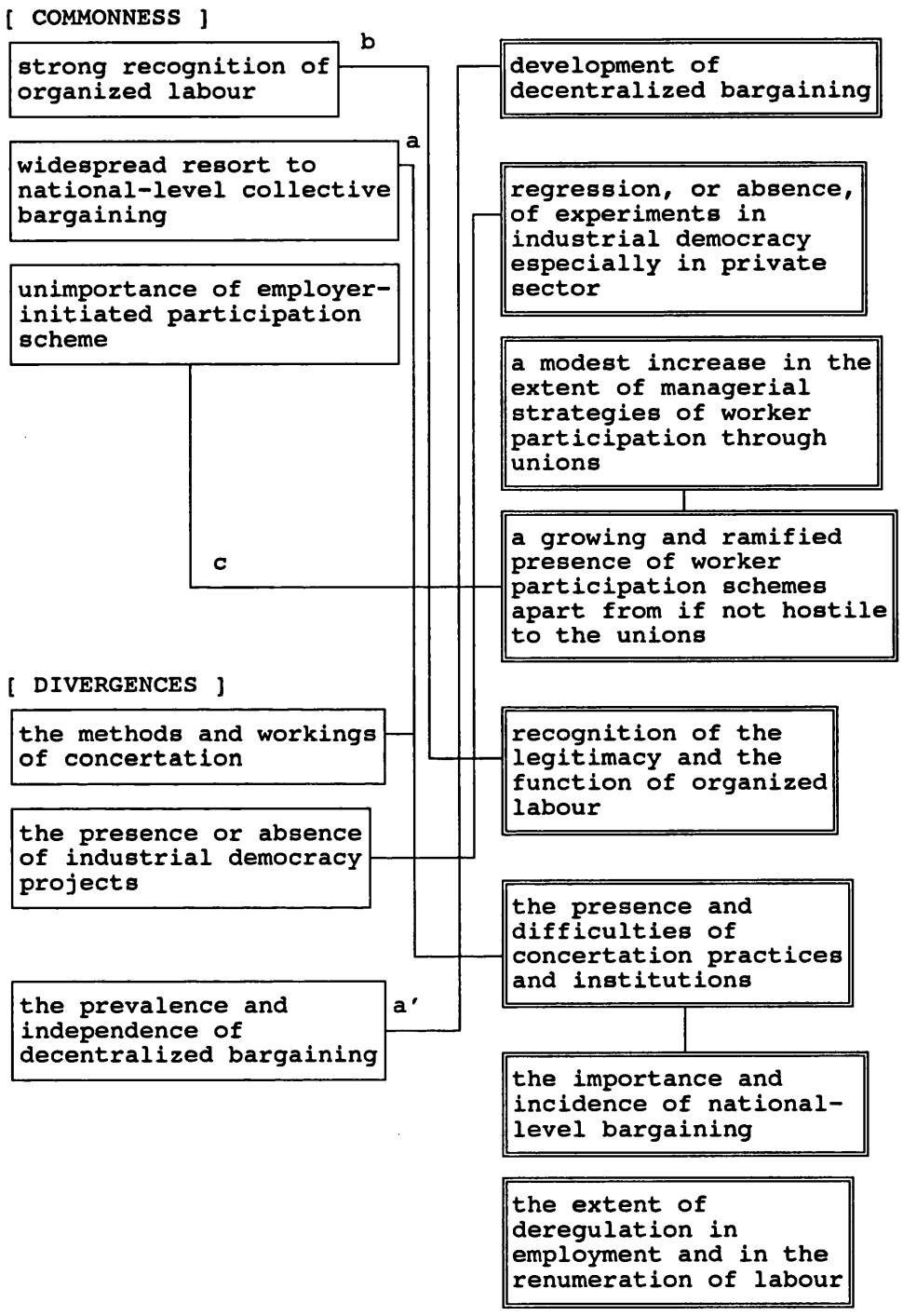
> 'These events, together with others no less important, such as the massive resurgence of unemployment, did not appear to give rise to any substantial constraints on industrial relations or to diminish either the political or the bargaining power or the recognition of the unions.' Baglioni (1991; p.2)

Indeed, during the 1970s there was an incongruity between economic under-performance and the progressive advance in the objectives and accomplishments of trade union action. This encouraged governments to confront their labour relations systems. In the case of the U.K., this led to important changes in employment legislation. While results of the measures taken by various countries and of the processes which emerged show a number of similarities, they also provide evidence of the persistence or emergence of significant differences, see e.g., Baglioni (1989; p.253).

Even if difficult, these similarities and divergences in the experience of European countries are summarized in figure 7.1. The shared features of the 1970s primarily involve political relations at the higher levels of collective bargaining. In the 1980s, by contrast, decentralizing trends and concession bargaining were common across Europe. In the 1970s, divergences are found in the mechanisms of concertation between different

[6] The oil shocks of the early 1970s triggered recession and an end to the expansionist years, see e.g., Baglioni (1991).

Figure 7.1 Commonness and Divergences of European Industrial Relations Systems Over the 1970s and the 1980s



Source: Authors' compilation from Baglioni (1991; pp. 30-31).
Notes: (1) ——— and ═══ stand for features of the 1970s and the 1980s respectively.
(2) a, b and c are points to be discussed in the text.

interest groups and also in plant level industrial relations. This includes company-level bargaining, steps towards the deregulation of employment and to use of labour. In the 1980s, differences are striking and substantial, especially in the political and institutional spheres. Furthermore, differences are even perceptible in the general state of relations between business and labour, and hence, in the national level of collective bargaining. Interestingly, common features of the 1970s become divergent in the 1980s, while divergent features of the 1970s become common in the 1980s. Several changes should be noted:

(i) The development of decentralized collective bargaining across European countries, with concomitant decreases in the importance and incidence of national level bargaining, see a & a' in figure 7.1;
(ii) The relative slowness in recognizing the legitimacy and function of organized labour, see b in figure 7.1;
(iii) A modest increase in the extent of managerial strategies of worker participation with or without unions across countries, see c in figure 7.1.

These changes may indirectly imply that, at an economy level, flexibility increases at the expense of consensus. At the level of the business unit, flexibility and consensus might increase and result in more flexible and cooperative labour relations. However, it is not altogether clear from existing studies how influential international competitive pressure has been in these changes. The previous two chapters which highlight consistent relationships between competitive pressure and economic performance across countries and over time suggest that they might have played a significant role.

Tables 7.2 and 7.3 present in greater detail cross-country differences in labour relations as well as the major characteristics of their changes in the 1980s. The tables show that, across countries, employers increasingly demand flexibility, and business units show a reduction in the rigidities accumulated during the 1960s and 1970s. Furthermore, employers demonstrate a preference for decentralized employment contracts which emphasize company-level bargaining. However, employers' attitudes to

Table 7.2 Major Characteristics of European Industrial Relations: Changes in Actors' Position in the 1980s

Actors	Characteristic Features of Industrial Relations
State	Prevalence of conservative governments Transnational convergence in its action - the need to curb the budget deficit and inflation; to improve international competitiveness - the effort to curb the rise in labour cost, to control wage rises, mainly through incomes policy Significant differences in: - the treatment of labour unions - the degree of recognition accorded to unions - the role unions are permitted to play Little convergence to relations between the state, unions and employer organizations (concentration)
Employers	Determination and initiative to remodel the industrial relations system - maintain the legitimacy of the unions as representatives of the collective interests of working people Convergence in: - the demand for flexibility intending to attenuate or eliminate many rigid rules accumulated during the 1960s and 1970s - internal flexibility; changes in: (i) work organization, (ii) working hours, (iii) work performance, (iv) job tasks, and (v) wage system - external flexibility; change in: (i) the number of employees, (ii) non-standard, (iii) employment contracts, and (iv) worker mobility - the preference for decentralization in the management of employment contracts (a clear preference for bargaining at the company level) - the renewed employer political presence Divergences in: - employer attitudes to workers and their union representatives (managerial styles)
Unions	Weakened political presence of the unions The growth of division between central labour organizations and, in some cases, within the same organization A perceptible decline in the authority of central confederations Divergences in the level of union membership and its changes A substantial decline in strikes dating back to the mid-1970s - a diminution in the share of traditional *bread and butter* strikes over wages and working conditions in industry - strikes increasingly dependent on economic variables and to be pro-cyclical - recession strikes taking on a defensive character with a tendency to decline - unemployment tending to exercise restraint

Source: A compiled table, largely based on Baglioni (1991; pp.10-29)

Table 7.3 Major Characteristics of European Industrial Relations: Industrial Relations Processes in the 1980s

Processes	Characteristic Features of Industrial Relations
Political Arena	Greater, more active and often direct intervention of the public powers - generally helping structural changes to reduce the role of national contracts in favour of local negotiations
Collective Bargaining	General pattern of increasing difficulties for collective bargaining (more evident at the start of the 1980s) compared to previous years Significant national differences in the degree of solidity of collective bargaining practices Convergence between political variables and industrial relations; collective bargaining not necessarily depending on political conditions even where there is a tendency to stronger state intervention - the relative solidity of collective bargaining practices heavily affected by economic conditions and by management style in labour relations Decentralization in collective bargaining Increased bargaining over flexibility; more substantial with respect to internal than external flexibility Increased worker participation, but without much progress in industrial democracy - managers dealing with workers directly, ignoring or cutting across union representatives - growing demand for and experience of the involvement of workers The reduction in working hours being traded off against the firms' ability to arrange working time in line with their own functional needs More wage claims adjusted by performance of structural-economic indicators such as competitiveness, labour productivity, and anti-inflation adjustment - but renewed real wage growth or at least a halt in the downward trend from 1984 to 1986, particularly in manufacturing - wage rises not being granted to the public sector - increasing wage drift, wider salary ranges not always set by collective bargaining, discretionary and individual salary decisions

Source: A compiled table, largely based on Baglioni (1991; pp.10-29)

workers and union representatives exhibit some cross-country differences which manifest themselves as distinct management styles. In addition to differences in union membership levels and changes, there are differences in the growth of divisions between, and in some cases within, central labour organizations. Notably, there has been a substantial decline in strikes, in particular the traditional *bread-and-butter* strikes over wages and working conditions in industry. Strikes have become increasingly dependent on economic variables. These changes in employers' and unions' positions in labour relations suggest that they might have become more perceptive of changes in economic conditions like international competitive pressure.

Over the same period, government approaches to labour relations do not appear to have changed consistently across countries. Our theory deliberately omitted the role of the state and focuses instead on the behaviourial interactions between workers and employers. Collective bargaining processes are not necessarily dependent on political conditions even where there is a tendency of stronger state interventions, see table 7.3.

From table 7.3, two other developments can be noted: (i) Increased worker participation; and (ii) Changes in wage claims. Interestingly it has become acceptable for managers to deal with workers directly and ignore their union representatives. Wage claims are increasingly adjusted by the performance of structural-economic indicators such as competitiveness and labour productivity[7]. Wage drift has increased, suggesting wider salary ranges which are not always set by collective bargaining. These changes in the process of collective bargaining processes support our competitive pressure hypothesis.

Even though the 1980s have not been a time of radical reconstruction of the bases of industrial relations, it is widely agreed that they have nevertheless witnessed changes in the power relationships between unions and employers and a strengthening of the emphasis on operational efficiency - in particular through enhancing flexibility at the workplace, see e.g., Clarke and Niland (1991; p.18). For example, in

[7] In the 1980s there has been a proliferation of studies on these developments. For a specific case study, see Bradley and Estrin (1987).

collective bargaining, management strategy generally has played a stronger role, and also there has been a greater emphasis on decentralization, with more matters being dealt with at the enterprise or workplace level. However, there has been no sweeping change in the way in which wages and working conditions are determined, see e.g., Clarke and Niland (1991; p.170). Furthermore, industrial relations systems continue to vary considerably between countries, both in their form and in their efficacy as can be seen in table 7.4. All in all, it should be noted that there have been substantial shifts in the focus and style of collective bargaining, with stronger emphasis on strategy and workplace bargaining and consultation arrangements[8].

These changes in industrial relations systems across countries strongly support our competitive pressure hypothesis. Changes suggest that there has been a greater emphasis on changes in strategic behaviour of workers as well as employers rather than cross-country differences in the *structure* of industrial relations systems themselves. In the next section, we will provide supportive evidence at an economy level with specific reference to the U.K. and the U.S. respectively.

[8] There are some studies which would disagree with this, see e.g., Batstone (1988); Edwards (1986); and Kelly (1988). However, their work is pitched at a different level to what is being argued here and these data - particularly Batstone's - is slightly dated.

Table 7.4 Changes in European Industrial Relations System Since 1980 Compared with those in Pre-1980

Type	Belgium	Denmark	Sweden	Germany
National concertation	3 - 1	2 - 0	2 - 1/3	2 - 1
Industry-wide bargaining	3 - 2	3 - 2	3 - 2	3 - 3
Decentralized bargaining	2 - 3	2 - 3	2 - 3	1 - 2
Worker participation with union involvement	1 - 2	1 - 1/0	1 - 1+	3 - 2
Worker participation without union	0 - 1	1 - 1+	0 - 0+	0 - 1
Individual bargaining	1 - 1+	0 - 0+	0 - 0+	1 - 1+
Individual contracts in the secondary labour market	0 - 1	1 - 1+	1 - 1+	0+ - 1
Degree of soundness of the bargaining process	-2	-1	0	0

Type	Netherlands	France	U.K.
National concertation	3 - 1	3 - 1	1 - 0
Industry-wide bargaining	3 - 2	3 - 3	3 - 1
Decentralized bargaining	1 - 2	1 - 3	3 - 3+
Worker participation with union involvement	3 - 3+	1- - 2	1 - 1
Worker participation without union	0 - 1	1 - 2+	0 - 1-
Individual bargaining	1 - 1+	1 - 2	2 - 3
Individual contracts in the secondary labour market	1 - 1+	1 - 2-	1 - 2+
Degree of soundness of the bargaining process	-2	1	-1

Sources: Tables 2.3, 3.3, 4.1, 5.10, 7.7, 10.1, and 11.7 in Baglioni and Crouch (1991). For the 'degree of soundness' see Baglioni (1991; pp.239-240).

Notes:
(1) The numbers on the left of each entry indicate the relative degree of a certain type of the industrial relations system before 1980, and those on the right show how much changes have been since 1980.
(2) The higher numbers indicate the higher degree of each type.
(3) Each entry is based on those country studies and evaluated more or less subjectively.
(4) For the definition of 'degree of soundness', the numbers indicate followings; -2 for seriously weakened bargaining, -1 for somewhat weakened bargaining, 0 for intact collective bargaining, and 1 for traditionally weak but strengthening bargaining. Baglioni originally included Spain and Portugal as 'traditionally weak bargaining'.

4. PERCEIVED ENVIRONMENTAL PRESSURE AND CHANGES IN COLLECTIVE BARGAINING OUTCOMES FOR THE U.K.

Three developments in industrial relations have been particulary important in the U.K. during the 1980s, see e.g., Crouch (1991; p.326):

> (i) The almost complete rejection by the Conservative government of the search for national compromise in industrial relations that had characterized the policy of all parties since at least 1940 and, arguably, since the early twentieth century;
> (ii) The installation of a tough legal framework for trade union action, marking the final end of the so-called *voluntarist* tradition that dates back to 1871;
> (iii) In several sectors of the economy, the emergence of the company as the most important level for industrial relations activity, replacing the branch, shop-floor and state levels that had previously competed for importance within the British system.

With hindsight, the following questions will be addressed: (i) What have been the major developments of wage determination processes? and (ii) How might competitive pressure affect wage bargaining?

Within manufacturing there has been a decline in collective bargaining. This is partly because some employers took the opportunity of the economic and political climate of the 1980s to stop dealing with unions, and partly because the recession mainly hit large firms rather than small ones, see e.g., Crouch (1991; p.333). Compared with changes in earnings for the whole economy, those of the manufacturing sector show relatively less increase in the early 1980s but more from late 1983 onwards[9].

[9] This is the case even though manufacturing was seriously hit by recession, see e.g., Crouch (1991; p.334).

* Changes in earnings (1980=100)

	1981	1982	1983	1984	1985	1986
Whole economy	125.8	137.6	149.2	158.3	171.7	185.3
Manufacturing	123.6	137.4	149.7	162.8	177.6	191.2
Difference	-2.2	-0.2	0.5	4.5	5.9	5.9

Table 7.5 Increase in Earnings by Industry for U.K.

Industry	1979-80	1980-81	1981-82	1982-83	1983-84	No. of Settlements
Food, Drink, Tobacco	18.3+	9.9+	8.1+	6.5+	6.1	164
Chemicals	16.9	10.0+	8.0+	6.5+	6.2	172
Metals	16.5	8.0-	6.7	4.8-	5.4-	94
Mechanical Engineering	15.4-	8.3-	6.4-	5.3-	5.6-	431
Instrument Engineering	16.0	9.2	6.9	5.8	6.3+	174
Textiles	15.0-	8.5	6.6	5.8	6.2	101
Bricks, Timber, Furniture	16.6	8.8	6.6	5.5	6.3	70
Paper, Printing Publishing	18.2+	9.8+	6.9	6.1	6.6+	100
All Settlements	16.3	9.0	7.0	5.7	6.0	1306

Source: Gregory *et al.* (1985; p.348; table 3).
Note: + (-) denotes an increase significantly above (below) the average for the remaining settlements at 5 per cent.

Inter-industry variations however, show significant differences. Indeed, in the 1980s, over a cumulative period of five years, three industries - food, chemicals and paper - emerged as high settlers, whereas metals, mechanical engineering and textiles were relatively low settlers, see table 7.5[10]. The latter three industries, in fact, have been faced with greater competitive pressure from international markets and have experienced higher levels and larger changes in import penetration.

Although there is no direct way to see the effects of competitive pressure on wage settlements, it is reasonable to assume that 'profits', 'degree of monopoly power', and 'risk of redundancy' might have exerted

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Source: Department of Employment Gazette; recited from Crouch (1991), Table 11.4.

Crouch associated this reversal in trend to Britain's poor training system which failed to produce skilled workers. Further Crouch argued that in much of the manufacturing industry little has really changed in collective bargaining: 'In manufacturing shop-steward organizations and local bargaining arrangements just waited quietly during the worst of the recession, and by the mid-decade had begun to be active again.' (p.334)

However, if we consider inter-industry variations of and their factors of influence in wage settlements (see text), these arguments need to be re-evaluated. There have been, at least, significant changes in the conduct of collective bargaining, especially in response to changes in the economic climate and profitability of industry including competitive pressure from international markets.

[10] For a detailed discussion, see e.g., Gregory *et al.* (1985; pp. 347-348).

Table 7.6 Proportion of Respondents Citing the Factors as 'Very Important' in Wage Negotiations for the U.K.

Factors	1979-80	1980-81	1981-82	1982-83	1983-84
Upward Pressures					
1. Profits	11	11	16	19	21
2. Degree of monopoly power	6	4	3	4	4
3. To recruit/ retain labour	22	7	6	5	9
4. Cost of living increases	60	47	45	36	40
5. Industrial action (threatened)	2	2	2	1	3
6. Industrial action (taken)	3	2	1	2	2
Downward Pressures					
7. Profits	45	62	60	53	45
8. Degree of monopoly power	38	56	52	52	51
9. Risk of redundancy	20	43	35	27	21
10. Other	2	6	3	4	3

Source: Gregory *et al.* (1985; p.350; table 4).

Notes: (1) There are six more factors listed in the original article, 'Other factors influencing level of settlement.

(2) Full citations for the factors stated are as follows: 1/7. Level of establishment/company profits. 2. Management able to pass on substantial part of pay increase in prices. 3. A need to improve ability to recruit/retain labour. 8. Management unable to pass on substantial part of pay increase in prices. 9. Risk of redundancy if large pay increase awarded. 10. This factor has changed over period: for 1979/80 dealing with the impact of direct tax cuts; for 1980-81 with that of government exhortation; and for the rest with that of employee involvement policies.

downward pressure on wages, see tables 7.6 and 7.7. It may not be surprising, as Gregory *et al.* (1985; p. 351) argue that product market pressure, from profits and prices, has consistently outweighed the risk of redundancy as a downward pressure on wage settlements. The former two factors have been significantly more affected by international competitive pressure than the third factor (see chapters 5 and 6). The more important point may be that managers in the low-wage industries have given too much emphasis to 'profits' and 'the risk of redundancy' in wage negotiations. In contrast, the high settlers have given less importance to all three plausible indicators of competitive pressure: (i) 'Profits'; (ii) 'Degree of monopoly power'; (iii) 'Risk of redundancy'. In fact, high settlers cite 'profits' more often as *upward* pressure, see table 7.7.

