Employment through Flexibility – Squaring the Circle?

Findings from the EPOC Survey

EUROPEAN FOUNDATION
for the Improvement of Living and Working Conditions

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Foreword

In recent years there has been a growing interest in new ways of organising work to make European enterprises more competitive in global markets. As part of this new interest in organisational efficiency, direct participation arrangements such as total quality management, quality circles, team work and re-engineering have gained in popularity. The indications are that this new direct approach to employee involvement is of benefit not only to the organisation, but also to the workforce. For the enterprise, there is the more efficient use of human resources and greater flexibility in its operations; for workers, the possibility of more meaningful jobs and a greater input into workplace issues which directly affect their working lives. In showing a greater interest in direct participation, unions and employers in Europe are seeking to develop a social model which is unique to Europe, in contrast with the emergence of workplace models in other trading blocks.

In order to address these developments, the European Foundation for the Improvement of Living and Working Conditions initiated the EPOC Project (**E**mployee direct **P**articipation in **O**rganisational **C**hange). The objective of this project was to research the trend towards more direct participation in European enterprises, and to provide information which would feed into the debate between the social partners and the European Union institutions on the most appropriate form of work organisation for Europe.

So far, the Foundation has produced six publications as part of this ongoing research project. The first report presented the conceptual framework of the EPOC Project. The second publication was based on an analysis of research

which looked at the attitudes and understanding of the social partners in EU Member States, and the extent to which the application of direct participation can influence the humanisation of work, while at the same time increasing profitability.

The third report reviewed empirical research into direct participation in Europe, the United States and Japan and gives an overview of the existing knowledge on the topic. It examines the extent of the Japanese 'Toyota' model and contrasts it with the Scandinavian 'Volvo' model of work organisation; and it has the most extensive literature review on this subject yet published in Europe.

Having carried out these research projects the Foundation paused to take stock, and a summary of the results so far was published in a booklet in 1996 which drew together all the knowledge EPOC had contributed to the debate. However, many questions were still unanswered and knowledge gaps remained. To fill these gaps, the Foundation carried out a survey of management in ten Member States to establish the extent and nature of direct participation within their organisations. The responses to this survey provided a wealth of information and the first analysis of the survey results was published in 1997.

This first EPOC report on the survey results was a significant contribution to the policy debate around the European Commission's Green Paper, *Partnership for a New Organisation of Work*. It provided, for the first time, detailed information on the extent of direct participation in its various forms; its economic and social impact; the attitudes of European management to it as a process for the efficient organisation of work, and the results of involving workers and their representatives in the process of change.

As a further step in the Foundation's contribution to the ongoing debate, a series of additional analyses of the results of the survey were undertaken in 1998 under the headings of: direct participation in the social public services (a review of this has been published); equal opportunities to take part in direct participation arrangements; the nature and extent of team working; and, in this report, the relationship between employment, organisational flexibility and innovation.

Employment was at the top of the European agenda for the Heads of State and Government at their European Council meeting in Luxembourg in November, 1997, at which they adopted a strategy for the creation of jobs. This European strategy is also built into the Amsterdam Treaty, in the Chapter on Employment

and Social Policy, through which the Member States are committed to coordinating their fight against unemployment and promoting policies which will help to provide the labour market with a skilled, well-trained and adaptable workforce which is responsive to economic change.

The dilemma for Europe's policy makers lies in preserving European social values and commitment to social protection, while at the same time promoting greater workplace flexibility. The focus in the European Commission's Green Paper, *Partnership for a New Organisation of Work*, is on how to balance these two objectives. This report draws on the results of the EPOC survey to measure the impact of new forms of work organisation on employment levels and to determine how this interacts with workplace flexibility and innovation in European enterprises. The results, as outlined in the report, show that these relationships are not simple; they are very complex and are contingent upon a wide range of interdependent factors.

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Chapter 1 Introduction

This report draws on the results of the EPOC questionnaire survey of some 5,800 managers in ten EU member countries to investigate the nature and extent of a range of flexibility strategies and their relationship with changes in the level of employment. The main focus is on functional flexibility and, in particular, the practice of the delegative direct employee participation at its core. The report explores both the direct relationship between functional flexibility and changes in the level of employment; and the indirect relationship, taking into account the practice of other adjustment strategies such as numerical flexibility, contract flexibility and innovation, together with the consultation of individual employees. It also seeks to establish the significance for these relationships of key structural dimensions such as size, sector, ownership, industrial relations institutions (the presence of union members/employee representation/collective agreements), as well as any country effect.

The policy context

Europe needs to create more jobs. Europe must become more competitive. The European labour market must become more flexible. Yet Europe must preserve its social values and its commitment to social protection.

Such themes have been central to European-level policy debate during the 1990s, formulated most clearly in the European Commission's 1994 White Paper, *Growth, Competitiveness and Employment*, and 1997 Green Paper, *Partnership for a New Organisation of Work*. This discussion assumes that

European organisations face growing competitive pressures from an increasingly globalised marketplace. In this situation, they can adopt one of two strategies. On the one hand, they can adopt the 'low road' of competing on price, cutting wages and conditions, and jettisoning as much as possible of the social achievements of the entire post-World War II period. Alternatively, they can take the 'high road' of economic development, competing on innovation and quality and developing the skills and commitment of their labour force. Clearly, posing the alternatives as starkly as this is an over-simplification. Clearly also, the choice depends not just on organisations but on the environment in which they operate, and in particular the regulatory framework at national and European level.

The importance of the regulatory framework is reflected in the debate over the 'strengths' and 'weaknesses' of the European and US social models, which can be linked to the contrast between the 'Anglo-American' and 'Rhineland' forms of market economies of the 'capitalism against capitalism' debate (Albert, 1993). At the risk of gross caricature, the key features of the European model are seen as an emphasis on employee rights introduced by collective bargaining and/or legal regulation, which leads to security of employment and relatively high levels of pay and conditions generally. There is a downside, however, which manifests itself in inflexibility, a lack of competitiveness (leading, for example, to overseas investment by European-owned companies), and high levels of unemployment. In most respects, the US model is deemed to be the exact opposite, reflecting a short-term orientation, weak employee protection and a tendency towards numerical flexibility. Management is supposedly much freer of the restrictions of collective bargaining and legal regulation, leading to greater flexibility, improved competitiveness, and a much lower rate of unemployment than in Europe. Again, however, there is reckoned to be a trade-off: considerable insecurity, lower levels of pay, and poorer working conditions for many employees.

The 'high road' option appears most compatible with European institutions and so is the most attractive option politically. First, it appears consistent with the idea of a 'European social model' of high standards of social welfare and social protection. Second, it involves the direct participation of employees in the organisation of work. Trade unions in Europe have campaigned for decades – and long before direct participation became associated with 'human resource management' and 'lean production' – for greater self-management and the improved quality of working life that it is believed to bring. Third, it involves the

acceptance of social partnership: employees have rights to representation in the workplace, and employee organisations have the right to participate in economic decision-making. Far from being obstacles to labour market flexibility and competitiveness, as some critics argue, these features are reckoned to contribute to social stability ('social cohesion') and, in giving employees dignity and a role in improving the quality of their work, help make them more committed to it and to the organisation for which they work.

A revised European social model which combines direct and indirect participation is at the heart of the Commission's Green Paper, *Partnership for a New Organisation of Work* (1997). The significance of direct participation is recognised in the following words:

> It is about the scope for improving employment and competitiveness through a better organisation of work at the workplace, based on high skill, high trust and high quality. It is about the will and ability of management and workers to take initiatives, to improve the quality of goods and services, to make innovations and to develop the production process and consumer relations.

The Green Paper also states very clearly that the principal means of dealing with the challenges is the building of a partnership for a new organisation of work involving the social partners and public authorities.

> The Green Paper invites the social partners and public authorities to seek to build a partnership for the development of a new framework for the modernisation of work. Such a partnership could make a significant contribution to achieving the objective of a productive, learning and participative organisation of work.

The flexibility debate

The debate on work organisation which helped to shape this policy context saw a strong revival throughout the industrialised world in the 1980s and 1990s, reflecting the increasingly competitive environment and pressures on public spending. New ideas and practices came to prominence. Human resource management, total quality management, lean production, flexible organisation, learning organisation and empowerment are just some of the terms that have become part of today's language of industrial relations.

The issue of flexibility has been central. It is not just that, in an increasingly competitive environment, businesses are supposedly seeking to introduce greater flexibility in work organisation and working arrangements in order to respond to the changing external demands and opportunities. There has also been growing support for the view that the flexibility of the workforce is one of the keys to success. The ability of employees to adapt, which means acquiring new skills and competences, is seen as especially vital.

In the scientific as well as the policy debate, two main approaches to workforce flexibility can be distinguished: numerical and functional. There are many different interpretations, but the essence of the two approaches may be summarised as follows:

- Numerical flexibility is the ability of the organisation to adjust the quantity of labour to meet fluctuations in demand. It can involve the number of employees – and therefore the ease with which they can be hired and fired, the duration and distribution of working time, the balance between different types of employees (eg full-time and part-time; permanent and temporary), and the use of outsourcing and subcontracting.

- Functional or task flexibility is about the ability to deploy employees to the best effect. Its common features are job rotation, delegation of responsibility and the use of teams, together with an emphasis on continuing training to enable employees to acquire new skills and competences. The expectation is that it will also involve collaborative approaches to work organisation which reject the hierarchy, specialisation and bureaucracy associated with traditional 'Fordist' or 'Taylorist' work organisation.

Putting the two approaches side by side like this raises one of the issues which has emerged in the flexibility debate: whether or not the two approaches are compatible. Although the possibility that different approaches might be applied to different segments of the workforce was implicit in one of the original formulations of the so-called 'flexible firm' model (see, for example, Atkinson, 1984; Atkinson and Meager, 1986), the view emerged that functional flexibility and numerical flexibility were not compatible. It was not just that key elements of numerical flexibility are of course controversial: downsizing, an increase in part-time work and temporary contracts, increased subcontracting and outsourcing are often assumed to involve a deterioration in employees'

conditions. The insecurity produced by much of the delayering and downsizing of recent years has proved to be counter-productive, it is argued. There is little or none of the trust that managers are encouraged to seek as the basis for a new 'psychological contract'. Employees, the argument goes, are hardly likely to be flexible, or seek continuous improvement, if the end result is their own or their colleagues' redundancy. Remove the insecurity and you remove the major barrier to flexibility.

More recent studies, in particular those stimulated by the OECD (1996), have claimed that numerical and functional flexibility can and do go together. A similar conclusion has been reached by Osterman (1998) following the recent updating of his 1992 survey of more than 500 organisations in the USA.

> Radical changes in the organisation of work seem to be occurring in the midst of substantial internal dislocation and turmoil. That both are happening at the same time point to what appears to be a paradox: on the one hand some firms are broadening jobs and devolving higher levels of responsibility to their workforce while at the same time they are also reducing their commitment to the same workforce and increasingly treating them as expendable. This is the opposite of what received wisdom would have led us to expect. The conventional view has always been that in order to obtain the high levels of employee commitment which decentralised and 'empowered' work requires then the firm would also have to make a reciprocal commitment. Perhaps it is the case that employee expectations have changed or perhaps the level of fear in the labour market has changed the terms of trade.

Another widespread assumption is that functional and numerical flexibility have very different implications for the levels of employment. Numerical flexibility, being associated with downsizing and outsourcing, has come to be associated with a reduction in employment. Functional flexibility, by contrast, being an essential ingredient of innovation in organisation, is usually assumed to be associated with an increase in employment.

The employment implications are also not uncontroversial, however. Both the EPOC social partner (Regalia, 1995) and literature (Fröhlich and Pekruhl, 1996) reviews revealed that trade union representatives were concerned that direct participation would lead to a reduction in the number of employees. The EPOC general survey report (European Foundation for the Improvement of Living and Working Conditions, 1997) confirmed that many of the workplaces introducing direct participation (around a third) reduced the number of employees in the

short term; and the more extensive the practice, the more likely they were to do so. The picture was more complicated in the medium term, however: half those reporting short term reductions had increased employment over a three year period.

Also complicating the debate is a growing appreciation that the categories of functional flexibility and numerical flexibility as they generally have come to be understood are far too broad for both analytical and policy purposes. The direct participation which is at the heart of functional flexibility involves the processes of both delegation and consultation and can take many forms, as the general EPOC report revealed (see, in particular, Chapter 4, European Foundation for the Improvement of Living and Working Conditions, 1997); there are even different types of the much acclaimed group work. Similarly, questions have been raised about the validity of including working time flexibility and some forms of contract flexibility, for example, part-time working, within the general category of numerical flexibility.

There is a growing body of opinion, too, arguing that the emphasis on labour market flexibility has been far too narrow: a much broader organisation perspective is needed on flexibility. Thus, the full definition of the flexible organisation in the Swedish NUTEK study of 1996 involves four characteristics: organised skills improvement, delegated responsibility, flatter organisational structure and an individual compensation system. Although the NUTEK study operationalises the 'flexible organisation' only in terms of the first two, the basic concept is clearly multidimensional. From this perspective, then, the focus is on the overall structure of the organisation, its human resources and its strategy rather than on labour utilisation per se.

Here the flexible organisation is one which is able to respond to changes in environment, to innovate and to learn. This notion of the flexible organisation is close to that of the 'learning organisation'. It is claimed that this over-arching flexibility is crucial to competitive success in the 'post-Fordist' world, where fragmented and rapidly changing markets are only the most obvious aspect of an increasingly unstable and unpredictable environment. For example, in Vickery and Wurzburg's (1997) words, 'In a volatile business climate in which investment, production and sales opportunities abound – and the pressure to exploit these opportunities is intensifying – the capacity of enterprises to stay competitive depends on their ability to adjust internal capacities quickly'.

Clearly, the organisational perspective draws attention to a much wider range of considerations than the labour market one. In particular, by implication, the role of managers in stimulating innovation generally, and not just in work organisation and working arrangements, is prioritised. Yet the organisational perspective is at one with the labour market in stressing the importance of the direct participation associated with functional flexibility. In the flexible, learning organisation responsibility is delegated downwards as individuals and groups take more decisions for themselves, thus also ensuring that initiatives flow upwards as employees become more responsible for organising their own work. This involvement in decision-making entails arrangements created by management which allow employees the space to make their views known and possibly to make their own decisions about the immediate organisation of work.

Functional flexibility, both perspectives imply, is not only a 'good' thing in itself, but also a necessary condition for the flexible organisation. The flexible organisation, in turn, is the route to competitive success and employment growth. Indeed, the impression often given – which takes us back to the policy context – is that for European countries, it is the *only* route to competitive success and employment growth.

The aims and approach of this report

As so often happens on these occasions, a major problem is that the flexibility debate has taken place in something of an empirical vacuum. Much of the information from which conclusions have been drawn comes from reports of case studies of 'best practice' . Because they see the flexible organisation as inherently flexible, the authors rarely investigate the form and extent of the operation of any practice, let alone the relationships between them; it is enough that the organisation has group work, for example – it is not seen as necessary to ask how much 'empowerment' the group has. Furthermore, since they more often than not start from the assumption that flexibility is inherently beneficial, they tend not to seek to verify its actual consequences in any systematic way. There have been very few such case studies, for example, which show how flexibility is related to changes in employment levels.

Critically, too, there have been relatively few surveys to allow us to establish the nature and extent of what has been happening on any significant scale, let alone compare and contrast the experience of different countries. Moreover, most of the surveys that have been conducted have been country-specific and concerned

with manufacturing only; very few have included the service sector, either private or public, where the majority of the workforce is now employed. The survey results are also hardly comparable from one country to another, such has been the extreme diversity in substance and methods as well as depth of measurement and analysis (for further details, see the review in Fröhlich and Pekruhl, 1996).

The major exception to these generalisations is the Cranet-E survey (the Cranfield Network for European Human Resource Management). This is a regular postal survey of senior personnel managers in the public and private sectors. The most recent available data are from the 1995 survey and relate to nearly 5,000 organisations with more than 200 employees in 14 European countries.

The results of the Cranet-E survey have been used to explore some of the issues in the flexibility debate such as working time flexibility and contract flexibility, although not functional flexibility. Briefly summarised, the findings are that these forms of flexibility are growing 'both in terms of range of practices and in terms of the number of organisations and people involved' (Brewster *et al.*, 1996:19). Most significantly for present purposes, however, the authors conclude that 'there is no convincing evidence that increased flexibility leads to increased levels of employment' (Brewster *et al.*, 1996:33).

It was to help fill the empirical vacuum that the EPOC questionnaire survey was planned. As with the Cranet-E survey, flexibility was not the only or, indeed, the main focus of attention. Nonetheless, the main focus was on the direct participation of employees, which has generally been regarded as being at the heart of functional flexibility; a particular benefit of the EPOC survey's design was that it enables a distinction to be drawn between the delegative and the consultative forms of direct participation (for further details, see Appendix 1). Mindful of the wider debate touched on in the previous section, the EPOC survey also included a range of questions about the other initiatives which management might have been taking, notably in the areas of numerical flexibility, contract flexibility and innovation. Moreover, there were also questions about the relevant context of the workplace and changes in the level of employment over the past three years.

Other advantages of the EPOC survey are that it was representative of the total population of workplaces in ten EU member countries, embracing those in the

public sector as well as private manufacturing and services. Furthermore, it was targeted at establishment rather than organisation level, which enabled it to ask questions which went beyond the simple incidence of practices to consider their nature and intensity as well. Fuller details of the EPOC survey will be found in Appendix 1. A copy of the full questionnaire is contained in the general survey report published by the European Foundation for the Improvement of Living and Working Conditions in 1997.

The EPOC survey results therefore offer a unique opportunity to give an empirical basis to the flexibility debate, which is both systematic and cross-national. Most importantly, instead of assuming that 'flexible' organisations have certain key characteristics which are inherently related, the EPOC data can be used to investigate whether this actually is the case. Similarly, they can be used to explore the relationship between the nature and extent of different forms of flexibilities and changes in the level of employment.

The analysis proceeds in three stages. In the first, which is the subject of Chapter 3, the report explores the relationship between functional flexibility and employment. It asks: how widespread is the practice of functional flexibility? Is functional flexibility associated with an increase in the levels of employment, as many policy makers assume, or a reduction, as many trade union representatives fear? Which of the dimensions in the context of workplaces influence this relationship and the levels of employment? How important, in particular, are size, sector, ownership, industrial relations arrangements and country?

In the second stage of the analysis, the report introduces two other forms of flexibility into the equation, numerical flexibility (Chapter 4) and contract flexibility (Chapter 5), together with innovation (Chapter 6) and 'face-to-face' consultation (Chapter 7). In each case, the aim is to establish whether functional flexibility and the other initiatives are combined, and if so, whether the relationship with changes in the levels of employment is stronger or weaker than when applied on their own.

The approach in this second stage breaks new ground in that it enables us to test some of the very specific issues arising in the flexibility debate discussed in the previous section. One set involves functional flexibility, numerical flexibility and contract flexibility: for example, that there is an inherent contradiction between functional flexibility, on the one hand, and numerical flexibility and contract flexibility, on the other; that whereas functional flexibility is likely to

be positively associated with changes in employment, the opposite will be true of numerical flexibility and contract flexibility; that functional flexibility, if it is practised alongside numerical flexibility and contract flexibility, is likely to moderate any negative employment effects they might have.

A second set of assumptions to be tested involves functional flexibility and innovation. The implication of the earlier discussion is that the practices associated with these two initiatives are likely to go hand-in-hand. Not only that, it also seems fair to conclude that as well as being positively associated with changes in the levels of employment individually, the relationship is likely to be even stronger when the two are combined.

A third set of assumptions involves consultation and reflects the fact that the delegative forms of direct employee participation, which will be our proxy for functional flexibility, have been prioritised over the consultative in both the scientific and policy debate. From this, it might be expected that consultation on its own would be unlikely to be strongly associated with changes in the levels of employment one way or the other. Consultation practised in combination with the other initiatives, however – notably, functional flexibility and innovation – would have a positive effect in that employees would be better informed and have an opportunity to input their own ideas.

A further reason for adopting this approach is that it enables us to take into account some of the most significant recent case study and quantitative research findings on new forms of work organisation (see, for example, Pil and MacDuffee, 1996; Collinson *et al*., 1997; Hutchinson *et al*., 1997). These findings emphasise the importance of complementarities of practices in the 'success' and 'failure' of attempts to modernise work organisation. The critical point, in other words, is not so much whether an organisation introduces functional flexibility or new technology. Rather it is whether or not the organisation introduces a 'bundle' or 'cluster' of mutually supporting and reinforcing practices and initiatives which makes the difference. Indeed, individual practices and initiatives introduced in isolation without such support are most likely to 'fail'.

Both the first and second stages of the analysis use relatively straightforward statistical techniques to establish the correlation between two variables: for example, differences in the intensity of functional flexibility and changes in the levels of employment. In the third and final stage, which is the subject of

Chapter 8, two forms of multivariate analysis are used. Not only do the results of these analyses allow us to assess the relative significance of the individual measures of flexibility, innovation, consultation and the five structural dimensions. Even more importantly, they enable us to assess the significance, across the ten countries, of the 'bundles' or 'clusters' of measures and dimensions involved in the 'stable', the 'shrinking' and the 'growing' workplaces, so far as employment is concerned .

The next chapter gives details of the measures and dimensions involved in the three stages of the analysis, together with a brief introduction to the statistical techniques used in Chapters 3 to 7. Details of the two forms of multivariate analysis will be found in Chapter 8 and Appendix 2.

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Chapter 2 Methodology

This chapter has two tasks. The first is to give details of the measures and dimensions involved in the three stages of the analysis, together with their acronyms used in the statistics programme. The second is to introduce the statistical techniques which will be used in the first and second stages of the analysis in Chapters 3 to 7.