Table 7.7 Factor Ratings for High (H) and Low (L) Settlers

Factors	1979/80		1980/81		1981/82		1982/83		1983/84	
	H	L	H	L	H	L	H	L	H	L
Upward Pressures										
1. Profits	+		+		+	-	+	-	+	-
2. Degree of monopoly power					+			-		
3. To recruit/ retain labour			+	-	+		+		+	
4. Cost of living increases		-		-		-	-	-	-	-
5. Industrial action (threatened)	+									
6. Industrial action (taken)										
Downward Pressures										
7. Profits	-	+	-	+	-	+	-	+	-	+
8. Degree of monopoly power	-		-	+	-		-		-	+
9. Risk of redundancy	-	+	-	+	-		-	+	-	+
10. Other										

Source: Gregory *et al.* (1985; p.350; table 4).

Notes: (1) There are six more factors listed in the original article, 'Other factors influencing level of settlement.

(2) Full citations for the factors stated are as follows: 1/7. Level of establishment/company profits. 2. Management able to pass on substantial part of pay increase in prices. 3. A need to improve ability to recruit/retain labour. 8. Management unable to pass on substantial part of pay increase in prices. 9. Risk of redundancy if large pay increase awarded. 10. This factor has changed over period: for 1979/80 dealing with the impact of direct tax cuts; for 1980-81 with that of government exhortation; and for the rest with that of employee involvement policies.

(3) +(-) denotes an influence significantly above (below) the average for the remaining sectors in that year at 5 per cent level.

This line of argument can also be applied to the finding by Blanchflower and Oswald (1988) that wage rates appear to be shaped by employers' financial prosperity (cited as 'profitability/productivity' and 'all establishment could afford') and also affected by external pressure which can be captured by those factors cited as the: 'increasing cost of living', 'going rate in industry', and 'external pay structure'[11]. It is also interesting to note that even if union and non-union pressure upon wages settlements are apparently similar, with the exception of merit payments for individual

[11] Blanchflower and Oswald (1988) are similar in spirit to Gregory *et al.* (1985; 1986).

Table 7.8 Factors Influencing the Level of Pay in the Most Recent Settlement (per cent responses)

	Manuals		Non-Manuals	
	Union	Non-union	Union	Non-union
All establishment could afford	11	5	9	7
Increased cost of living	34	29	37	32
Going rate in industry	15	23	13	19
Merit/individual performance	4	20	5	33
Published norms	3	2	3	4
Internal pay structure	2	3	6	15
External pay structure	15	15	9	11
Government regulation	6	3	10	2
Strikes	1	0	0	0
Profitability/ productivity	34	35	37	38
Economic climate	9	2	13	3
Other	13	7	15	6
Not answered	8	3	11	1
Number of establishments	488	613	356	904

Source: Blanchflower and Oswald (1988; p.366; table 2).

performance[12], union sectors seem to be more perceptive of changes in the 'economic climate', see table 7.8[13]. This supports, albeit indirectly, one of the propositions of our theory: that workers in densely-unionized companies tend to perceive competitive pressure more accurately, see chapter 4.

Ingram (1991) highlights the extent of changes in working practices that have been linked to pay settlements during the 1980s. Even if his analysis is focused on the 1980s, he finds a number of significant changes in working practices introduced simultaneously with wage negotiations. Moreover, he also indicates that there was an increase in such practices

[12] Blanchflower and Oswald (1988; pp.367-368).

[13] In the late 1980s, the financial performance of the firm had become increasingly important in wage settlement determination. According to Gregg and Yates (1991), this indicates that 'financial pressures on the firm were increasingly being transmitted to the workforce.' However, it could also be interpreted that workers and unions have become more perceptive of financial performance of the company, see e.g., Gregg and Yates (1991; pp.361-376).

with the intensification of competitive pressure. Similarly, Machin and Wadhwani (1989) find that unionized plants were more likely to have experienced a change in working practices in the 1980s, showing larger effects where there was a simultaneous increase in product market competition[14]. These studies further support, if indirectly, our findings of positive correlations between competitive pressure and macro-economic performance.

5. CHANGES IN COLLECTIVE BARGAINING PRESSURE, PROCESS AND OUTCOMES: *A cross-sector study for the U.S.A.*

Increasingly, widespread economic problems have been viewed as largely originating from pressure engendered by long-term changes in the nature of the international economy. Industrial policy directed at such problems often critically depends on the active participation and cooperation of employees, employers and government. Although the shape of the ensuing relationships have not yet become clear during the first half of the 1980s, see Kochan and Wever (1991), a variety of experiments and changes have taken place in industrial relations in the U.S.

Indeed, it is widely agreed, at least in the U.S., that the globalisation of markets and structural adjustments have combined to make it increasingly more difficult for unions to "take wages out of competition" through collective bargaining by standardising costs among producers. According to Kochan and Wever (1991) wage settlements in major bargaining units averaged 1 to 3 per cent below those that would have resulted had collective bargaining continued to follow the wage patterns of

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[14] They also suggested that 'organisational change' was more likely if:
(a) The plant is larger, probably because restrictive practices are more likely to be present in the first place.
(b) The plant is experiencing financial distress.
(c) The plant is foreign-owned.
(d) In the recent past, the plant has been taken over (although the evidence here is rather weak).
(e) The plant has a joint consultative committee (i.e., a "voice" effect).
(f) In the recent past, the product market has become less concentrated. Importantly, there is a suggestion that the union effects on organisational change are much larger in cases where there is a simultaneous increase in product market competition.

Table 7.9 Concessions by Manufacturing Industry Group[15]

Industry Group	Number of concession negotiations	% of unionized affected (estimates)
Food	16	20
Tobacco	0	0
Textile mill		3
Apparel	8	30
Lumber	1	5
Furniture	0	0
Paper	3	5
Printing	6	22
Chemicals	1	28
Petroleum products	2	25
Rubber and plastics	5	44
Leather and products	1	35
Stone, clay and glass	5	20
Primary metal	27	40
Fabricated metal	1	1
Non-electric machinery	17	35
Electrical & electronic	4	45
Transportation equipment	31	48
Instruments	0	0
Miscellaneous manufacturing	3	33

Source: Cappelli and McKersie (1985; p.229; table 11.1).

the 1970s. However, evidence suggests that concessions were far from uniform across industries. Indeed, Cappelli and McKersie (1985) draw attention to this fact with data from the 1982 U.S. labour negotiations, see table 7.9. The number of concessions was higher in those industries such as food, primary metal, non-electric machinery, and transportation equipment. These industries had a reputation for their union density. In descending order of magnitude the most densely unionised were: transportation equipment, electrical and electronic, rubber and plastics, and primary metal industries. Unsurprisingly, most of these industries have been faced with relatively higher international competition. This suggests that increased product market competition, combined with declining levels of unionisation, produce a fundamental shift in wage setting institutions and

[15] Data in table 7.9 are originally from the Bureau of National Affairs (BNA) and includes all cases where parties were negotiated concessions. They do not show where agreement had been reached.

Table 7.10 Collective Bargaining Pressures, Process and Outcomes in the 1982 U.S. Bargaining Round[16]

Industry	Auto	Steel	Rubber	Clothing	Trucking	Airlines	Meat-packing	Electrical products	Oil refining
Environmental Economic Pressures									
International competition	X	X	X	X					
Domestic nonunion competition	X	X	X	X	X	X	X		
Regulatory change					X	X			
Bargaining Process									
Changes in degree of centralization	X	X	X		X		X		
Shift in role of IR function	X				X	X			
New forms of communication or tactics	X	X	X		X	X			X
Bargaining Outcomes									
Compensation level concessions	X	X	X		X	X	X		
Changes in pay criteria	X					X	X		
Work rules	X	X	X		X	X	X		
Job Security	X					X	X	X	
Union jurisdictional issues					X				
Labour-management cooperation	X	X		X		X			

[16] Note that in the table, X is placed in each category box where they found a significant development within 1982 bargaining in an industry; sometimes affected only one major company or agreement while in other cases pervading the whole industry. For more details on their sample and methodology, see Katz (1985; pp. 214-215).

collective bargaining outcomes[17].

How has competitive pressure affected the changes and outcomes in collective bargaining process across industries? Data reported in table 7.10 suggests that those industries with international competition seem to have significantly more experience of labour-management cooperation than otherwise, especially in the auto, steel and clothing sectors. In fact, the nine industries mentioned in table 7.10 can be grouped into four according to the nature and the extent of economic pressure:

(i) *Stable (or favourable) pressure* (electrical products and oil refining);
(ii) *Intense* pressure from domestic sources (trucking, airlines, and meat-packing);
(iii) *Intense pressure from both domestic and international markets* (auto, steel, and rubber); and
(iv) *Historically high competitive pressure* (clothing).

It is notable that those industries in groups (i) and (iv) have not shown significant developments while those under intense pressure in the other groups exhibited major changes including bargaining processes and outcomes[18]. Even though those in (i) and (iv) are similar in the sense that there are no remarkable changes, it should be noted that in the clothing industry - group (iv) - labour and management constantly had adapted to the threat of competition throughout the post-World War II period:

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[17] It should be noted that the most general development associated with concession bargaining has been a broadening of the bargaining agenda to include employment levels and strategic business decisions. In previous periods, employment levels were not an issue in bargaining mainly because they remained reasonably stable; if at all, employment adjustments occurred incrementally and temporarily (Cappelli and McKersie 1985; p.227). However, the incidence of concession agreements are falling; the amount of concession activity followed the worsening economic climate from 1981 to 1982 with a time lag - increasing as the economy declined and receding as the downturn slowed in late 1982-3 (*ibid.* p.230).

[18] Note that those pay and work-rule concession in these industries are consistent with a national slow-down in the rate of compensation increases. Similar types of changes have occurred in these and other industries during previous economic recessions.

However, the magnitude of the reduction in the rate of pay increases and the scope of work-rule changes set the 1982 concessions apart from the outcomes of bargaining in previous recessions, see Katz (1985).

> 'In industries that have been declining for some time, such as the textile and garment industries, the economic aspects of bargaining has been adjusting for quite a while and the process of adapting to the worsening environments has been more gradual. One could draw an analogy here to a dam that holds back pressure until it finally breaks, leading to a big collapse; contracts that adjust continually and gradually to economic changes may avoid that sudden collapse.' Cappelli and McKersie (1985; pp.231-232)

Except for 'labour management cooperation', there are no marked differences between the two groups of industries when they are exposed to increased competitive pressure. Thus, it is difficult to distinguish between the effects of competitive pressure generated by international markets and those from domestic sources such as non-union competition and regulatory changes[19].

It is enough to say here that there seems to be a significant difference in bargaining processes and outcomes across industries, possibly through the mechanism devised in our theoretical framework, namely through subtle interactions of strategic changes in response to perceived competitive pressure by both employers and workers. These changes do not seem to be specific to the early 1980s; except, that is, for their speed and depth. Indeed, as we have seen in chapters 5 and 6, there has been continuous, even if not too apparent, adjustments in the conduct of labour market institutions in response to the competitive pressure.

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[19] The importance of economic pressure - either from domestic or international competition - in explaining changes in collective bargaining behaviour is also emphasized in the following: 'The reasons for the upsurge in activity (like concession bargaining) can be traced to a number of developments that have placed substantial economic pressure on many industries in the United States. Changes in import penetration, enlargement of the nonunion sector, and deregulation have placed substantial competitive pressure on many industries, especially manufacturing, to cut costs through concessions. The importance of economic pressure was the determining factor in the twenties and thirties as well...This current period of concession bargaining, like the Depression, has been one where structural economic changes have not been confined to isolated industries...These industries have been under pressure to cut costs in order to meet new competitive pressures, and concessions have been an obvious way to do that.' Cappelli and McKersie (1985; p.231)

6. SUMMARY AND IMPLICATIONS

Albeit limited in scale and scope, these case studies seem to support our theoretical predictions in chapter 4 as well as our empirical findings in chapters 5 and 6. As we can see in table 7.11, one of the most striking common features of changes in industrial relations systems between the two decades is that, even with continuing variations across countries in their form and efficacy, there have been substantial shifts in the focus and style of collective bargaining with stronger emphasis on strategy and workplace bargaining, and consultation arrangements. These shifts are more impressive across industries within an economy in response to varying degrees of competitive pressure, especially in the 1980s. For example, in the U.S., more practices of labour management cooperation can be found in those industries faced with more intense international competition such as auto, steel, and clothing sectors. In the U.K., lower wage settlements were made in metals, textiles and mechanical engineering which have also experienced higher competitive pressure.

Among the factors cited as influencing wage settlements in these industries, profits and the degree of monopoly power of their bargaining units as well as the risks of redundancy have exerted significant downward pressure and their importance has been increased. Although there is no way of directly disentangling the effects of competitive pressure from these studies, it is notable that there are considerable relevant differences between industries faced with higher competitive pressure and those with less. Indeed, it is not unusual to find that those companies facing severe international competition tend to be more subject to declining profits and monopoly power, and that they may experience more structural adjustments resulting in redundancy problems[20].

On the other hand, governments have never been indifferent to employment trends and the evolution of industrial relations in industries

[20] Company case studies (e.g., Chrysler in the U.S., British Leyland in the U.K., and Volkswagen in Germany) lend support to our theory. When faced with trouble from increased competitive pressure these companies pursue similar reform strategies based on enhanced cooperation and participation, see e.g., Altshuler *et al.* (1984); Katz (1986); Streeck (1984).

Table 7.11 A Comparative View of the Evidence from Theory and Practice for the Competitive Pressure Hypothesis

Theory and Empirical Findings	Supplementary Evidence in Practice
More intense competitive pressure	**Auto industry**
Perception process	In the U.S.: - correctly perceived only from the early 1980s
Strategy formulation Profitability Survivability Redundancy threats	- changes in wage rules - increased involvement of workers and union in corporate decision-making
Interactions of strategic choices	In the U.K.: - development of consultative arrangements
Bargaining outcomes More cooperative Trade-offs between concessions in wages, more employment security, and working practices	- removal of restrictive working practices In Germany: - co-determination with union's readiness to cooperate
Economic performance at an economy level Decrease/less increase in: - unemployment - inflation - producer prices in manuf.	**The experience in the U.K.** Increase in company-level bargaining Low wage settlements in industries with more intense international competition (metals, textiles, mechanical engineering industries) Downward pressure on wage settlements - profits - degree of monopoly power - risk of redundancy Union sectors more perceptive of changes in economic climate
Increase/less decrease in: - GDP growth rate - real GDP per capita - employment in manuf - real value-added in manuf. - labour productivity in manuf.	**The experience of the U.S.** Less increase in wages in the early 1980s More concession bargaining in transportation equipment, electrical and electronic, rubber and plastics, primary metal industries More labour-management cooperation in auto, steel and clothing sectors with more intense international competition
	Changes in industrial relations systems between the 1970s and the 1980s (commonness) Decentralization Increase in worker participation with/without unions

facing structural adjustment problems, especially when they are engendered by international competition. Even if policy suggestions by Altshuler *et al* (1984) are only based on the automobile industry, our analysis suggests that they could be applied to other sectors as well. Indeed there seems to be a consistent trend of changes in those industries faced with increased competitive pressure as seen above. According to Altshuler *et al.* (1984), governments can encourage cooperative reform strategies in response to competitive challenges by:

(i) Resisting pressures to remove legal employment protection, such as the lay-off notification requirements, that now exist in many European countries;

(ii) Encourage management to engage in manpower planning so that long-term employment cuts and companies' long-term manpower policies can be subject to early and extensive consultation and negotiation with labour to enable the two sides to exhaust all available alternatives to dismissals;

(iii) Direct publicly funded programmes to help manage short-term cyclical changes in labour input;

(iv) Provide aid to ailing companies, contingent upon management and labour agreeing on a scheme that provides for accountable and responsible participation of labour representatives in decision-making, this coupled with other accommodations, such as adjustments in compensation, will increase the chances of the companies becoming competitive;

(v) Encourage share ownership by workers, if necessary with changes in tax and other legislation, in order to strengthen workers' interest in their company's performance and competitiveness. At the same time, offer employees an opportunity to participate in the making of company policy;

(vi) Facilitate the creation of flexible compensation systems that are responsive to economic conditions.

It should be noted, however, that these policies can help improve competitiveness when they are accompanied by compromises on labour's part which make work rules more flexible, and link the growth of renumeration to the firm's health. At the same time, governments might have to consider creating programmes to cope with the social costs associated with inevitable employment decline in some severely hit sectors by encouraging retraining and relocation and by providing temporary income support for displaced workers, such as the active labour market policies which have been already well established in Sweden and Germany. More cautious approaches are needed in order to encourage workers and unions to perceive competitive pressure in an appropriate manner. For example, the duration of unemployment benefits might have to be considered. However, none of these policy suggestions are a panacea:

> 'All they can do is provide favourable conditions under which management and labour can work together in pursuit of common economic interests. Whether or not labour and management respond to those conditions is ultimately up to them.' Altshuler *et al.* (1984; p. 221)

Our studies suggest that there should be a more coordinated approach in various fields of government policy. For example, conventional macro-economic tools, industrial and trade policies should be linked more closely to industrial relations and firm-specific policies.

In sum, we found further, indirect support from existing case studies. However, case studies are not carried out to any generally accepted format. Thus, data tends to be patchy. This is a pity since case studies can provide useful supplementary data to econometric studies. However, if they are to be more useful to the pursuit of knowledge they need to adopt a consistent framework. Our study suggests that there should be a coordinated approach to accumulate information at company or industry levels for the relationship between product markets and labour market institutions. Historical and dynamic studies on individual economy's industrial relations systems would have added another dimension to our study of labour relations behaviour and economic performance.

CHAPTER EIGHT
SUMMARY AND CONCLUSION

One of the primary questions we address in this thesis is; what might be the potential role of increased competitive pressure on the relationship between labour market institutions and economic performance? This quest is motivated by the debate on the relationships between labour market institutions and macroeconomic performance: is it the *structure* and/or the *nature* of labour market institutions that matter for cross-country differences in economic performance? Chapter 2 is devoted to a critical survey of four established hypotheses on the relationships between indicators of labour market institutions and those of macroeconomic performance.

Our critical survey of these four hypotheses places a greater emphasis on their underlying logic of transmission mechanisms. This suggests that the corporatist and liberal-pluralist hypotheses, proposing linear relationships, rests upon two competing arguments; *flexibility versus consensus*. The liberal-pluralist hypothesis is grounded on the view that wage increases would be more readily restrained if market forces were allowed to play a larger role and this would lead to wage flexibility. Disciples of liberal-pluralism believe in the *invisible hand* and regard the decentralization of wage bargaining systems as a competitive force. Corporatists believe the contrary; that wage setters would reconcile broad, social interests with higher centralization of bargaining institutions. This evokes an offhand consensus of wage restraint when needed. The U-curve and interactive hypotheses prefer non-linear correlations and stand in-between corporatism and liberal-pluralism. They map mechanisms of flexibility and consensus onto two extreme ends of an imaginary horizontal axis. Supporters of each hypothesis, however, construct their arguments based on different ways of blending flexibility and consensus, with the common faith that they might be in operation at the same time.

The U-curve hypothesis of Calmfors and Driffill (1988) mix flexibility and consensus in a straightforward manner, finding predominant forces according to the degree of centralization of collective bargaining levels. On the other hand, the interactive hypothesis of Paloheimo (1990), unlike any

other, realizes that there might be negative as well as widely-accepted positive effects in both mechanisms of flexibility and consensus. Apart from the expected positive effects, both of these two could have negative side-effects if they act in opposite directions. Thus, flexibility and consensus might cause higher increases in wages, on average, when wage restraint is needed, if their influences were stronger in some sections of the economy where negative side-effects are more predominant than in anywhere else. Similar to the U-curve hypothesis, these two are mixed, but in a more complicated way because of their two-sided influences according to the interactions between the levels of unionization and centralization. In fact, Paloheimo's empirical study draws similar implications to those of Calmfors and Driffill, but with more complicated interactions between the level of unionization and centralization.

To date, most empirical studies relating cross-country differences in the structure of labour market institutions to those in macroeconomic performance tend to favour the U-curve or the interactive hypotheses. For their empirical methodologies, they employed Phillips-type multiple regression techniques, whether it was about prices (Bruno and Sachs 1985; McCallum 1983) or wages (Bean *et al.* 1986; Newell and Symons 1987), or simply investigate simple and rank correlations (Calmfors and Driffill 1988; Paloheimo 1990) between the two sets of indicators. Apart from the vagueness of the concepts in use like corporatism and centralization of bargaining levels one crucial question remains. To what extent do inter-country variations really reflect fundamental differences in behaviour or are they due to either spurious correlations, or to specification differences?