Flexibility, innovation and consultation

Although the main purpose of the EPOC survey was to investigate the nature and extent of direct employee participation, the results nonetheless provided a considerable amount of data to analyse the relationship between flexibility and employment. In some cases, there was a choice of measures. In every case, there was a measure available which enabled us to take into account not just the incidence of the practice, but also its extent or intensity.

Functional flexibility

In the general report, the analysis focused on six main types of direct participation: individual 'face-to-face' consultation, individual 'arms-length consultation, temporary group consultation, permanent group consultation, individual delegation and group delegation. Individual delegation and group delegation were selected as the basis of our measure of functional flexibility because they come closest to the concept in the flexibility debate. Following the general survey report, data on the scope or intensity with which they were practised were used rather than their simple incidence; they give us both a more

accurate impression of practice and a more robust basis for arriving at four values.

The measure of functional flexibility used throughout this report, therefore, labelled FUNCFLEX, combines the scope or intensity of two of the forms of direct participation investigated in the general report: individual delegation and group delegation. In total, this means the combined measure embraces eight rights in the case of individual delegation and 11 in the case of group delegation. To make the results digestible, the combined list was reduced to four values: 0 = no delegation; 1 = low intensity, 2 = medium intensity and 3 = high intensity.

Numerical flexibility

The EPOC survey gave us data for two possible measures of numerical flexibility, which not only made sense in conceptual terms, but were also closely related in our preliminary data analysis. One combines answers to questions about whether or not the establishments had been involved in 'downsizing' and had pursued a strategy of 'back to core business'. The other was offered by answers to questions about whether or not the establishment practised 'outsourcing' and 'subcontracting'.

The measure of numerical flexibility used in the analysis, labelled NUMFLEX, uses answers to the 'downsizing'/'back to core business' combination. The measure has three values: 0 = none of this practice; 1 = low intensity (one of this practice); 2 = high intensity (both of the practices).

To have included data on two measures of numerical flexibility would have made the task of presenting the results even more complicated than it is. Much more importantly, our preliminary analysis showed the 'downsizing'/'back to core business' combination to be more strongly associated with changes in employment.

Contract flexibility

As in the case of numerical flexibility, our measure of contract flexibility, labelled CONTFLEX, had to be created anew. It combines answers to questions about whether or not there had been an increase in part-time work and temporary contracts. The measure also has three values: 0 = none of this practice; 1 = low intensity (one of this practice); 2 = high intensity (both of the practices).

Innovation

The EPOC survey asked whether or not respondents had taken a range of initiatives in addition to the direct participation which was the main focus. Factor analysis clearly grouped together four types of initiatives which became the basis for our innovation measure: product innovation, the introduction of new information technology, a policy of automation and the introduction of new machinery and equipment. INNOVAT, which is the label adopted for this measure, counts the occurrence of the four items. The intensity of innovation is coded as: 0 = none of these initiatives; 1 = one of these initiatives; 2 = two of these initiatives; 3 = three of these initiatives; 4 = four of these initiatives.

Consultation

Our measure of consultation, labelled CONSULT, is the intensity of individual 'face-to-face' consultation. This was based on the range of issues on which employees are systematically consulted. There were eight issues in total, which, in the interests of digestion, were reduced to four values: 0 = no delegation; 1 = low intensity; 2 = medium intensity and 3 = high intensity.

The EPOC survey data, it will be recalled from a previous paragraph, gave us four possible measures of consultation: individual 'face-to-face' consultation, individual 'arms-length' consultation, temporary group consultation and permanent group consultation. The reason for choosing individual 'face-to-face' consultation, apart from not wanting to overburden the presentation of the results, was that this form proved to be the one most associated statistically with changes in employment.

The combinations of measures

For the reasons set out in Chapter 1, one of the main aims in the second stage of the analysis was to establish whether functional flexibility and the other initiatives were combined, and if so, whether the relationship with changes in the levels of employment was stronger or weaker than when they are applied on their own. Rather than adding to the complexity of the presentation by reproducing the further set of acronyms necessary for the statistics programme, the simple combinations will be used in the text, eg FUNCFLEX-NUMFLEX to denote the combination of functional flexibility and numerical flexibility and FUNCFLEX-CONTFLEX to do the same for functional flexibility and contract flexibility and so on.

The values of the combinations were calculated using a similar formula in each case and will be illustrated using FUNCFLEX-NUMFLEX:

0 = there is no functional or numerical flexibility
1 = both types of flexibility are only weakly applied
2 = both types of flexibility are moderately applied
3 = functional flexibility is intensively applied with little/no numerical flexibility
4 = numerical flexibility is intensively applied with little/no functional flexibility
5 = both types of flexibility are intensively applied.

Limitations

Every one of the measures, it must be emphasised, can be criticised on some grounds or another: that it does not fully capture what is involved in a practice; that some of the combinations of answers to questions do not conform to a particular understanding of the practice, or that better questions should have been asked to elicit the data required. This is the first time that such a systematic analysis has been undertaken, however, and a start had to be made somewhere. Preliminary analysis also suggested that, within the constraints of the survey questions, the measures finally chosen made most sense in data as well as conceptual terms.

Employment

The measure of employment change used throughout the analysis comes from answers to a question early in the survey about how the number of employees in the largest occupational group compared to three years ago. In particular, it asked whether there had been an increase, whether the number was about the same or whether there had been a reduction.

Clearly this measure has particular weaknesses which need to be recognised. It does not provide information on the number of employees affected – the piloting of the questionnaire suggested that asking for such information would have reduced the overall response rate considerably. Also, it involves the largest occupational group and does not relate the trends in employment to any specific development. For example, the number of employees in other groups might have been increasing at the same time as those in the largest were reducing, or vice versa. Medium-term changes in the employment performance of organisations

can be influenced by many factors, internal and external to the workplace, and it is difficult to determine from the survey results the exact links between trends in employment and any of the approaches being considered. Last, but by no means least, in relating to the individual establishment, the results can say nothing about macro-level developments: for example, there may have been an increase or decrease in employment of suppliers and/or customers as a result of the changes taking place in our workplaces.

Even so, this is one of the most robust measures of changes in employment available. Most importantly, given that the response rate to this particular question was high at 96 per cent, it gives us information about growth, stability and decline in employment from just over 5,500 workplaces in the ten countries. At the very least, it seems fair to assume that it is indicative of the direction of any trends and of the association between the different approaches to flexibility and employment.

The five structural dimensions

Integral to understanding better the relationship between flexibility and employment is an appreciation of the significance of a number of key structural dimensions. It is not only important to know whether or not there is an association between, say, functional flexibility and employment, but also whether the association is stronger in large rather than small establishments or in EU rather than non EU-owned ones. Altogether five structural dimensions were included in the analysis: size of establishment, sector, ownership, industrial relations context and country. Further details of these dimensions are given below.

Size of establishment

This was measured in terms of the total number of employees, including full-time and part-time, permanent and temporary, working at or from the establishment at the time of the survey. Three size categories are used in the analysis: 0 to 49 employees, 50 to 499 employees, and more than 500 employees.

Sector

In the original questionnaire, respondents were given a choice of 15 activities plus ‘other’. As in the general report, these have been reduced to five categories

in the analysis: industry (manufacturing), construction, trade, private services and the public sector.

Ownership

The analysis is based on the four categories appearing in the original questionnaire: independent; totally/partly owned by domestic organisation; totally/partly owned by EU company; totally/partly owned by non-EU company.

Industrial relations context

There were three variables to this dimension: collective agreement coverage (whether or not the establishment was bound by a collective agreement); employee representation (whether or not the largest occupational group had some form of representation for the purposes of consultation/negotiation or joint decision making at the workplace); and union membership (the proportion of employees in the largest occupational group in membership of trade unions, reduced to two categories: from none up to 29 per cent, and from 30 per cent to 100 per cent).

Country

The ten countries included in the survey were Denmark, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the UK.

A guide to the bivariate analysis

In the general EPOC survey report, the results were presented largely in descriptive form in the interests of speedy and digestible presentation. Typically, for example, the tables simply gave details of the proportion of establishments reporting one or other of the forms of direct participation. In the first and second stages of the analysis here, two or three way cross-tabulations of variables are used to establish the association between, for example, functional flexibility and changes in the level of employment and functional flexibility and numerical flexibility.

Most tables in Chapters 3 to 7 display one or other of two statistical measures, CC or gamma, together with details of their approximate significance. These are helpful in gaining an impression of the quality of association between the two variables. Very generally (and somewhat imprecisely), the level of statistical significance measure tells us to what degree (percentage) the differences between the table cells are systematic or chance results. A systematic

relationship is a statistically significant relationship. To talk about a significant relationship, the p-value (p stands for 'probability') should be smaller than .05, which means that chance results are lower than 5 per cent. By convention, a value of < .05 is considered the threshold of acceptability of table data. Higher values, eg < .08 or .10, indicate too large a risk of dealing with chance results. The lower the values, the higher the probability that the differences are not chance, eg <.0000 would indicate that the probability of a non-chance relationship between two variables is lower than .00 per cent. In this case it is possible to speak of a highly significant relationship. The analysis in this report restricts itself to values of < .00 (smaller than 1 per cent) to indicate the highest level of significance.

A statistically significant relationship does not tell us anything about the strength of this relationship. Measures of strength are expressed by correlation coefficients. In this report two such coefficients are used: CC (contingency coefficient) and gamma.

CC measures the strength of an association between nominal variables such as blue eyes/green eyes or yes/no, which cannot be ordered as 'from low to high' or 'small to large' etc. For example, the types of combinations used in Chapters 4, 6 and 8 (for example, functional flexibility *and* numerical flexibility) are nominal variables: they cannot be ordered in a sequence from 'low' to 'high' or from 'weak' to 'intensive'. The upper limit of CC, when both variables are very strongly, completely associated, is about 0.86. Thus, CC varies between .00 and about .86. The closer the value is to .00, the weaker the association. The more CC approaches .86, the stronger are the two variables related to each other.

Gamma measures the association between two ordinal variables, with values ranging from 'low' to 'high', 'weak' to 'strong' etc. Gamma ranges from -1.00 to +1.00. Thus, it can indicate the strength of negative associations like 'the higher A, the lower B', or positive associations: 'the higher A, the higher B'. The closer gamma is to .00, the weaker the association; the closer it comes to +1.00 or -1.00, the stronger a positive/negative relationship between two variables.

As gamma is able to indicate positive as well as negative relationships, it is the more meaningful of the two statistical measures of association. But it presupposes that both variables of a table are ordinal. In cases where one or both variables are nominal, CC has to be used. CC might tell us that there is a strong relationship, but it does not give further details such as the direction of the

relationship. Thus, such measures only serve as a first, general indication; they are no substitute for looking closely at the tables themselves.

Concluding remarks

This chapter has given details of the key measures and dimensions which figure in the analysis that follows, together with an introduction to the statistical techniques used in Chapters 3 to 7. Every one of the measures, it must be emphasised, has limitations. Also, the relationships that the statistical analysis is going to explore are associations: they do not prove a causal relationship. The analysis that is made possible does nonetheless enable us, for the very first time, to test systematically many of the assumptions about the links between flexibility and employment. If it causes the reader to rethink these assumptions, it will have done its job.

Chapter 3

Functional Flexibility and Employment

Our starting point is the relationship between functional flexibility and employment. Much prevailing thinking assumes a positive relationship between a changing organisation of work, with strong direct employee participation, enhanced productivity and competitiveness, and stable or increased levels of employment. This is also acknowledged by the social partners in Europe. In the survey carried out for the EPOC project of 200 leading representatives of central organisations of the social partners in all 15 Member States of the EU (Regalia, 1995), most respondents saw a positive economic effect of direct participation, depending on its ability to link increased consultation and delegation of rights and responsibilities of employees to innovation, new information technology, quality of production and services, and economic performances.

The European Commission's 1997 Green Paper *Partnership for a New Organisation of Work*, stresses that 'a renewal of the organisation of work is of fundamental importance for improved productivity'. Higher productivity achieved through new forms of work organisation is seen to be a major condition for an increase of employment in the medium and long term.

However, the employment effects of different forms of direct participation are not uncontroversial. Concepts like 'lean production' and 'business re-engineering', even when they involve direct participation, imply the possibility of a reduction or restructuring of the workforce. Unions like IG-Metall have highlighted the possible short term rationalisation potential of new forms of work organisation. The European Commission's Green Paper (1997:11) also

concedes that 'improvement in productivity can result in a reduction of employment in one part of the production chain' – a conclusion which the general EPOC survey report confirmed: around a third of workplaces (31 per cent) reported a short-term reduction in the number of employees due to the introduction of direct participation.

As was discussed in the general EPOC survey report (European Foundation for the Improvement of Living and Working Conditions, 1997: Chapter 7), the question on which this result was based has a number of methodological limitations. It captures only the negative effects of introducing direct participation and gives no information on increases or stability of employment. It measures only the immediate effect of direct participation and gives no indication of medium-term trends. It provides no information on the number of employees affected, and perhaps most critically, the response rate for the question was very low at just under 40 per cent.

Our aim here is to investigate the relationship between our proxy for functional flexibility – the intensity of delegative participation – and employment, using the answers to a question early in the EPOC survey about how the number of employees in the largest occupational group compared to three years ago: whether there had been an increase, whether the number was about the same or whether there had been a reduction. As the previous chapter pointed out, although not without its weaknesses, this is one of the most robust measures of changes in employment available. Most importantly, given that the response rate to this particular question was high at 96 per cent, it gives us information about growth, stability and decline in employment from just over 5,500 workplaces in the ten countries.

The chapter begins by outlining the extent of the functional flexibility practised by our establishments. It goes on to consider whether the practice of functional flexibility was associated with reduction, stability or increase in the employment of the largest occupational group over the past three years. The third and final section seeks to establish which, if any, of the structural dimensions was significant for this relationship.

The nature and extent of functional flexibility

To set the scene, 3.1 gives brief details of the extent of delegative participation, which is our proxy for functional flexibility, in the nearly 5,800 workplaces

responding to the EPOC survey. Around 40 per cent of the workplaces, it will be seen, reported that they did not practise any. Of the remainder, most (36 per cent of the total) said they did very little. Only six per cent could be said to have a high level of functional flexibility in that they delegated a fair number of responsibilities to employees.

Table 3.1 *The extent of functional flexibility – % of workplaces*

none	42
low	36
medium	17
high	6
Total	100
N	*5786*

Functional flexibility and employment

Table 3.2 gives an overall picture of the medium term employment trends in our workplaces. It will be seen that the biggest proportion, accounting for 40 per cent, reported that employment had been stable. Slightly more workplaces (33 per cent) reported an increase than did a reduction (28 per cent).

Table 3.2 *Changes in employment – % of workplaces*

reduced	28
same	40
increased	33
N	*5528*

Table 3.3 reproduces the same data depending on the intensity of our measure of functional flexibility (FUNCFLEX). In the case of reductions in employment, workplaces with high levels of FUNCFLEX have reduced their workforce in the last three years to a lesser extent (20 per cent) than workplaces without any delegative direct participation (31 per cent). There is also a slighter greater stability the more intensive the practice. In the case of increases in employment, there appears to be a weak but clear trend: workplaces with high levels of FUNCFLEX have a slightly higher increase in jobs than workplaces without, or with low and medium levels.

Table 3.3 *Changes in employment by functional flexibility – % of workplaces*

change in employment	level of functional flexibility			
	none	low	medium	high
reduced	31	28	22	20
same	39	37	45	43
increased	30	34	34	37
Total	100	100	100	100
N	*2306*	*1960*	*931*	*330*
p < .00				
gamma = .09				

Table 3.4 offers another view of the same data. It shows the net employment effects associated with different levels of FUNCFLEX, which are arrived at simply by subtracting the percentage of establishments reducing employment from that increasing it. It will be seen that workplaces with high levels of FUNCFLEX have the strongest positive effect with +17. Medium and low levels of FUNCFLEX also have a positive index value of +12 (medium) and +6 (low). Workplaces without functional flexibility have an index value of -1. Here positive and negative medium-term employment trends are balanced.

Table 3.4 *Functional flexibility and net employment change*

stable employment: % of establishments reporting no increase/decrease in employment	40
net employment change: difference in % of establishments reporting increase/decrease in employment	+5
- no FUNCFLEX	-1
- low FUNCFLEX	+6
- medium FUNCFLEX	+12
- high FUNCFLEX	+17
N	*5527*
p <	.00
gamma	.09

The relationship between functional flexibility, employment and the key structural dimensions

In the next step of the analysis, the association between functional flexibility (FUNCFLEX) and employment is controlled by the set of structural dimensions outlined in the previous chapter.

Size

Size is important for employment changes (Table 3.5). Growth occurs in medium-sized workplaces (50-499 employees) but losses outweigh gains in small and in particular in large workplaces. In terms of percentage differences, small workplaces show an employment loss of four per cent, large workplaces a loss of six per cent, but in medium-sized workplaces, gains outnumber losses by nine per cent.

Table 3.5 also shows the net employment effects associated with different levels of FUNCFLEX in small, medium and larger establishments. The general trend of a positive employment effect of FUNCFLEX is confirmed for small and medium-sized workplaces with less than 500 employees. In the case of larger workplaces the relationship is not significant, but FUNCFLEX tends to be associated with a reduction in employment, most probably reflecting the greater scope for reducing bureaucracy.

Sector

The general picture is reasonably clear and in line with expectations (Table 3.6). The positive net change overall masks two different experiences. In industry and construction, employment declined, whereas in the services sector, notably private services, it grew.

As for the relationship between functional flexibility and employment, a sector analysis provides an interesting differentiation of the overall trend. FUNCFLEX has the most positive effect on the overall employment balance in industry and trade, where the range between the employment index for workplaces with no FUNCFLEX and high FUNCFLEX is largest. A weaker trend in the same direction shows in services and in the public sector, whereas in construction no clear pattern emerged.

Ownership

In this case (see Table 3.7), caution has to be exercised because of the relatively small numbers for EU-owned and non EU-owned establishments. Other things

being equal, however, Table 3.7 suggests that it was among these two groups that the most substantial changes took place, with EU-owned establishments reducing jobs and non EU-owned ones increasing them.

The general trend of a positive relation between employment and FUNCFLEX is confirmed for independent and domestically-owned workplaces. The strongest effect of intensive forms of functional flexibility can be observed in subsidiaries of non EU-owned workplaces, with an employment index of +61 and a range between the employment index of non-FUNCFLEX to high FUNCFLEX workplaces of more than 40 points. A careful interpretation of this finding is, however, necessary as it represents only 16 cases. In general, ownership does not appear to be a strong influence on the relationship between functional flexibility and employment.

Industrial relations context

In Table 3.8, the control is by the three industrial relations variables: collective agreement coverage, employee representation and degree of unionisation. In each case, it will be seen, there is a marked difference between establishments with and without these three variables. There was more likely to be a net increase in employment in establishments without than those with.

Especially interesting, however, are the detailed results from correlating the relationship between functional flexibility and employment. In workplaces without collective agreements and employee representatives, and with low unionisation, the positive effect of high levels of FUNCFLEX occurs in situations with an overall positive employment trend. Here FUNCFLEX seems to be associated with an improvement in an already positive employment trend. In the case of workplaces with collective agreements and employee representatives, and with high unionisation, FUNCFLEX appears to convert an overall negative employment trend into a positive one, ie from -6 to +14 in the case of collective agreements; -9 to +11 in the case of employee representation, and -19 to +6 in the case of unionisation.

The suggestion is that it is not so much collective agreements, employee representation and unionisation that are the significant variables. Rather is it the size, sector and ownership which make the difference. Other things being equal, in other words, collective agreements, employee representation and unionisation are more likely to be found in larger establishments and in EU-owned ones, where the overall employment trend is negative.

Country

Most significant is the country variable shown in Table 3.9. The general picture is in line with what might have been expected when the survey was undertaken in 1996, and speaks for itself. The overall trend so far as the relationship between functional flexibility and employment is concerned is confirmed in six out of ten countries. Denmark, Germany and Ireland show a very strong positive association between the level of FUNCFLEX and employment. The range of the employment index between workplaces with and without functional flexibility is between +30 and +50 points. The Netherlands, Sweden and France also have strong employment increases related to functional flexibility. For Spain, there are no data in regard of workplaces with high levels of FUNCFLEX, while in Portugal the sample of workplaces with high levels included only 12 cases.

Italy and the UK are the two countries which deviate from the overall trend. In the case of the UK the trend is reversed, whereas in the Italian case, workplaces with low/medium FUNCFLEX have the best employment performance index.

There are also two other interesting results to be drawn from Table 3.9. First, the data show that even in countries with an overall negative employment trend, such as Germany and Sweden, increased functional flexibility is associated with significantly improved employment performance. Second, the positive effect associated with functional flexibility also holds for countries (notably Ireland and the Netherlands) with an overall positive employment trend. Countries doing well in employment terms, it seems, perform even better with the implementation of intensive functional flexibility.

Summary

Analysis of the relationship between our measure of functional flexibility (delegative direct participation) and employment confirms the findings of the general EPOC survey report. In the medium term, workplaces practising functional flexibility are less likely to reduce employment and more likely to increase it. Also, the more intensive the practice of functional flexibility, the more positive the employment trend. The tendencies are relatively modest, however, as consideration of other initiatives in subsequent chapters will confirm. Moreover, if anything, the practice of functional flexibility seems more associated with employment retention than employment growth. Critically, too, the number of workplaces practising functional flexibility intensively (six per cent) is a very small minority.

Of the key structural dimensions, the positive trend of the relationship is stronger in small and medium-sized workplaces than larger ones, and in industry and trade than in the other sectors. Overall, ownership does not appear to be a significant influence, although in non EU-owned companies the intensive practice of functional flexibility is strongly related to employment growth.