Further, it is not so surprising to find that there have been much wider cross-country differences in economic performance even within the group of countries which were supposed to have similar bargaining structures. Thus, it is justified to ask once again the much-debated question of whether it is really the structural differences of labour market institutions that contribute to understanding diverse experience of economic performance such as unemployment, inflation and growth rates not only across countries but also within an economy. At the same time, it seems necessary that the conduct of labour market institutions, rather than simply

their structural differences, should be examined in more detail. We note not only *a priori* needs to link changes in product market conditions with the conduct of labour market institutions. But also the critical understanding of the four established hypotheses suggests the necessity of studying the behaviourial dimension of labour market institutions. It is essential to fill the missing connection between structure and performance though extremely difficult.

For the purpose of investigating behaviourial aspects of labour market institutions, chapter 3 introduces various fields of study: international trade, employment and labour relations; changes in environmental conditions, strategic behaviour, and organizational adaptations. Chapter 3 provides a synthesis of these diverse theories and constructs a micro-foundation of labour relations and economic performance. It suggests that competitive pressure from international markets is one of the most important environmental conditions influencing the strategic choices of workers/unions as well as employers' strategies. This is in keeping with traditional industrial relations research which suggests that influence exerted by product market competition on collective bargaining is structured by, and may be mitigated by, the existing arrangements for setting labour costs, see e.g., Commons (1909). The preeminence we give to competitive pressure was prompted by the fact that the globalization of markets and the internationalization of national economies over the past two or three decades has greatly altered the context within which employment relations and policies operate; see e.g., Marshall (1989); Burton (1989); Kruse (1988); Abowd and Lemieux (1990); and Mills and Lovell (1985).

Even if there is no consensus on the employment effects of manufacturing trade, import competition seems to give workers a choice between jobs and wages. According to Tyson and Zysman (1988), wages have responded differently in different industries with varying degrees of trade pressure. Employers' perceptions of import competition (is it temporary or permanent?) affects their choice of strategies. If they think competition is temporary, then they tend to sacrifice a short-term decrease in profits by retaining their employees even though this results in an increase

in wages. Heywood (1986) shows that higher imports tend to lower wages, especially in imperfectly competitive markets. And wage decline happens only when new unexpected imports alter the bargaining agreement.

Kruse (1988) reports that the average duration of joblessness varies directly with the rise in primary industry's import share with about an 8-year lag. Based on a comparative study of U.S. and Canada by Abowd and Lemieux (1990) find consistent relations between international trade and collective bargaining outcomes: (i) Employment growth is slowed more severely by import penetration than a comparable change in real shipments; (ii) For the U.S., an unexpected change in import penetration is more sensitive to employment; (iii) The effects of expected changes in international competition on real wage rates show opposite signs between the two countries: for the U.S., import penetration decreases real wages but increases them in Canada. These arguments, at least, show us that changes in international manufacturing trades might influence employment and wages in a consistent manner, but their actual effects would be diverse between different countries, for which there is no systematic explanation.

Leibenstein's X-inefficiency theory suggests that, in general, the greater the environmental pressure, the greater the X-efficiency of the firm, *ceteris paribus*. The nature of the decision which can be represented by the degree of procedural rationality depends on the extent of the environmental pressure. Also every individual in a firm has a different type of decision function which is assumed to be lexicographic. From this, we can identify at least two or three different decision functions, respectively for employers and workers, which are step-wise in response to perceived competitive pressure.

Cooke and Meyer (1990) define industrial relations strategies into three: Union avoidance; Union-management collaboration (as single-approach strategies); and a Mixture of these two. The following arguments are suggested: (i) When markets worsen by increased import penetration and labour markets tighten, managers will choose one of the more aggressive single-approach strategies; (ii) The higher unionized the company is, employers will choose collaboration strategy; (iii) The higher the firm's labour intensity and the higher average investment in plants, mixed

strategies will be chosen; (iv) The greater the number of plants, mixed strategies will be chosen over collaboration; (v) The higher the ratio of the cost of goods to sales, strategies will be changed from mixed to collaborative. Even if these arguments are constrained by marginal analysis, they give us a good guide to set up a new theoretical framework.

In addition to these, some of the strategic choice theories in response to changes in environmental conditions are also ushered in from various sources (Streeck 1987; Child 1972; Hrebiniak and Joyce 1985; Whittington 1988). Also a few theoretical efforts - mainly by applying game theory - to strategic choices in industrial relations are reviewed (Soskice 1990; Brunetta and Carraro 1990). These studies suggest that differences in economic performance such as unemployment, inflation and growth rates can be explained more efficiently by considering labour market agents' strategic behaviour, which can be influenced significantly by the structural differences in labour market institutions, in response to changes in product market conditions. And among the changes in product market conditions, we have shown competitive pressure from international trade would have the most important influence on employees' as well as employers' behaviour. Therefore, we argue it would be worthwhile to attempt to make a theoretical framework linking product markets, labour market institutions, and economic performance systematically.

In chapter four, a serious effort is made to construct a theoretical framework of competitive pressure, labour market institutions, and economic performance by synthesizing the dispersed theories. We define a concept of competitive pressure, derived from those studies of international trade, employment and labour relations. We argue that competitive pressure is a crucial environmental factor which influences the strategic behaviour of employers and workers/unions in collective bargaining. Applying the X-inefficiency theory of Leibenstein, step-wise perceptions and decision functions for each group of economic agents are set up with some special assumptions. From the studies of industrial relations strategies we develop a set of alternative strategies for labour relations: Cooperation, Non-cooperation, and Acquiescence. In order to make a systematic framework,

we examine strategic interactions from our choice theories and game theoretic approaches, which, in turn, lead to an equilibrium pair of labour relations strategies of managers and workers. From these pairs of equilibrium strategies, a further attempt is made to derive the nature of labour relations into four types, incorporating the two mechanisms of flexibility and consensus - recognizing both their negative and positive effects - on which the four established hypotheses are considered to be based: flexible-consensus(F-C), flexible-friction(F-F), rigid-consensus(R-C), and rigid-friction(R-F). Finally, applying the studies of organizational adaptations, we relate these four types of labour relations behaviours to the differences in economic performance. This leads us to develop an hypothesis for the relationships between product market conditions captured by competitive pressure, structural differences of labour market institutions and their economic performance.

We develop the *competitive pressure hypothesis* from a simulation study, resulting in 242 cases from the combination of environmental conditions with which an hypothesised firm is assumed to face. We find that the company would show improved performance through positive effects of enhanced flexibility and consensus when faced with higher intensity of competitive pressure. Chapters 5 and 6 tests this hypothesis and demonstrates that at an aggregate economic level, differences in economic performance show expected correlations with competitive pressure. These empirical results support our arguments on behaviourial changes in labour relations at a company level as constructed in the theoretical simulation.

Our empirical studies rest on data from seventeen O.E.C.D. countries. Chapter 5 pursues time-series variations in economic performance within a national economy, and chapter 6 focuses on cross-country variations. Data are collected from the O.E.C.D. Historical Statistics largely with cross-country comparisons in mind for the 29 year period between 1960 and 1989: (i) The levels of and changes in import penetration ratios, defined by total imports as a proportion to total supply (GDP plus imports), are used for indicators of competitive pressure; (ii) Annual percentage

changes in real GDP growth, real GDP *per capita* and consumer price index are used for macroeconomic performance indicators; (iii) Annual percentage changes in real hourly wages, employment, real value-added, real value-added per person employed, producer price index are used for indicators of the manufacturing sector performance. Indicators for the structure of labour market institutions (the degree of unionization, workers' and employers' coordinations), standardized unemployment and inflation (GDP deflator) rates are used for the same data in the study of Layard *et al.* (1991).

In addition, the centralization index of collective bargaining and its revised index for the U-curve hypothesis are borrowed from Calmfors and Driffill (1988). Similar to those empirical studies for the established hypotheses, simple and rank correlation techniques are employed between competitive pressure, indicators for differences in the structure of labour market institutions, and economic performance. Also Phillips-type equations including the competitive pressure indicator are estimated for unemployment and real wages. In addition, Multiple Canonical Correlation Methods are used in order to see the combined effects of different indicators for competitive pressure and economic performance.

From these quantitative empirical studies at an economy level, the *competitive pressure hypothesis* is confirmed for the time-series as well as the cross-country variations in economic performance. In chapter seven, a further effort is made to supplement these findings with more qualitative case studies.

Therefore, this thesis has made a serious attempt to uncover the potential effects of competitive pressure from international markets on labour market institutions and economic performance, primarily at an economy level. By emphasizing changes in the strategic behaviour of employees as well as employers, our own *competitive pressure hypothesis* is suggested: differences in cross-country economic performance is significantly influenced by economic agents changing their behaviour as a result of their *perceptions* of competitive pressure. Indeed, from a theoretical simulations at company or plant levels, marginal effects of more intense competitive pressure are found to be positive with respect to

economic performance. This implies that not only employers but also employees might adapt their strategies of labour relations in such a way that those organizations faced with higher competitive pressure tend to have more *positive, rather than negative, effects of flexibility and consensus*. This promotes economic performance.

This logic from competitive pressure to economic performance is supported by empirical studies at an economy level for the seventeen O.E.C.D. countries. Significance is found for time-series variations within an economy rather than cross-country variations at a certain year or period. Our work suggests that changes in labour market institutions are continuous; but not, as some commentators suggest, contingent upon recession, see e.g., Katz (1985). In effect, cross-country comparisons of rank and simple correlations between competitive pressure - measured by annual percentage changes in import penetration ratio - and economic performance proved to be pretty consistent. Empirical results for cross-country studies provide similar interpretations, even though with weaker statistical significance.

As far as structural differences of labour market institutions are concerned, none of the four established hypotheses are consistently supported by our empirical studies. For cross-country variations, the U-curve hypothesis tends to be most favoured but not consistent. Hence, we cannot reject all four hypotheses in favour of our own competitive pressure hypothesis. Nevertheless, our hypothesis is important for its policy implications. Our work suggests that: (i) It may be of no great use either altering the degree of centralization in collective bargaining levels or attempting to implant a corporatist regime, because they do not play a decisive role in changes in economic performance, as traditionally expected; (ii) Rather it might be more meaningful to examine how to enhance flexibility and consensus in response to changes in product market conditions, especially to competitive pressure from international markets.

It would be very difficult to devise specific policies based on these implications drawn from this thesis. However, the following broad policy suggestions can be made. In order to influence the level of unemployment and inflation, policies should attempt to coordinate demand-management

economic policies such as fiscal, monetary and exchange rate policies with supply-side policy measures directed towards more micro-levels.

Industrial relations and firm-specific policies might be better served by the following micro strategies: (i) More disclosure of performance-related information to enhance industrial democracy; (ii) Financial aid to ailing companies contingent upon providing accountable and responsible participation of labour representatives; (iii) Extending profit sharing and share ownership in order to increase workers' interests in their company's performance and competitiveness; (iv) Facilitating the creation of flexible compensation systems; (v) Stimulate early retirement and work-sharing arrangements instead of making redundancies when needed with discrete use of employment protection legislation like lay-off notification requirements; (vi) Long-term manpower planning to be subject to early and extensive consultation and negotiation with labour. In this regard, we need to integrate the organization's human capital strategies with its strategies for physical and financial capital, see e.g. Bradley (1992).

On the other hand, it is important to recognize a salient fact that higher percentage changes in import penetration, even if their levels may be harmful in some sense, can serve as a countervailing force to increase in real wages and unemployment. Considering the increased interdependence of the world economy, it does not seem justified to protect trade. Rather, together with the above mentioned policies, there should be more liberalization of trade restrictions. For the severely hit industries, rather than yielding to increased demands for trade protection, a set of industrial policies with tax and subsidy controls might be more appropriate.

In sum, this thesis examined macro-economic effects of the conduct of labour relations systems. For this purpose, we made an attempt to integrate theoretically such fields as industrial relations, business strategy, organizational behaviour, and labour economics. We proposed *international competition* as our important pressure on employers and employees which influence their strategic choices. The theory developed in chapters three and four provided a basis for cross-country comparative studies on the macro-economic effects of labour relations behaviour. In chapters 5 and 6, we

carried out empirical studies using data from seventeen O.E.C.D. economies to test our *competitive pressure hypothesis*. Chapter 7 augmented our econometric analysis by supportive evidence from case studies.

This thesis has made a contribution to the study of industrial relations by examining the role of labour market institutions in explaining economic performance. Firstly, it has constructed a theoretical framework at disaggregate levels with a greater emphasis on behaviourial aspects of labour market institutions. Secondly, employing various empirical methodologies we tested the potential effects of competitive pressure on labour market institutions and economic performance based on our own theoretical framework. Unlike other studies, both time-series and cross-country variations were studied for the seventeen O.E.C.D. countries using the Multivariate Canonical Correlation Method as well as simple/rank correlations and multiple regression techniques[1]. In addition to these quantitative analyses we examined our theory against case study data.

Possible directions for future research might be cross-country coordinated comparative research which contains secondary data and case studies. The basic framework of these studies might be focused on the relationships between changes in competitive pressure from international markets and strategic behaviours of wage-setting institutions. This thesis might be considered as an initial step in this direction by discovering one of the most salient factors which links changes in product market conditions, structure and conduct of labour market institutions, and economic performance. We had achieved this for the economy and company levels, with broad cross-country perspectives.

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[1] Nevertheless, as with any empirical study, results should be interpreted with a degree of caution. It will be recalled that competitive pressure was measured by the levels of, and (percentage) changes in, import penetration ratios. For a cross-country comparative study based on secondary data, these can be regarded as one of the best available indicators. However, these indicators might be too crude to grasp the *true* nature of competitive pressure.

APPENDICES:

I. APPENDIX TO CHAPTER THREE: AN EXAMPLE OF GAME THEORETIC APPROACH TO LABOUR RELATIONS STRATEGIES

II. APPENDIX TO CHAPTER FOUR:
DATA SET BASED ON THE THEORETICAL FRAMEWORK

III. APPENDIX TO CHAPTER SIX
COMPETITIVE PRESSURE AND CROSS-COUNTRY DIFFERENCES IN AVERAGE ECONOMIC PERFORMANCE OVER PERIODS

IV. DATA AND EMPIRICAL RESULTS

I. APPENDIX TO CHAPTER THREE: AN EXAMPLE OF GAME THEORETIC APPROACH TO LABOUR RELATIONS STRATEGIES

In order to see if there is a precondition that the workforce will behave cooperatively, Soskice (1990) tentatively applied a game theoretical framework to suggest a set of answers contingent on the external environment of the company. Management is assumed to have three alternative strategies:

(i) *Hierarchic*, involving appropriate production conditions and a rule-based culture. Specific requirements are determined and enforced by management for individual employees with different skills;
(ii) *Co-operative*, involving a degree of employee participation in decision-making and allowing workers some autonomous responsibility;
(iii) *Acquiescent*, in job control by the workforce.

The workforce also has three strategies:

(i) *Cooperative*, workforce prepared: to accept autonomous responsibility and management instructions; and to engage in teamwork;
(ii) *Acquiescent*, following management instructions to the extent that they will be sanctioned if they do not;
(iii) *Non-cooperative*, impinging strike or other forms of industrial action if management is either cooperative or hierarchic, and imposing job control if management is acquiescent in it.

Labour management relations can be thought to result from an interaction of strategies. In game theoretic terms, each strategy will have some payoffs (rewards) from each interaction, which can be represented by a bimatrix, see appendix table 3.1.

We could find a Nash equilibrium from the matrix in the table. No

Appendix Table 3.1 A Payoff Matrix of Managements' and Workers' Strategies

	Management		
	Acquiescent	Cooperative	Hierarchic
Workforce			
Cooperative	(0,0)	(10,10)	(0,25)
Acquiescent	(0,0)	(5, 5)	(5,20)
Non-cooperative	(20,0)	(x,-x)	(x,-x)

Source: Soskice (1990; p.188)

significance is attached to the size of the numbers, only to their ordering - independently for the two sides. Management has some preference for a cooperative to an acquiescent semi-skilled workforce. More importantly, the payoff is much higher for hierarchic as compared to cooperative management: this is because we assume the labour force to be relatively unskilled. The worst outcome for management is to have to acquiesce in job control.

Workers prefer cooperative to hierarchic management; and if management is cooperative they prefer to cooperate themselves, though with hierarchic management they choose acquiescence. Job control is rated above each of these by the workforce. The strength of this preference is determined, in part, by low workforce belief in employment security.

x is a measure of workforce power, so that if x is positive it can be interpreted as the workforce winning strikes. So if $x > 0$, management is forced to acquiesce in job control, while workers choose non-cooperation; this is the unique Nash equilibrium for $x > 0$[1]. If $x < 0$, management will choose hierarchic organization, and workers will choose acquiescence; again a unique equilibrium. Thus, the co-operative/co-operative solution is not favoured by an external environment of unrestricted free markets, providing for low skills and low employment security. What is more surprising is that the aspects of the external environment (such as long-run finance, a low degree of opportunism, effective cooperative relations between companies

[1] A Nash equilibrium (NE) is a vector of strategies such that no one player can improve his lot. For a full description of this and other game theoretical inferences see e.g., Shubik (1982).

and other institutions for marketing and product innovation, which will produce a highly skilled workforce), do not by themselves guarantee the co-operative/co-operative solution, see e.g., Soskice (1990; pp. 189-190).

Further, Soskice (1990) applied a sequential game theoretical framework, attempting to explain why unemployment rates are different in different countries during the 1970s and 1980s, and also to see why that explanation is consistent with full employment in each of the countries in the 1950s and 1960s.

Brunetta and Carraro (1990) also apply game theoretic frameworks to show that incomes policy is a way of achieving cooperation among conflicting social groups. They recognize that economic agents interact and that a group of agents' action can negatively affect other agents' welfare or profit. Thus the presence of externalities thus leads the government to intervene in order to distribute welfare gains that can be achieved through harmonization of agents' behaviour. In this context, they set up a model in which agents' behaviour is represented as an intertemporal non-cooperative game, where conflict and cooperation are possible outcomes that depend on the agents' strategies. All agents have different objectives, and decisions are decentralized and sequential; workers decide first, by choosing the union they want to support. Then firms, unions, and the government simultaneously set their own decision variables, assuming the industrial relations system is centralized. Brunetta and Carraro simplify the model by assuming that unions set wages, that firms set prices and employment, and that the government sets monetary and fiscal policy. Finally, in the third stage of the game, parliament can intervene either by imposing institutional constraints, or by modifying or ratifying decisions taken in the previous stage.

All in all, studies applying game theory to the strategic interactions of workers and managers, and also government, seem to make a significant contribution to our understanding of strategic choice and the *conduct* of industrial relations. However, not only are they in their infancy, but also they fall short of analyzing the relationship between labour management relations and economic performance. This is because their primary aim of applying game theory is different to what we want to do here.

II. APPENDIX TO CHAPTER FOUR: DATA SET BASED ON THE THEORETICAL FRAMEWORK

Abbreviations

CON: Typology of the conduct [1-4 (F-C, F-F, R-C, R-F)]
MOP: Market-openness [3-1 (H,M,L)]
CEN: Centralization in bargaining levels [3-1 (H,M,L)]
UACP: Expectedness of competitive pressures [1:unexpected, 2:expected]
PACP: Permanency of competitive pressures [1:permanent, 2:temporary]
IACP: Intensity of competitive pressures [3-1 (H,M,L)]
UD: Union density [3-1 (H,M,L); 4 for no role]
MP: Market power [3-1 (H,M,L); 4 for no role]
EP: Equilibrium strategies [C-C (1), C-A/A-C (2), C-N/N-C (3), A-A (4), A-N/N-A (5), N-N (6)]
* A-A not actually happen in the interactions

CON	MOP	CEN	UACP	PACP	IACP	UD	MP	EP
1	2	2	1	1	3	3	4	1
1	2	2	1	1	3	2	4	2
2	2	2	1	1	3	1	4	4
3	2	2	1	1	2	4	3	5
3	2	2	1	1	2	4	2	5
1	2	2	1	1	2	3	1	2
2	2	2	1	1	2	2	1	4
2	2	2	1	1	2	1	1	4
3	2	2	1	1	1	4	3	5
4	2	2	1	1	1	4	2	6
4	2	2	1	1	1	4	1	6
1	2	2	1	2	3	3	4	1
1	2	2	1	2	3	2	3	2
1	2	2	1	2	3	2	1	2
2	2	2	1	2	3	1	3	4
2	2	2	1	2	3	1	1	4
3	2	2	1	2	3	4	2	5
3	2	2	1	2	2	4	3	5
3	2	2	1	2	2	4	1	5
4	2	2	1	2	2	4	2	6
1	2	2	1	2	2	3	3	2
3	2	2	1	2	1	4	3	5
3	2	2	1	2	1	4	2	5
4	2	2	1	2	1	4	1	6
2	2	2	2	1	3	4	4	4
3	2	2	2	1	2	4	4	5
4	2	2	2	1	1	4	2	6
4	2	2	2	1	1	4	1	6

CON	MOP	CEN	UACP	PACP	IACP	UD	MP	EP
3	2	2	2	1	1	4	3	5
2	2	2	2	2	3	4	4	4
3	2	2	2	2	2	4	4	5
3	2	2	2	2	1	4	3	5
3	2	2	2	2	1	4	2	5
4	2	2	2	2	1	4	2	6
1	3	2	1	1	3	3	4	1
1	3	2	1	1	3	2	4	1
2	3	2	1	1	3	1	4	4
1	3	2	1	1	2	3	4	1
1	3	2	1	1	2	2	1	2
3	3	2	1	1	2	4	3	5
3	3	2	1	1	2	4	2	5
2	3	2	1	1	2	1	1	4
4	3	2	1	1	1	4	4	6
1	3	2	1	2	3	3	4	1
1	3	2	1	2	3	2	4	1
2	3	2	1	2	3	1	3	4
2	3	2	1	2	3	1	1	4
3	3	2	1	2	3	2	2	5
3	3	2	1	2	3	1	2	5
1	3	2	1	2	2	3	4	1
1	3	2	1	2	2	2	4	2
3	3	2	1	2	2	4	4	5
3	3	2	1	2	1	4	4	5
1	3	2	1	2	1	3	4	2
2	3	2	2	1	3	4	4	4
3	3	2	2	1	2	4	4	5
4	3	2	2	1	1	4	4	6
2	3	2	2	2	3	4	4	4
3	3	2	2	2	2	4	4	5
3	3	2	2	2	1	4	4	5
2	1	2	1	1	3	2	4	4
2	1	2	1	1	3	1	4	4
1	1	2	1	1	3	3	4	2
3	1	2	1	1	2	4	3	5
3	1	2	1	1	2	4	2	5
2	1	2	1	1	2	4	1	4
3	1	2	1	1	1	4	4	5
2	1	2	1	2	3	2	3	4
2	1	2	1	2	3	2	1	4
2	1	2	1	2	3	1	3	4
2	1	2	1	2	3	1	1	4
3	1	2	1	2	3	4	2	5
1	1	2	1	2	3	3	3	2
1	1	2	1	2	3	3	1	2
3	1	2	1	2	2	4	3	5

CON	MOP	CEN	UACP	PACP	IACP	UD	MP	EP
3	1	2	1	2	2	4	1	5
4	1	2	1	2	2	4	2	6
3	1	2	1	2	1	4	3	5
3	1	2	1	2	1	4	2	5
4	1	2	1	2	1	4	1	6
2	1	2	2	1	3	4	4	4
3	1	2	2	1	2	4	4	5
3	1	2	2	1	1	4	4	5
2	1	2	2	2	3	4	4	4
3	1	2	2	2	2	4	4	5
3	1	2	2	2	1	4	3	5
3	1	2	2	2	1	4	2	5
4	1	2	2	2	1	4	1	6
1	2	3	1	1	3	3	4	1
1	2	3	1	1	3	2	4	1
2	2	3	1	1	3	1	4	4
3	2	3	1	1	2	4	4	5
3	2	3	1	1	1	4	3	5
4	2	3	1	1	1	4	2	6
4	2	3	1	1	1	4	1	6
1	2	3	1	2	3	3	4	1
1	2	3	1	2	3	2	4	1
2	2	3	1	2	3	1	4	4
3	2	3	1	2	2	4	4	5
1	2	3	1	2	2	3	3	2
1	2	3	1	2	2	2	3	2
3	2	3	1	2	1	4	3	5
3	2	3	1	2	1	4	2	5
4	2	3	1	2	1	4	1	6
1	2	3	2	1	3	4	4	1
3	2	3	2	1	2	4	4	5
3	2	3	2	1	1	4	3	5
4	2	3	2	1	1	4	2	6
4	2	3	2	1	1	4	1	6
1	2	3	2	2	3	4	4	1
3	2	3	2	2	2	4	4	5
2	2	3	2	2	2	4	3	2
3	2	3	2	2	1	4	3	5
3	2	3	2	2	1	4	2	5
4	2	3	2	2	1	4	1	6
1	3	3	1	1	3	4	4	1
3	3	3	1	1	2	4	4	5
4	3	3	1	1	1	4	4	6
1	3	3	1	2	3	4	4	1
3	3	3	1	2	2	4	4	5
1	3	3	1	2	2	4	4	2
3	3	3	1	2	1	4	4	5

CON	MOP	CEN	UACP	PACP	IACP	UD	MP	EP
1	3	3	2	1	3	4	4	1
3	3	3	2	1	2	4	4	5
4	3	3	2	1	1	4	4	6
1	3	3	2	2	3	4	4	1
3	3	3	2	2	2	4	4	5
2	3	3	2	2	2	4	4	2
3	3	3	2	2	1	4	4	5
1	1	3	1	1	3	3	4	1
1	1	3	1	1	3	2	4	2
2	1	3	1	1	3	1	4	4
3	1	3	1	1	2	4	4	5
1	1	3	1	1	2	3	4	2
3	1	3	1	1	1	4	4	5
1	1	3	1	2	3	3	4	1
1	1	3	1	2	3	2	4	2
2	1	3	1	2	3	1	3	4
2	1	3	1	2	3	1	1	4
3	1	3	1	2	3	1	2	5
3	1	3	1	2	2	4	4	5
1	1	3	1	2	2	3	3	2
3	1	3	1	2	1	4	3	5
3	1	3	1	2	1	4	2	5
4	1	3	1	2	1	4	1	6
1	1	3	2	1	3	4	4	1
3	1	3	2	1	2	4	4	5
1	1	3	2	1	2	4	4	2
3	1	3	2	1	1	4	4	5
1	1	3	2	2	3	4	4	1
3	1	3	2	2	2	4	4	5
1	1	3	2	2	2	4	3	2
3	1	3	2	2	1	4	3	5
3	1	3	2	2	1	4	2	5
4	1	3	2	2	1	4	1	6
1	2	1	1	1	3	3	4	1
2	2	1	1	1	3	2	4	4
2	2	1	1	1	3	1	4	4
3	2	1	1	1	2	4	3	5
3	2	1	1	1	2	4	2	5
2	2	1	1	1	2	4	1	2
3	2	1	1	1	1	4	3	5
4	2	1	1	1	1	4	2	6
4	2	1	1	1	1	4	1	6
1	2	1	1	2	3	3	4	1
2	2	1	1	2	3	2	3	4
2	2	1	1	2	3	2	1	4
2	2	1	1	2	3	1	3	4
2	2	1	1	2	3	1	1	4

CON	MOP	CEN	UACP	PACP	IACP	UD	MP	EP
4	2	1	1	2	3	2	2	6
4	2	1	1	2	3	1	2	6
3	2	1	1	2	3	3	2	5
3	2	1	1	2	2	4	3	5
3	2	1	1	2	2	4	1	5
4	2	1	1	2	2	4	2	6
1	2	1	1	2	2	3	3	2
3	2	1	1	2	1	4	3	5
3	2	1	1	2	1	4	2	5
4	2	1	1	2	1	4	1	6
2	2	1	2	1	3	4	4	4
3	2	1	2	1	2	4	4	5
3	2	1	2	1	1	4	3	5
4	2	1	2	1	1	4	2	6
4	2	1	2	1	1	4	1	6
2	2	1	2	2	3	4	4	4
3	2	1	2	2	2	4	4	5
3	2	1	2	2	1	4	3	5
3	2	1	2	2	1	4	2	5
4	2	1	2	2	1	4	1	6
1	3	1	1	1	3	3	4	1
1	3	1	1	1	3	2	4	1
2	3	1	1	1	3	1	4	4
1	3	1	1	1	2	3	4	1
3	3	1	1	1	2	2	3	5
3	3	1	1	1	2	2	2	5
3	3	1	1	1	2	1	3	5
3	3	1	1	1	2	1	2	5
2	3	1	1	1	2	1	1	4
1	3	1	1	1	2	2	1	2
3	3	1	1	1	1	3	4	5
1	3	1	1	1	1	3	4	1
4	3	1	1	1	1	2	4	6
4	3	1	1	1	1	1	4	6
1	3	1	1	2	3	3	4	1
1	3	1	1	2	3	2	4	1
2	3	1	1	2	3	1	3	4
2	3	1	1	2	3	1	1	4
3	3	1	1	2	3	1	2	5
1	3	1	1	2	2	3	4	1
1	3	1	1	2	2	2	4	2
3	3	1	1	2	2	2	4	5
3	3	1	1	2	2	1	4	5
1	3	1	1	2	1	3	4	1
3	3	1	1	2	1	4	4	5
2	3	1	2	1	3	4	4	4
3	3	1	2	1	2	4	4	5

CON	MOP	CEN	UACP	PACP	IACP	UD	MP	EP
4	3	1	2	1	1	4	4	6
2	3	1	2	2	3	4	4	4
3	3	1	2	2	2	4	4	5
3	3	1	2	2	1	4	4	5
2	1	1	1	1	3	4	4	4
3	1	1	1	1	2	4	3	5
3	1	1	1	1	2	4	2	5
4	1	1	1	1	2	4	1	6
3	1	1	1	1	1	4	4	5
2	1	1	1	2	3	4	3	4
2	1	1	1	2	3	4	1	4
4	1	1	1	2	3	4	2	6
3	1	1	1	2	2	4	3	5
3	1	1	1	2	2	4	1	5
4	1	1	1	2	2	4	2	6
3	1	1	1	2	1	4	3	5
3	1	1	1	2	1	4	2	5
4	1	1	1	2	1	4	1	6
2	1	1	2	1	3	4	4	4
3	1	1	2	1	2	4	4	5
3	1	1	2	1	1	4	4	5
2	1	1	2	2	3	4	4	4
3	1	1	2	2	2	4	4	5
3	1	1	2	2	1	4	3	5
3	1	1	2	2	1	4	2	5
4	1	1	2	2	1	4	1	6

III. APPENDIX TO CHAPTER SIX: COMPETITIVE PRESSURE AND CROSS-COUNTRY DIFFERENCES IN AVERAGE ECONOMIC PERFORMANCE OVER PERIODS

When we used average data for our cross-country studies, our competitive pressure hypothesis could not be supported except in a few cases. This is largely because pressure indicators might be of little explanatory power by being averaged out over a period. As we studied in chapter four, the potential role of competitive pressure is to affect workers' as well as employers' choices of labour relations strategies. Hence, our hypothesis can be appropriately supported by studying on yearly bases as we did in the text.

Tables 6.11 and 6.12 summarize empirical findings using average data over five periods: 1961-69, 1969-73, 1973-79, 1979-89, and 1961-89. Only signs of correlations are reported in the tables. Each five signs are related with the above five periods.

Appendix Table 6.1 Summary of Findings for Average Economic Performance Over Periods (I)

	Level of IPR	Percentage changes in IPR	Competitive pressure	Plus labour market structures
Unemployment	− − − + −	+ + − + +	+ − − + +	− − + + +
Inflation	+ + − − −	+ − − + −	− + − − −	+ − + + +
GDP growth rate	− − − − −	+ + − + +	+ − − − −	− − + + +
Real GDP *per capita*	− + + − −	+ − − − +	+ + + − −	− + − + −
Consumer price index	+ + − − −	− − − + −	− + + + −	+ + − + −
Producer price index in manufacturing	+ − − + −	− + − − +	− + − − −	− + − + −
Real hourly wages in manufacturing	+ + + − +	+ + − − −	+ + + − +	− − − − +
Employment in manufacturing	− + − + −	− + − + +	− + − + −	− + − + −
Real value-added in manufacturing	− + − + +	+ + + + −	+ + − + +	+ + − + +
Real value-added *per capital* in manufacturing	− + + − +	+ + + − −	+ + + − +	+ + − + +

Appendix Table 6.2 Summary of Findings for Average Economic Performance Over Periods (II): Simple Correlations with Separate Indicators of Labour Market Institutions

	Union Density	Workers' Coordinations	Employers Coordinations
Unemployment	− − − + −	− − − − −	− − − − −
Inflation	+ + + + +	+ + + + +	+ + − − −
GDP growth rate	− − + − −	− + + + +	− + − − −
Real GDP *per capita*	− + + − +	+ + + + +	+ + + + +
Consumer price index	+ + + + +	+ + + + +	+ − − − −
Producer price index in manufacturing	+ + + + +	+ − − + +	+ − − + +
Real hourly wages in manufacturing	+ + + + +	+ + + + +	+ − − + +
Employment in manufacturing	− + − − −	− + − − −	− + − − −
Real value-added in manufacturing	+ + − − +	− + − + +	− + − − +
Real value-added *per capital* in manufacturing	+ + + + +	+ + + + +	+ + − − +

IV. DATA AND EMPIRICAL RESULTS

[NOTATIONS AND SOURCES]

C (Appendix A-B): country
C (Appendix C-D): the degree of centralization [the original index of Calmfors and Driffill (1988)]
CD: the revised U-curve index of Calmfors and Driffill [Calmfors and Driffill (1988)
Y: year
IPR: import penetration ratio [calculated from O.E.C.D.(1991)]
DIPR: percentage changes in import penetration ratio [calculated from O.E.C.D. (1991)]
CP: changes in import penetration ratio [calculated from O.E.C.D. (1991)]
PGDP: annual percentage changes in real GDP growth [calculated from O.E.C.D.(1991)]
DP: inflation rate [Layard, Nickell and Jackman (1991)]
U: standardized unemployment rate [Layard, Nickell and Jackman (1991)]
RHWM: annual percentage changes in real hourly wages in manufacturing [O.E.C.D. (1985, 1990)]
EMM: annual percentage changes in employment in manufacturing [O.E.C.D. (1985, 1990)]
RGDP: annual percentage changes in real GDP [O.E.C.D. (1985, 1990)]
RGDPPC: annual percentage changes in real GDP per capita [O.E.C.D. (1985, 1990)]
RVAM: annual percentage changes in real value-added in manufacturing [O.E.C.D. (1985, 1990)]
RVAMPC: annual percentage changes in real value-added per person employed in manufacturing [O.E.C.D. (1985, 1990)]
CPI: annual percentage changes in consumer price index [O.E.C.D. (1985, 1990)]
PPIM: annual percentage changes in producer price index in manufacturing [O.E.C.D. (1985, 1990)]

A. Time-series data for indicators of macroeconomic performance and competitive pressures: 1960-89

A1. AUSTRALIA

C	Y	IPR	DIPR	CP	PGDP	DP	U
10	60	0.136	*	*	*	3.2	1.9
10	61	0.124	-8.51	-1.16	-0.37	1.2	3.5
10	62	0.125	1.020	0.127	6.377	1.2	2.8
10	63	0.128	1.658	0.208	6.600	3.7	2.7
10	64	0.141	10.87	1.393	6.281	2.7	1.7
10	65	0.150	6.199	0.880	5.558	2.9	1.5
10	66	0.137	-8.72	-1.31	2.826	3.3	1.7
10	67	0.142	3.827	0.526	6.923	3.1	1.9
10	68	0.148	3.946	0.564	5.856	3.1	1.8
10	69	0.143	-3.08	-0.45	6.059	4.9	1.8
10	70	0.141	-1.49	-0.21	6.026	4.9	1.6
10	71	0.135	-4.48	-0.63	5.928	6.3	1.9
10	72	0.120	-10.9	-1.48	3.856	9.4	2.6
10	73	0.136	12.93	1.560	5.296	14.7	2.3
10	74	0.160	17.96	2.446	1.574	18.4	2.6
10	75	0.135	-15.6	-2.50	2.787	15.1	4.8
10	76	0.145	6.985	0.946	3.419	11.1	4.7
10	77	0.144	-0.63	-0.09	1.083	7.7	5.6
10	78	0.145	1.247	0.179	2.852	7.9	6.2
10	79	0.142	-2.02	-0.29	4.723	11	6.2
10	80	0.146	2.151	0.307	2.266	10.1	6
10	81	0.153	5.403	0.789	3.123	10.2	5.7
10	82	0.161	5.051	0.777	-0.64	10.9	7.1
10	83	0.146	-9.48	-1.53	0.763	7.5	9.9
10	84	0.161	10.09	1.477	7.587	6.1	8.9
10	85	0.162	0.604	0.097	4.695	7	8.2
10	86	0.155	-3.87	-0.62	1.886	7.2	8
10	87	0.154	-0.74	-0.11	4.327	7.7	8
10	88	0.169	9.296	1.437	3.928	9.1	7.2
10	89	0.188	11.71	1.979	4.697	7	6.1

Note: C, Y, IPR, DIPR, CP, PGDP, DP, and U are for the centralization index, year, the level of import penetration ratio, percentage annual changes in import penetration ratio, simple annual changes in import penetration ratio, GDP growth rate, inflation measured by GDP deflator, and standardized unemployment rate.

Source: (1) IPR, DIPR, and CP are calculated from OECD, HISTORICAL STATISTICS.

(2) PGDP, DP, and U are from Layard et al (1991).

(3) C from Calmfors and Driffill (1988).

A2. AUSTRIA

C	Y	IPR	DIPR	CP	PGDP	DP	U
1	60	0.158	*	*	*	3.1	1.9
1	61	0.155	-1.89	-0.30	5.306	4.9	1.5
1	62	0.158	1.794	0.279	2.396	3.7	1.5
1	63	0.165	4.352	0.690	4.060	3.5	1.7
1	64	0.171	3.863	0.639	6.051	3.2	1.6
1	65	0.182	6.073	1.044	2.868	5.6	1.6
1	66	0.188	3.599	0.656	5.638	3.2	1.5
1	67	0.187	-0.53	-0.10	3.012	3.2	1.6
1	68	0.191	2.137	0.401	4.456	2.8	1.6
1	69	0.195	2.031	0.390	6.293	2.7	1.6
1	70	0.210	7.295	1.429	7.099	4.7	1.1
1	71	0.211	0.839	0.176	5.130	6.2	1
1	72	0.221	4.388	0.930	6.194	7.6	1
1	73	0.228	3.410	0.754	4.888	8	0.9
1	74	0.233	2.165	0.495	3.940	9.5	1.1
1	75	0.226	-3.30	-0.77	-0.34	6.5	1.5
1	76	0.246	9.230	2.086	4.577	5.6	1.5
1	77	0.249	1.160	0.286	4.524	5.3	1.4
1	78	0.249	0.026	0.006	0.070	5.3	1.7
1	79	0.262	4.885	1.220	4.731	4.1	1.7
1	80	0.268	2.349	0.615	2.916	5.1	1.5
1	81	0.267	-0.35	-0.09	-0.27	6.3	2.1
1	82	0.258	-3.22	-0.86	1.067	6.2	3.1
1	83	0.265	2.566	0.663	1.982	3.7	3.7
1	84	0.281	6.040	1.602	1.370	5	3.8
1	85	0.288	2.593	0.729	2.452	3	3.6
1	86	0.283	-1.66	-0.48	1.181	4.1	3.1
1	87	0.289	1.881	0.533	1.971	2.6	3.8
1	88	0.301	4.287	1.239	3.866	1.5	3.6
1	89	0.312	3.620	1.091	3.980	2.7	3.2

A3. BELGIUM

C	Y	IPR	DIPR	CP	PGDP	DP	U
8	60	0.307	*	*	*	0.8	3.4
8	61	0.311	1.486	0.456	4.982	1.3	2.6
8	62	0.317	1.928	0.601	5.187	1.7	2.2
8	63	0.326	2.785	0.885	4.354	3	1.8
8	64	0.330	1.187	0.387	6.963	4.6	1.6
8	65	0.336	1.918	0.634	3.572	5.1	1.8
8	66	0.351	4.252	1.432	3.154	4.2	2
8	67	0.346	-1.43	-0.50	3.871	3.1	2.6
8	68	0.362	4.594	1.590	4.214	2.7	3.1
8	69	0.380	5.136	1.859	6.624	4	2.3
8	70	0.383	0.749	0.285	6.365	4.6	2.1
8	71	0.383	-0.02	-0.01	3.673	5.7	2.1
8	72	0.392	2.479	0.950	5.288	6.2	2.7
8	73	0.420	6.902	2.712	5.909	7.2	2.7
8	74	0.420	0.196	0.082	4.076	12.6	3
8	75	0.401	-4.58	-1.92	-1.47	12.1	5
8	76	0.416	3.698	1.485	5.562	7.5	6.4
8	77	0.426	2.455	1.022	0.472	7.5	7.4
8	78	0.426	-0.05	-0.02	2.736	4.4	7.9
8	79	0.442	3.733	1.591	2.136	4.5	8.2
8	80	0.430	-2.58	-1.14	4.318	3.8	8.8
8	81	0.426	-1.11	-0.47	-0.98	4.9	10.8
8	82	0.422	-0.77	-0.32	1.499	7.1	12.6
8	83	0.418	-0.96	-0.40	0.388	5.9	12.1
8	84	0.426	1.950	0.817	2.129	5	12.1
8	85	0.426	-0.06	-0.02	0.833	5.5	11.3
8	86	0.440	3.338	1.424	1.453	5	11.2
8	87	0.455	3.340	1.472	2.248	1.9	11
8	88	0.463	1.622	0.739	4.590	1.2	9.7
8	89	0.473	2.163	1.001	3.880	2.8	8.1