More controversially, net employment changes in workplaces with collective agreements and employee representation are, overall, less positive than those without. The same is true of workplaces with high levels of union membership as opposed to those with low levels. Noteworthy, however, is that the intensive application of functional flexibility in workplaces where these three variables are present converts a negative employment balance into a positive one, suggesting that other influences, such as size and sector, may be of overriding importance.

Country proved to be the most significant of the dimensions. The details have been given in the preceding section and do not bear repeating. It is important that the overall trend comes through in most countries (Italy and the UK being slightly deviant cases): the more intensively our measure of functional flexibility is applied, the more likely there is to be an improvement in the net change of employment.

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Table 3.5 *Functional flexibility and net employment change by size*

	ten-country average	-49 employees	50-499 employees	500+ employees
stable employment: % of establishments reporting no increase/decrease in employment	40	49	37	31
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	-4	+9	-6
- no FUNCFLEX	-1	-10	+3	-15
- low FUNCFLEX	+6	-7	+11	+6
- medium FUNCFLEX	+12	+3	+16	-6
- high FUNCFLEX	+17	+15	+20	0
N	*5527*	*1271*	*3953*	*304*
p <	.00	.00	.00	.61
CC	.09	.17	.10	.12

Table 3.6 *Functional flexibility and net employment change by sector*

	ten-country average	industry	construction	trade	private services	public sector
stable employment: % of establishments reporting no increase/decrease in employment	40	33	33	43	41	49
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	-2	-9	+9	+15	+10
- no FUNCFLEX	-1	-8	-13	0	+17	+8
- low FUNCFLEX	+6	+2	+4	+9	+13	+8
- medium FUNCFLEX	+12	+9	-31	+23	+12	+13
- high FUNCFLEX	+17	+14	-6	+18	+23	+17
N	*5527*	*2047*	*388*	*1108*	*849*	*1139*
p <	.00	.01	.05	.00	.05	.58
CC	.09	.10	.20	.23	.13	.06

Table 3.7 *Functional flexibility and net employment change by ownership*

	ten-country average	totally independent	domestic	EU-owned	non-EU owned
stable employment: % of establishments reporting no increase/decrease in employment	40	41	41	30	24
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+9	+1	-14	+14
- no FUNCFLEX	-1	+3	-7	-19	+17
- low FUNCFLEX	+6	+12	+4	-16	+13
- medium FUNCFLEX	+12	+15	+6	-1	-8
- high FUNCFLEX	+17	+17	+31	-5	+61
N	*5527*	*2631*	*1628*	*536*	*268*
p <	.00	.00	.00	.00	.00
CC	.09	.10	.12	.23	.27

Table 3.8 *Functional flexibility and employment change by industrial relations context*

	ten-country average	collective agreement		union membership		employee representation	
		No	Yes	0-29%	30-100%	No	Yes
stable employment: % of establishments reporting no increase/decrease in employment	40	39	39	41	38	43	38
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+16	+2	+13	-9	+13	+1
- no FUNCFLEX	-1	+14	-6	+11	-19	+11	-9
- low FUNCFLEX	+6	+8	+8	+13	-5	+10	+7
- medium FUNCFLEX	+12	+30	+6	+18	+6	+19	+8
- high FUNCFLEX	+17	+29	+14	+25	+6	+38	+6
N	*5527*	*1083*	*4096*	*3132*	*1964*	*1676*	*3527*
p <	.00	.00	.00	.00	.00	.00	.00
CC	.09	.17	.11	.10	.14	.15	.11

Table 3.9 *Functional flexibility and net employment change by country*

	ten-country average	DK	FRA	GER	IRL	ITA	NL	POR	SPA	SWE	UK
stable employment: % of establishments reporting no increase/ decrease in employment	40	49	39	42	45	34	42	42	37	44	40
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+22	+8	-7	+32	+11	+26	+6	+5	-2	+7
- no FUNCFLEX	-1	+13	-7	-14	+33	+4	+16	-1	-6	-11	+15
- low FUNCFLEX	+6	+19	+20	-8	+31	+23	+34	+9	+22	-7	+11
- medium FUNCFLEX	+12	+37	+17	-2	+23	+12	+22	+28	+22	+4	+21
- high FUNCFLEX	+17	+46	+20	+18	+88	0	+39	+50	-	+11	+4
N	*5527*	*641*	*548*	*803*	*367*	*476*	*494*	*294*	*452*	*717*	*763*
p <	.00	.05	.00	.00	.00	.00	.00	.00	.05	.00	.00
CC	.09	.15	.22	.16	.21	.20	.20	.27	.18	.19	.18

Chapter 4

Functional Flexibility, Numerical Flexibility and Employment

This chapter begins the second stage of the analysis. The focus is on the relationship between functional flexibility, numerical flexibility and employment. One aim is to explore the extent of the compatibility between our indicators of functional flexibility (the intensity of delegative participation) and numerical flexibility ('downsizing' and 'back to core business'). There are, it will be remembered from Chapter 1, very different views about this. European commentators have tended to see the two as mutually exclusive: key elements of numerical flexibility, such as downsizing, are seen as undermining the trust and cooperation needed for functional flexibility. By contrast, colleagues from other OECD countries (OECD, 1996; Vickery and Wurzburg, 1997) – notably the USA (Osterman, 1998) – have suggested that many organisations are practising both at the same time.

The second and third aims are closely related. The second is to test one of the main prevailing assumptions in the flexibility debate discussed in Chapter 1, namely that, whereas functional flexibility is usually assumed to be associated with an increase in employment, the opposite will be true of numerical flexibility. The third is to establish the relationship with employment if and when functional flexibility and numerical flexibility are practised together: whether the effect of numerical flexibility is to negate completely the slightly positive relationship confirmed in Chapter 3, or whether functional flexibility is associated with a moderation in the impact of numerical flexibility.

The chapter is divided into five main sections. The first deals very briefly with the extent of the numerical flexibility practised by our establishments. The second looks at the relationship between our measure of functional flexibility and the indicators of numerical flexibility to establish the extent to which they are combined or mutually exclusive. The third considers whether the practice of numerical flexibility was associated with reduction, stability or increase in the employment of the largest occupational group over the past three years. The fourth investigates the relationship between the combinations of functional flexibility and numerical flexibility and the trends in employment of this group. Finally, the fifth section seeks to establish which, if any, of the structural dimensions was significant for this relationship.

The nature and extent of numerical flexibility

Our measure of numerical flexibility, labelled NUMFLEX, comprises two indicators: 'down sizing' and a strategy of 'back to core business'. The intensity of numerical flexibility therefore has three values: 0 = no practice, 1 = low intensity (one of the two practices), 2 = high intensity (both of the practices).

As will be seen from Table 4.1, the extent of numerical flexibility was noticeably less than that for delegative participation, which is our proxy for functional flexibility. Around six in ten (58 per cent) of our establishments practised one and/or other of the two forms of delegative participation; some six per cent did so to a high degree. Only three in ten (31 per cent) had engaged in downsizing or a 'back to core business' approach. The proportion with a lot of numerical flexibility is also extremely small at five per cent, although greater than that for functional flexibility, relative to the number with some of the practice.

Table 4.1 *The extent of numerical flexibility – % of workplaces*

	FUNCFLEX	NUMFLEX
none	42	69
low /medium	52	26
high	6	5
Total	100	100
N	*5786*	*5786*

The relationship between functional flexibility and numerical flexibility

Our focus now shifts to the relationship between functional flexibility and numerical flexibility. The results of cross-tabulating our measure of functional flexibility, FUNCFLEX, with our indicator of numerical flexibility, NUMFLEX, appear in Table 4.2 and show that the relationship is weak.

Table 4.3, which shows the proportions with the different combinations of FUNCFLEX and NUMFLEX, suggests that functional flexibility was much more likely to be practised on its own than in combination with numerical flexibility. Yet, if there is no evidence of their extensive combination, the two approaches were far from being mutually exclusive. The workplaces in which they were practised side by side amounted to a not insubstantial minority. Around four per cent reported the intensive practice of functional flexibility alongside the equivalent of numerical flexibility, and a similar number practised both together to a medium extent.

Table 4.2 *The relationship between functional flexibility and numerical flexibility – % of workplaces*

	NUMFLEX		
FUNCFLEX	none	low	high
none	42	42	38
low	37	34	30
medium	16	16	25
high	5	8	7
Total	100	100	100
N	*3995*	*1519*	*273*

p < .00
gamma = .05

There was also very little evidence of numerical flexibility being practised as an alternative approach to functional flexibility. Further analysis of data behind Tables 4.2 and 4.3 showed that the numbers practising numerical flexibility more or less on its own were relatively low (12 per cent). Furthermore, in proportionate terms, the incidence of numerical flexibility in establishments with functional flexibility was virtually identical to those without; this holds true both for those establishments with any level of numerical flexibility, and for

those practising it to a considerable degree. The results would therefore seem to support the 'randomly applied' interpretation.

Table 4.3 *The combinations of functional flexibility and numerical flexibility – % of workplaces*

	FUNCFLEX/ NUMFLEX
no FUNCFLEX or NUMFLEX	29
low FUNCFLEX/low NUMFLEX	45
both medium	4
high FUNCFLEX	15
high NUMFLEX	3
both high	4
Total	100
N	*5787*
gamma	.05
p <	.05

Numerical flexibility and employment

Table 4.4 gives details of the relationship between different levels of NUMFLEX and changes in the employment of the LOG over the past three years. It shows a very strong negative relationship between NUMFLEX and the changes in employment: the greater the application of NUMFLEX, in other words, the more likely there was to be a reduction in employment and the less likely an increase. Thus, of those establishments with high levels of NUMFLEX, the number with a reduction in employment (63 per cent) was six times that of those with an increase (11 per cent), whereas of those establishments with no NUMFLEX (the 'none' category'), more than twice as many increased employment as reduced it (39 per cent against 19 per cent). It will also be seen that employment was much more likely to stay the same in the absence of NUMFLEX (42 per cent against 35 per cent and 26 per cent for the 'little' and 'high' categories respectively).

The relationship between NUMFLEX and employment becomes even clearer when the focus is put on net employment change (Table 4.5). In the absence of NUMFLEX, the net employment change was +19; a little application produced figures of -24; a high application -52.

Table 4.4 *Changes in employment by numerical flexibility – % of workplaces*

change in employment	level of numerical flexibility (NUMFLEX)		
	none	little	high
reduced	19	44	63
same	42	35	26
increased	39	20	11
Total	100	100	100
N	*3831*	*1435*	*261*
p < .00			
gamma = -.47			

Table 4.5 *Changes in net employment by numerical flexibility*

stable employment: % of establishments reporting no increase/decrease in employment	40
net employment change: difference in % of establishments reporting increase/decrease in employment	+5
– no NUMFLEX	+19
– little NUMFLEX	-24
– high NUMFLEX	-52
N	*5527*
p <	.00
gamma	.47

Functional flexibility, numerical flexibility and employment

The association between NUMFLEX and employment seems clear enough. The task is now to establish what happens when functional flexibility is combined with numerical flexibility. To enable us to gain some insight into these relationships, the measure of FUNCFLEX was combined with that of NUMFLEX to produce a composite measure, which was then matched against changes in the employment of the largest occupational group over the past three years.

The results are presented in Table 4.6. It will be seen that the relationship between the composite measure FUNCFLEX-NUMFLEX and changes in the level of employment is statistically significant, but it is not as strong as that between

NUMFLEX and employment reported earlier in Table 4.4. The implication is that either NUMFLEX dilutes the impact of FUNCFLEX or that FUNCFLEX is associated with a moderation of the influence of NUMFLEX.

Further support for these conclusions comes from a closer look at Table 4.6. Especially worthy of comment is that when the combination of both FUNCFLEX and NUMFLEX is 'high', the reduction in employment was less than when NUMFLEX alone is 'high' (44 per cent against 63 per cent). Likewise, when the combination is high, the increase in employment is greater than when NUMFLEX alone is 'high' (18 per cent against 11 per cent).

Table 4.6 *Changes in employment by levels of functional flexibility and numerical flexibility – % of workplaces*

	levels of NUMFLEX and FUNCFLEX					
change in employment	none	low FUNCFLEX/ low NUMFLEX	both medium	high NUMFLEX	high FUNCFLEX	both high
reduced	23	32	32	63	13	44
same	42	37	44	25	46	37
increased	36	31	23	11	42	18
Total	100	100	100	100	100	100
N	*1614*	*2476*	*241*	*177*	*824*	*198*
$p < .00$						
CC = .22						

The data in Table 4.7 on the changes in net employment effects associated with combining functional flexibility with numerical flexibility illustrate the point even more clearly. Especially worthy of comment are the changes associated with the high application of NUMFLEX, on the one hand, and those with the high application of the combination, on the other. It will be seen that combining functional with numerical flexibility halves the net employment effect from -52 to -26.

These are important findings. The problem is that they do not tell us the direction of causation. It is eminently plausible that combining functional flexibility with numerical flexibility would have a positive impact on employment – the greater the flexibility, the greater the ability of the establishment to minimise employment reductions/maximise employment increases. No less plausible, however, is that the causation is the other way

round: the establishment able to minimise employment reductions/maximise employment increases is in a better position to introduce functional flexibility.

Table 4.7 *Changes in net employment effects by levels of functional flexibility and numerical flexibility – % of workplaces*

	ten-country average
net employment change: difference in % of establishments reporting increase/decrease in employment	+5
- no FUNCFLEX or NUMFLEX	+13
- low FUNCFLEX/low NUMFLEX	0
- both medium	-9
- high NUMFLEX	-52
- high FUNCFLEX	+29
- both high	-26
N	*5530*
p <	.00
CC	.22

The significance of the key structural dimensions

The next step in our analysis is to explore the relationship between functional flexibility, numerical flexibility and employment, taking into account the key structural dimensions described in Chapter 2. The full details are given in Tables 4.8 to 4.14 at the end of the chapter.

Size

The overall pattern which emerged in Chapter 3 is repeated (Table 4.8). It is the larger workplaces, followed by the smaller ones, which experience net reductions in employment regardless of the application of functional or either type of numerical flexibility. Functional flexibility to some extent moderates the impact of NUMFLEX across the board, with the effect apparently greater in the smaller workplaces.

Sector

In terms of functional flexibility, conforming to the findings of the general EPOC survey report, there were signs of greater activity in trade, private services and the public sector than in industry or construction (Table 4.9). High levels of numerical flexibility were more evenly spread, however. Admittedly,

the incidence of high levels of numerical flexibility was lowest in the public sector as might have been expected. Yet, interestingly, its figures for 'both medium' and 'both high' combinations were on a par with other sectors.

As for the relationship with employment, FUNCFLEX seems to have most impact in industry and least in private services (Table 4.10). Construction appears to be the exception to the rule that FUNCFLEX moderates the impact of NUMFLEX (although the position of construction is suspect because of the small numbers in some of the categories).

Ownership

Chapter 3 suggested that the influence of ownership was rather neutral, although workplaces owned by non-EU companies stood out on account of the positive association of the intensive practice of FUNCFLEX and employment. The first part of that conclusion holds here as well (Table 4.11). The second needs to be qualified somewhat. Here it is the workplaces owned by EU companies which merit the attention, although the negative effect of FUNCFLEX may be a rogue result because of the small numbers.

Industrial relations

Our starting point will again be Chapter 3. There it was found that, although overall the workplaces with collective agreements, employee representation and high levels of union membership tended to have poorer employment trends than those without, the intensive application of FUNCFLEX accompanied the move to a positive trend. The same conclusion is appropriate here for NUMFLEX (Table 4.12): the differential between those with and without these features tends to narrow the more intensive the application of FUNCFLEX, either more or less on its own or in combination with NUMFLEX.

Country

The pattern of activity revealed in the findings of the general EPOC survey report are repeated. Spain and, albeit to a lesser extent, Portugal and Italy, stand out at one extreme, and Sweden at the other (see Table 4.13). The first three, above all Spain, are characterised by relative inactivity. Thus some 51 per cent of Spanish establishments reported no functional flexibility or numerical flexibility compared to the 10-country average of 29 per cent. Meanwhile, Sweden not only had the smallest proportion of inactive workplaces (12 per cent), but also the largest practising functional flexibility to a high degree (21 per cent against the 10-country average of 16.0 per cent) and the largest 'both

medium' and 'both high' combinations of functional-numerical flexibility (10 per cent compared to 5 per cent, and 7 per cent compared to 4 per cent). The only measure on which it did not achieve the highest score was that for high levels of numerical flexibility, where the UK's five per cent was roughly twice the 10-country average.

The country data on the relationship between functional flexibility, numerical flexibility and employment in Table 4.14 have to be treated with extreme caution because of the small numbers in many of the categories. It is perhaps sufficient to note that the application of NUMFLEX has its smallest impact in Denmark followed by Italy and Germany. Interestingly, each of these three countries, it will be recalled from Chapter 3, had better records than other countries for the association between FUNCFLEX and employment. NUMFLEX had its biggest impact, even at the lowest level of application, in Sweden, followed by Portugal and the UK.

Summary

The proportion of establishments practising numerical flexibility is of the order of three out of ten compared to six out of ten for functional flexibility. In the circumstances, it is not perhaps surprising that there is little evidence of the extensive combination of functional and numerical flexibility. Yet functional and numerical flexibility are far from being mutually exclusive. There is a fair amount of overlap. Around 20 per cent of the total number of establishments have both to some degree – which is not inconsiderable taking into account the relatively low incidence overall – while some four per cent combine functional and numerical flexibility to a medium level, and an equal proportion to a high level. There is also little evidence of numerical flexibility being pursued on its own: more establishments report high levels of the functional flexibility/numerical flexibility combination than high levels of numerical flexibility.

Not surprisingly, our measure of numerical flexibility, involving downsizing/back to core business, has a strong negative relationship with trends in employment. The more numerical flexibility is applied, the greater the likelihood of reductions in employment and the less the likelihood of stability or increases in employment, although the latter are not totally absent.

Our particular interest is with what happens when functional flexibility and numerical flexibility are found together. Although the numbers are relatively small, it seems that their combination is less likely to be associated with a reduction in employment, and more likely to be associated with an increase, than when numerical flexibility is practised on its own. It could be argued that this implies that numerical flexibility overrides any positive effect on employment that functional flexibility might have. Equally plausible, however, is that functional flexibility helps to moderate the negative influence of numerical flexibility.

The pattern of association of the key structural dimensions uncovered in Chapter 3 is mostly repeated. In the case of country, it is worth noting that Spain, Portugal and Italy are at one extreme of inactivity for both functional flexibility and numerical flexibility. Sweden stands out at the other: it not only had the largest proportion with high levels of functional flexibility, but also the largest practising the functional flexibility/numerical flexibility combination to both a medium and a high degree. This would appear to offer yet further confirmation for the conclusion that functional flexibility and numerical flexibility are not mutually incompatible, but can and do exist side by side.