A4. CANADA

C	Y	IPR	DIPR	CP	PGDP	DP	U
17	60	0.129	*	*	*	1.2	6.3
17	61	0.126	-2.47	-0.32	3.152	1.8	6.5
17	62	0.121	-3.93	-0.49	7.102	1.7	5.4
17	63	0.118	-2.08	-0.25	5.193	1.7	5
17	64	0.125	5.279	0.626	6.673	2.9	4.3
17	65	0.131	4.935	0.616	6.602	3.2	3.6
17	66	0.138	5.588	0.732	6.804	4.6	3.3
17	67	0.141	1.921	0.266	2.920	3.7	3.8
17	68	0.146	3.617	0.510	5.356	3.3	4.4
17	69	0.155	6.181	0.904	5.359	4.7	4.4
17	70	0.149	-3.56	-0.55	2.593	4.6	5.6
17	71	0.151	1.126	0.168	5.757	2	6.1
17	72	0.161	6.416	0.971	5.718	5.5	6.2
17	73	0.169	5.357	0.863	7.717	9.1	5.5
17	74	0.178	5.268	0.894	4.388	15.3	5.3
17	75	0.170	-4.74	-0.84	2.585	11.4	6.9
17	76	0.173	1.924	0.327	6.158	8.7	7.1
17	77	0.170	-1.49	-0.25	3.617	7.7	8
17	78	0.174	2.221	0.379	4.585	6.7	8.3
17	79	0.185	5.899	1.031	3.880	10.6	7.4
17	80	0.190	2.761	0.511	1.478	11.1	7.5
17	81	0.197	3.745	0.712	3.684	10.4	7.5
17	82	0.177	-10.1	-2.00	-3.22	10	10.9
17	83	0.185	4.618	0.818	3.162	4.8	11.8
17	84	0.200	8.111	1.504	6.323	3.4	11.2
17	85	0.206	2.948	0.591	4.765	3.2	10.4
17	86	0.213	3.279	0.677	3.307	2.5	9.5
17	87	0.217	1.986	0.423	4.043	4.3	8.8
17	88	0.231	6.248	1.358	4.394	4.2	7.7
17	89	0.234	1.590	0.367	2.983	4.7	7.5

A5. DENMARK

C	Y	IPR	DIPR	CP	PGDP	DP	U
4	60	0.211	*	*	*	1.8	2.4
4	61	0.208	-1.47	-0.31	6.373	4.3	2.1
4	62	0.220	5.714	1.190	5.670	6.6	2.1
4	63	0.217	-1.33	-0.29	0.641	5.8	2.3
4	64	0.233	7.237	1.572	9.255	4.6	1.9
4	65	0.236	1.674	0.390	4.573	7.4	1.7
4	66	0.241	2.031	0.481	2.729	6.8	1.9
4	67	0.243	0.769	0.185	3.428	6	1.7
4	68	0.245	0.598	0.145	3.977	7.2	1.7
4	69	0.256	4.808	1.178	6.296	6.8	1.7
4	70	0.270	5.204	1.336	2.049	8.1	1.3
4	71	0.263	-2.41	-0.65	2.645	7.9	1.6
4	72	0.256	-2.68	-0.70	5.273	9	1.6
4	73	0.273	6.420	1.647	3.649	10.4	1
4	74	0.267	-2.10	-0.57	-0.94	12.8	2.3
4	75	0.259	-3.11	-0.83	-0.66	12.8	5.3
4	76	0.275	6.185	1.602	6.488	9	5.3
4	77	0.271	-1.11	-0.30	1.606	8.7	6.4
4	78	0.269	-0.98	-0.26	1.478	9.5	7.3
4	79	0.271	0.984	0.265	3.541	7.6	6.2
4	80	0.259	-4.70	-1.27	-0.43	8.2	7
4	81	0.257	-0.58	-0.15	-0.90	10.1	9.2
4	82	0.259	0.529	0.136	3.030	10.6	9.8
4	83	0.257	-0.54	-0.14	2.518	8.2	10.4
4	84	0.259	0.759	0.195	4.388	5.2	10.1
4	85	0.266	2.675	0.694	4.293	5.3	9
4	86	0.272	2.175	0.579	3.634	4.7	7.8
4	87	0.269	-1.17	-0.31	-0.58	5.1	7.8
4	88	0.271	0.983	0.264	-0.16	4.9	8.6
4	89	0.280	3.141	0.853	1.323	4	9.3

A6. FINLAND

C	Y	IPR	DIPR	CP	PGDP	DP	U
5	60	0.177	*	*	*	2.2	1.5
5	61	0.177	0.332	0.058	7.636	5.3	1.2
5	62	0.181	2.096	0.373	2.963	4	1.3
5	63	0.172	-4.82	-0.87	3.270	5.1	1.5
5	64	0.193	11.74	2.030	5.278	7.2	1.5
5	65	0.197	2.220	0.428	5.294	5	1.4
5	66	0.199	0.937	0.185	2.361	4.7	1.5
5	67	0.195	-1.93	-0.38	2.158	7.4	2.9
5	68	0.185	-4.95	-0.96	2.331	12.1	3.8
5	69	0.203	9.260	1.720	9.576	4.2	2.8
5	70	0.221	9.273	1.882	7.472	3.8	1.9
5	71	0.217	-2.08	-0.46	2.085	7.6	2.2
5	72	0.211	-2.54	-0.55	7.639	8.4	2.5
5	73	0.221	4.670	0.988	6.712	14.1	2.3
5	74	0.227	2.696	0.597	3.016	22.5	1.7
5	75	0.226	-0.42	-0.09	1.151	14.5	2.2
5	76	0.222	-1.71	-0.38	0.272	12.5	3.8
5	77	0.219	-1.30	-0.29	0.123	10.1	5.8
5	78	0.209	-4.51	-0.99	2.168	7.7	7.2
5	79	0.226	7.994	1.677	7.260	8.4	5.9
5	80	0.231	2.159	0.489	5.329	9.3	4.6
5	81	0.220	-4.80	-1.11	1.579	11.4	4.8
5	82	0.218	-0.84	-0.18	3.572	8.7	5.3
5	83	0.218	-0.00	-0.00	2.982	8.6	5.4
5	84	0.215	-1.53	-0.33	3.073	8.9	5.2
5	85	0.220	2.592	0.557	3.326	5.1	5
5	86	0.222	0.745	0.164	2.090	4.6	5.3
5	87	0.230	3.661	0.814	3.986	5.2	5
5	88	0.239	4.089	0.942	5.437	6.3	4.5
5	89	0.245	2.372	0.569	5.173	5.8	3.4

A7. FRANCE

C	Y	IPR	DIPR	CP	PGDP	DP	U
11	60	0.110	*	*	*	3.5	1.8
11	61	0.111	1.209	0.133	5.506	3.4	1.5
11	62	0.111	0.032	0.003	6.674	4.7	1.4
11	63	0.120	7.277	0.814	5.347	6.4	1.3
11	64	0.128	7.045	0.845	6.518	4.1	1.4
11	65	0.125	-2.10	-0.27	4.776	2.7	1.5
11	66	0.131	4.424	0.556	5.214	2.9	1.8
11	67	0.135	2.956	0.388	4.686	3.2	1.9
11	68	0.144	7.083	0.957	4.259	4.2	2.6
11	69	0.159	9.855	1.426	6.990	6.6	2.3
11	70	0.159	0.433	0.068	5.730	5.6	2.5
11	71	0.162	1.538	0.245	4.756	5.8	2.7
11	72	0.174	7.651	1.241	4.078	6.2	2.8
11	73	0.185	6.409	1.119	5.418	7.8	2.7
11	74	0.182	-1.52	-0.28	2.715	11.1	2.8
11	75	0.168	-7.68	-1.40	-0.32	13.4	4
11	76	0.186	10.28	1.736	4.401	9.9	4.4
11	77	0.182	-2.16	-0.40	3.535	9	4.9
11	78	0.182	0.086	0.015	3.381	9.5	5.2
11	79	0.192	5.690	1.037	3.173	10.4	5.9
11	80	0.194	0.691	0.133	1.387	12.2	6.3
11	81	0.188	-2.78	-0.54	1.195	11.8	7.3
11	82	0.188	0.011	0.002	2.297	12.6	8.1
11	83	0.183	-2.81	-0.53	0.792	9.5	8.3
11	84	0.185	0.927	0.170	1.483	7.2	9.7
11	85	0.188	1.893	0.350	1.814	5.9	10.2
11	86	0.194	3.362	0.634	2.408	5.1	10.4
11	87	0.203	4.434	0.864	1.961	2.9	10.5
11	88	0.211	3.674	0.748	3.590	3.2	10
11	89	0.218	3.664	0.773	3.638	3.2	9.4

A8. GERMANY

C	Y	IPR	DIPR	CP	PGDP	DP	U
6	60	0.122	*	*	*	2.5	1.1
6	61	0.126	2.579	0.316	4.634	4.3	0.6
6	62	0.132	5.166	0.651	4.733	4.1	0.6
6	63	0.134	1.801	0.238	2.772	2.8	0.4
6	64	0.137	2.181	0.294	6.665	3	0.4
6	65	0.147	7.095	0.978	5.483	3.5	0.3
6	66	0.147	-0.30	-0.04	2.940	3.6	0.2
6	67	0.145	-0.97	-0.14	-0.11	1.3	1.3
6	68	0.154	6.278	0.915	5.557	1.8	1.5
6	69	0.165	7.007	1.085	7.463	4.2	0.9
6	70	0.178	7.607	1.261	5.149	7.6	0.8
6	71	0.189	5.993	1.069	2.893	7.8	0.9
6	72	0.191	1.355	0.256	4.212	5.4	0.8
6	73	0.191	-0.26	-0.05	4.687	6.5	0.8
6	74	0.192	0.921	0.176	0.271	6.8	1.6
6	75	0.195	1.583	0.305	-1.59	6.1	3.6
6	76	0.204	4.265	0.835	5.412	3.5	3.7
6	77	0.204	-0.00	-0.00	2.952	3.6	3.6
6	78	0.209	2.626	0.536	2.871	4.1	3.5
6	79	0.218	4.235	0.887	4.150	4	3.2
6	80	0.222	1.875	0.409	1.364	4.3	3
6	81	0.217	-2.39	-0.53	0.165	4.2	4.4
6	82	0.215	-0.63	-0.13	-0.64	4.7	6.1
6	83	0.216	0.246	0.053	1.501	3.3	8
6	84	0.221	2.159	0.467	2.814	2	7.1
6	85	0.223	1.100	0.243	1.986	1.7	7.2
6	86	0.224	0.588	0.131	2.344	3.1	6.4
6	87	0.228	1.809	0.406	1.681	2.1	6.2
6	88	0.232	1.556	0.356	3.699	1.5	6.2
6	89	0.241	3.949	0.918	3.263	2.5	5.6

A9. ITALY

C	Y	IPR	DIPR	CP	PGDP	DP	U
13	60	0.115	*	*	*	2.1	4.4
13	61	0.121	4.505	0.522	8.206	2.8	3.8
13	62	0.129	7.146	0.865	6.208	5.8	3.3
13	63	0.147	13.63	1.770	5.605	8.5	2.9
13	64	0.136	-7.51	-1.10	2.796	6.5	3.2
13	65	0.134	-1.04	-0.14	3.270	4.2	4.2
13	66	0.143	6.484	0.875	5.986	2.2	4.4
13	67	0.150	5.005	0.719	7.175	2.8	4
13	68	0.150	-0.53	-0.08	6.545	1.7	4.2
13	69	0.165	10.37	1.557	6.098	4.1	4.2
13	70	0.179	8.341	1.381	5.309	6.9	3.8
13	71	0.181	1.039	0.186	1.605	7.2	3.9
13	72	0.190	5.080	0.921	2.700	6.3	4.5
13	73	0.193	1.679	0.320	7.108	11.6	4.4
13	74	0.187	-3.10	-0.60	5.430	18.5	3.7
13	75	0.171	-8.39	-1.57	-2.65	17.5	4
13	76	0.181	5.253	0.903	6.578	18	4.6
13	77	0.178	-1.17	-0.21	3.376	19.1	4.9
13	78	0.180	0.991	0.177	3.680	13.9	4.9
13	79	0.188	4.239	0.765	5.986	15.9	5.2
13	80	0.186	-0.85	-0.16	4.237	20.7	5.2
13	81	0.179	-3.97	-0.74	0.959	18.3	5.8
13	82	0.177	-0.82	-0.14	0.325	17.9	6.4
13	83	0.173	-2.34	-0.41	1.125	15.3	7
13	84	0.185	6.583	1.143	3.012	10.2	7
13	85	0.188	1.632	0.302	2.628	8.8	7.1
13	86	0.191	1.936	0.364	2.541	7.6	7.5
13	87	0.202	5.859	1.123	3.038	6.1	7.9
13	88	0.207	2.436	0.494	4.155	5.9	7.9
13	89	0.218	5.107	1.062	3.161	5.5	7.8

A10. JAPAN

C	Y	IPR	DIPR	CP	PGDP	DP	U
14	60	0.077	*	*	*	6	1.7
14	61	0.086	11.71	0.906	12.04	7.9	1.5
14	62	0.079	-8.49	-0.73	8.909	3.6	1.3
14	63	0.086	9.316	0.737	8.476	4.5	1.3
14	64	0.087	1.661	0.143	11.67	4.4	1.2
14	65	0.087	-0.21	-0.01	5.819	5.1	1.3
14	66	0.088	1.304	0.114	10.63	5	1.4
14	67	0.097	9.444	0.839	11.08	5.8	1.3
14	68	0.096	-0.59	-0.05	12.88	5.2	1.2
14	69	0.097	0.984	0.095	12.47	4.8	1.1
14	70	0.107	9.794	0.956	10.70	7.3	1.1
14	71	0.108	1.193	0.127	4.293	5.2	1.2
14	72	0.110	1.558	0.169	8.381	5.2	1.4
14	73	0.124	13.33	1.469	7.875	11.9	1.3
14	74	0.131	5.084	0.634	-1.21	20.6	1.4
14	75	0.117	-10.7	-1.41	2.599	7.8	1.9
14	76	0.118	1.027	0.120	4.783	6.4	2
14	77	0.116	-1.12	-0.13	5.288	5.7	2
14	78	0.117	0.485	0.056	5.102	4.6	2.2
14	79	0.124	5.660	0.665	5.188	2.6	2.1
14	80	0.110	-11.1	-1.38	4.443	2.8	2
14	81	0.108	-1.83	-0.20	3.860	2.7	2.2
14	82	0.106	-2.07	-0.22	2.837	1.8	2.4
14	83	0.100	-5.14	-0.54	3.151	0.4	2.6
14	84	0.105	5.013	0.504	5.015	1.2	2.7
14	85	0.100	-4.38	-0.46	4.714	1.5	2.6
14	86	0.102	1.848	0.186	2.460	1.8	2.8
14	87	0.104	1.555	0.160	4.406	-0.2	2.8
14	88	0.115	10.64	1.111	5.711	0.4	2.5
14	89	0.131	13.77	1.591	4.915	1.5	2.3

A11. NETHERLANDS

C	Y	IPR	DIPR	CP	PGDP	DP	U
7	60	0.242	*	*	*	2.7	1.2
7	61	0.253	4.520	1.095	0.309	2.4	0.9
7	62	0.252	-0.24	-0.06	6.827	3.5	0.8
7	63	0.263	4.384	1.107	3.637	4.7	0.8
7	64	0.275	4.401	1.160	8.266	8.7	0.7
7	65	0.276	0.608	0.167	5.256	6.1	0.8
7	66	0.285	2.986	0.827	2.734	6	1.1
7	67	0.287	0.726	0.207	5.281	4.2	2.1
7	68	0.299	4.339	1.246	6.413	4.2	2
7	69	0.314	4.966	1.488	6.427	6.4	1.3
7	70	0.332	5.679	1.786	5.698	5.6	1.3
7	71	0.336	1.203	0.400	4.224	8.5	1.7
7	72	0.339	0.938	0.315	3.306	9.4	2.9
7	73	0.352	3.914	1.329	4.687	8.4	2.9
7	74	0.342	-3.05	-1.07	3.974	9.3	3.6
7	75	0.333	-2.65	-0.90	-0.09	11.2	5.2
7	76	0.343	3.119	1.039	5.117	8.9	5.5
7	77	0.344	0.370	0.127	2.321	6.3	5.3
7	78	0.353	2.422	0.835	2.453	5.2	5.3
7	79	0.361	2.274	0.803	2.369	4.2	5.4
7	80	0.358	-0.82	-0.29	0.866	5.7	6
7	81	0.346	-3.39	-1.21	-0.64	5.5	8.5
7	82	0.351	1.633	0.565	-1.43	6	11.4
7	83	0.357	1.575	0.553	1.380	1.8	12
7	84	0.361	1.130	0.403	3.134	1.8	11.8
7	85	0.369	2.399	0.866	2.591	1.7	10.6
7	86	0.373	0.984	0.364	2.009	0.7	9.9
7	87	0.383	2.537	0.947	0.778	-1	9.6
7	88	0.392	2.427	0.929	2.680	1.6	9.2
7	89	0.396	1.121	0.439	4.010	1.3	8.3

A12. NORWAY

C	Y	IPR	DIPR	CP	PGDP	DP	U
2	60	0.240	*	*	*	1	2.4
2	61	0.247	2.726	0.655	6.259	2.6	1.8
2	62	0.251	1.786	0.441	2.831	4.8	2.1
2	63	0.255	1.651	0.415	3.774	3.4	2.5
2	64	0.259	1.475	0.377	5.006	4.7	2.2
2	65	0.266	2.628	0.682	5.297	4.8	1.8
2	66	0.273	2.791	0.743	3.792	4	1.6
2	67	0.283	3.644	0.997	6.263	3	1.5
2	68	0.283	-0.02	-0.00	2.245	4.4	2.1
2	69	0.278	-1.84	-0.52	4.495	4.2	2
2	70	0.300	7.963	2.217	2.003	12.8	1.6
2	71	0.304	1.194	0.359	4.571	6.7	1.5
2	72	0.291	-4.14	-1.26	5.172	5	1.7
2	73	0.311	6.817	1.987	4.127	9.2	1.5
2	74	0.310	-0.29	-0.09	5.172	10.3	1.5
2	75	0.316	1.820	0.565	4.170	10	2.3
2	76	0.327	3.460	1.094	6.825	7.5	1.8
2	77	0.326	-0.11	-0.03	3.579	8.3	1.5
2	78	0.286	-12.3	-4.02	4.545	6.4	1.8
2	79	0.275	-3.98	-1.14	5.057	6.6	2
2	80	0.273	-0.64	-0.17	4.201	14.6	1.6
2	81	0.274	0.419	0.114	0.871	14	2
2	82	0.280	2.381	0.653	0.341	10.2	2.6
2	83	0.271	-3.21	-0.90	4.624	6.1	3.4
2	84	0.278	2.569	0.698	5.759	6.4	3.1
2	85	0.280	0.429	0.119	5.265	5.2	2.6
2	86	0.291	3.890	1.089	4.176	-1.4	2
2	87	0.271	-6.59	-1.91	1.996	6	2.1
2	88	0.268	-1.31	-0.35	0.113	2.9	3.2
2	89	0.267	-0.20	-0.05	1.211	2	4.9