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Table 4.8 *Functional flexibility/numerical flexibility and net employment change by size*

	ten-country average	Number of employees (% of establishments)		
		-49 employees	50-499 employees	500+ employees
stable employment: % of establishments reporting no increase/decrease in employment	40	49	37	31
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	-4	+9	-11
- no FUNCFLEX or NUMFLEX	+13	+5	+15	0
- low FUNCFLEX/low NUMFLEX	0	-10	+5	-3
- both medium	-9	-13	-5	(-24)
- high NUMFLEX	-52	(-57)	-51	(-56)
- high FUNCFLEX	+29	+21	+33	+11
- both high	-26	-4	-46	(-11)
N	*5530*	*1272*	*3954*	*303*
p <	.00	.00	.00	.18
CC	.22	.25	.25	.21

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 4.9 *Functional flexibility/numerical flexibility by sector – % of workplaces*

	none	low FUNCFLEX/ low NUMFLEX	both medium	high FUNCFLEX	high NUMFLEX	both high	Total	*(N)*
ten-country average	29	45	4	15	3	4	100	*5788*
industry	33	46	3	11	4	3	100	*2119*
construction	34	45	5	9	4	4	100	*403*
trade	25	50	5	15	3	3	100	*1186*
private services	29	38	5	18	4	6	100	*898*
public sector	26	45	5	20	1	4	100	*1182*

p < .00
CC= .17

Table 4.10 *Functional flexibility/numerical flexibility and net employment change by sector*

	ten-country average	industry	con-struction	trade	private services	public sector
stable employment: % of establishments reporting no increase/decrease in employment	40	33	33	43	41	49
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	-2	-9	+9	+15	+10
- no FUNCFLEX or NUMFLEX	+13	+8	+14	-3	+35	+21
- low FUNCFLEX/low NUMFLEX	0	-6	-16	+10	+3	+3
- both medium	-9	-14	(-41)	-5	0	-3
- high NUMFLEX	-52	-73	(-69)	(-26)	(-12)	-50
- high FUNCFLEX	+29	+29	(+8)	+36	+32	+25
- both high	-26	-35	(-79)	(+2)	(-24)	-23
N	*5530*	*2047*	*388*	*1107*	*849*	*1137*
p <	.00	.00	.00	.00	.00	.00
CC	.22	.25	.32	.29	.28	.24

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 4.11 *Functional flexibility/numerical flexibility and net employment change by status/ownership*

	ten-country average	independent	domestically-owned	EU-owned	Non EU-owned
stable employment: % of establishments reporting no increase/decrease in employment	40	41	41	30	24
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+9	+1	-14	+14
- no FUNCFLEX or NUMFLEX	+13	+14	+15	-12	+4
- low FUNCFLEX/low NUMFLEX	0	+10	-8	-18	+22
- both medium	-9	+3	-11	(-25)	(-24)
- high NUMFLEX	-52	-58	-45	(-61)	(-71)
- high FUNCFLEX	+29	+27	+26	(+15)	(+53)
- both high	-26	-25	-28	(-33)	(-36)
N	*5530*	*2630*	*1267*	*536*	*266*
p <	.00	.00	.00	.00	.00
CC	.22	..21	.25	.27	.40

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 4.12 *Functional flexibility/numerical flexibility and net employment change by industrial relations context*

	ten-country average	collective agreement		union membership		employee representation	
		No	Yes	0-29%	30-100%	No	Yes
stable employment: % of establishments reporting no increase/ decrease in employment	40	39	39	41	38	43	38
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+16	+2	+13	-9	+13	+1
- no FUNCFLEX or NUMFLEX	+13	+31	+7	+23	-3	+25	+3
- low FUNCFLEX/ low NUMFLEX	0	+6	-1	+7	-15	+2	0
- both medium	-9	+11	-13	-1	-22	+3	-16
- high NUMFLEX	-52	(-49)	-55	-43	-63	(-41)	-56
- high FUNCFLEX	+29	+40	+26	+33	+26	+31	+29
- both high	-26	+10	-38	-10	(-51)	+15	-39
N	*5530*	*1082*	*4097*	*3131*	*1965*	*1677*	*3529*
p <	.00	.00	.00	.00	.00	.00	.00
CC	.22	.29	.22	.22	.26	.25	.23

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 4.13 *Functional flexibility/numerical flexibility by country - % of workplaces*

	none	low FUNCFLEX/ low NUMFLEX	both medium	high FUNCFLEX	high NUMFLEX	both high	Total	*N*
ten-country average	29	44	5	16	3	4	100	*5786*
Denmark	33	41	4	18	2	2	100	*673*
France	22	48	4	18	4	4	100	*596*
Germany	23	46	7	16	4	4	100	*828*
Ireland	29	41	3	17	2	9	100	*381*
Italy	41	45	2	9	2	1	100	*499*
Netherlands	23	44	7	17	3	6	100	*506*
Portugal	48	38	0.3	12	3	0	100	*299*
Spain	51	42	0.4	7	0.2	0	100	*461*
Sweden	12	48	10	21	2	7	100	*731*
UK	25	45	3	15	5	6	100	*812*

p < .00
CC= .30

Table 4.14 *Functional flexibility/numerical flexibility and net employment change by country*

	ten-country average	DK	FR	GER	IR	IT	NL	POR	SP	SW	UK
stable employment: % of establishments reporting no increase/ decrease in employment	40	49	39	42	45	34	42	42	37	44	41
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+22	+8	-7	+32	+11	+26	+6	+5	-2	+7
- no FUNCFLEX or NUMFLEX	+13	+18	+17	-2	+41	+16	(+24)	+24	-6	+35	+30
- little FUNCFLEX/ little NUMFLEX	0	+16	+3	-10	+27	+11	+26	-24	+16	-19	-7
- both medium	-9	(+39)	(-12)	-13	(+8)	(+13)	(+20)	-	-	-13	-26
- high NUMFLEX	-52	(-40)	(-48)	(-73)	(-28)	-	(+14)	-	-	(-41)	-31
- high FUNCFLEX	+29	(+43)	(+41)	+20	(+46)	+11	(+45)	-	-	+32	+33
- both high	-26	(-7)	(-60)	(-35)	-	-	(-20)	(+33)	(+17)	(-25)	(-7)
N	*5530*	*638*	*547*	*802*	*370*	*477*	*495*	*294*	*453*	*716*	*761*
p <	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00
CC	.22	.22	.35	.27	.34	.28	.31	.43	.17	.33	.31

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Chapter 5

Functional Flexibility, Contract Flexibility and Employment

The European Commission's *Employment Report 1996* reminds us of the growing importance, overall, of the two practices which go into our measure of contract flexibility, ie increases in part-time working and temporary contracts. In 1995, the proportion of employees across the EU who were part-time was 16.0 per cent, compared to 12.5 per cent in 1985; the proportion of part-time men had increased from 3.4 per cent to 5.2 per cent and the proportion of part-time women from 27.3 per cent to 31.3 per cent. The figures for the proportion of employees on temporary or fixed term contracts was 11.5 per cent; 10.7 per cent and 12.5 per cent of male and female employees respectively were so employed (adapted and reported in Leat, 1998:67-9).

The same report also gives a strong impression of the relationship between these two forms of contract flexibility and employment trends. The majority of the jobs created in the first half of the 1990s were part-time rather than full-time. In 1995, for example, 71 per cent and 85 per cent of the new jobs filled by men and women respectively were part-time. In the same year, around half of those in the prime working age group (25 to 49) moving into employment did so on the basis of a temporary contract (reported in Leat, 1998:68-9).

The aims and structure of this chapter are similar to the previous one. The first section gives brief details of the extent of the contract flexibility practised by our establishments. The second investigates the extent to which our measures of functional flexibility and contract flexibility are combined. The third asks whether our measure of contract flexibility was associated with reduction,

stability or increase in the employment of the largest occupational group over the past three years. The fourth investigates the relationship between the combinations of functional flexibility and contract flexibility and the trends in employment of this group. Finally, the fifth section seeks to establish which, if any, of the structural dimensions was significant for this relationship.

The nature and extent of contract flexibility

Our measure of contract flexibility, labelled CONTFLEX, comprises two indicators: increases in part-time working and temporary working. The intensity of contract flexibility therefore has three values: 0 = no practice, 1 = low intensity (one of the two practices), 2 = high intensity (both of the practices).

As will be seen from Table 5.1, the extent of contract flexibility, like numerical flexibility discussed in the previous chapter, was noticeably less than that for delegative participation, which is our proxy for functional flexibility. Around six in ten (58 per cent) of our establishments practised one and/or other of the two forms of delegative participation; some six per cent did so to a high degree. Around one third reported increases in contract flexibility. The proportion with a high level of contract flexibility is also small (seven per cent), although slightly greater than for functional flexibility (six per cent).

Table 5.1 *The extent of contract flexibility – % of workplaces*

	FUNCFLEX	CONTFLEX
none	42	66
low/medium	52	27
high	6	7
Total	100	100
N	*5786*	*4349*

The relationship between functional flexibility and contract flexibility

The results of cross-tabulating our indicator of contract flexibility, CONTFLEX with our measure of functional flexibility, FUNCFLEX, appear in Table 5.2, and the combinations in Table 5.3. They show a similar pattern to that between NUMFLEX and FUNCFLEX in the previous chapter. There is a weak relationship between CONTFLEX and FUNCFLEX which would seem to support the 'randomly applied'

interpretation. Functional flexibility was roughly twice as likely to be practised on its own as in combination with contract flexibility, yet if there is no evidence of their extensive combination, the two approaches were far from being mutually exclusive. The proportion of workplaces in which they were practised side by side is not insignificant at around 20 per cent. Around three per cent reported high levels of functional flexibility alongside the equivalent of contract flexibility and five per cent practised both together to a medium extent.

Table 5.2 *The relationship between functional flexibility and contract flexibility – % of workplaces*

	CONTFLEX		
FUNCFLEX	none	low	high
none	44	43	30
low	34	33	47
medium	16	19	15
high	6	6	9
Total	100	100	100
N	*2916*	*1174*	*304*
p <.01			
gamma = .07			

Table 5.3 *The combinations of functional flexibility and contract flexibility – % of workplaces*

	FUNCFLEX/ CONTFLEX
no FUNCFLEX or CONTFLEX	29
low FUNCFLEX/low CONTFLEX	43
both medium	5
high FUNCFLEX	15
high CONTFLEX	5
both high	3
Total	100
N	*4394*
p <	.00
gamma	.07

As in the case of numerical flexibility, there was also very little evidence of contract flexibility being practised as an alternative approach to functional flexibility. The numbers practising high levels of contract flexibility more or less on its own were relatively low (5 per cent). Further analysis, which is not

reported in Table 5.3, also revealed that in proportionate terms, the incidence of the indicators of contract flexibility was less in establishments without functional flexibility than in those with; this holds true both for those establishments with any level of contract flexibility and for those practising it to a considerable degree.

Contract flexibility and employment

Table 5.4 gives full details of the relationship between different levels of CONTFLEX, measuring increases in part-time/temporary working, and changes in the employment of the largest occupational group over the past three years. The relationship is significant, though less so than in the case of NUMFLEX in Chapter 4. The relationship is also very different. CONTFLEX is associated with employment growth rather than reduction. In other words, the more CONTFLEX was applied, the more likelihood there was of an increase in employment and the less likelihood of a reduction. Thus, in proportionate terms, 26 per cent of establishments without any CONTFLEX increased employment against 31 per cent who reduced it; whereas 43 per cent with high levels of CONTFLEX increased employment against 23 per cent who reduced it. It will also be seen that employment was more likely to stay the same in the absence of CONTFLEX (43 per cent against 32 per cent for 'a little' and 34 per cent for 'much').

Table 5.4 *Changes in employment by contract flexibility – % of workplaces*

change in employment	level of contract flexibility (CONTFLEX)		
	none	little	much
reduced	31	26	23
same	43	32	34
increased	26	42	43
Total	100	100	100
N	*2820*	*1145*	*290*
p < .00 gamma = .20			

The contrast between CONTFLEX and NUMFLEX becomes even clearer when the focus is put on net employment change. It will be seen from Table 5.5 that whereas CONTFLEX was similar to NUMFLEX in terms of the stability of employment (40 per cent for both) and the overall net employment change (+5 against +3), there are substantial differences in the levels of application of the two sets of practices. In the absence of CONTFLEX, the net employment change

was -4; low levels of CONTFLEX produced figures of +16, and high levels +19. In the absence of NUMFLEX, the comparable net employment changes reported in Table 4.5 in the previous chapter were +19, -24 and -52 respectively.

Table 5.5 *Changes in net employment by contract flexibility*

stable employment: % of establishments reporting no increase/decrease in employment	40
net employment change: difference in % of establishments reporting increase/decrease in employment	+3
– no CONTFLEX	-4
– little CONTFLEX	+16
– high CONTFLEX	+19
N	*4255*
p <	.00
CC	.16

Functional flexibility, contract flexibility and employment

In the next step of the analysis, our measure of contract flexibility (CONTFLEX) was combined with that of functional flexibility (FUNCFLEX) to produce a composite measure which was then matched against changes in the employment of the largest occupational group over the past three years. The full results, which are given in Table 5.6, are statistically significant. Especially noteworthy is that the relationship between the FUNCFLEX-CONTFLEX combination and employment is stronger than that between CONTFLEX and employment. The implication is that FUNCFLEX was associated with an exaggeration of the positive influence of CONTFLEX.

Further support for this conclusion comes from a closer look at Table 5.6. The greater the extent of the combination of FUNCFLEX and CONTFLEX, the greater the tendency for there to be an increase in employment. The proportions rise from 35 per cent in the case of 'low FUNCFLEX/low CONTFLEX' to 44 per cent in the case of 'both medium', to 55 per cent in the case of 'both high'. By the same token, the greater the extent of the combination, the less likelihood there was of a reduction in employment. The proportions decline from 28 per cent in the case of 'low FUNCFLEX/low CONTFLEX' to 21 per cent in the case of both 'medium' to 19 per cent in the case of 'both high'.

It will be also be seen from Table 5.6 that there was more likely to be an increase in employment where both CONTFLEX and FUNCFLEX were applied to a considerable extent than where one was used more or less on its own: 55 per cent of establishments with high levels of both increased their employment, whereas 41 per cent and 25 per cent did so in the case of high levels of the individual applications of CONTFLEX and FUNCFLEX respectively. Again, it is also the case that there was less likely to be a reduction in employment where both were applied to a considerable extent than where one was used: 19 per cent of establishments with 'both high' reduced their employment, whereas 25 per cent of those with 'high' FUNCFLEX or CONTFLEX did so.

Table 5.6 *Changes in employment by levels of functional flexibility and contract flexibility – % of workplaces*

change in employment	levels of CONTFLEX and FUNCFLEX					
	none	low FUNCFLEX/ low CONTFLEX	both medium	high CONTFLEX	high FUNCFLEX	both high
reduced	35	28	21	25	24	19
same	41	37	35	34	51	26
increased	24	35	44	41	25	55
Total	100	100	100	100	100	100
N	*1214*	*1829*	*220*	*220*	*635*	*138*
p < .00						
CC = .18						

The data in Table 5.7 on the changes in net employment effects associated with the combination illustrate the point even more clearly. Especially worthy of comment are the changes associated with the high application of NUMFLEX and CONTFLEX, on the one hand, and those with the high application of the combination, on the other. Combining functional with contract flexibility more than doubles the net employment effect of high levels of contract flexibility from +16 to +36, while the increase in the case of high levels of functional flexibility goes from +1 to +36.

Again, these are important findings. The problem, as in the case of numerical flexibility discussed in the previous chapter, is that they do not tell us the direction of causation. It is eminently plausible that combining functional flexibility with contract flexibility would have a positive impact on employment

– the greater the flexibility, the greater the ability of the establishment to minimise employment reductions/maximise employment increases. No less plausible, however, is that the causation is the other way round: the establishment able to minimise employment reductions/maximise employment increases is in a better position to introduce functional flexibility and has more opportunity/need to introduce part-time/temporary working.

Table 5.7 *Changes in net employment effects by levels of functional flexibility and contract flexibility*

stable employment: % of establishments reporting no increase/decrease in employment	40
net employment change: difference in % of establishments reporting increase/decrease in employment	+3
- no FUNCFLEX or CONTFLEX	-12
- low FUNCFLEX/low CONTFLEX	+7
- both medium	+23
- high CONTFLEX	+16
- high FUNCFLEX	+1
- both high	+36
N	*4256*
p <	.00
CC	.18

The significance of the key structural dimensions

The final step in our analysis in this chapter is to explore the relationship between functional flexibility, contract flexibility and employment, taking into account the key structural dimensions described in Chapter 3. The full details are given in Tables 5.8 to 5.14 at the end of the chapter.

Size

The overall pattern which emerged in Chapters 3 and 4 is repeated (Table 5.8). Especially noteworthy, however, is the turnaround that the practice of CONTFLEX appears to produce in the case of the smaller workplaces. No ‘activity’ is associated with a net employment reduction of -27; medium levels of the FUNCFLEX-CONTFLEX combination produce a net employment gain of +2 and high levels a net gain of +62.

Sector

Here the pattern is similar to that found in Chapters 3 and 4. As Table 5.9 shows, there were again signs of greater activity overall in trade and services (private and public) than industry or construction. In this case, however, trade and services (private and public) did not just stand out on account the proportions of establishments with high levels of the combined measure. They were also more to the fore among establishments which practised contract flexibility by itself. Construction also stands out on account of the relatively low level of contract flexibility, whether it is practised on its own or in combination with functional flexibility.

Moving on to the relationship with employment, the biggest contrast is between industry, on the one hand, and trade, private services and the public sector, on the other (Table 5.10). Industry is the only sector in which high levels of contract flexibility practised with little or no functional flexibility is associated with an increase in net loss of employment. Yet the association between the FUNCFLEX-CONTFLEX combination and employment is apparently greater in industry than the other sectors; medium and high levels of the combinations are the only two categories showing positive signs. The position of trade is also worthy of comment. In this case there is a suggestion that the relatively moderate, rather than intensive, application of contract flexibility is associated with the biggest net gains.

Ownership

The influence of ownership appears to be particularly neutral in the case of contract flexibility. The overriding impression from Table 5.11 is that CONTFLEX is positively associated with employment in whichever type of workplace it is found. Deficits in the case of 'inactive' independent and domestically-owned workplaces are turned round and in the case of EU-owned ones reduced, while in the case of non EU-owned ones, stability becomes growth.

Industrial relations context

Chapter 3 found that although overall the workplaces with collective agreements, employee representation and high levels of union membership tended to have poorer employment trends than those without, high levels of FUNCFLEX accompanied the move to a positive trend. The same overall conclusion holds even more so for CONTFLEX (Table 5.12): deficits of -18 and -24 for workplaces with collective agreements and employee representation but 'no activity', are turned into gains of +39 and +29 where there are high levels

of the FUNCFLEX-CONTFLEX combination. Yet CONTFLEX, it seems, is not associated with the positive trend to the same extent in workplaces with high levels of union membership. Indeed, unionised workplaces are the only ones where high levels of contract flexibility are associated with a net employment loss of (-24).

Country

As the results in Table 5.13 show, Spain, Portugal and Italy are again at the extreme of the inactivity continuum, with figures of 88 per cent, 89 per cent and 88 per cent respectively for no or low levels of activity compared to the 10-country average of 69 per cent. It is the position of some of the other countries which is intriguing, however. France, for example, has an above average proportion of workplaces with high levels of functional flexibility (19 per cent) and contract flexibility (11 per cent), but is slightly below average for the FUNCFLEX-CONTFLEX combination. Denmark, Germany and Sweden have above average figures for the stand-alone practice of functional flexibility. By contrast, in these countries, the proportion of establishments with high levels of contract flexibility, either on its own (3 per cent, 5 per cent and 3 per cent respectively) or in combination with high levels of functional flexibility (2 per cent, 3 per cent and 6 per cent respectively), is relatively low. In these cases, it is tempting to suggest, functional flexibility and contract flexibility may tend to be seen more as alternatives than in other countries. The countries achieving the highest scores for the combinations were Ireland (15 per cent) followed by the Netherlands (9 per cent).

As the previous chapter pointed out, the country data on employment have to be treated with extreme caution because of the small numbers in many of the categories. Focusing on the first two rows of the bottom half of Table 5.14 suggests that in nine of the ten countries, the application of a little FUNCFLEX and CONTFLEX is associated with an increase in net employment gains or a decrease in the net employment loss. The one exception is the UK, where this application is accompanied by a move from a net employment gain of +10 to a net employment loss of -4. The largest increases/decreases are to be found in Spain, followed by France and Portugal. Not surprisingly in view of the remarks above, the countries with little or no contract flexibility, such as Denmark, Germany and Sweden, show smaller differences.

Summary

Contract flexibility, like the numerical flexibility discussed in Chapter 4, is less in evidence than functional flexibility. Around one third of establishments reported increases in our measure of contract flexibility, ie increases in the use of part-time working or temporary working, compared to 58 per cent for functional flexibility. The proportion with a high level of contract flexibility is also small (seven per cent), although on a par with that for functional flexibility (six per cent).

Contract flexibility and functional flexibility, like numerical flexibility and functional flexibility, are far from being mutually exclusive. Around 18 per cent of the total number of establishments have both to some degree. Furthermore some eight per cent of establishments combine functional and contract flexibility to a medium or high extent. The proportion of establishments practising contract flexibility on its own was also small.

Although the figures for incidence are very similar, the practice of contract flexibility has a very different relationship with employment from the numerical flexibility considered in Chapter 4. Whereas numerical flexibility was accompanied by significant reductions in employment in most cases, the opposite is true of contract flexibility. The more contract flexibility was applied, the less the likelihood of reductions in employment and the greater the likelihood of stability or increases in employment. Contract flexibility also interrelates with functional flexibility in a particular way. When functional flexibility and contract flexibility are combined, their association with positive employment outcomes is enhanced. Far from being antithetical, it seems, functional flexibility and contract flexibility are mutually reinforcing.

The pattern of association of the key structural dimensions uncovered in Chapter 3 and confirmed in Chapter 4 is mostly repeated. In the case of sector, however, it is worth emphasising that the incidence of contract flexibility appears to be especially low in construction. In the case of country, Portuguese, Spanish and Italian establishments are again characterised by relative inactivity, although less so than in the case of numerical flexibility. German and Danish establishments seem to practise less contract flexibility than functional flexibility, as does Sweden, albeit to a lesser extent. France and Ireland are at the other extreme: France has the largest proportion of establishments with high

levels of contract flexibility, while Ireland has the largest with high levels of the combination of functional flexibility and contract flexibility.

References

European Commission, *Employment Report 1996,* Luxembourg, Office for Official Publications of the European Communities, 1997.

Leat, M., *Human Resource Issues of the European Union,* London, Financial Times Pitman, 1998.

Table 5.8 *Functional flexibility/contract flexibility and net employment change by size*

	Number of employees (% of establishments)			
	ten-country average	-49 employees	50-499 employees	500+
stable employment: % of establishments reporting no increase/decrease in employment	40	49	37	31
net employment change: difference in % of establishments reporting increase/decrease in employment	+3	-7	+7	-8
- no FUNCFLEX or CONTFLEX	-12	-27	-7	-28
- low FUNCFLEX/low CONTFLEX	+7	-6	+11	-2
- both medium	+24	+2	+32	(-9)
- high CONTFLEX	+16	+38	+13	(+5)
- high FUNCFLEX	-1	+1	+1	-3
- both high	(+37)	+62	+36	(0)
N	*4256*	*862*	*3018*	*229*
p <	.00	.00	.00	.00
CC	.18	.31	.16	.18

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 5.9 *Functional flexibility and contract flexibility by sector – % of workplaces*

	none	low FUNCFLEX/ low CONTFLEX	both medium	high FUNCFLEX	high CONTFLEX	both high	total	*N*
ten-country average	29	43	5	15	5	3	100	*4395*
industry	33	48	3	11	6	2	100	*1710*
construction	40	40	3	15	1	2	100	*309*
trade	28	41	8	13	9		100	*870*
private services	25	38	6	20	7	4	100	*672*
public sector	22	39	6	20	6	6	100	*828*

p < 00
CC = .22

Table 5.10 *Functional flexibility/contract flexibility and net employment change by sector*

	ten-country average	industry	con-struction	trade	private services	public sector
stable employment: % of establishments reporting no increase/ decrease in employment	40	33	30	42	45	50
net employment change: difference in % of establishments reporting increase/decrease in employment	+3	-5	-12	+13	+10	+8
- no FUNCFLEX or CONTFLEX	-12	-20	-30	-1	+5	-3
- low FUNCFLEX/ low CONTFLEX	+7	+4	+9	+7	+12	+9
- both medium	+24	+13	(-22)	+48	+12	+19
- high CONTFLEX	+16	-22	(-)	+47	+10	+26
- high FUNCFLEX	-1	-4	-26	+13	+7	-1
- both high	+37	+32	(-)	(+40)	(+33)	+44
N	*4256*	*1612*	*291*	*805*	*638*	*762*
p <	.00	.00	.26	.32	.13	.26
CC	.18	.18	.05	.00	.30	.00

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 5.11 *Functional flexibility/contract flexibility and net employment change by status/ownership*

	ten-country average	independent	domestically-owned	EU-owned	Non EU-owned
stable employment: % of establishments reporting no increase/decrease in employment	40	42	41	30	23
net employment change: difference in % of establishments reporting increase/decrease in employment	+3	+7	-1	-9	+9
- no FUNCFLEX or CONTFLEX	-12	-5	-23	-28	0
- low FUNCFLEX/low CONTFLEX	+7	+12	+6	-5	+23
- both medium	+24	+5	+14	(+13)	(-)
- high CONTFLEX	+16	+7	+17	(+30)	(+18)
- high FUNCFLEX	-1	+6	-4	(-22)	(-9)
- both high	+37	+51	+32	(+37)	(+50)
N	*4256*	*2055*	*1346*	*425*	*230*
p <	.00	.00	.00	.00	.01
CC	.18	.16	.23	.32	.33

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 5.12 *Functional flexibility/contract flexibility and net employment change by industrial relations context*

	ten-country average	collective agreement		union membership		employee representation	
		No	Yes	0-29%	30-100%	No	Yes
stable employment: % of establishments reporting no increase/decrease in employment	40	40	38	41	36	44	37
net employment change: difference in % of establishments reporting increase/decrease in employment	+3	+18	-1	+48	-12	+54	-1
- no FUNCFLEX or CONTFLEX	-12	+10	-18	-1	-32	+3	-24
- low FUNCFLEX/ low CONTFLEX	+7	+15	+5	+3	-2	+9	+7
- both medium	+24	+40	+19	+33	+14	+19	+22
- high CONTFLEX	+16	+29	+14	+32	-24	+9	+16
- high FUNCFLEX	-1	+21	-6	+9	-10	+17	-9
- both high	+37	+38	+39	+48	+12	+54	+29
N	*4256*	*833*	*3294*	*2421*	*1663*	*1305*	*2850*
p <	.00	.05	.00	.00	.00	.00	.00
CC	.18	.16	.20	.23	.18	.23	.20

Table 5.13 *Functional flexibility and contract flexibility by country - % of workplaces*

	none	low FUNCFLEX/ low CONTFLEX	both medium	high FUNCFLEX	high CONTFLEX	both high	total	*N*
ten-country average	28	41	5	17	5	4	100	*4371*
Denmark	36	34	2	24	3	2	100	*438*
France	29	32	7	19	11	3	100	*453*
Germany	25	43	4	21	5	3	100	*612*
Ireland	25	39	6	10	5	15	100	*228*
Italy	34	54	4	6	1	0.4	100	*448*
Netherlands	23	37	5	18	8	9	100	*379*
Portugal	59	30	3	6	3	0	100	*179*
Spain	30	58	1	5	5	1	100	*316*
Sweden	17	41	4	29	3	6	100	*732*
UK	30	39	9	12	6	5	100	*586*

$p < .00$
CC= .34

Table 5.14 *Functional flexibility/contract flexibility and net employment change by country*

	ten-country average	DK	FR	GER	IR	IT	NL	POR	SP	SW	UK
stable employment: % of establishments reporting no increase/ decrease in employment	40	50	38	43	43	31	45	50	35	44	41
net employment change: difference in % of establishments reporting increase/decrease in employment	+3	+18	+6	-12	+32	+12	+18	+4	+2	+3	+7
- no FUNCFLEX or CONTFLEX	-12	-1	-30	-21	+32	+1	-6	-15	-38	-21	+10
- little FUNCFLEX/ little CONTFLEX	+7	+15	+12	-12	+34	+19	+28	+27	+21	-4	-4
- both medium	+24	(+78)	(+58)	(-19)	(+36)	(+15)	(+30)	(+50)	(+100)	0	+20
- high CONTFLEX	+16	(+67)	+32	(-14)	(+50)	(+25)	(+24)	(+20)	(-11)	(-4)	(+31)
- high FUNCFLEX	-1	+36	+4	-9	(+36)	(+4)	+11	(+60)	(-19)	+11	+8
- both high	+37	(+57)	(+43)	(+50)	(+17)	(+100)	(+39)	no case	(+50)	(+3)	(+15)
N	*4256*	*432*	*439*	*602*	*219*	*425*	*373*	*177*	*316*	*732*	*557*
p <	.00	.00	.00	.00	.00	.46	.00	.00	.00	.00	.08
CC	.18	.30	.39	.25	.31	.15	.33	.41	.39	.23	.17

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Chapter 6

Functional Flexibility, Innovation and Employment

Innovation, and its links with participation, have become increasingly central to the flexibility debate. To quote only from the policy literature, European Commission documents from the White Paper, *Growth Competitiveness and Employment* (1994), to the Green Paper, *Partnership for a New Organisation of Work* (1997), firmly link participation and innovation. Even a more 'technologically' oriented document like the *Green Paper on Innovation* (1995:11), states that 'the motivation and participation of employees is critical for its [innovation's] success'. The participative firm, in other words, is the innovative firm.

The argument for participation thus shifts from employees' rights and the quality of working life as ends in themselves to a more instrumental argument about the factors that contribute to competitiveness. If the link between participation and innovation is true, then the result is a politically desirable win/win situation: participation is both an example of social partnership, and a crucial component of the European high road of development – a road that combines economic growth, social cohesion, and crucially for our concerns, a more democratic (or at least more humane) working environment.

This chapter uses the EPOC survey data to provide some empirical evaluation of these claims. Of necessity, it presents a rather more complex picture than the programmatic policy documents. While they leave terms like 'participation' or 'partnership' undefined, the EPOC study as a whole examines one aspect of participation, namely 'direct participation', the involvement of employees

themselves in the immediate organisation of their own work. Within that general framework, this particular report focuses on *delegative* direct participation or 'functional flexibility'. EPOC distinguishes all such forms of direct participation from indirect participation, ie the involvement of employee representatives, such as trades union delegates or works councillors, in the organisation of work at enterprise level. Accordingly, this chapter examines the relationship between functional flexibility and innovation, and treats the industrial relations issues (the role of trades unions and other forms of representation) as one dimension of the context within which innovation and direct participation do or do not occur.

The first EPOC survey report has already approached some of these issues. Chapter 6 in that report showed that direct participation is indeed linked with management initiatives in other areas (ranging from strategic and organisational changes through to technical innovation). 'Active' workplaces, where management is taking a range of initiatives including direct participation, amount to less than a fifth of the sample. They are particularly common in Denmark, Germany, the Netherlands and the UK. The same chapter reported that whereas such general management initiatives are strongly linked to the presence of competition, this competition effect is weaker on direct participation per se. Finally, multinational companies are particularly likely not just to use direct participation but also to be more 'active' in general. This chapter now continues this analysis and disentangles innovation from other management initiatives.

This chapter follows the structure of the previous ones. The first section gives details of the extent of the innovation practised by our establishments. The second investigates the extent to which our measures of functional flexibility and innovation are combined. The third asks whether our measure of innovation was associated with reduction, stability or increase in the employment of the largest occupational group over the past three years. The fourth investigates the relationship between the combinations of functional flexibility and innovation and the trends in employment of this group. Finally, the fifth section seeks to establish which, if any, of the structural dimensions was significant for this relationship.

The nature and extent of innovation

The measure of innovation used in the analysis, it will be recalled from Chapter 2, is based on four items. Three are initiatives taken 'by the

management of this workplace in the last three years': the introduction of new information technology, of automation and of product innovation. The fourth is whether the largest occupational group 'has been directly affected in the last three years by major changes in work organisation involving new plant/machinery/automation'. These are combined in a simple additive index of innovation (INNOVAT).

At first glance innovation does not appear to be very widespread in the sample workplaces (Table 6.1). Fully 30 per cent of the workplaces report no innovation whatsoever ('none'), and only 3 per cent report all four items occurring ('intense'). However, this should be compared with the fact that fully 42 per cent of all workplaces report no functional flexibility. In other words, at the lower end of the intensity scale, enterprises find it easier to make technical changes than organisational changes.

Table 6.1 *The extent of innovation – % of workplaces*

none	30
very little	34
little	23
medium	10
intense	3
Total	100
N	*5786*

The relationship between functional flexibility and innovation

Functional flexibility is the extent to which employees are able to carry out different tasks. To the extent that these tasks vary in difficulty, this obviously involves questions of competence and skill. Furthermore, such skills are going to be more important as it becomes more difficult to specify in advance the precise tasks to be carried out. Functional flexibility involves questions of commitment and trust, since employees need to make decisions on their own, and possibly even to make decisions which may be beyond the competence of their superiors to understand. It is for these reasons that the EPOC study links functional flexibility and direct participation.

Our main measure of functional flexibility is FUNCFLEX. This measures the intensity of delegative direct participation. Since delegative direct participation

is where either individuals or groups are *delegated* authority to make decisions about their immediate work, this approximates to the concept of functional flexibility found in the literature and, crucially, to the form of direct participation most plausibly linked to innovation.

Once again, such combined measures show that enterprises with extremes of participation are infrequent. Recall the finding of the general report that although direct participation is widespread within European firms, it usually takes much more restricted forms than in the widely reported case studies. A mere six per cent of firms are reported as having 'high' intensity of delegative direct participation, whereas 42 per cent have none at all.

However, the fact that extremes of innovation and of participation are both infrequent does not of itself challenge the 'high road' argument. If innovation requires delegative direct participation, then we would expect that those few cases of intense innovation are disproportionately likely to have a high intensity of direct participation. However, this is not the case. There is very little relationship between the intensity of delegative direct participation and the level of innovation (Table 6.2). It is certainly true the cases cluster in the top left hand corner of the table, but this is simply because most workplaces score low on both measures. Of those that do have 'intense' innovation, however, only seven per cent have high participation – exactly the same proportion as those with very low innovation. In other words, rather than direct participation and innovation going together, they seem to have little relationship to each other.

Table 6.2 *The relationship between functional flexibility and innovation – % of workplaces*

	INNOVAT				
FUNCFLEX	none	very low	low	medium	intense
none	47	43	37	35	50
low	34	35	38	42	27
medium	15	16	20	15	16
high	3	7	7	8	7
Total	100	100	100	100	100
N	*1705*	*1951*	*1347*	*595*	*187*

p < .00
gamma = .01

As in the case of previous chapters, these results can be used to show the different combinations of innovation and participation. In the present case, Table 6.3 shows that while 14 per cent of workplaces have neither innovation nor direct delegative participation, only 2 per cent are 'high' on both variables. Equally, there are significant minorities which are high on innovation and not on participation or vice versa.

Table 6.3 *The combinations of functional flexibility and innovation – % of workplaces*

	FUNCFLEX/ INNOVAT
no FUNCFLEX or INNOVAT	14
low FUNCFLEX/low INNOVAT	53
both medium	10
high INNOVAT	6
high FUNCFLEX	15
both high	2
Total	100
N	*5786*
p < .00	.00
gamma = .01	.01

Innovation and employment

Table 6.4 shows that innovative workplaces are likely to increase employment. Where there is no innovation, only 26 per cent of all workplaces show an increase in employment of the largest occupational group; where innovation is intense, the proportion rises to 52 per cent. Yet the relationship between innovation and employment is not a simple linear one, for the level of innovation makes no difference to the extent to which workplaces are likely to reduce employment. Where there is no innovation 31 per cent of workplaces reduce employment, and where innovation is intense the proportion is almost exactly the same (30 per cent). As Table 6.4 shows, the effect of rising levels of innovation is simply to make workplaces less likely to have 'constant' employment and more likely to have 'increased' employment, but it makes very little difference to their likelihood of losing employment. Nonetheless, the EPOC survey does confirm an 'optimistic' approach to innovation and employment: job numbers are more likely to grow where workplaces introduce (technological) innovation.

Table 6.4 *Changes in employment by level of innovation - % of workplaces*

change in employment	level of innovation				
	none	very little	little	medium	intense
same	43	41	37	38	18
reduced	31	26	28	23	30
increased	26	32	35	39	52
Total	100	100	100	100	100
N	*1592*	*1871*	*1302*	*582*	*182*
p < .00					
gamma = .11					

Functional flexibility, innovation and employment

Chapter 3 has already shown that functional flexibility has a weak but positive relationship with employment: there is a linear relationship between the intensity of delegative direct participation and the number of workplaces reporting employment growth. What then is the combined effect of innovation and functional flexibility? Are they mutually reinforcing or do they, at least to some extent, cancel each other out? Given the very weak relationship between innovation and functional flexibility noted above, the latter is the most likely outcome. Table 6.5 shows the basic information.

Table 6.5 *Changes in employment by levels of functional flexibility and innovation – % of workplaces*

change in employment	levels of FUNCFLEX and INNOVAT					
	none	low FUNCFLEX/ low INNOVAT	both medium	high FUNCFLEX	high INNOVAT	both high
reduced	31	30	23	20	28	27
same	46	37	40	47	33	19
increased	23	33	38	34	40	54
Total	100	100	100	100	100	100
N	*743*	*2938*	*595*	*826*	*337*	*89*
p < .00						
CC = .14						

Relating our combination of functional flexibility and innovation with employment changes shows a clear relationship. The employment effect of innovation and functional flexibility combined is rather similar to that of innovation by itself: with increasing intensity the proportion of workplaces reporting no change in employment falls, while the proportion reporting an increase rises. While this trend is consistent, there is no clear concomitant fall in the proportion of workplaces reporting reduced employment. High innovation and high functional flexibility independently produce an increase in employment: where there is neither innovation nor functional flexibility, only 23 per cent of workplaces gain employment. By contrast, where there is high innovation the proportion rises to 40 per cent and to 34 per cent for functional flexibility. In these terms innovation has a greater impact on employment than functional flexibility. More importantly, their combined effect is clearly positive: where there is both high innovation and high functional flexibility ('high both') the proportion of workplaces with employment growth rises to fully 54 per cent.

Table 6.6 *Functional flexibility, innovation and net employment change*

stable employment: % of workplaces reporting no increase/decrease in employment	40
net employment change: difference in % of workplaces reporting increase/decrease in employment	+5
no FUNCFLEX or INNOVAT	-8
low FUNCFLEX/low INNOVAT	+2
both medium	+14
high INNOVAT	+12
high FUNCFLEX	+14
both high	+27
N	*5528*
p <	.00
CC	.14

The employment impact of innovation and functional flexibility can also be seen by calculating for each category the percentage difference between workplaces reporting an employment gain and those reporting reduced employment (Table 6.6). Where there is neither functional flexibility nor innovation ('nothing') this is clearly negative at -8 per cent, but for all other categories the percentage difference is positive, rising from 2 per cent for 'both low' through to 27 per cent

for ‘both high’. Given the small absolute numbers in the ‘high both’ category, it is important to notice the clear linear growth in the percentage difference from -8 per cent of ‘nothing’ through +2 per cent for ‘both low’ to +14 per cent for ‘both medium’. This strengthens confidence in the figure for ‘high both’. The combined effect of functional flexibility and innovation is clearly therefore to increase employment.

This part of the analysis therefore ends with an optimistic result. Earlier it was shown that there was little overall relationship between innovation and functional flexibility. Nonetheless, we now see that where the two management strategies are combined, they do have a strong and positive effect on employment.

The significance of the key structural dimensions

The structural dimensions (size, sector, ownership, industrial relations context and country) influence the impact of innovation and functional flexibility on employment. Each is discussed in turn.

Size

Size has an effect on innovation by itself and combined with direct participation. Not only is innovation more likely in large workplaces (Table 6.7), but the few cases where INNOVAT is combined with FUNCFLEX are also more likely to be large workplaces.

The consequences of functional flexibility and innovation for employment are also affected by the size of the workplace within which they occur. In small workplaces, job losses outweigh job gains where there is little or no innovation or little or no functional flexibility. Where there is innovation or functional flexibility, and particularly where both are combined (‘high both’) there are job gains.

In medium-sized workplaces job gains occur in all categories except where there is no activity in either innovation or functional flexibility. Job losses here are concentrated in the ‘inactive’ workplaces. In the medium-sized workplaces, as innovation and functional flexibility increase in intensity, there is a clear growth in employment gains relative to employment losses: from -4 per cent in the ‘nothing’ category, through +6 per cent in ‘both low’, and +20 per cent in ‘both medium’, to +36 per cent in the ‘high both’ category. As the previous section has

shown, this particular linear increase in employment gains relative to employment losses exists in the sample as a whole; we shall see that it emerges in most sub-divisions of the sample. Furthermore, where numbers in the 'high both' category are too small for meaningful analysis, this growth occurs from the inactive through to the 'both medium' categories.

In large workplaces job losses outweigh job gains. As we would expect, this is so in completely or nearly inactive workplaces ('nothing' or 'low' on both dimensions). There is some suggestion in the data that innovation either alone or in combination with functional flexibility does not have a positive effect on employment in large workplaces, but the numbers in the individual categories are too small to draw any clear conclusions.

Sector

Table 6.8 shows that innovation varies by sector, with innovation being more widespread in industry than in services or trade. In industry six per cent of all workplaces report 'intense' levels of innovation and only 20 per cent no innovation. At the other extreme, over half of the workplaces in the construction sector report no innovation at all, and none 'intense' levels.

Given the impact of sector on innovation per se, it is hardly surprising that sector also affects the combination of innovation and direct participation. Innovation by itself, and in combination with direct participation, is particularly likely in industry. While there is no table to refer to here, 12 per cent of workplaces have 'high' innovation and in a further 3 per cent of cases this is combined with high delegative direct participation. In no other sector does this proportion exceed 2 per cent. By contrast, delegative direct participation by itself is rarest in industry (7 per cent) and most likely in the non-profit sector (22 per cent). The pattern for consultative direct participation and innovation is similar, though less pronounced. The literature on direct participation and innovation is sometimes criticised for drawing its exemplars of best practice from manufacturing industry. Our data suggests that this criticism is misplaced. To the extent that innovation and participation are combined, this rather infrequent event is most likely to occur in manufacturing industry.

Overall, there are employment gains in services, and to a lesser extent in the public sector and in trade (Table 6.9). By contrast, workplaces in industry and in particular in construction were more likely to report job losses than job gains. When this general trend is combined with the innovation and functional

flexibility typology, the specific nature of industry becomes clear. In industry, when both innovation and functional flexibility occur together, their intensity is directly related to employment growth: workplaces with no activity have a -24 per cent percentage difference in employment; this becomes -3 per cent where there is 'low' activity on both dimensions, +8 per cent for 'medium' and fully +25 per cent for 'high'. While innovation by itself has a slight negative impact on employment, workplaces with functional flexibility show a 17 per cent gain. Finally, workplaces with both high functional flexibility and high innovation showed a 25 per cent percentage difference between those reporting job losses and those reporting job gains. In the other sectors, small cell numbers make detailed analysis less plausible. A similar linear relationship between employment and combined innovation and functional flexibility appears to exist in trade and the public sector, but not in services.

Ownership

The status of the workplace also has some effect, although the key difference is whether or not the workplace is owned from within the EU. Non-EU workplaces are more likely to be innovative, and more likely to combine this with either form of direct participation. Again, it must be stressed that we are dealing with a very small proportion of the total number of cases.

The extremes of employment growth and decline are concentrated in the foreign owned sector in each country (Table 6.10). Thus while EU-owned workplaces show the most substantial decline (-14 per cent), workplaces owned from outside the Union are more likely to be expanding. This difference between the different ownership groups does not, however, undermine the basic relationship between innovation, functional flexibility and employment growth. In every category increased intensity in the combination of innovation and functional flexibility remain associated with increasing employment.

Industrial relations context

The least significant structural variables are those concerned with industrial relations. The various aspects of industrial relations (presence of a collective agreement, high proportion of the workforce unionised, the existence of employee representatives) seem to have very little impact on the distribution. Where there are relationships, these are not consistent. Thus a high level of innovation (not associated with functional flexibility) is more likely in less unionised firms. This is probably explained by size and sector effects, given that unions are more likely in large firms and in manufacturing industry, and as we

have seen, this is where (technical) innovation is most prevalent. By contrast, there is a slight negative relationship between the coverage of collective agreements and the extent of stand-alone innovation.

As for trends in employment, the findings are similar to those of previous chapters (Table 6.11). Employment growth is stronger where such 'indirect participation' is weaker. For example, overall of those workplaces with a collective agreement, the percentage difference (growth-loss) was two per cent, as opposed to fully 16 per cent where there was no such agreement. This greater employment growth for workplaces with weaker indirect participation applied to all categories. Finally, once again there was a linear relationship between the combination of functional flexibility and innovation with employment growth.

Country

There are substantial national differences. Table 6.12 shows the proportions of workplaces in each country which have 'medium' or 'intense' levels of innovation. At one extreme, over a fifth of Danish and Italian workplaces have high levels of innovation, whereas at the other extreme this applies to less than a tenth of workplaces in France and Sweden, a lower level of innovation than Portugal.

One possible explanation for these striking variations is a sector effect, due possibly to differential non-response rates. Given that industry has above average innovation, any over-representation of industry within each national sample will distort the result. This is part (but only part) of the explanation for Italy. Overall, 34 per cent of workplaces are in industry, but in Italy this is 62 per cent. In other countries the proportion of workplaces in industry ranges from Spain, at 42 per cent, to the Netherlands, at 20 per cent. Examining innovation by sector and controlling for country shows whether there are clear country patterns of innovation. Thus, in Italy, innovation is high in services and trade as well as in industry. Italy's high level of innovation is probably exaggerated by our study, but is nonetheless a real feature of Italian workplaces.