A13. NEW ZEALAND

C	Y	IPR	DIPR	CP	PGDP	DP	U
9	60	0.212	*	*	*	2.1	0.1
9	61	0.204	-3.80	-0.80	5.699	0.4	0
9	62	0.197	-3.42	-0.69	2.124	3.6	0.1
9	63	0.209	6.263	1.234	6.24	3.6	0.1
9	64	0.209	0.108	0.022	4.969	4.3	0.1
9	65	0.225	7.357	1.543	6.384	3.6	0.1
9	66	0.224	-0.17	-0.03	6.271	0.7	0
9	67	0.198	-11.7	-2.63	-4.63	4.4	0.4
9	68	0.197	-0.21	-0.04	0	4.9	0.7
9	69	0.199	0.633	0.125	10.17	2.7	0.3
9	70	0.232	16.45	3.277	-1.44	10.2	0.1
9	71	0.219	-5.21	-1.20	5.208	13.5	0.3
9	72	0.228	3.691	0.811	4.309	10.5	0.5
9	73	0.250	9.983	2.276	7.091	7.8	0.2
9	74	0.263	5.072	1.272	5.943	3.1	0.1
9	75	0.221	-16.1	-4.24	-1.13	16.6	0.3
9	76	0.214	-3.08	-0.68	2.439	17.4	0.4
9	77	0.224	5.016	1.074	-4.90	15.1	0.6
9	78	0.230	2.600	0.584	-1.73	14.2	1.7
9	79	0.253	9.839	2.271	-0.46	19.6	1.9
9	80	0.237	-6.44	-1.63	1.671	13.7	2.7
9	81	0.250	5.531	1.311	3.288	15.6	3.5
9	82	0.252	0.885	0.221	0.597	10.9	3.7
9	83	0.246	-2.24	-0.56	2.917	1.5	5.4
9	84	0.261	6.109	1.507	4.949	8.2	4.6
9	85	0.262	0.166	0.043	1.190	15.2	3.6
9	86	0.261	-0.41	-0.10	2.488	17	4
9	87	0.283	8.692	2.270	0.529	15.4	4.1
9	88	0.283	-0.07	-0.02	-1.22	7.9	5.6
9	89	0.311	9.656	2.740	1.289	5	6.8

A14. SWEDEN

C	Y	IPR	DIPR	CP	PGDP	DP	U
13	60	0.199	*	*	*	4.9	1.3
13	61	0.191	-4.21	-0.84	5.672	2.9	1.1
13	62	0.193	1.140	0.217	4.266	4	1.1
13	63	0.195	1.331	0.257	5.336	1.9	1.4
13	64	0.200	2.155	0.422	6.820	4.4	1.2
13	65	0.211	5.644	1.129	3.821	6	1
13	66	0.214	1.685	0.356	2.082	6.6	1.3
13	67	0.213	-0.67	-0.14	3.368	5	1.7
13	68	0.220	3.488	0.744	3.640	2.4	1.8
13	69	0.233	5.764	1.273	5.003	3.4	1.5
13	70	0.240	2.741	0.640	6.480	6	1.2
13	71	0.232	-3.22	-0.77	0.937	7.1	2.1
13	72	0.235	1.259	0.292	2.288	7	2.2
13	73	0.240	2.163	0.509	3.976	7	2
13	74	0.252	4.890	1.175	3.197	9.5	1.6
13	75	0.240	-4.47	-1.12	2.550	14.5	1.3
13	76	0.255	5.860	1.411	1.057	11.9	1.3
13	77	0.250	-1.62	-0.41	-1.59	10.5	1.5
13	78	0.237	-5.42	-1.35	1.752	9.6	1.8
13	79	0.250	5.614	1.332	3.847	7.9	1.7
13	80	0.248	-0.90	-0.22	1.658	11.7	1.6
13	81	0.237	-4.46	-1.10	0.032	9.5	2.1
13	82	0.241	1.730	0.410	1.120	8.7	2.6
13	83	0.239	-0.76	-0.18	1.806	9.7	2.9
13	84	0.241	0.985	0.235	3.982	7.7	2.6
13	85	0.251	4.059	0.981	2.224	6.8	2.4
13	86	0.256	1.791	0.450	2.265	7.1	2.2
13	87	0.263	3.026	0.775	2.934	5.3	1.9
13	88	0.270	2.423	0.639	2.341	6.6	1.6
13	89	0.279	3.313	0.895	2.103	8	1.4

A15. SWITZERLAND

C	Y	IPR	DIPR	CP	PGDP	DP	U
15	60	0.153	*	*	*	2.8	0.4
15	61	0.167	9.101	1.400	8.127	4.1	0.2
15	62	0.175	4.471	0.750	4.774	5.8	0.2
15	63	0.175	-0.05	-0.00	4.886	4.8	0.2
15	64	0.179	2.688	0.471	5.252	5.3	0
15	65	0.175	-2.54	-0.45	3.183	3.8	0
15	66	0.176	0.876	0.153	2.458	4.8	0
15	67	0.178	0.760	0.134	3.057	4.4	0
15	68	0.184	3.740	0.666	3.590	3.1	0
15	69	0.195	5.564	1.029	5.640	2.6	0
15	70	0.206	5.597	1.092	6.368	4.7	0
15	71	0.209	1.642	0.338	4.078	9.2	0
15	72	0.216	3.072	0.643	3.202	9.8	0
15	73	0.221	2.606	0.563	3.042	8.1	0
15	74	0.217	-1.85	-0.41	1.452	6.9	0
15	75	0.202	-6.96	-1.51	-7.27	7.1	0.9
15	76	0.225	11.36	2.300	-1.40	2.7	1.8
15	77	0.236	5.100	1.149	2.432	0.3	1.2
15	78	0.255	7.774	1.841	0.410	3.6	0.9
15	79	0.263	3.143	0.802	2.488	2	0.9
15	80	0.268	1.816	0.478	4.602	2.7	0.6
15	81	0.262	-1.98	-0.53	1.443	6.9	0.6
15	82	0.259	-1.25	-0.33	-0.93	7.3	1.2
15	83	0.265	2.482	0.644	1.011	3.3	2.4
15	84	0.276	3.817	1.015	1.763	2.8	3
15	85	0.278	0.946	0.261	3.711	2.7	2.4
15	86	0.286	2.906	0.809	2.867	3.8	2.1
15	87	0.293	2.399	0.688	2.032	2.5	1.8
15	88	0.298	1.613	0.473	2.896	3	2.1
15	89	0.302	1.324	0.395	3.503	3.3	1.8

A16. U.K.

C	Y	IPR	DIPR	CP	PGDP	DP	U
12	60	0.162	*	*	*	1	2.2
12	61	0.156	-3.19	-0.51	3.275	3.3	1.9
12	62	0.158	0.903	0.141	1.032	3.7	2.9
12	63	0.155	-1.52	-0.24	3.848	2	3.5
12	64	0.162	4.295	0.669	5.415	3.7	2.6
12	65	0.160	-1.13	-0.18	2.527	5.1	2.2
12	66	0.161	0.474	0.076	1.876	4.6	2.2
12	67	0.168	4.050	0.654	2.254	3	3.1
12	68	0.173	3.072	0.516	4.072	4.1	3.1
12	69	0.174	0.694	0.120	2.069	5.4	2.9
12	70	0.178	2.305	0.402	2.267	7.3	3
12	71	0.183	2.558	0.456	1.988	9.4	3.8
12	72	0.191	4.616	0.845	3.483	8.3	4.2
12	73	0.197	3.191	0.611	7.279	7.1	3.1
12	74	0.201	2.049	0.404	-1.71	14.9	3.1
12	75	0.191	-5.02	-1.01	-0.76	27.2	4.5
12	76	0.194	1.603	0.307	2.706	14.9	5.7
12	77	0.193	-0.68	-0.13	2.299	13.9	6.1
12	78	0.193	0.087	0.016	3.664	11.1	5.9
12	79	0.203	5.280	1.021	2.842	14.5	5
12	80	0.201	-1.05	-0.21	-2.17	19.8	6.4
12	81	0.198	-1.24	-0.25	-1.30	11.7	9.8
12	82	0.204	2.542	0.506	1.689	7.1	11.3
12	83	0.208	1.964	0.400	3.730	4.9	12.5
12	84	0.220	5.949	1.237	2.128	4.2	11.7
12	85	0.218	-0.82	-0.18	3.566	6	11.2
12	86	0.223	2.220	0.485	3.884	3.5	11.1
12	87	0.228	2.381	0.532	4.681	4.8	10.2
12	88	0.242	5.956	1.362	4.617	6.6	8.3
12	89	0.250	3.497	0.847	2.174	6.8	6.9

A17. U.S.

C	Y	IPR	DIPR	CP	PGDP	DP	U
16	60	0.049	*	*	*	1.5	5.3
16	61	0.048	-1.93	-0.09	2.759	1	6.4
16	62	0.051	5.611	0.272	5.290	1.9	5.3
16	63	0.050	-2.44	-0.12	4.290	1.5	5.5
16	64	0.049	-0.57	-0.02	5.848	1.7	5
16	65	0.051	3.099	0.154	5.935	2	4.4
16	66	0.054	6.763	0.346	5.111	3.5	3.6
16	67	0.056	2.580	0.141	2.275	2.9	3.7
16	68	0.061	8.888	0.499	4.173	5	3.5
16	69	0.062	2.629	0.160	2.865	5.1	3.4
16	70	0.065	3.915	0.245	-0.10	5.3	4.8
16	71	0.067	2.956	0.192	3.252	5.3	5.8
16	72	0.071	6.980	0.468	5.059	4.4	5.5
16	73	0.075	4.984	0.358	4.769	5.5	4.8
16	74	0.073	-2.93	-0.22	-0.74	9	5.5
16	75	0.066	-8.97	-0.65	-1.02	9.2	8.3
16	76	0.075	12.82	0.854	4.874	5.9	7.6
16	77	0.080	6.625	0.498	4.444	5.7	6.9
16	78	0.080	0.645	0.051	5.115	7.4	6
16	79	0.080	-0.63	-0.05	1.976	8.5	5.8
16	80	0.074	-7.49	-0.60	-0.07	9.6	7
16	81	0.074	0.136	0.010	2.268	8.9	7.5
16	82	0.074	0.358	0.026	-2.58	6.9	9.5
16	83	0.079	7.313	0.544	3.895	3.3	9.5
16	84	0.090	13.47	1.077	7.162	3.7	7.4
16	85	0.091	1.039	0.094	3.774	3.2	7.1
16	86	0.097	6.719	0.616	3.186	2.7	6.9
16	87	0.102	4.538	0.444	3.522	3.3	6.1
16	88	0.103	0.933	0.095	4.537	3.4	5.4
16	89	0.106	3.341	0.345	2.038	5	5.2

B. Time-series data for indicators of manufacturing economic performance, alternative macro-indicators, and competitive pressures: 1973-89

B1. AUSTRALIA

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
10	73	0.136	12.93	1.560	*	3.7	3.9	6.8	2.9	9.5	8.7
10	74	0.160	17.96	2.446	*	-0.2	0.2	-4.1	-3.9	15.1	15.2
10	75	0.135	-15.6	-2.50	*	-7.4	1.6	-1.1	6.8	15.1	15.1
10	76	0.145	6.985	0.946	*	1.2	2.4	2.5	1.3	13.5	11.3
10	77	0.144	-0.63	-0.09	*	-0.1	0	-0.4	-0.3	12.3	10.2
10	78	0.145	1.247	0.179	*	-6	1.7	4.1	10.8	7.9	8.2
10	79	0.142	-2.02	-0.29	*	3	3.6	4.3	1.3	9.1	14.8
10	80	0.146	2.151	0.307	*	1.7	1	2.1	0.3	10.2	14
10	81	0.153	5.403	0.789	*	-0.1	1.5	2.5	2.6	9.7	8.4
10	82	0.161	5.051	0.777	*	-2.6	-2.4	-8.2	-5.7	11.1	8.9
10	83	0.146	-9.48	-1.53	*	-4.3	-0.6	1.5	6.1	10.1	8.1
10	84	0.161	10.09	1.477	*	1.7	6.3	5.1	3.3	3.9	5.4
10	85	0.162	0.604	0.097	*	-2.9	3.3	2.5	5.6	6.8	6.6
10	86	0.155	-3.87	-0.62	*	*	0.4	1.5	*	9.1	5.6
10	87	0.154	-0.74	-0.11	*	0.4	2.7	6	5.6	8.5	7.3
10	88	0.169	9.296	1.437	*	3.5	2.2	5.6	2	7.2	7.4
10	89	0.188	11.71	1.979	*	2.4	3	*	*	7.6	6.7

Notes: (1) C, Y, IPR, DIPR, and CP have same meaning as A1.
(2) RHWM, EMM, RGDPPC, RVAM, RVAMPC, CPI, and PPIM are for annual percentage changes in real hourly wages in manufacturing, employment in manufacturing, real GDP per capita, real value-added, real value-added per person employed in manufacturing, consumer price index and producer price index in manufacturing.
Source: OECD

B2. AUSTRIA

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
1	73	0.228	3.410	0.754	*	2.3	4.3	5.2	2.8	7.6	1.3
1	74	0.233	2.165	0.495	*	-0.1	3.8	3.4	3.5	9.5	15.1
1	75	0.226	-3.30	-0.77	*	-3.6	-0.1	-6	-2.5	8.4	6.4
1	76	0.246	9.230	2.086	*	-1.6	4.8	6.3	8	7.3	5.9
1	77	0.249	1.160	0.286	*	2.1	4.5	5	2.9	5.5	3
1	78	0.249	0.026	0.006	*	0.4	0.1	1	0.5	3.6	1
1	79	0.262	4.885	1.220	*	0.6	4.9	6.4	5.8	3.7	4.2
1	80	0.268	2.349	0.615	*	0.8	2.9	2.4	1.6	6.4	8.6
1	81	0.267	-0.35	-0.09	*	1.2	-0.5	-1.3	-2.5	6.8	8.1
1	82	0.258	-3.22	-0.86	*	3.1	1	0.4	-2.6	5.4	3.1
1	83	0.265	2.566	0.663	*	-5.4	2.3	1.6	7.4	3.3	0.6
1	84	0.281	6.040	1.602	*	2.9	1.3	2.9	0	5.6	3.8
1	85	0.288	2.593	0.729	*	-1.1	2.4	3.8	5	3.2	2.6
1	86	0.283	-1.66	-0.48	*	1.5	1.1	0.5	-1	1.7	-5.3
1	87	0.289	1.881	0.533	*	0.8	1.8	0.7	-0.1	1.4	-2
1	88	0.301	4.287	1.239	*	-1.8	3.6	5.6	7.6	2	-0.2
1	89	0.312	3.620	1.091	*	-0.5	3.7	5.9	6.5	2.5	1.7

B3. BELGIUM

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
8	73	0.420	6.902	2.712	9.2	1.3	5.6	8.9	7.5	7	3.4
8	74	0.420	0.196	0.082	7.5	1.1	3.8	3.7	2.6	12.7	17.3
8	75	0.401	-4.58	-1.92	5	-6.1	-1.8	-6.5	-0.4	12.8	6.9
8	76	0.416	3.698	1.485	3.1	-3.9	5.4	7.5	11.9	9.2	3.8
8	77	0.426	2.455	1.022	2.1	-3.8	0.4	0.6	4.6	7.1	3.1
8	78	0.426	-0.05	-0.02	1.2	-4	2.7	1.6	5.8	4.5	0.9
8	79	0.442	3.733	1.591	1.8	-2.7	2.1	2.7	5.5	4.5	4.4
8	80	0.430	-2.58	-1.14	2	-2.1	4.2	2.5	4.7	6.6	5.3
8	81	0.426	-1.11	-0.47	1.1	-5.1	-1	-0.4	4.9	7.6	10.4
8	82	0.422	-0.77	-0.32	-0.6	-3.7	1.5	4	8	8.2	12.3
8	83	0.418	-0.96	-0.40	-1.6	-2.1	0.4	4.6	6.9	7.7	4.9
8	84	0.426	1.950	0.817	-1	-1.1	2.1	2	3.1	6.3	6.2
8	85	0.426	-0.06	-0.02	-1.9	-1.5	0.8	1	2.5	4.9	3.1
8	86	0.440	3.338	1.424	-0.1	-1.6	1.4	-0.7	1	1.3	-9.4
8	87	0.455	3.340	1.472	-0.5	-2.4	2.2	1.5	4	1.6	-2.9
8	88	0.463	1.622	0.739	1.7	-0.6	4.4	5.1	5.8	1.2	1.6
8	89	0.473	2.163	1.001	1.1	1.7	3.3	*	*	3.1	6.7

B4. CANADA

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
17	73	0.169	5.357	0.863	1.2	5.2	6.5	10.7	5.2	7.6	11.3
17	74	0.178	5.268	0.894	2.3	2.7	2.9	3	0.3	10.9	18.9
17	75	0.170	-4.74	-0.84	4.4	-4.4	1.1	-6.7	-2.4	10.8	11.3
17	76	0.173	1.924	0.327	5.8	2.7	4.8	7.3	4.5	7.5	5.2
17	77	0.170	-1.49	-0.25	2.7	-1.7	2.4	3.6	5.4	8	7.8
17	78	0.174	2.221	0.379	-1.6	3.6	3.5	4.6	0.9	8.9	9.2
17	79	0.185	5.899	1.031	-0.3	5.9	2.8	3.7	-2	9.1	14.5
17	80	0.190	2.761	0.511	-0.1	1.9	0.3	-4.5	-6.3	10.2	13.4
17	81	0.197	3.745	0.712	-0.6	0.6	2.4	3.7	3	12.4	10.2
17	82	0.177	-10.1	-2.00	1.1	-9.2	-4.1	-12.9	-4	10.8	6.7
17	83	0.185	4.618	0.818	-2.2	-2.5	2.4	6.5	9.2	5.8	3.5
17	84	0.200	8.111	1.504	0.8	4	5.6	12.9	8.6	4.3	4.5
17	85	0.206	2.948	0.591	-0.1	0.3	4	5.6	5.3	4	2.8
17	86	0.213	3.279	0.677	-1	1.5	2.5	0.7	-0.7	4.2	0.9
17	87	0.217	1.986	0.423	-1.9	1.5	2.9	4	2.5	4.4	2.8
17	88	0.231	6.248	1.358	0.8	4.3	3.2	4.9	0.6	4	4.3
17	89	0.234	1.590	0.367	0.5	1	1.8	0.4	-0.6	5	2

B5. DENMARK

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
4	73	0.273	6.420	1.647	8.6	3.4	3	5.5	2.1	9.3	14.8
4	74	0.267	-2.10	-0.57	5.4	-2.8	-1.4	1.6	4.5	15.3	22.1
4	75	0.259	-3.11	-0.83	8.7	-9.2	-1	-2.4	7.5	9.6	5.8
4	76	0.275	6.185	1.602	3.5	0.3	6.2	4.8	4.5	9	7.7
4	77	0.271	-1.11	-0.30	-0.8	2.7	1.3	0.4	-2.2	11.1	8.2
4	78	0.269	-0.98	-0.26	0.4	-0.5	1.2	-0.3	0.2	10	4.3
4	79	0.271	0.984	0.265	1.5	1.3	3.3	5.7	4.3	9.6	9.1
4	80	0.259	-4.70	-1.27	-1	-2.1	-0.6	4.5	6.7	12.3	16.7
4	81	0.257	-0.58	-0.15	-2	-4.7	-0.8	-3.2	1.6	11.7	16
4	82	0.259	0.529	0.136	-0.2	-0.6	3.1	1.6	2.2	10.1	10.5
4	83	0.257	-0.54	-0.14	-0.3	*	2.6	6.7	*	6.9	5
4	84	0.259	0.759	0.195	-1.5	-2.4	4.4	4.7	7.2	6.3	7.1
4	85	0.266	2.675	0.694	0.2	7.1	4.2	3.2	-3.6	4.7	2.6
4	86	0.272	2.175	0.579	1.1	3.7	3.5	0	-3.6	3.6	-6.8
4	87	0.269	-1.17	-0.31	5.1	-2.4	0.2	-4.1	-1.8	4	0
4	88	0.271	0.983	0.264	1.9	1	0.5	0.4	-0.6	4.6	3.6
4	89	0.280	3.141	0.853	0.3	-2.6	1.1	1.2	4	4.8	6.3