Sampling issues do not explain the high innovation score for Denmark. Innovation in Danish industry is high (41 per cent), but it is also high in services (19 per cent) and the public sector (13 per cent). Even though innovation in the trade sector is low (3 per cent), the Danish score is not reducible to one sector and certainly cannot be explained by any over-representation of industry.

In France, innovation scores are low in all sectors. Equally, in Germany innovation is just above the 10-country average in all sectors: there is no sign of the high levels of innovation one might have expected from industry. In Spain industry is overrepresented but levels of innovation are low everywhere. In the Netherlands, innovation is very high in industry and trade, but average in services.

Finally, a low country level of innovation could be explained by an over-representation of the public sector in the sample, given that the public sector has the lowest level of innovation apart from construction. Thus, in Sweden the low level of innovation is partly explained by an overrepresentation of the public sector in the sample (30 per cent of cases as against 22 per cent for all countries). Yet this does not completely explain Sweden's low level of innovation, for Swedish industry itself also has a below-average level of innovation (19 per cent as against a ten-country average of 22 per cent).

The pattern of employment growth in the different countries is broadly in line with more conventional measures: particularly high growth (ie high percentage difference between growing workplaces and declining workplaces) was reported in Denmark, Ireland and the Netherlands (Table 6.13). At the other extreme, in Germany, Portugal and Sweden more workplaces lost jobs than gained them. The only anomaly here is Portugal.

Of all the structural dimensions, country analysis above all produces many cells with few or no cases. Examining only the cells with ten or more cases, it is clear that virtually all countries show the relationship between innovation, functional flexibility and employment already described above. With two exceptions, in all countries employment growth becomes more likely as functional flexibility and innovation are increased from 'nothing' through 'both low' to 'both medium' (the absolute numbers for intense innovation and functional flexibility, whether by themselves or in combination, are virtually always too small for analysis). The UK, the Netherlands and to some extent Denmark, do not fit this pattern. In Denmark the relationship is the 'normal' association of increasing functional flexibility and innovation with employment growth, but two of the three relevant values are calculated from cells with less than ten cases, while high innovation by itself has a negative effect on job growth. In the Netherlands 'both low' is linked to more employment growth than 'both medium', while in the UK 'nothing' and 'both low' produce almost the same employment effect.

Finally, it is worth examining the extremes of employment change. Three small countries – Denmark, Ireland and the Netherlands – have achieved noticeably higher employment growth than the rest. At the country level of aggregation, there does seem to be some relationship with innovation. Of the three countries, Denmark and the Netherlands are second and third respectively in the innovation ranking (Table 6.12), although Ireland's first in employment growth (Table 6.13) is associated with seventh position in innovation.

Ranking the countries by intensity of functional flexibility (proportion of workplaces scoring 'high' on FUNCFLEX) also places Ireland and the Netherlands relatively high (second and fourth place respectively), but Denmark is seventh (no table). At the other extreme, two of the three countries with net employment loss, Germany and Sweden, are in the top half of the distribution for functional flexibility but in the bottom half of the innovation ranking. At the country level, innovation rather than functional flexibility would therefore appear to be more important in creating employment growth.

Conclusion

This chapter has shown that one of the key premises of a European 'high road' of economic growth – that the direct participation which is our proxy for functional flexibility goes hand in hand with innovation – does not happen very often. Nearly one in three workplaces reported no innovation, while only three per cent admitted to four items: only two per cent achieved high scores for both functional flexibility and innovation. The relationship between functional flexibility and innovation, it seems, is contingent rather than inherent. Policies that seek to stimulate participation are no substitute for policies to stimulate innovation.

It is possible to locate situations in which these best practice cases are more likely to occur: in industry rather than services, in large rather than small workplaces, and in particular countries. However, the country analysis has shown that at this level too there is no relationship between the extent to which workplaces are innovative and the extent to which such workplaces in turn also practise functional flexibility. Some countries have low levels of innovation, but high levels of functional flexibility. Rather than seeing the two as necessarily connected and as an inherent part of an innovative economy, it is reasonable to suggest that organisations (and indeed countries) choose particular forms. The direct participation which is our proxy for functional flexibility is neither a necessary nor a sufficient condition for innovation.

Although there is no clear relationship between functional flexibility and innovation, this chapter has produced evidence to support a second premise of the 'high road' approach – that the combination of functional flexibility and innovation is associated with employment growth. Significantly, too, this conclusion seems to apply not just to the few extreme cases where intense functional flexibility is combined with intense innovation. It is also the case that, as workplaces move from 'none' to 'low' to 'medium' intensity of combined functional flexibility and innovation, so employment growth becomes more likely. Furthermore, when functional flexibility is combined with innovation, there is nearly always a more positive impact on employment than when they occur by themselves. The detailed controlling for structural dimensions, if anything, sharpens these conclusions.

References

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Table 6.7 *Functional flexibility/innovation and net employment change by size*

	ten-country average	-49 employees	50-499 employees	500+ employees
stable employment: % of establishments reporting no increase/decrease in employment	40	49	37	32
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	-4	+9	-6
- no FUNCFLEX or INNOVAT	-8	-21	-4	(-11)
- low FUNCFLEX/low INNOVAT	+2	-7	+6	-6
- both medium	+14	+1	+20	+3
- high INNOVAT	+12	(+12)	+16	(-21)
- high FUNCFLEX	+14	+9	+16	+5
- both high	+27	(25)	+36	(-14)
N	*5528*	*1275*	*3955*	*304*
p <	.01	.00	.00	.76
CC	.14	.17	.15	.15

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 6.8 *Level of innovation by sector – % of workplaces*

	industry	construction	trade	private services	public sector
none	20	56	28	30	39
very little	30	32	38	36	38
little	27	8	25	23	20
medium	16	4	7	9	7
intense	6	0	2	2	1
Total	100	100	100	100	100
N	*2118*	*402*	*1185*	*897*	*1182*
p < .00					
CC = .28					

Table 6.9 *Functional flexibility/innovation and net employment change by sector*

	ten-country average	industry	construction	trade	private services	public sector
stable employment: % of establishments reporting no increase/decrease in employment	40	33	33	43	41	49
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	-2	-9	+9	+15	+10
- no FUNCFLEX or INNOVAT	-8	-24	-25	-9	+15	+4
- low FUNCFLEX/low INNOVAT	+2	-3	-6	+1	+14	+8
- both medium	+14	+8	(+55)	+26	+5	+27
- high INNOVAT	+12	-1	(-50)	(+65)	(+35)	(+24)
- high FUNCFLEX	+14	+17	-33	(+25)	+18	+12
- both high	+27	+25	(+67)	-	(+75)	(-33)
N	*5528*	*2046*	*387*	*1108*	*848*	*1134*
p <	.01	.00	.00	.00	.00	.01
CC	.14	.16	.27	.29	.20	.15

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 6.10 *Functional flexibility/innovation and net employment change by ownership*

	ten-country average	totally independent	domestic	EU-owned	non-EU owned
stable employment: % of establishments reporting no increase/decrease in mployment	40	41	41	30	24
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+6	+1	-14	+14
- no FUNCFLEX or INNOVAT	-8	+2	-17	-32	(-6)
- low FUNCFLEX/low INNOVAT	+2	+9	+1	-25	+1
- both medium	+14	+24	+8	+16	(-17)
- high INNOVAT	+12	+4	+3	+12	(+64)
- high FUNCFLEX	+14	+13	+11	+3	(+18)
- both high	+27	+14	+31	(+11)	(+53)
N	*5528*	*2630*	*1628*	*537*	*268*
p <	.01	.00	.00	.00	.00
CC	.14	.14	.14	.26	.47

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 6.11 *Functional flexibility/innovation and employment change by industrial relations context*

	ten-country average	collective agreement		union membership		employee representation	
		No	Yes	0-29%	30-100%	No	Yes
stable employment: % of establishments reporting no increase/decrease in employment	40	39	39	41	38	43	38
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+16	+2	+13	-9	+13	+1
- no FUNCFLEX or INNOVAT	-8	+14	-13	+1	-26	+7	-19
- low FUNCFLEX/ low INNOVAT	+2	+36	+1	+11	-14	+9	-1
- both medium	+14	+37	+12	+18	+9	+17	+13
- high INNOVAT	+12	+32	+1	+25	-3	+26	+7
- high FUNCFLEX	+14	+47	+10	+19	+11	+26	+8
- both high	+27	(+31)	+14	+42	(+6)	(+71)	+7
N	*5528*	*1082*	*4099*	*3129*	*1965*	*1678*	*3527*
p <	.01	.00	.00	.00	.00	.00	.00
CC	.14	.21	.15	.15	.18	.20	.15

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Table 6.12 *Innovation by country – % of workplaces*

	high innovation ('medium' or 'intense')
ten-country average	14
Denmark	21
France	6
Germany	14
Ireland	10
Italy	21
Netherlands	15
Portugal	10
Spain	14
Sweden	9
UK	13

Table 6.13 *Functional flexibility/innovation and net employment change by country*

	ten-country average	DK	FRA	GER	IRL	ITA	NL	POR	SPA	SWE	UK
stable employment: % of establishments reporting no increase/ decrease in employment	40	49	39	42	45	34	42	42	37	44	40
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+22	+8	-7	+32	+11	+26	-6	5	-2	+7
- no FUNCFLEX or INNOVAT	-8	(+11)	-7	-16	(+6)	-10	+5	(-19)	-9	-38	+1
- low FUNCFLEX/ low INNOVAT	+2	+25	+6	-10	+36	+8	+32	+11	+4	-10	-1
- both medium	+14	(+42)	+22	+2	+56	(+40)	+17	(-20)	+20	+14	+5
- high INNOVAT	+12	-16	(-33)	(-19)	(+55)	+27	(+17)	(-14)	(0)	(+65)	(+46)
- high FUNCFLEX	+14	(+31)	+20	+3	(+25)	(0)	+29	(+54)	(+38)	+6	+17
- both high	+27	(+86)	(0)	(0)	(+57)	(+20)	(+76)	(+50)		(+27)	(+47)
N	*5528*	*637*	*549*	*802*	*370*	*478*	*495*	*295*	*452*	*715*	*762*
p <	.01	.00	.00	.17	.00	.00	.00	.00	.19	.00	.00
CC	.14	.30	.25	.13	.301	.25	.24	.29	.16	.28	.21

NB Entries in brackets involve small numbers, ie single figures in the case of the establishments reporting either an increase or decrease in employment.

Chapter 7 The Significance of Consultation

Previous chapters have been concerned with our main task, which is to explore the relationship between a range of flexibility strategies and changes in the levels of employment. Before proceeding to the multivariate analysis, it seemed sensible to take the opportunity to consider the significance of the other main type of direct participation covered in the EPOC survey, ie consultation. The reason is that, although the scientific literature has tended not to give consultation – in particular, 'face-to-face' and 'arms-length' consultation with individual employees – the same attention as delegation (see Chapter 2 of Fröhlich and Pekruhl, 1996), the majority of respondents (around two-thirds) in the EPOC survey reckoned the former to be a more important form of direct participation than the latter. Even many of the managers practising *both* the consultative and delegative forms of direct participation did so.

As in the case of delegative participation, there are two sets of possibilities to be considered. One is that there is a direct relationship between consultation and changes in employment. The management that practises consultation extensively, for example, might be expected to gain a particular benefit from the ideas and suggestions of employees, which feed through into growth generally. The other possibility is that there is an indirect relationship between consultation and changes in employment. Most commentators agree that the better employees are informed and consulted, the more successful management decision-making is likely to be. Indeed, this was one of the major findings of the interim report in respect of the effects of direct participation on a range of indicators of performance. In the case of the indirect relationship between

consultation and changes in employment, therefore, it might be expected that the extensive practice of consultation would interrelate in a positive way with the different forms of flexibility and innovation.

Four forms of consultative participation were covered in the EPOC survey. Two were individual – 'face-to-face' and 'arms-length'; and two were collective – 'temporary' groups such as task forces, and 'permanent' groups such as quality circles. Our focus throughout this chapter is on only one of these, ie 'face-to-face' consultation. As well as wanting to keep the results digestible, the main reason for the focus is that preliminary analysis suggested that the direct relationship between this form and changes in employment was by far the strongest, followed by the permanent group and 'arms-length' forms; only the relationship between temporary group consultation and employment was not significant.

The chapter is divided into three main sections. The first deals very briefly with the extent of 'face-to-face' consultation practised by our establishments. The second looks at the direct relationship between this measure of consultation and changes in employment. The third looks at the indirect relationship between this measure of consultation and changes in employment; the aim is to establish whether the extensive practice of consultation enhanced the effects of the functional flexibility, numerical flexibility and innovation discussed in previous chapters. In the interests of keeping the results digestible, and because of the upcoming multivariate analysis in the following chapter, there will be no treatment of the structural dimensions.

The nature and extent of 'face-to-face' consultation

It will be recalled from the general EPOC survey report that some 35 per cent of establishments in the total sample engaged in some form of 'face-to-face' consultation, ie arrangements involving discussions between individual employee and immediate manager, such as regular performance reviews, regular training and development reviews and '360 degree' appraisal. A measure of scope or intensity was derived on the basis of responses to a question about which of eight issues managers consulted with employees on, and how often they did so ('regularly', 'sometimes' and 'never'). The issues were: work organisation; working time; health and safety; training and development; quality of product or service; customer relations; changes in technology, and changes in

investment. These items were reduced to a simple index of scope or intensity with the categories ‘low’, ‘medium’ and ‘high’.

The frequencies of these categories are shown in Table 7.1. It will be seen that just over half of the establishments (18 per cent of the total) scored low, 12 per cent medium and 5 per cent high.

Table 7.1 *The extent of ‘face-to-face’ consultation – % of workplaces*

none	65
low	18
medium	12
high	5
Total	100
N	*5786*

As the general EPOC survey report stressed, the proportions practising any of the forms of direct participation was surprisingly low considering the attention the issues have received. The low figure for the proportion of establishments with intensive ‘face-to-face’ consultation is especially surprising in view of the balance of employment in the sample. It might have been expected if industry had been the largest employer: many of the operations involved do not lend themselves to individual relationships. It was services which accounted for the majority of the employment, however, and here there is much more scope, yet while greater than that in industry and construction, the proportion with high scores reached only six per cent in trade and public services and only four cent in private services.

‘Face-to-face’ consultation and employment

Our next task is to confirm that there was a direct relationship between consultation and changes in employment. Table 7.2 clearly shows there was, and it was significant statistically. The more intensively ‘face-to-face’ consultation was practised, the more likely there was to be an increase in employment and the less likely a reduction. Thus, in the absence of ‘face-to-face’ consultation, roughly equal proportions (29 per cent and 31 per cent) increased or reduced their employment; in the case of its low practice, the proportion increasing was almost 50 per cent more than that reducing (35 per cent against 26 per cent); in the case of the medium and high combinations, the proportions were more than 100 per cent greater (43 per cent against 19 per cent, and 50 per cent against 18 per cent, respectively).

Table 7.2 *Changes in employment by 'face-to-face' consultation – % of workplaces*

change in employment	level of 'face-to-face' consultation (CONSULT)			
	none	low	medium	high
reduced	31	26	19	18
same	41	40	38	32
increased	29	35	43	50
Total	100	100	100	100
N	*3612*	*975*	*643*	*297*
p < .00				
gamma = .20				

The importance of these findings becomes clearer when the statistical relationship between CONSULT and changes in employment is put alongside the equivalent for the 'flexibilities' and innovation discussed in previous chapters (see Table 7.3). The relationship between 'face-to-face' consultation and changes in employment is stronger than that between functional flexibility (FUNCFLEX) and employment. It is also on a par with that between innovation (INNOVAT) and employment. It is only exceeded in the case of numerical flexibility (NUMFLEX) and contract flexibility (CONTFLEX).

Table 7.3 *A comparison of the tests of significance of changes in employment by 'face-to-face' consultation, the 'flexibilities' and innovation*

	changes in employment by CONSULT	changes in employment by FUNCFLEX	changes in employment by NUMFLEX	changes in employment by CONTFLEX	changes in employment by INNOVAT
N	*5527*	*5527*	*5527*	*4255*	*5529*
p <	.00	.00	.00	.00	.00
gamma	.20	.09	-.47	.20	.12

The relationship between 'face-to-face' consultation, the 'flexibilities' and employment

'Face-to-face' consultation and the 'flexibilities'

So much for the direct relationship between 'face-to-face' consultation and employment. Our focus shifts to the indirect role of 'face-to-face' consultation. In a first step, our measure of 'face-to-face' consultation was cross-tabulated with those of functional flexibility, numerical flexibility, contract flexibility and

innovation to establish the nature of the relationship. In three of the cases (CONSULT-FUNCFLEX, CONSULT-CONTFLEX and CONSULT-INNOVAT), the combined relationship was significant, as Table 7.4 clearly shows. Especially noteworthy is that the relationship between 'face-to-face' consultation and functional flexibility was the strongest of any so far considered. 'Face-to-face' consultation and functional flexibility, it seems, tend to go together much more than any other two sets of practices. The one relationship which is not significant is that between 'face-to-face' consultation and numerical flexibility (NUMFLEX). One might have thought that there would more consultative activity in those establishments with a strategy of 'downsizing'/'back to core business', but this does not appear to be the case.

Details of the frequencies of our four combinations will also be found in Table 7.4. It will be seen that CONSULT-FUNCFLEX had the highest number in the medium and high categories (15 per cent). FUNCFLEX was also less likely to be practised on its own than other flexibilities. The proportion with 'high' FUNCFLEX (five per cent) was half that of the other flexibilities.

Table 7.4 *The relationship between 'face-to-face' consultation, the 'flexibilities' and innovation – % of establishments*

	CONSULT-FUNCFLEX	CONSULT-NUMFLEX	CONSULT-CONTFLEX	CONSULT-INNOVAT
- no CONSULT or flexibility/ innovation	32	45	47	21
- low CONSULT/low flexibility/ low innovation	36	34	32	51
- both medium	11	4	4	7
- high flexibility or innovation	5	11	10	12
- high CONSULT	11	4	5	9
- both high	4	3	3	1
N	*5785*	*5785*	*4394*	*5783*
p <	.00	.01	.00	.00
gamma	.35	.07	.25	.11

Significant though the relationship is between consultation and the flexibilities, there is another, far more fundamental, message which comes from Table 7.4. It is that, overall, sizeable proportions (one in ten in the case of NUMFLEX, CONTFLEX and INNOVAT) were making extensive changes in the respective area and yet admitted to little or no 'face-to-face' consultation. Indeed, it was more likely that functional flexibility, numerical flexibility and innovation were

practised intensively on their own than in combination with consultation. In the case of innovation, for example, the proportions were 12 per cent against 1 per cent; in the case of NUMFLEX, 11 per cent against 3 per cent, and in the case of CONTFLEX, 10 per cent against 3 per cent. Notwithstanding the strong relationship between the intensities of 'face-to-face' consultation and functional flexibility, even more establishments practised the latter on its own that in combination with 'face-to-face' consultation (5 per cent against 4 per cent).

Especially surprising are the cases of innovation and numerical flexibility. CONSULT-INNOVAT had the smallest proportion in the 'both high' category (only one per cent), hardly suggesting extensive consultation over what are major changes. In the case of numerical flexibility, as already suggested, one might have thought that there would be a substantial amount of 'face-to-face' consultation in those establishments with a strategy of 'downsizing'/'back to core business'. In the event, as the proportion for CONSULT-NUMFLEX (three per cent) suggests, this was not so.

Face-to-face' consultation, the 'flexibilities' and employment

In the next step of the analysis, our four measures combining the intensity of 'face-to-face' consultation with the equivalent measures of functional flexibility, numerical flexibility, contract flexibility and innovation were cross-tabulated with changes in the employment of the largest occupational group over the past three years. Details of the tests of significance and the net employment effects will be found in Table 7.5.

It will be seen that each of the combinations has a statistically significant relationship with changes in employment. The prospects for employment growth and minimisation of employment reduction, it seems, are enhanced, the more intensive the 'face-to-face' consultation accompanying functional flexibility, contract flexibility and innovation. In the circumstances, it is not unfair to conclude that the intensity of 'face-to-face' consultation has an indirect as well as a direct effect.

As for the net changes in employment over the past three years, the overall picture is remarkably similar for each of the flexibilities (see Table 7.5). A substantial majority, four out of ten in each case, were characterised by employment stability. Also, three of the combinations registered the same net employment change of +5 percentage points; the exception, CONSULT-CONTFLEX, was +3 percentage points.

Table 7.5 *The relationships between 'face-to-face' consultation, the 'flexibilities' and net employment change*

	CONSULT-FUNCFLEX	CONSULT-NUMFLEX	CONSULT-CONTFLEX	CONSULT-INNOVAT
stable employment: % of establishments reporting no increase/decrease in employment	40	40	40	40
net employment change: difference in % of establishments reporting increase/decrease in employment	+5	+5	+3	+5
- no CONSULT or flexibility/ innovation	-4	-14	-9	-10
- low CONSULT/low flexibility/ low innovation	+1	-9	-8	-2
- both medium	+27	+6	+25	+22
- high flexibility or innovation	+3	-57	+6	+11
- high CONSULT	+29	+42	+21	+27
- both high	+28	-9	+50	+45
N	*5528*	*5528*	*4257*	*5528*
p <	.00	.00	.00	.00
CC	.16	.28	.20	.17

The interest is in the breakdown. In each case, it will be seen, doing 'nothing' was associated with a reduction in employment. In three cases, FUNCFLEX, CONTFLEX and INNOVAT, the greater the combination of 'face-to-face' consultation and the 'flexibility' or innovation, the more likelihood there was to be an increase in employment: for example, 'low', 'medium' and 'high' combinations of CONSULT-FUNCFLEX produced net employment increases of +1, +27 and +29 percentage points respectively.

In each case, too, high levels of CONSULT were much more likely to be associated with a net increase in employment than any of the individual flexibilities or innovation. Especially noteworthy is the comparison between CONSULT and FUNCFLEX. The intensive practice of each of the two forms of direct participation on its own produced a net increase of 29 and 3 percentage points respectively.