B6. FINLAND

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
5	73	0.221	4.670	0.988	*	4.1	6.1	6.5	2.3	10.7	21.1
5	74	0.227	2.696	0.597	*	3.3	2.5	4.5	1.1	16.9	25.7
5	75	0.226	-0.42	-0.09	*	-1.3	0.7	-5.1	-3.8	17.9	14.8
5	76	0.222	-1.71	-0.38	*	-0.4	0	2.2	2.6	14.4	6.8
5	77	0.219	-1.30	-0.29	*	-2.7	-0.2	-1.6	1.2	12.6	9.2
5	78	0.209	-4.51	-0.99	*	-2.8	1.9	4.2	7.2	7.8	4.7
5	79	0.226	7.994	1.677	*	3.5	7	10.8	7.1	7.5	9.7
5	80	0.231	2.159	0.489	*	5.3	5	8.3	2.8	11.6	15.9
5	81	0.220	-4.80	-1.11	*	-0.6	1.2	3.3	3.9	12	11.9
5	82	0.218	-0.84	-0.18	*	-1.9	3	1.4	3.3	9.6	7.1
5	83	0.218	-0.00	-0.00	*	-2.1	2.4	3.2	5.4	8.3	5
5	84	0.215	-1.53	-0.33	*	-1.2	2.5	4	5.3	7.1	5.7
5	85	0.220	2.592	0.557	*	-1.4	2.9	3.9	5.4	5.9	4.1
5	86	0.222	0.745	0.164	*	-4.2	1.8	1.3	5.8	2.9	-4.3
5	87	0.230	3.661	0.814	*	-1.9	3.7	5	7	4.1	0.8
5	88	0.239	4.089	0.942	*	-2.8	5.1	3.9	6.9	5.1	5.3
5	89	0.245	2.372	0.569	*	0.4	4.9	3.1	2.7	6.6	6

B7. FRANCE

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
11	73	0.185	6.409	1.119	6.7	2.3	4.5	7	4.5	7.3	14.7
11	74	0.182	-1.52	-0.28	4.9	1.2	2.6	3.2	2	13.7	29.1
11	75	0.168	-7.68	-1.40	4.9	-2.6	-0.3	-2.1	0.6	11.8	-5.7
11	76	0.186	10.28	1.736	4.1	-0.9	4	7.1	8	9.6	7.4
11	77	0.182	-2.16	-0.40	3	-0.4	3.1	3.7	4.2	9.4	6.6
11	78	0.182	0.086	0.015	3.6	-1.4	2.9	2.2	3.6	9.1	4.4
11	79	0.192	5.690	1.037	2.1	-1.5	2.7	2.4	4	10.8	13.2
11	80	0.194	0.691	0.133	1.3	-1.1	0.9	-0.7	0.4	13.6	9.3
11	81	0.188	-2.78	-0.54	0.9	-3.2	0.6	-0.7	2.6	13.4	11.7
11	82	0.188	0.011	0.002	3.1	-1.4	1.7	0.9	2.3	11.8	10.7
11	83	0.183	-2.81	-0.53	1.4	-2.2	0.3	0.4	2.6	9.6	8.8
11	84	0.185	0.927	0.170	0.3	-2.7	1.1	-1.8	0.9	7.4	9.2
11	85	0.188	1.893	0.350	-0.1	-2.9	1.4	-0.4	2.5	5.8	4.4
11	86	0.194	3.362	0.634	1.2	-2.2	2	-0.2	2	2.7	-2.8
11	87	0.203	4.434	0.864	0	-2.3	1.5	-0.3	2.1	3.1	0.6
11	88	0.211	3.674	0.748	0.4	-1.5	3.1	3.3	4.8	2.7	5.2
11	89	0.218	3.664	0.773	0.2	0.3	3.1	3.7	3.4	3.6	5.4

B8. GERMANY

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
6	73	0.191	-0.26	-0.05	2.6	-0.1	4.2	6.4	6.5	6.9	6.8
6	74	0.192	0.921	0.176	4.7	-1.4	0.1	-0.7	0.7	7	13.3
6	75	0.195	1.583	0.305	2.9	-5.5	-1.2	-4.7	0.9	6	3.3
6	76	0.204	4.265	0.835	1	-0.9	5.9	7.7	8.7	4.5	3.5
6	77	0.204	-0.00	-0.00	3.7	-0.4	3.2	2.1	2.5	3.7	2.8
6	78	0.209	2.626	0.536	1.8	-0.2	3	1.8	2	2.7	0.8
6	79	0.218	4.235	0.887	1.1	0.5	4.1	4.6	4.1	4.1	5.1
6	80	0.222	1.875	0.409	0.5	*	1	0	*	5.5	7.1
6	81	0.217	-2.39	-0.53	-0.8	-1.8	0	-1.5	0.3	6.3	6
6	82	0.215	-0.63	-0.13	-0.7	-3.1	-0.6	-2.4	0.7	5.3	4.8
6	83	0.216	0.246	0.053	0	-3	1.9	1.1	4.3	3.3	1.5
6	84	0.221	2.159	0.467	0.3	-0.5	3.2	2.7	3.3	2.4	2.8
6	85	0.223	1.100	0.243	2.9	0.2	2.2	3.4	3.2	2.2	2
6	86	0.224	0.588	0.131	3.8	0.8	2.3	0	-0.8	-0.1	-2.4
6	87	0.228	1.809	0.406	4.1	-0.2	1.7	-2.9	-2.7	0.2	-0.4
6	88	0.232	1.556	0.356	2.5	-0.3	3.1	2.9	3.3	1.3	1.6
6	89	0.241	3.949	0.918	0.9	1.4	2.4	4.7	3.2	2.8	3.4

B9. ITALY

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
13	73	0.193	1.679	0.320	12.1	-0.2	6.3	10.8	11	10.8	18.5
13	74	0.187	-3.10	-0.60	2.8	2.1	3.5	6.4	4.1	19.1	33.4
13	75	0.171	-8.39	-1.57	8.3	0.3	-4.2	-9.7	-10	17	9.3
13	76	0.181	5.253	0.903	3.5	-1.4	6.1	14.8	16.4	16.8	20.8
13	77	0.178	-1.17	-0.21	9.3	1.2	3.3	3.6	2.3	17	19
13	78	0.180	0.991	0.177	3.6	-1	2.9	4.7	5.8	12.1	10.4
13	79	0.188	4.239	0.765	3.7	-0.3	5.7	10	10.3	14.8	11.9
13	80	0.186	-0.85	-0.16	-2.2	1.2	4	5.3	4	21.2	17.3
13	81	0.179	-3.97	-0.74	4.5	-1.9	0.8	-1.7	0.2	17.8	15.8
13	82	0.177	-0.82	-0.14	0.4	-1.9	0.1	-0.7	1.2	16.6	14.8
13	83	0.173	-2.34	-0.41	0.1	-2.9	0.8	0.8	3.8	14.6	11.6
13	84	0.185	6.583	1.143	0.7	-3.9	2.7	4.5	8.7	10.8	9.8
13	85	0.188	1.632	0.302	1.9	-2.4	2.4	3	5.5	9.2	8.3
13	86	0.191	1.936	0.364	-0.9	-1	2.4	2.3	3.3	5.8	3.6
13	87	0.202	5.859	1.123	1.6	-1.7	2.8	3.9	5.7	4.7	4
13	88	0.207	2.436	0.494	1	1.8	4	7.5	5.6	5.1	4.8
13	89	0.218	5.107	1.062	-0.2	0.1	3	3	2.8	6.3	6.6

B10. JAPAN

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
14	73	0.124	13.33	1.469	10.6	3.7	6.4	13.7	9	11.7	7.7
14	74	0.131	5.084	0.634	1.4	-1.1	-2.6	-0.2	0.9	24.5	27
14	75	0.117	-10.7	-1.41	-0.2	-5.7	1.3	-6.1	-0.4	11.8	8.9
14	76	0.118	1.027	0.120	2.7	-0.1	3.6	10.1	10.1	9.4	5.3
14	77	0.116	-1.12	-0.13	0.5	-0.4	4.3	5.5	5.9	8.2	2.8
14	78	0.117	0.485	0.056	2	-1	4.2	6.7	7.9	4.2	-0.8
14	79	0.124	5.660	0.665	3.5	0.5	4.3	6.7	6.2	3.7	5
14	80	0.110	-11.1	-1.38	-0.6	2.6	3.6	9	6.3	7.7	14.7
14	81	0.108	-1.83	-0.20	0.7	1.3	3.1	4.5	3.2	4.9	1.1
14	82	0.106	-2.07	-0.22	1.9	-0.4	2.1	5.8	6.2	2.7	0.5
14	83	0.100	-5.14	-0.54	1.2	1.9	2.5	8	6	1.9	-0.7
14	84	0.105	5.013	0.504	1.5	2.3	4.3	11.6	9.1	2.3	0
14	85	0.100	-4.38	-0.46	1.1	1	4.1	7	5.9	2	-0.8
14	86	0.102	1.848	0.186	1	-0.6	1.8	0.5	1.1	0.6	-4.7
14	87	0.104	1.555	0.160	1.9	-1.3	3.9	7.2	8.6	0.1	-2.9
14	88	0.115	10.64	1.111	4	2	5.3	8	5.9	0.7	-0.3
14	89	0.131	13.77	1.591	3.4	2.1	4.5	*	*	2.3	2.1

B11. NETHERLANDS

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
7	73	0.352	3.914	1.329	4.6	-1.6	3.8	8.5	10.3	8	6.7
7	74	0.342	-3.05	-1.07	7.4	-0.2	3.2	5.2	5.4	9.6	9.8
7	75	0.333	-2.65	-0.90	3	-3.6	-1	-3.1	0.5	10.2	6.8
7	76	0.343	3.119	1.039	-0.2	-4.5	4.3	6.7	11.7	8.8	7.8
7	77	0.344	0.370	0.127	0.9	-1.4	1.7	0	1.4	6.4	5.9
7	78	0.353	2.422	0.835	1.5	0	1.8	0.3	0.3	4.1	1.3
7	79	0.361	2.274	0.803	0.1	-1.6	1.7	2.7	4.5	4.2	2.7
7	80	0.358	-0.82	-0.29	-1.8	-0.7	0.1	-1.2	-0.6	6.5	8.2
7	81	0.346	-3.39	-1.21	-3.2	*	-1.3	-1.9	*	6.7	11
7	82	0.351	1.633	0.565	0.8	-3.1	-1.9	-4.8	-1.8	5.9	3
7	83	0.357	1.575	0.553	-0.2	-7	1	3.7	11.5	2.7	0.5
7	84	0.361	1.130	0.403	-2.1	1.9	2.7	3.8	1.8	3.3	5.6
7	85	0.369	2.399	0.866	2.6	0.9	2.1	3.8	2.9	2.3	1
7	86	0.373	0.984	0.364	1.5	0.9	1.4	0.4	-0.5	0.1	-10.
7	87	0.383	2.537	0.947	2.1	*	0.1	-0.5	*	-0.7	-2.6
7	88	0.392	2.427	0.929	0.5	0.3	2	2.4	2.1	0.7	1.4
7	89	0.396	1.121	0.439	0.3	3.9	3.4	5.8	1.9	1.1	4.8

B12. NORWAY

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
2	73	0.311	6.817	1.987	2.9	-0.8	3.4	5.7	6.5	7.5	8
2	74	0.310	-0.29	-0.09	7.2	0.8	4.6	5	4.2	9.4	18.2
2	75	0.316	1.820	0.565	7.2	4.8	3.6	-2.2	-6.7	11.7	9.7
2	76	0.327	3.460	1.094	7.2	1	6.3	0.2	-0.7	9.1	7.8
2	77	0.326	-0.11	-0.03	1.7	-1.4	3.1	-2.1	-0.6	9.1	6.3
2	78	0.286	-12.3	-4.02	-0.1	-3.4	4.1	-2.5	1	8.1	4.8
2	79	0.275	-3.98	-1.14	-1.8	-2.8	4.7	3.2	6.2	4.8	8.6
2	80	0.273	-0.64	-0.17	-1	*	3.8	-1.1	*	10.9	14.7
2	81	0.274	0.419	0.114	-2.9	-1.6	0.6	-1	0.6	13.7	11.3
2	82	0.280	2.381	0.653	-0.1	-3.2	-0.1	-0.7	2.6	11.3	6.4
2	83	0.271	-3.21	-0.90	-0.6	-7.4	4.3	-0.7	7.2	8.4	5.8
2	84	0.278	2.569	0.698	1.9	2.1	5.4	5.7	3.6	6.3	6.3
2	85	0.280	0.429	0.119	1.9	0.9	5	3.7	2.8	5.7	5.1
2	86	0.291	3.890	1.089	2.9	2.9	3.8	0	-2.8	7.2	2.7
2	87	0.271	-6.59	-1.91	6.8	-1.7	1.6	1.9	3.7	8.7	6
2	88	0.268	-1.31	-0.35	-0.9	-4.3	-0.5	-3	1.3	6.7	5.3
2	89	0.267	-0.20	-0.05	0.8	-9.2	0.8	0.3	10.4	4.6	5.5

B13. NEW ZEALAND

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
9	73	0.250	9.983	2.276	*	4.6	5.8	*	*	8.2	*
9	74	0.263	5.072	1.272	*	4.4	4.4	*	*	11.1	*
9	75	0.221	-16.1	-4.24	*	-1	-3.1	*	*	14.7	*
9	76	0.214	-3.08	-0.68	*	1.7	1.5	*	*	16.9	*
9	77	0.224	5.016	1.074	*	3.6	-5.2	*	*	14.4	*
9	78	0.230	2.600	0.584	*	-6.3	0.4	-0.2	6.5	12	*
9	79	0.253	9.839	2.271	*	2	1.7	4.7	2.6	13.7	*
9	80	0.237	-6.44	-1.63	*	4.3	0.5	-1.5	-5.5	17.2	*
9	81	0.250	5.531	1.311	*	-3.5	4.4	8.6	12.5	15.4	*
9	82	0.252	0.885	0.221	*	2	-0.4	0.7	-1.2	16.2	*
9	83	0.246	-2.24	-0.56	*	-3.5	1.5	2.8	6.5	7.3	*
9	84	0.261	6.109	1.507	*	0	4	10.6	10.6	6.2	*
9	85	0.262	0.166	0.043	*	5.3	0.7	-4.4	-9.2	15.4	*
9	86	0.261	-0.41	-0.10	*	*	2.3	2.3	*	13.2	*
9	87	0.283	8.692	2.270	*	-5.3	-0.4	-4.2	1.2	15.8	*
9	88	0.283	-0.07	-0.02	*	-9	-1.9	-2.9	6.7	6.4	*
9	89	0.311	9.656	2.740	*	-5.8	0.8	1.8	8.1	5.7	*

B14. SWEDEN

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
13	73	0.240	2.163	0.509	1.4	1.9	3.8	7.1	5.1	6.7	11
13	74	0.252	4.890	1.175	1	5.1	2.9	5.4	0.3	9.9	23.3
13	75	0.240	-4.47	-1.12	4.6	1.6	2.2	0.3	-1.3	9.8	6.1
13	76	0.255	5.860	1.411	6.9	-3.3	0.7	0	3.5	10.3	8.6
13	77	0.250	-1.62	-0.41	-4.3	-3.6	-1.9	-5.7	-2.2	11.4	9.5
13	78	0.237	-5.42	-1.35	-1.1	-3.5	1.5	-2.7	0.8	10	8.2
13	79	0.250	5.614	1.332	0.5	0.3	3.6	6.4	6.1	7.2	11.6
13	80	0.248	-0.90	-0.22	-4.3	0	1.5	0.4	0.4	13.7	13.2
13	81	0.237	-4.46	-1.10	-1.4	-4.1	-0.1	-3	1.1	12.1	10.5
13	82	0.241	1.730	0.410	0.1	-3.9	1.1	0.2	4.2	8.6	12.7
13	83	0.239	-0.76	-0.18	-1.7	-0.5	1.8	6	6.6	8.9	11.5
13	84	0.241	0.985	0.235	1.4	1.3	3.9	7.6	6.2	8	8
13	85	0.251	4.059	0.981	0.2	1.6	2.1	2.1	0.5	7.4	5.5
13	86	0.256	1.791	0.450	3	0.8	2	0.7	-0.1	4.3	0.2
13	87	0.263	3.026	0.775	2.2	-1.6	2.5	2.7	4.4	4.2	2.7
13	88	0.270	2.423	0.639	2	0.6	1.8	2.4	1.8	5.8	6
13	89	0.279	3.313	0.895	3.3	1.2	1.4	1.2	-0.1	6.4	7.1

B15. SWITZERLAND

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
15	73	0.221	2.606	0.563	*	-0.3	2.1	*	*	8.7	10.7
15	74	0.217	-1.85	-0.41	*	-0.7	1.2	*	*	9.8	16.1
15	75	0.202	-6.96	-1.51	*	-8	-6.5	*	*	6.7	-2.2
15	76	0.225	11.36	2.300	*	-6	-0.3	*	*	1.7	-0.7
15	77	0.236	5.100	1.149	*	-0.6	2.7	*	*	1.3	0.3
15	78	0.255	7.774	1.841	*	0.6	0.1	*	*	1.1	-3.4
15	79	0.263	3.143	0.802	*	-0.3	2.2	*	*	3.6	3.8
15	80	0.268	1.816	0.478	*	*	4	*	*	4	5.1
15	81	0.262	-1.98	-0.53	*	0.5	0.7	*	*	6.5	5.8
15	82	0.259	-1.25	-0.33	*	-3.3	-1.5	*	*	5.6	2.5
15	83	0.265	2.482	0.644	*	-3.6	0.8	*	*	3	0.5
15	84	0.276	3.817	1.015	*	-1	1.4	*	*	2.9	3.2
15	85	0.278	0.946	0.261	*	*	3.3	*	*	3.4	2.3
15	86	0.286	2.906	0.809	*	1.8	2.2	*	*	0.8	-4
15	87	0.293	2.399	0.688	*	-0.1	1.3	*	*	1.4	-2
15	88	0.298	1.613	0.473	*	0	2.1	*	*	1.9	2.3
15	89	0.302	1.324	0.395	*	1	2.7	*	*	3.2	4.3

B16. U.K.

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
12	73	0.197	3.191	0.611	3.2	0.7	7.4	9.2	8.5	9.2	7.3
12	74	0.201	2.049	0.404	0.9	0.6	-1	-1.2	-1.8	16	27.8
12	75	0.191	-5.02	-1.01	1.7	-4.8	-0.6	-6.9	-2.2	24.2	23.1
12	76	0.194	1.603	0.307	0.2	-3.2	2.7	1.8	5.2	16.5	16.2
12	77	0.193	-0.68	-0.13	-4.8	0.7	2.4	2	1.3	15.8	18.2
12	78	0.193	0.087	0.016	5.7	-0.5	3.7	0.6	1.1	8.3	9.9
12	79	0.203	5.280	1.021	1.9	-0.4	2.7	-0.2	0.2	13.4	10.9
12	80	0.201	-1.05	-0.21	-0.1	-4.4	-2.3	-8.7	-4.5	18	14
12	81	0.198	-1.24	-0.25	1	-10.	-1.4	-6	4.9	11.9	9.6
12	82	0.204	2.542	0.506	2.4	-5.8	1.8	0.2	6.4	8.6	7.7
12	83	0.208	1.964	0.400	4.2	-5.9	3.7	2.9	9.3	4.6	5.5
12	84	0.220	5.949	1.237	3.6	-2.1	1.9	4	6.2	5	6.1
12	85	0.218	-0.82	-0.18	2.9	-0.8	3.3	3	3.8	6.1	5.6
12	86	0.223	2.220	0.485	4.1	-2.5	3.6	0.9	3.4	3.4	4.3
12	87	0.228	2.381	0.532	3.7	-1.4	4.4	*	*	4.1	3.9
12	88	0.242	5.956	1.362	3.4	1.3	4.4	*	*	4.9	4.5
12	89	0.250	3.497	0.847	0.9	0.2	1.9	*	*	7.8	5.1

B17. U.S.