In the case of NUMFLEX, the combination of consultation and numerical flexibility tends to moderate the employment reduction of the latter. The intensive practice of both CONSULT and NUMFLEX results in a difference of 48

percentage points compared to the intensive practice of NUMFLEX on its own (-9 percentage points as against -57). Significantly, the 'moderation' effect of CONSULT is much greater than that of FUNCFLEX which was discussed in Chapter 4.

Summary and conclusions

Consultation is no more intensively practised than the functional flexibility, numerical flexibility, contract flexibility and innovation discussed in previous chapters. Indeed, as many as two thirds of our respondents had no arrangements for 'face-to-face' consultation at all. Especially surprising is that not insignificant proportions (one in ten in the case of numerical flexibility, contract flexibility and innovation) were making extensive changes in the respective area and yet admitted to little or no 'face-to-face' consultation.

There are also much more positive findings which are potentially far-reaching in their implications. The first concerns the indirect relationship between 'face-to-face' consultation and changes in employment. The more intensive the 'face-to-face' consultation accompanying functional flexibility, contract flexibility and innovation, the more positive the employment outcome. These findings add further weight to those of previous chapters: it is the combinations or 'bundles' of initiatives which are most likely to be associated with positive employment trends.

The second, which involves the direct relationship between 'face-to-face' consultation and changes in employment, provides considerable food for thought. The evidence presented here is that this relationship is stronger than that for the intensity of delegative participation, which is our proxy for functional flexibility, and almost as strong as our measure of innovation. Both the policy and scientific debate has tended to prioritise the delegative forms of direct participation; group work in particular has been seen as the 'dominating concept' and the 'core element of new forms of work organisation' (Fröhlich and Pekruhl, 1996:79). By contrast, the individual consultative forms especially have tended to be dismissed as being of little consequence. Indeed, the EPOC literature review (see Chapter 2 of Fröhlich and Pekruhl, 1996) found that they had received scarcely any scientific attention whatsoever. In the circumstances, the findings presented here (coupled with those in the general EPOC survey report suggesting that managers regarded the consultative forms of direct participation as more important than the delegative) point to the need for a

fundamental reappraisal of the relative importance of the main forms of direct participation.

It will be recalled that there were two reasons for not including any treatment of the structural dimensions in the case of CONSULT: the sheer volume of tables that would have been required to present the data; and the upcoming multivariate analysis, which makes it possible to consider CONSULT, together with the two forms of flexibility; innovation and the structural dimensions, much more systematically. It is to the multivariate analysis that the study now turns.

References

Fröhlich, D., and U. Pekruhl, European Foundation for the Improvement of Living and Working Conditions, *Direct participation and organisational change – fashionable but misunderstood? An analysis of recent research in Europe, Japan and the USA*, Luxembourg, Office for Official Publications of the European Communities, 1996.

Chapter 8

The Results of the Multivariate Analyses

Preceding chapters have analysed stability and change of employment on a table basis, asking how individual and combined approaches to flexibility and innovation, together with key structural dimensions, are associated with employment growth, stability or decrease. According to this analysis, numerical flexibility is strongly associated with employment reduction, whereas functional flexibility, contract flexibility, innovation and 'face to face' consultation lead to employment increases. Employment increases, further, concentrate in medium-sized establishments, in the private services, in non-EU companies and in countries like Ireland, Italy and the Netherlands. Employment reductions are more likely to be found in large establishments, the construction industry and the trade sector; EU-owned companies, and workplaces with a highly unionised workforce.

Such bivariate table results are easy to grasp, but they are open to criticism. For example, the positive employment effects of an innovation strategy might not be due to innovation in general, but might be confined to particular establishments (say to subsidiaries of non EU-owned companies) whereas workplaces in domestic ownership might use innovations to reduce employment. The relationship between contract flexibility and employment increases might hold for some sectors and size categories only, or the negative relationship between industrial relations indicators and employment growth might not be a general trend, but could be confined to industry and/or large workplaces, which are in decline and where employees tend to be more highly organised.

In other words, what appears to be a straightforward relationship between a particular approach and an establishment's employment changes might be influenced by other factors. If such factors are taken into account, the 'straightforward' relationship might disappear (it would be a 'spurious relationship') or it might even increase in strength, indicating that the factors were mutually re-enforcing. Such control of additional influences on a straightforward relationship can hardly be carried out on a table basis: the number of tables would be impossible to digest and the number of cases in some cells would be too small for serious analysis.

This is where multivariate analysis has its great value. Two kinds of multivariate analysis will be used in this, the third stage of the analysis: multinomial logistic regression (MLR) and a linear probability model (LPM). Both methods have the advantage that they are able to filter out 'other' influences and present the unique contribution a variable has on employment changes. As these two methods have their own limitations, they are applied side by side to control one another. If there are strong unequivocal factors influencing employment changes, they should lead to very similar results in both cases. Thus, the application of both methods of analysis serves as a safety precaution and a control strategy.

Both methods suffer from the handicap of their high level of abstraction, which makes the results difficult to grasp and to interpret. To solve this difficulty, the presentation that follows tries to restrict itself to the absolute minimum of 'technical' information and statistical figures for the benefit of verbalising the results. The interested reader is referred to the annex for a more detailed explanation of the method and for full documentation of the results.

Explaining employment changes by means of multinomial logistic regression

Multinomial logistic regression (MLR) attempts to explain changes in employment in terms of the unique effects of independent or explanatory variables. It does so by estimating the likelihood that an establishment belongs to the group of establishments with employment decreases rather than employment stability or that it belongs to the group with increases rather than stability. Stability of employment, in other words, serves as the reference category.

Table 8.1 has the results, and the most important information is in columns 4 and 5. The effects of an independent variable on employment reductions or increases are indicated like this:

+	weak positive effect
++	strong positive effect
+++	very strong positive effect
-	weak negative effect
--	strong negative effect
---	very strong negative effect

(For full statistical details see Table A2.2 in Appendix 2.)

Table 8.1: *Significant effects of all independent variables on employment decreases and employment increases, using a multinomial logistic regression model*

1	2	3	4	5
no.	variable name	variable description	effect on employment reduction	effect on employment increase
1	FUNCFLEX	intensity of delegative participation/ internal functional flexibility	- -	
2	NUMFLEX	intensity of external numerical flexibility: downsizing, back to core business	+ + +	- - -
3	CONTFLEX	intensity of internal numerical flexibility/ contract flexibility		+ + +
4	INNOVAT	intensity of innovation strategy		+ +
5	CONSULT	intensity of individual 'face-to-face' consultation		+ +
6	SIZE3	size of establishment	+ +	+ +
7	SECTOR2 – dummy	construction sector	+ + +	
8	C1 – dummy	Denmark	- - -	+ + +
9	C3 – dummy	Germany	+ + +	
10	C4 – dummy	Ireland		+ + +
11	C5 – dummy	Italy	+ + +	+ + +
12	C8 – dummy	Spain	+ + +	
13	C9 – dummy	Sweden		+ + +
14	UNION3	degree of unionisation of the establishment's workforce	+ +	-

The reader will note that two sets of variables are missing from Table 8.1: some structural dimensions did not appear as they had no significant effects on employment changes (see Table A2.1 in Appendix 2). The combinations of strategies are also absent. The reason is that they were produced from the separate strategies FUNCFLEX, NUMFLEX, CONTFLEX, INNOVAT and CONSULT, and present us with the statistical problem of multi-collinearity: the combinations and the variables they originate from naturally correlate very strongly, which forbids their inclusion in a multivariate approach of this kind.

Managerial strategies and employment

Table 8.1 confirms the 'rule of thumb' that strong bivariate effects tend to persist in multivariate analysis as well, even when the influence of third factors is excluded or controlled:

Functional flexibility, FUNCFLEX (ie the intensity of direct delegative participation), exerts a rather strong negative influence[1] on employment reductions, which means that when functional flexibility is applied, the chance of employment reductions are diminished. By the same token, however, functional flexibility has no influence on employment growth.

Numerical flexibility, NUMFLEX (ie the intensity of a strategy of 'downsizing/back to core business'), as in the bivariate analysis, has a singular, unique negative influence on employment: the positive influence on employment reductions is extremely strong, meaning that an intensive use of such a strategy leads to a shrinking workforce. At the same time, such a strategy has a strong negative effect on employment growth: when managers operate this strategy, the chance for employment growth is greatly reduced.

Contract flexibility, CONTFLEX (ie the increase in part-time work and temporary contracts) had mainly positive employment effects according to the bivariate analysis. This result shows as well in the MLR: the unique influence of a policy of contract flexibility is very strong, leading to employment growth. It even seems to be that this unique effect is stronger than the 'contaminated' effect shown in the bivariate analysis. In addition, there are no significant effects of a policy of contract flexibility in regard to employment reductions.

[1] The qualified interpretations of the strength of effects, beyond the number of simple plus or minus signs, rest on the exact strength of figures in Table A2.2.

Innovation, INNOVAT, shows the same, albeit less pronounced, pattern. Innovation has no detrimental effects on employment, and employment increases are more likely.

'Face-to-face' consultation, CONSULT, was associated with employment growth in the bivariate analysis. This result is confirmed, albeit moderately, in the MLR analysis as well. There remain no effects that point to employment reductions.

The key structural dimensions

Establishment size shows interesting influences on employment changes: with increasing size, there are equally strong effects of both employment reduction and employment increase. This means two things: first, the larger the workplace, the less the chance of a stable workforce; but, second, employment changes do not go just in one direction – in a large proportion of workplaces the dynamism is expressed as job losses, whereas in an equally large group it results in employment growth. Graphically, one might imagine a U-curve with stability of employment at the lowest point of the U and the two highest points representing substantial employment reductions and growth, respectively.

Of the five sectors, only construction has a unique and very strong effect on employment, which is negative. There was a very strong probability, in other words, that establishments in construction were the ones reducing their workforce. In bivariate analysis, industry had a similar negative effect, but the exclusion of other intervening factors levels this out.

There appear to be five cases where there are very strong country effects. When the establishments are Danish, the prospects for employment reduction are very strongly negative, whereas those for employment growth are very strongly positive. Irish and Swedish establishments display similar positive effects. In both cases, however, the influences relate only to employment growth, which is very likely in both countries. Here, and in the case of the other countries, it has to be remembered that these effects are independent of the sectoral composition and the type of flexibility, innovation and consultation being applied.

The German case tells us a simple story. Other things being equal, the fact that an establishment is German increases the likelihood of employment reductions and very strongly so. The same applies, even more strongly, to Spanish establishments. Whereas the multivariate results confirm most of the findings of the bivariate analysis, the Spanish case is different: the straightforward

relationship between the countries and employment change suggests a split picture for Spain. Spanish workplaces outstrip the ten-country average both in employment growth and reductions. Yet, after controlling for other influences, Spanish workplaces appear as job losers only.

Italy is an interesting case in that the multivariate analysis suggests a U-shaped situation. Employment stability is well below average: most Italian establishments are either high job reducers or high job creators.

Finally, it will be recalled that the bivariate analysis showed a negative influence of all three industrial relations indicators on employment growth (collective agreement coverage, employee representation and a high degree of unionisation). The MLR analysis suggests that two of these variables, collective agreement coverage and employee representation, were unimportant in employment changes after other factors are taken into account.

The influence of the degree of unionisation remains, however, after the exclusion of other factors. A high degree of unionisation strongly increases the chance of employment reductions and reduces the chances of employment growth slightly. As industrial relations variables are very country specific, these relationships were checked on a trivariate basis (tables not included). This analysis showed that the degree of unionisation varied considerably between the countries, with Danish and Swedish workforces being most highly unionised and French and Dutch workforces being at the other extreme. Even so, regardless of the national levels of unionisation, employment growth dwindled and employment reductions grew with a high degree (relatively, in regard to country) of unionisation in all countries.

Looking at the high figures for (positive) effects of the countries included in Table 8.1, one might get the impression that employment reductions and increases are overwhelmingly explained by country effects. A systematic analysis of this issue shows that this is not the case, however: the most important variable to contribute to the explanatory power of the model is NUMFLEX (ie numerical flexibility), which contributes 6.3 per cent of the overall Log-Likelihood Improvement of 12.4 per cent. The countries follow with 2.2 per cent, closely followed by CONTFLEX (contract flexibility) with 2.1 per cent. The contribution of the other variables is very marginal. (For details see Table A2.3 in Appendix 2.)

Summary of MLR results

Of the approaches to flexibility and innovation, only numerical flexibility exerts a negative influence on employment, and this is very strong. Each of the other approaches has a positive influence, be it that their application reduces the chance of employment reductions (as in the case of functional flexibility) or that it increases the chance of employment growth (as in the case of contract flexibility, innovation and 'face-to-face' consultation). The structural dimensions have only minor effects: large establishments are polarised as 'job reducers' and 'job creators', while only the construction sector contributes to employment reductions. Other establishment traits, such as ownership, have no sizeable impact of their own on employment changes. The country influence follows largely known patterns: Denmark, Ireland and Sweden are positive, Germany and Spain are negative, and Italy is polarised. The Dutch workplaces, which do so well in the bivariate analysis, level out after controlling for other factors. The degree of unionisation exerts a negative effect.

Explaining employment changes by means of a linear probability model

Like the preceding MLR analysis, the linear probability model (LPM) will be used to explain changes in employment by the influence of the same independent variables. Compared to logistic analysis, LPM allows for relatively easy interpretation of results: it compares the contribution of the independent variables to explained variance, together with the strength of relationships between employment changes and independent variables, controlled and uncontrolled for other influences. Particularly attractive is that the results of LPM can be used as input for a correspondence analysis (CA), displaying the controlled results in graphical form like a map. (More detailed information on LPM and CA will be found in Appendix 2.)

For our purposes, the concept of explained variance is very informative. Somewhat imprecisely, the 'explained variance' indicates to what degree a set of independent variables explains the variation of a dependent variable, and how much a single independent variable contributes to that. The explained variance varies between .00 per cent and 100 per cent. A value of '0' per cent indicates no explanatory power at all, whereas one of 100 per cent means that the variation of the dependent variable is completely explained by the independent variable(s) in the analysis.

In Table 8.2, employment is treated as three nominal variables. EMPLOY – (minus) indicates whether there are employment reductions or not; EMPLOY 0 (zero) indicates whether there is employment stability or not; EMPLOY + indicates whether there is employment increase or not. Table 8.2 shows that the total explained variance for employment decrease, stability and increase is rather low (16.52 per cent, 5.42 per cent and 12.31 per cent respectively). In this respect, therefore, the results of the LPM analysis are similar to those of its MLR counterpart, where the comparable figure, the Log-Likelihood (reduction) was only 12.4 per cent. In other words, this means that the independent variables in our analyses explain variations in employment only to a weak or moderate extent.

Table 8.2 *Percent of variance explained for employment*

	variable description	EMPLOY - reduction	EMPLOY 0 stable	EMPLOY + increase
TOTAL	total explained variance	16.52	5.42	12.31
NUMFLEX	external numerical flexibility	8.38	.45	3.85
CONTFLEX	internal numerical (contract) flexibility	.22	.68	1.61
FUNCFLEX	functional flexibility, delegative participation	.54	.25	.08
CONSULT	individual 'face-to-face' consultation	.52	.17	1.17
INNOVAT	innovation	.19	.37	.98
COLLECT	establishment bound by collective agreement	.03	.08	.19
UNION3	degree of unionisation	2.03	.05	1.18
ER	employee representation	.15	.03	.13
SIZE3	size of establishment	.18	.50	.77
SECTOR	economic sector	.33	.47	.44
V044	status/ownership of establishment	.83	.59	.21
V046	profit/non-profit organisation	.13	.76	.70
COUNTRY	countries	3.38	.53	1.56

Looking at employment reductions, the familiar result appears: numerical flexibility exerts the greatest single influence, accounting for half of the explained variance (8.38 per cent). The nationality of establishments (COUNTRY) exerts the next highest effect (3.38 per cent), followed by the degree of unionisation (2.03 per cent). Evidently, too, the status/ownership of establishments makes a slight contribution to decreases, as does functional flexibility and 'face-to-face' consultation. From the bivariate analysis, it will be recalled, EU-owned subsidiaries were associated with employment decreases; whereas, in the case of functional flexibility and 'face-to-face' consultation it was the absence or low intensity of the practice which contributed to job losses.

Employment increases show a more varied picture. Again, it is the absence or low intensity of numerical flexibility that contributes most to variance explanation (3.85 per cent), followed by contract flexibility, country, a low degree of unionisation, 'face-to-face' consultation and innovation.

The LPR permits another data check: the strength of relationships between employment and our independent variables, both including possible additional influences by other independent variables and excluding or controlling for these other influences. In this case, 'employment' is used as one variable with the values 'reduced', 'stable' and 'increased'. The measure of association is Cramer's V (CV), which varies between .00 (no association) and 1.00 (complete association). The last three columns of Table 8.3 show the figures uncontrolled for strength of association, the strength controlled for all other independent variables and the difference between the two measures indicating how much the direct relationships were blurred by influences other than the obvious one.

Table 8.3 *Bivariate relations between employment change and independent variables, uncontrolled and controlled – Cramer's V*

	variable description	uncontrolled CV	controlled CV	difference: uncontrolled minus controlled
NUMFLEX	external numerical flexibility	.22	.21	- .01
CONTFLEX	internal numerical (contract) flexibility	.10	.09	- .01
FUNCFLEX	functional flexibility, delegative participation	.07	.05	- .02
CONSULT	individual 'face-to-face' consultation	.10	.08	- .02
INNOVAT	innovation	.08	.07	- .01
COLLECT	establishment bound by collective agreement	.07	.03	- .04
UNION3	degree of unionisation	.09	.11	+ .02
ER	employee representation	.07	.03	- .04
SIZE3	size of establishment	.09	.07	- .02
SECTOR	economic sector	.10	.06	- .04
V044	status/ownership of establishment	.10	.07	- .03
V046	profit/non-profit organisation	.08	.07	- .01
COUNTRY	countries	.13	.14	+ .01

Looking at the column 'uncontrolled CV' reveals, yet again, the familiar overriding impact of numerical flexibility on employment (CV=.22), followed by the country influence (.13). Excluding other influences (column 'controlled CV') reduces the strength of association slightly in most cases. In three cases (collective agreement coverage, the existence of employee representation and sector) the reduction is considerable (.04 is sizeable), which means that these

three variables have a rather low own impact on employment. This leaves two independent variables which are even more strongly related to employment when other influences are excluded: nationality and the degree of unionisation. Here the controlled strength is higher than the direct association (.14 and .11 respectively).

To assess the outcome of the linear probability model, the results of both Tables 8.2 and 8.3 have to be interpreted together. Just looking at Table 8.2, the total and the specific amounts of explained variance are rather low; likewise the strength of associations – uncontrolled and controlled – between variables in Table 8.3. But as we used multivariate analysis first of all as an approach to control bivariate relationships between variables for the influence of third factors, our main interest is in recurrent patterns of unique influences and associations. Such patterns are particularly informative in comparison to the other type of multivariate analysis (MLR). If the same patterns recur between Tables 8.2 and 8.3 as well as in MLR, one is on rather safe ground in regard to data analysis and interpretation.

The main factors influencing employment changes in both Tables 8.2 and 8.3 are numerical flexibility, the country factor and the degree of unionisation. Table 8.3 has the additional information on how the strength of association changes when controlling for third factors. For example, in the first multivariate analysis (MLR) the two industrial relations variables (collective agreements and employee representations) influencing employment changes on a bivariate level became statistically insignificant when controlling for other influences. The linear probability model shows in Table 8.3 how such a reduction in the importance of variables works: both these industrial relations variables are weakly associated with employment changes (CV=.07) on a bivariate basis, and when they are controlled for third factors, both associations drop down to an insignificant CV=.03. It is this example in particular which demonstrates parallel results, and thus the worth of both multivariate approaches for data control.

The ‘growing’ versus the ‘shrinking’ workplace

Correspondence analysis (CA) will now be used to summarise this detailed information by seeking to identify the characteristics of the ‘growing’ and ‘shrinking’ workplaces in terms of employment. CA presents the data from our LPM in the form of a graphical display of scatter plots mapping the position of

groups of workplaces. To interpret the 'map', four yardsticks will be helpful (cf. Plot 8.1):

1. The focal point (the origin of the plot) is the intersection of the three lines in the plot. This point represents the marginal distribution of our employment variable (V126) and can be interpreted as the position of the 'average' European workplace. (Theoretically, this is the zero position of both dimensions 1 and 2.)

2. The distance of the values of the dependent variables from the focal point is important. The closer a value is located to the focal point, the less it deviates from the average; the further away the value, the more it deviates from the average and points out to a distinctive difference.

3. The direction of the values is defined by three additional reference points. The first point is 'E+', indicating the 'average' 'growing' workplace. The second, 'E-', indicates the 'average' 'shrinking' firm, and the third, 'E0', stands for the workplace with stable employment. The more the values cluster around one of these reference points, the easier they are to be identified as belonging to 'growing', 'shrinking' or 'stable' workplaces.

4. The direction of the values is defined by three additional reference points. For convenience, the plots are divided into three sectors mapping out the combinations of establishment traits that account for employment growth, decrease or stability. The further these traits are from the sectorial borders and the closer to the (imaginary) line from the focal point through the E-reference points, the more unequivocal their contribution to either growth, shrinkage or stability. This might also be expressed the other way around: traits close to the sectorial borders, say close to the line that divides the E+ and the E0 sector, might be interpreted as 'borderline cases' which can be characterised as overrepresenting growing and stable workplaces, but underrepresenting shrinking workplaces. Clear examples are Denmark and Ireland.