C	Y	IPR	DIPR	CP	RHWM	EMM	RGDPPC	RVAM	RVAMPC	CPI	PPIM
16	73	0.075	4.984	0.358	0.8	5.6	3.8	10.9	5.1	6.2	9.1
16	74	0.073	-2.93	-0.22	-2.5	-0.1	-1.6	-4.7	-4.5	11.1	15.3
16	75	0.066	-8.97	-0.65	-0.1	-7.5	-2	-7.7	-0.3	9.1	10.8
16	76	0.075	12.82	0.854	2.2	4.1	3.9	9.7	5.3	5.7	4.4
16	77	0.080	6.625	0.498	2.1	3.1	3.4	7.3	4.1	6.5	6.5
16	78	0.080	0.645	0.051	1	4.3	4	6.1	1.7	7.6	7.9
16	79	0.080	-0.63	-0.05	-2.5	3.1	0.9	2.2	-0.8	11.3	11.1
16	80	0.074	-7.49	-0.60	-4.3	-2.3	-1.3	-4.4	-2.1	13.5	13.5
16	81	0.074	0.136	0.010	-0.5	-0.6	1.2	1.9	2.5	10.3	9.3
16	82	0.074	0.358	0.026	0.2	-7	-3.6	-6.2	0.9	6.1	4
16	83	0.079	7.313	0.544	0.6	-1.7	2.9	6.1	7.9	3.2	1.6
16	84	0.090	13.47	1.077	-0.2	5.3	6.2	12.2	6.6	4.3	2.1
16	85	0.091	1.039	0.094	0.3	-0.6	2.8	4	4.6	3.5	0.9
16	86	0.097	6.719	0.616	0.2	0.4	2.2	2.3	1.9	1.9	-1.4
16	87	0.102	4.538	0.444	-1.8	-0.1	2.5	4.5	4.6	3.7	2.1
16	88	0.103	0.933	0.095	-1.2	1.8	3.5	*	*	4.1	2.5
16	89	0.106	3.341	0.345	-1.8	1.6	1.8	*	*	4.8	5.1

C. Cross-country rank correlations between competitive pressures, labour market institutions and economic performance

C1. UNEMPLOYMENT

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1961	-	-	-	+	-
1962	-	+	+	+	-
1963	-	-(*)	-	+	-
1964	-	-	-	+	-
1965	-	-	-	+	-
1966	-	+(**)	+	+	-
1967	-	+	+	+	+
1968	-	+	-	+	-
1969	-	+	+	+	-
1970	-	-(*)	-(*)	+(*)	+
1971	-	+	+	+	+
1972	-	+	+	+(*)	+
1973	-	-	-	+(*)	+
1974	-	-	-	+(*)	+
1975	-	+	+	+	+
1976	-	+	-	+(*)	+
1977	-	-	-	+	+
1978	-	-	-	+	+
1979	-	-	-	+	+
1980	-	-	-	+	+
1981	-	0	-	+	+(*)
1982	-	+	+	+	+
1983	-	+	+	+	+
1984	+	+	+	+	+(*)
1985	+	0	-	+	+(*)
1986	-	+	+	+	+(*)
1987	-	+	+	+	+(*)
1988	+	+	+	+	+(*)
1989	+	-	-	+	+(*)
FREQUENCY	25	12	16	29	21
SIG	0	2	1	5	7
OPP	0	1	0	0	0

NOTES:
(1) Based on more conservative Kendall-Tau B rank coefficients.
(2) (*) for the statistical significance of less than 10 percent, and (**) for less than 1 percent.
(3) IPR, DIPR, CP, C, and CD are for the level, percentage changes and changes of import penetrations, index of centralization, and Calmfors-Driffill U-curve index, respectively.
(4) 'Frequency' means the number of expected signs.
(5) 'SIG' and 'OPP' means the number of expected and unexpected signs with significance level of less than 10 percent.

C2. INFLATION

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1961	-	+	+	-	-
1962	+	+(*)	+(**)	-	-
1963	+	+(*)	+	-	+
1964	+(*)	-	+	-	0
1965	+(**)	-	+	-(*)	-
1966	+	-	+	-	-
1967	+	-	-	-	-
1968	-	-	-(*)	+	+
1969	-	-	-	+	+
1970	+	+(*)	+(*)	-	-
1971	+(*)	-	+	-	+
1972	+	-	-	-	+
1973	-	+(*)	+(*)	+	+
1974	-	+	+	+	+
1975	-	-	-(*)	+	+(*)
1976	-	-(*)	-	+	+(*)
1977	0	-(*)	-(*)	-	+
1978	-	-	-	-	+
1979	-	+	+	+	+
1980	-	-	-	+	0
1981	-	+	+	+	+
1982	-	+	+	+	+
1983	-	-	-	-	-
1984	-	-	-	-	+
1985	-	-	-	0	+
1986	-	-	-	-	+(*)
1987	-	+	-	-	-
1988	-	+	+	+	+
1989	-	+	+	+	+
FREQUENCY	19	18	14	12	19
SIG	0	2	3	0	3
OPP	3	4	3	1	0

C3. GDP GROWTH RATE

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1961	+	+(*)	+	-	-
1962	-	-	-	+(*)	+
1963	-	+(*)	+(*)	+(*)	+
1964	-	+	+	-	+
1965	-	+(*)	+	+	+
1966	-	+(*)	+	+	+
1967	-	+(**)	+(**)	+	+
1968	-(*)	+	+	+	+
1969	+	+	+	-	+(*)
1970	+	+	-	-	+
1971	-	-	-	+	+
1972	-	-	-	-	-
1973	-	+	+	+(*)	+
1974	+(*)	0	+	-	-
1975	-	+	+	-	-
1976	+	+	+	-	-
1977	-(*)	+	+	+	-
1978	-(*)	0	-	+(**)	+
1979	-	+	-	-	-
1980	+	+	+	0	-
1981	-(*)	+	+	+(*)	+
1982	+	+	-	-	+
1983	-	+	+	+	-(*)
1984	-	+	+	+	-
1985	-	-	-	+	-(*)
1986	-	+(*)	+(*)	+(*)	-
1987	-(*)	-	-	+(*)	+
1988	-(*)	+(*)	+(*)	+(*)	+
1989	-	+	+	+	+
FREQUENCY	7	22	21	10	12
SIG	1	7	4	0	2
OPP	6	0	0	8	1

C4. PERCENTAGE CHANGES OF REAL HOURLY WAGES IN MANUFACTURING

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1973	+	+	+	+	+(*)
1974	+(**)	-	-	-(*)	+
1975	+(*)	+	-	-	-
1976	+	+	+	-	-(*)
1977	-	+	+	+	+
1978	-	+	+	+	+(*)
1979	-	+	+	+	+(*)
1980	+	+	+	+	+(*)
1981	-(*)	-	-	+	+(*)
1982	-	-	-	+	+
1983	-(*)	-	-	+	+(*)
1984	-	+	+	+	-
1985	+	-	-	-	+
1986	+	-	-	-(*)	0
1987	+	-(*)	-(*)	-(**)	-
1988	+	+	+	-	+
1989	+	+	+	-	-
FREQUENCY	7	7	8	9	11
SIG	2	1	1	0	6
OPP	2	0	0	3	1

C5. PERCENTAGE CHANGES OF EMPLOYMENT IN MANUFACTURING

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1973	-(*)	+(*)	+	+	+
1974	+	+	+	+	0
1975	+	+	+	-	-
1976	-(*)	-	-(*)	+	-
1977	-	+	+	+	+
1978	-	+	+	+	-(*)
1979	-(*)	+	0	+	-
1980	-	+	+	-	0
1981	-	+	+	+	-
1982	+	-	-	-	+
1983	-(*)	-	-	+	-
1984	-	+(*)	+	+	-(*)
1985	+	+	+	-	-
1986	+	-	+	-	-(*)
1987	-	-	-(*)	+	-(*)
1988	-(*)	+(*)	+	+(*)	-
1989	-	+	+	+	+
FREQUENCY	5	12	12	5	11
SIG	0	3	0	0	4
OPP	5	0	2	1	0

C6. PERCENTAGE CHANGES OF REAL GDP PER CAPITA

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1973	-	+	-	+	+
1974	+(*)	0	+	-	-
1975	-	+	+	-(*)	-
1976	+	+	+	-	-
1977	-	+	+	+	-
1978	-(*)	-	-	+(*)	-
1979	-	+	-	-	-
1980	+	+	+	-	-
1981	-(*)	+	+(*)	+(*)	-
1982	+	-	-	-	+
1983	-	+	+	-	-(*)
1984	-	+	+	+	-
1985	-	-	-	+	-(*)
1986	+	+(*)	+(*)	+	-
1987	-(*)	-	-	+	-
1988	-	+(*)	+(*)	+	+
1989	-	+	+	-	+
FREQUENCY	5	12	11	8	13
SIG	1	2	3	1	2
OPP	3	0	0	2	0

C7. PERCENTAGE CHANGES OF REAL VALUE-ADDED IN MANUFACTURING

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1973	-	+	-	+(**)	+
1974	+(*)	-	-	-	-
1975	+	+	+	-(*)	+
1976	-	+	-	+(*)	+
1977	-(*)	+	+	+(*)	-
1978	-(**)	+	+	+(**)	+
1979	-	+	+	-	-
1980	+	+	+	-	0
1981	-	+(*)	+(*)	+	+
1982	+	-	-	-	+
1983	-	+	+	+	-
1984	-(*)	+(*)	+	+	-
1985	-(*)	-	-(*)	+	+
1986	-(*)	-	-(*)	+	+
1987	-(*)	-	-	+	+
1988	-(*)	+(**)	+(**)	+(*)	+
1989	+	+	+	0	+
FREQUENCY	5	12	10	5	5
SIG	1	3	2	1	0
OPP	7	0	2	5	0

C8. PERCENTAGE CHANGES OF REAL VALUE-ADDED PER CAPITA IN MANUFACTURING

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1973	+	-	-	+	+
1974	+(**)	-(*)	-(**)	-(*)	-
1975	-	-	-	0	+(*)
1976	+	+	+	+	+
1977	-	+	+	+(*)	+
1978	-(*)	+	+	+	+(*)
1979	+	+	+	-(*)	-
1980	+	-	-	-	-
1981	-	+	+	+	+(*)
1982	+	+	-	-	+
1983	+	+(*)	+(*)	-	-
1984	-	+	+	+	-
1985	-(*)	+	-	+(*)	+(*)
1986	-(*)	+	+	+	+(*)
1987	-(*)	+	+	+	+
1988	+	+	+	+	+
1989	+	+	+	-	-
FREQUENCY	9	13	11	6	6
SIG	1	1	1	2	0
OPP	4	1	1	2	5

C9. PERCENTAGE CHANGES OF CONSUMER PRICE INDEX

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1973	-	+	+	+	+
1974	-	+	+	+	+(*)
1975	-	-	-	+	+(*)
1976	-	-(*)	-(*)	+	+(*)
1977	-	-(*)	-(*)	+	+
1978	-	-	-	+	+
1979	-	+	+	+	+
1980	-	-	-	+	+
1981	-	+	+	0	-
1982	-	+	+	+	+
1983	-	-(*)	-(*)	-	+
1984	+	-	-	-	-
1985	-	0	-	-	+
1986	-	-	-	-	-
1987	-	+	-	-	-
1988	-	-	-	-	-
1989	-	+	-	+	+
FREQUENCY	16	9	12	10	12
SIG	0	3	3	0	3
OPP	0	0	0	0	0

C10. PERCENTAGE CHANGES OF PRODUCER PRICE INDEX IN MANUFACTURING

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1973	-	-	-	+	-
1974	-	+	-	+	+
1975	-	-	0	+	+
1976	+	-	-	-	+
1977	-	-(*)	-(*)	+	+
1978	-	-	-	+	+
1979	-(**)	+	-	+	+
1980	-(*)	-	-	-	0
1981	+	-	-	-	+
1982	-	+	+	-	+
1983	-	-(*)	-(*)	-	+
1984	+	-	-	-	+
1985	-	+	-	-	+
1986	-(*)	+	-	+	+
1987	-(*)	-	-	0	-
1988	-	-	0	-	+
1989	+	0	+	-	+
FREQUENCY	13	11	13	7	14
SIG	4	2	2	0	0
OPP	0	0	0	0	0

C11. AVERAGE UNEMPLOYMENT RATES OVER PERIODS

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1961-69	-	0	-	+	-
1969-73	-	+	-	+(*)	+
1973-79	-	-	-	+	+
1979-89	-	+	+	+	+(*)
1960-89	-	+	+	+(*)	+
1983-88	0	+	+	+	+(*)

C12. AVERAGE INFLATION RATES OVER PERIODS

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1961-69	+	+	+	-	-
1969-73	+	-	-	-	+
1973-79	-	-(*)	-(*)	+	+(*)
1979-89	-	+(*)	+	+	+
1960-89	+	-(*)	-(*)	-	+
1983-88	-	+	-	-	+

C13. AVERAGE GDP GROWTH RATES OVER PERIODS

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1961-69	-	+(*)	+(*)	+(*)	+
1969-73	-	0	+	+	+
1973-79	-	-	-	+	-
1979-89	-(*)	+	-	+	-
1960-89	-(*)	-	-	+	+
1983-88	-(**)	+	-	+	-

C14. AVERAGE PERCENTAGE CHANGES OF REAL HOURLY WAGES IN MANUFACTURING OVER PERIODS

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1961-69	+	+	+	-	+
1969-73	+	+	+	+	+
1973-79	+	-	+	-	+
1979-89	-	-	-	-	+
1960-89	0	-	+	+	+

C15. AVERAGE PERCENTAGE CHANGES OF EMPLOYMENT IN MANUFACTURING OVER PERIODS

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1961-69	-	+	-	+(**)	+
1969-73	-	+	-	-	+
1973-79	-(*)	-	-(*)	+	-
1979-89	-	+	-	+	-
1960-89	-(*)	+	-(*)	+	-

C16. AVERAGE PERCENTAGE CHANGES OF REAL GDP PER CAPITA OVER PERIODS

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1961-69	-	+(*)	+(*)	-	-
1969-73	+	+	-	-	-
1973-79	+	-	-	-	-
1979-89	-	-	-	+	-
1960-89	-	-	-	-	-

C17. AVERAGE PERCENTAGE CHANGES OF REAL VALUE -ADDED IN MANUFACTURING OVER PERIODS

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1961-69	-	+(*)	+	+(*)	+
1969-73	+	+	+(*)	-	+
1973-79	-	+	+	+	+
1979-89	-	+	+	-	-
1960-89	-	+	+	+	+

C18. AVERAGE PERCENTAGE CHANGES OF REAL VALUE -ADDED PER CAPITA IN MANUFACTURING OVER PERIODS

	IPR(+)	DIPR(+)	CP(+)	C(-)	CD(-)
1961-69	-	+(*)	+	+	+
1969-73	+	+(*)	+(*)	+	+
1973-79	+	+	+	+	+(*)
1979-89	-	-(*)	-(*)	-	+
1960-89	+	-	+	-	+

C19. AVERAGE PERCENTAGE CHANGES OF CONSUMER PRICE INDEX OVER PERIODS

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1961-69	+	+	+	-	-
1969-73	+	-	+	-	+
1973-79	-	-(*)	-(*)	+	+(*)
1979-89	-	+	+	-	+
1960-89	+	-(*)	-	+	+

C20. AVERAGE PERCENTAGE CHANGES OF PRODUCER PRICE INDEX IN MANUFACTURING OVER PERIODS

	IPR(-)	DIPR(-)	CP(-)	C(+)	CD(+)
1961-69	+	-(**)	-	-	-
1969-73	+	-	-	-	+
1973-79	-	-	-(*)	+	+
1979-89	-	+	-	-	+
1960-89	-	-	-	0	+

D. Rank correlations of time-series variations within an economy between competitive pressures, labour market institutions and economic performance (1961 -89)

D1. UNEMPLOYMENT

	IPR	DIPR	CP
AU	+(**)	-	+
NW	-(**)	-	-
SW	+(*)	-	-
DK	+	-	-
FN	+(*)	-	-
GE	+(**)	-(*)	-
NT	+(**)	-	-
BE	+(**)	-	-
NZ	+(**)	+	+
AL	+(*)	-	-
FR	+(**)	-	-
UK	+(**)	+	+
IT	+(**)	-	-
JA	+	-	-
SZ	+(**)	+	+
US	+(*)	-	-
CA	+(*)	-	+

D2. INFLATION

	IPR	DIPR	CP
AU	-	-	-
NW	+(**)	-	-
SW	+(**)	-	-
DK	+	-(*)	-(*)
FN	+(*)	-	-
GE	-	+	+
NT	-(*)	-	-
BE	+	-	-
NZ	+(*)	+	+
AL	+	+	+
FR	+(**)	-(*)	-
UK	+(*)	-	-
IT	+(**)	-(*)	-(*)
JA	+	+	+
SZ	-	-(*)	-(**)
US	+(*)	-	-
CA	+(*)	+	+

D3. GDP GROWTH

	IPR	DIPR	CP
AU	-(*)	+(*)	+(*)
NW	+	+	+
SW	-(*)	+(*)	+
DK	-	+(**)	+(**)
FN	+	+(**)	+(**)
GE	-(*)	+(**)	+(**)
NT	-(*)	+(*)	+(*)
BE	-(*)	+(*)	+(*)
NZ	-	+	+
AL	-	+	+
FR	-(**)	+(**)	+(*)
UK	+	+(*)	+(*)
IT	-	+(*)	+(*)
JA	-(*)	+(*)	+
SZ	-(*)	+	+
US	-	+(**)	+(**)
CA	-(*)	+(**)	+(*)

D4. PERCENTAGE CHANGES OF REAL HOURLY WAGES IN MANUFACTURING

	IPR	DIPR	CP
AU			
NW	+(*)	+(*)	+(*)
SW	+(*)	+(*)	+(*)
DK	+(*)	+	+
FN			
GE	-	+	-
NT	-	+	+
BE	-	+	+
NZ			
AL			
FR	-(**)	-	-
UK	+	+	+
IT	-	-	-
JA	+	+(*)	+(*)
SZ			
US	-	+(*)	+(*)
CA	-(*)	-	-

D5. PERCENTAGE CHANGES OF EMPLOYMENT IN MANUFACTURING

	IPR	DIPR	CP
AU	-	-	-
NW	+(**)	+(*)	+(*)
SW	+	+	+
DK	+(*)	+(*)	+(*)
FN	+	+	+
GE	+(*)	+	+(*)
NT	+(**)	-	-
BE	+	+	+
NZ	-	+	-
AL	+	+(*)	+(*)
FR	-	+	+
UK	+	+(*)	+(*)
IT	+	-	-
JA	-	+	+
SZ	+(*)	-	+
US	+	+(*)	+(*)
CA	+	+(**)	+(**)

D6. PERCENTAGE CHANGES OF REAL VALUE-ADDED IN MANUFACTURING

	IPR	DIPR	CP
AU	+	+(**)	+(**)
NW	+	+	+
SW	+	+(*)	+(*)
DK	+	+(*)	+(*)
FN	+	+(*)	+(*)
GE	+	+	+(*)
NT	+	+	+(*)
BE	-	+	+
NZ	-	+	+
AL	-	+	+
FR	+	+(*)	+(*)
UK	+	+	+
IT	+(*)	+(*)	+(*)
JA	-	+	+
SZ			
US	+(*)	+(*)	+(*)
CA	-	+(**)	+(*)

D7. PERCENTAGE CHANGES OF REAL VALUE-ADDED PER PERSON EMPLOYED IN MANUFACTURING

	IPR	DIPR	CP
AU	+	+(**)	+(**)
NW	-(*)	-	-
SW	-	+	+
DK	-	-	-
FN	-	+	+
GE	-	+	+
NT	-	+	+(*)
BE	-	+	+
NZ	+	+	+
AL	-	-	-
FR	+	+(*)	+(*)
UK	+	+	+
IT	+	+(**)	+(**)
JA	+	+	+
SZ			
US	+(*)	+(**)	+(**)
CA	-	+	+

D8. PERCENTAGE CHANGES OF PRODUCER PRICES IN MANUFACTURING

	IPR	DIPR	CP
AU	-(*)	+	+
NW	+	+	+
SW	-	-	-
DK	-	-	-
FN	+	+	+
GE	-(*)	-	-
NT	-(**)	-(*)	-(*)
BE	-	-(*)	-(*)
NZ			
AL	-(**)	-	-
FR	-	-	-
UK	-(**)	-(*)	-(*)
IT	-	-	-(*)
JA	+(**)	-	+
SZ	-	-	-(*)
US	-(**)	-(**)	-(**)
CA	-(**)	+	+

D9. PERCENTAGE CHANGES OF REAL GDP PER CAPITA

	IPR	DIPR	CP
AU	+	+(**)	+(**)
NW	+	+	+
SW	0	+	+
DK	+	+(**)	+(**)
FN	+(*)	+(**)	+(**)
GE	0	+	+
NT	+	+(*)	+(*)
BE	+	+(*)	+(*)
NZ	+	+	+
AL	-	+	+
FR	+	+(**)	+(**)
UK	+	+(*)	+(*)
IT	+(*)	+	+
JA	+	+(*)	+(*)
SZ	+(*)	+	+
US	+(*)	+(**)	+(**)
CA	-	+(*)	+(*)

D10. PERCENTAGE CHANGES OF CONSUMER PRICES INDEX

	IPR	DIPR	CP
AU	-(**)	-	-
NW	+	+	+
SW	-(*)	-(*)	-(*)
DK	-	-(*)	-(*)
FN	-	-	-
GE	-(**)	-	-
NT	-(**)	-	-(*)
BE	-(**)	-	-
NZ	-(*)	-	-(*)
AL	-(*)	-	-
FR	-(*)	-(*)	-(*)
UK	-(**)	-(*)	-(*)
IT	-(**)	-(**)	-(**)
JA	+(**)	-	-
SZ	-(*)	-(**)	-(**)
US	-(**)	-(**)	-(**)
CA	-(*)	-	-

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