Plot 8.1 holds the complete information of the correspondence analysis and is therefore difficult to interpret. To make the results easier to digest, Plot 8.1 is broken down into Plots 8.2-8.5, which appear at the end of the chapter. In all four plots, as can easily be seen, the focal point, the E-positions and the sectors

are alike. They only differ in regard to the independent variables displayed. (In all plots, the independent variables are controlled for third influences).

Plot 8.2 holds the data on numerical flexibility, contract flexibility and functional flexibility. It displays graphically what is already known from the bivariate and MLR analysis: the employment reduction sector is marked by medium and high external numerical flexibility. Not only are the two values located in the E- sector, they are also very distant from our focal point, indicating a very strong influence on employment decreases. When this type of flexibility is absent (NUMFLEX0), these workplaces are to be found in the employment growth sector, albeit close to the stability sector. Intensive contract flexibility (ie the use of part-time and temporary work) is located in the growth sector, and where it is not applied, in the stability sector. Functional flexibility (delegative participation) is more borderline, lying close to the growth and stability sectors and at the same time not far from our focal point, the average establishment. The absence of a policy of functional flexibility (FUNCFLEX0) does not appear in the plot, indicating that it does not significantly contribute to employment changes.

Of the industrial relations variables (Plot 8.3), employee representation and collective agreement coverage (COLLECT1) do not appear either, and for the same reason. Workplaces without collective agreements appear in the employment growth sector, but their close vicinity to the focal point indicates that their contribution to employment growth is not very strong. The degree of unionisation shows a clear pattern: establishments with a non-unionised or a weakly unionised workforce are located in the growth sector, in close vicinity to the sector of employment stability. Organisations with a moderately and strongly organised workforce clearly contribute to employment decrease, although the influence is not overly strong as exemplified by the rather close proximity to the focal point.

The main message of Plot 8.4 is the very strong influence of intensive innovation on employment growth, exemplified by the 'outlier' INNOVAT4. Intensive 'face-to-face' consultation contributes to employment growth as well, but its impact is only moderate.

Finally, Plot 8.5 maps the position of the other structural dimensions: sector, size, status/ownership, and country. The most important contributions to employment reductions come from establishments which are subsidiaries of

EU-firms (V044-3); which are large (size3-3), Portuguese and German. Stability of employment is to be found mainly in non-profit organisations (V046-2), in the trade sector and in Danish workplaces, although the Danish case borders close to the employment growth sector.

The same applies to Irish workplaces, but they are located in the growth sector, close to employment stability. The only outstanding contribution to employment growth comes from establishments which are subsidiaries of non-EU companies. The influence of other structural dimensions remains weak.

One way of summarising the data is to think in terms of the characteristics associated with, respectively, the 'shrinking', the 'stable' and the 'growing' workplace. Again, Plot 8.1, which integrates the information from Plots 8.2 to 8.5, enables an overview assessment. At the risk of repeating ourselves, it suggests that the following, in descending order, are the most important influences:

The 'shrinking' workplace can be characterised by:

1. intensive numerical flexibility;
2. ownership by an EU-based multinational company;
3. a very large workforce;
4. being Portuguese and German; and
5. a highly unionised workforce.

The 'stable' workplace is somewhat 'bleak' in regard to its traits. It is:

1. Danish;
2. operates in the non-profit sector;
3. belongs to the trade sector; and
4. practices functional flexibility (ie delegative participation).

The 'growing' workplace could be described somewhat like this:

1. highly innovative;
2. a subsidiary of a non-EU based company;
3. Irish or Dutch;
4. does not practise numerical flexibility;
5. practises contract flexibility to a moderate extent;
6. is not unionised; and
7. practises 'face-to-face' consultation.

It is at this point that there is a need to remind ourselves that the analysis, even in its multivariate form, cannot completely unravel cause and effect. It may be, for example, that it is the growth in employment of these workplaces which makes the other initiatives possible; for example, the workplace in which employment is growing might have more scope (and need) to offer different forms of contract flexibility.

Interestingly, in this regard, the combination of the dimensions highlighted by the multivariate analysis hints at the significance of the business life-cycle. Many non EU-owned workplaces are more likely to be in the start-up or growth stages of activity. They are also more likely to have been influenced by and have implemented some of the practices of HRM, such as consultation; their employees may have seen little need, in these circumstances, to join trade unions. Many EU-owned workplaces, by contrast, are more likely to be in the stages of business maturity or decline. They are also less likely to have been influenced by and see less scope for introducing some of the practices of HRM such as 'face-to- face' consultation with individual employees. Their employees are also more likely to be long-established members of trade unions.

Comparison and conclusion

Each of the two methods of multivariate analysis used here has its advantages and disadvantages. MLR is said to be statistically more accurate, but allows several options in constructing models and carrying out the analysis. LPM is more generous in its basic assumptions, but has the advantage of producing results that are easier to interpret. Although both approaches differ methodologically, the common overlap of results nonetheless exceeds the differences by a considerable margin. This is the most important point. This makes us reasonably confident that the main findings presented here about flexibility and employment are not just stylised facts but are close to the reality. The adoption of other models and variable coding might have altered the results, but certainly not decisively.

The key results are as follows:

1. The bivariate relationships between the various forms of flexibility, innovation, consultation and employment changes are confirmed after the exclusion of other influences. They confirm that:

- intensive numerical flexibility is very detrimental to employment growth;
- functional flexibility involving the delegation of rights and responsibilities to employees is not strongly related to employment changes – at best it reduces trends towards employment reduction;
- innovation, contract flexibility and 'face-to-face' consultation with individual employees go with positive employment effects.

2. Both methods show that two of the three industrial relations variables negatively related to employment in the bivariate analysis – collective agreement coverage and employee representation – lose their impact after controlling other influences. The negative association between the third variable (a high degree of unionisation) and employment growth nonetheless remains.

3. Both methods confirm the relative unimportance of two of the key structural dimensions, sector and size, although the overlap of results was not as complete as in the cases above. More diversity is revealed in the cases of the ownership and nationality of the establishments.

Chapter 9 Conclusions and Implications

A number of the findings of this report are especially worth repeating in the light of the discussion of the flexibility debate in Chapter 1. The first is that functional flexibility and numerical flexibility do not appear to be mutually incompatible. Admittedly, very few workplaces combine functional flexibility and numerical flexibility intensively, but most practise both to some extent. New forms of work organisation, it seems, can and do take place side by side with the employment reductions that tend to be associated with our measure of numerical flexibility made up of 'downsizing' and a 'back to core business' approach. European workplaces are no different in this regard from their OECD and US counterparts.

Another finding worth mentioning again is that, in terms of employment growth – our measure of functional flexibility – the intensity of direct delegative participation of employees does not appear to have the significance it has been given. Not only is functional flexibility likely to be associated with a reduction in the level of employment in the short term; apparently, it has only a moderately positive relationship with employment in the medium term compared to other initiatives. Indeed, its importance seems to lie more in promoting employment retention than creation. It has only a significant positive effect in combination with contract flexibility, innovation and consultation. Far from being the only path to employment growth, it seems, functional flexibility is not even the main one.

The third finding of note relates to the initiatives that are shown to be positively associated with employment growth. That innovation is so associated is hardly

surprising: it would have been a staggering finding if it had not been. It also confirms the critical importance that the organisational perspective on flexibility places on the role of managers in stimulating innovation in general. The labour market perspective, it can be argued, is far too narrow: policies seeking to promote labour market flexibility are no substitute for those aimed at stimulating innovation.

Less expected is that contract flexibility should appear to make such a positive contribution. In the light of the findings of the European Comission's *Employment in Europe 1996*, however, it is perhaps not so surprising: much of the growth in employment generally has been in part-time and temporary work.

Especially intriguing, as Chapter 7 has argued, is the relatively strong showing of individual 'face-to-face' consultation. Both the policy and scientific debate has tended to prioritise the delegative forms of direct participation at the expense of the consultative. Yet the findings presented here not only suggest that 'face-to-face' consultation enhances the effect of functional flexibility, but also that it has the stronger positive direct impact on employment growth. A reappraisal of the relative significance of consultation as opposed to delegation certainly seems to be called for in the light of these findings. Although the implications of semi-autonomous group work may look very far-ranging when compared to traditional 'Taylorist' work organisation, it may be that the intensive practice of individual consultation is a better indicator of a management that is open to new ideas and willing to learn – one therefore that is more likely to be sensitive to the opportunities for change and adaptation leading to positive employment outcomes.

The fourth finding worthy of comment is consistent with the results of recent research emphasising the importance of 'bundles' or 'clusters' of activities in making for the 'success' of new forms of work organisation. It is that the combinations of flexibility measures, innovation and consultation are especially important for employment growth. Put functional flexibility and contract flexibility together, for example; or contract flexibility and consultation; or contract flexibility and innovation; or innovation and consultation, and the prospects for employment growth are enhanced.

The fifth finding needing emphasis is one of two arising from the multivariate analyses. It is that some of the variables in the dimensions shown to have a negative relationship with changes in the levels of employment in the bivariate

analysis – in particular collective bargaining coverage and employee representation – turn out to be neutral when put into their proper structural context of size and sector etc. It is these other dimensions, in other words, which make the difference.

The second finding from the multivariate analyses, and the sixth overall, relates to the 'clusters' of measures and dimensions associated with workplaces which are 'successful' in terms of employment trends. Growth, the multivariate analyses suggest, is more likely to be associated with highly innovative workplaces which consult with their employees rather than delegate responsibilities, have a moderate amount of contract flexibility and practise numerical flexibility to only a limited extent. Such workplaces are likely to be non EU-owned rather than EU-owned and their employees are marginally less likely to be in membership of trade unions. Employment reductions are associated, above all, with 'downsizing' and a 'back to core business' approach.

Our final comments are reserved for the implications that are in danger of being lost sight of in focusing on any of the individual associations identified in this report. The discussion of the choice between 'high road' and 'low road' work organisation, it seems, is premature if not largely theoretical. The fundamental difference uncovered by the findings presented here is not between workplaces pursuing one or other of these approaches but between those which are 'active' and those which are 'passive'. This is a point already highlighted in the general EPOC survey report, where it was found that the critical difference was not so much between workplaces with and without direct participation; rather was it between workplaces which were 'active' and 'passive' in taking a range of initiatives (eg strategic alliances; product innovation; pursuing a 'back to core business' approach; outsourcing; relying on the introduction of new information technologies and the automation of processes; downsizing and delayering of management structures; working time flexibility and working time reductions). The workplaces which were practising direct participation were more likely to be taking other initiatives and vice versa.

The same conclusion is true, it seems, of employment. It is the 'active', and not the 'passive', workplaces which increase employment. In the case of functional flexibility, contract flexibility, innovation and the consultation of individual employees, and their combinations, the net employment change (ie the difference in the proportion of workplaces reporting an increase/decrease in employment) was likely to be least positive in the 'passive' workplace. Only in

the case of numerical flexibility (ie downsizing/back to core business), not surprisingly, was 'inactivity' favourable from the point of view of employment.

Discussion of 'active' and 'passive' workplaces also takes us back to what was perhaps the key finding of the general EPOC survey report. Bearing in mind the considerable media and policy attention the various forms of flexibility, innovation and consultation have received, the levels reported by the EPOC survey are remarkably low. The respondents, it cannot be emphasised too strongly, are also senior workplace managers, who are extremely unlikely to be guilty of underestimating what is going on. The numbers of workplaces reporting no activity for downsizing/back to core business; outsourcing and subcontracting; working time flexibility, and contract flexibility were 69 per cent, 78 per cent, 63 per cent and 66 per cent respectively; the figures for delegative participation and consultative participation were 42 per cent and 65 per cent respectively. No fewer than 30 per cent also reported no innovation in their products or technology.

At the other extreme, the proportions of workplaces reporting intense activity in any of these areas can only be described as minuscule. In no case does the proportion rise above double figures; the highest is seven per cent for contract flexibility. Typically only five per cent, or one in 20, of workplaces report intense activity. In short, it is not just delegative participation that is rarely practised intensively. The same is true of numerical flexibility, contract flexibility and innovation. Even consultation, which has been shown to have unexpectedly strong effects, is rarely practised intensively. There is, it seems, a yawning gap between the rhetoric of the flexibility debate and the reality of what is happening. To paraphrase the final paragraphs of the general EPOC survey report, it is not so much the promotion of the 'high' road' of work organisation which is the biggest challenge facing European policy makers, but encouraging the practice of some of the most basic forms of 'activity'.

Appendix 1 The EPOC Survey

The EPOC survey, which was commissioned by the European Foundation for the Improvement of Living and Working Conditions, is the most comprehensive review of its kind. A standard questionnaire, translated with the help of industrial relations 'experts', was posted to a representative sample of workplaces in ten EU member countries: Denmark, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the UK. Altogether, some 5,800 managers, from manufacturing and services, and the public and the private sector, responded. The size threshold was 20 or 50 employees depending on country. The respondent was either the general manager or the person he or she felt was most appropriate. The main subject of the questions was the largest occupational group.

In keeping with the conceptual framework developed in its early days (for further details, see Geary and Sisson, 1994), the focus of the EPOC survey was on the two main forms of direct participation, which for the purposes of empirical enquiry can be defined as follows:

consultative participation – management encourages employees to make their views known on work-related matters, but retains the right to take action or not; and

delegative participation – management gives employees increased discretion and responsibility to organise and do their jobs without reference back.

The essence of direct participation can be better understood by contrasting it with the other main forms of involvement and participation listed in Figure A1.1.

Figure A1.1 *Types of involvement and participation*

information disclosure

financial participation
- profit sharing
- share ownership

direct participation
- consultative
- delegative

indirect or representative participation
- joint consultation
- co-determination
- collective bargaining
- worker directors

In contrast with information disclosure and financial participation, ie profit-sharing and share ownership, the key distinguishing features of direct participation are consultation and delegation. Profit-sharing and share ownership may be an integral feature of a participative approach, but they do not necessarily involve consultation or delegation. In contrast with indirect or representative participation, the word *direct* is key; whereas indirect participation takes place through the intermediary of employee representative bodies, such as works councils or trade unions, direct participation involves employees themselves.

Both consultative and delegative participation can involve individual employees or groups of employees. The two forms of consultative participation can be further subdivided. Individual consultation can be 'face-to-face' or 'arms-length'; group consultation can involve temporary or permanent groups. This gives us six main forms of direct participation regardless of the particular label applied. The six forms are set out in Figure A1.2, together with examples of relevant practices from EPOC's research review (Fröhlich and Pekruhl, 1996) and round-table discussions. It is around these types that the EPOC survey's questions were structured.

Figure A1.2 *The main forms of direct participation*

- Individual consultation:
  'face-to-face': arrangements involving discussions between individual employee and immediate manager, such as performance reviews, regular training and development reviews and '360 degree' appraisal;
  'arms-length': arrangements which allow individual employees to express their views through a 'third party', such as a 'speak-up' scheme with 'counsellor' or 'ombudsman', or through attitude surveys and suggestion schemes.

- Group consultation:
  'temporary' groups: groups of employees who come together for a specific purpose and for a limited period of time, eg 'project groups' or 'task forces';
  'permanent' groups: groups of employees that discuss various work related topics on an ongoing basis, such as quality circles.

- Individual delegation:
  individual employees are granted extended rights and responsibilities to carry out their work without constant reference back to managers – sometimes known as 'job enrichment'.

- Group delegation:
  rights and responsibilities are granted to groups of employees to carry out their common tasks without constant reference back to managers – most often known as 'group work'.

Respondents

The EPOC survey was planned to be representative of workplaces in as many countries as the budget would reasonably allow taking into account a range of different populations and geographical positions. The ten countries finally chosen were: Denmark, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the UK. The choice of the workplace as the level and the general manager as the immediate target is explained by the overall aim of the survey, which was to gather as much data as possible about what was happening in practice. A survey directed at higher levels in the organisation was unlikely to have produced such information, and there was some concern that small workplaces in particular might not have a personnel manager. In any event, the general manager was invited to complete the questionnaire him/herself or to pass it on to the manager most capable of doing so.

In targeting managers only, and not employees or their representatives as well, the EPOC survey is open to the criticism that its results are one-sided. Much as the EPOC Research Group would like to have included employee representatives, in particular, in the survey, the costs of doing so proved to be prohibitive. In many workplaces it would have been necessary to get a response from more than one employee representative and in some countries there would also have been enormous complexity in identifying the most appropriate respondent(s).

The omission of employee respondents is perhaps not as much a weakness as it might at first appear, however. The main objective of the EPOC survey was to establish the nature and extent of direct participation. The experience of the European Foundation's survey on *Workplace Involvement in Technological Innovation in the European Community* (Fröhlich, Gill and Krieger, 1993), which involved responses from almost 4,000 employee representatives as well as from an identical number of managers, showed a high consensus on factual issues between both groups of workplace respondents. Also, a unique feature of the EPOC survey was that it did not simply ask about the incidence of direct participation, which managers might have been tempted to exaggerate. Questions designed to estimate the coverage, scope and intensity of the processes involved helped to ensure a balanced picture.

Organisation of the survey

The questionnaire, which is reproduced in full in the general report (European Foundation for the Improvement of Living and Working Conditions, 1997), was initially drawn up in English by members of the research group, with the help of a team from the Industrial Relations Research Unit at the University of Warwick, and was translated by them and trusted experts into the other languages. Tenders to administer it were invited in the Official Journal of the European Union in September 1995. In December 1995, INTOMART, representing GfK Europe, and based in Hilversum (the Netherlands), was commissioned to do the job. With INTOMART's help, the questionnaire was pre-tested in the ten countries in the winter of 1995 and the spring of 1996.

Details of the main survey

The gross sample of workplaces, drawn up by the national GfK members, differed for the ten countries according to population size, the number of employees in industry and services, and the number of workplaces with 20 or more employees (for the smaller and medium-sized countries) and 50 or more employees (for the larger ones). For the larger countries (France, Germany, Italy, Spain, the UK) the gross sample was 5,000 workplaces; for the medium

countries (Denmark, the Netherlands and Sweden) 2,500, and for the smaller countries (Ireland and Portugal) 1,000.

The mailing was carried out in two full waves, including the questionnaire and the accompanying letter, followed by one additional reminder letter. The first questionnaires were mailed in the beginning of June 1996. Because of the varying times of summer holidays, an additional mailing was carried out in certain countries with a lower response rate in October 1996, focusing on particular sectors. The additional mailing used the original representative sample.

Each of the national GfK member institutions drew up the final gross samples for their respective countries. Table A1.1 holds the final gross sample figures, the net samples (gross sample minus 'return to sender'), the number of returned questionnaires and the response rate per country. The response rate in column 4 is based on columns 2 and 3.

From the gross sample of 33,427 questionnaires, 845 (2.5 per cent) were returned to sender by the different postal services either because the address was wrong or unknown, or the addressee had moved to an unknown address, or because the company had ceased to exist altogether. By 15 November 1996, 5,786 questionnaires had been returned and it was on the basis of these that the data analysis took place.

In data analysis, the remaining sample distortions regarding sector and size of the workplace were weighted for each sector/size cell to reflect the original research universe. The sample distortions between countries were corrected by a weighting factor that accounted for the number of employees represented in the data set for each country and the overall size of the workforce in that country.

Assessment of the response

The number of explicit refusals was very low: only about 400 potential respondents indicated that they were not willing to cooperate. On the basis of remarks made by respondents either on the telephone or in the questionnaire, direct participation was regarded as a subject of some importance. In addition, a large number of respondents (47 per cent) responded positively to the question asking if they would like to receive a summary of the results.

Table A1.1 *Sample sizes and questionnaire returns*

	gross sample absolute nos.	net sample absolute nos.	questionnaire returns: absolute nos.	response %
Denmark	2,600	2,535	674	26.6
France	5,028	4,870	598	12.3
Germany	4,954	4,887	826	16.9
Ireland	1,000	984	382	38.8
Italy	3,949	3,849	499	13.0
Netherlands	2,386	2,303	505	21.9
Portugal	1,000	996	298	29.9
Spain	5,062	4,872	460	9.4
Sweden	2,448	2,401	732	30.5
United Kingdom	5,000	4,881	812	16.6
Total	33,427	32,582	5,786	17.8

An overall return rate of 18 per cent was not as high as the Research Group hoped for. It is not out of line, however, with the only comparable cross-national survey of Price-Waterhouse-Cranfield (PWC) carried out in 1991 at company level. Like the EPOC survey, this was a postal survey. Its overall return rate of usable questionnaires was 17.1 per cent, which is almost identical to the EPOC response rate. Table A1.2 compares the results of the two surveys in detail.

Table A1.2 *EPOC and Price-Waterhouse-Cranfield survey response rates*

	EPOC response rate %	PWC response rate %
Denmark	27	19
France	12	15
Germany	17	15
Ireland	39	(not in sample)
Italy	13	10
Netherlands	22	19
Portugal	30	(not in sample)
Spain	9	14
Sweden	31	42
United Kingdom	17	19
10 country average	18	17

(Price-Waterhouse-Cranfield: Switzerland: 16%, Norway 28%)

It will be seen that the EPOC response rates for France, Spain, Sweden and the United Kingdom were below the PWC equivalents. Setting aside Ireland and

Portugal, which were not included in the PWC study, the return rates of the remaining countries were higher in the EPOC survey.

Additional information from similar national surveys is also instructive:

- a German national postal survey on the same topic in the production sector had an identical response rate to that of the EPOC survey: 18 per cent (cf. ISI, 1996).
- an earlier Dutch national postal survey on a similar topic (Muffels, Heinen and van Mil, 1982) had a return rate of 28 per cent which is higher than that of the EPOC survey (22 per cent).
- the EPOC survey's response rate for Portugal (30 per cent) is very high. A similar postal survey carried out by Kovacs, Cerdeira and Moniz (1992) had a return rate of 12 per cent.
- high return rates seem to be the norm in Sweden. The EPOC rate for this country (31 per cent) is below that of the PWC survey (42 per cent), but it approaches the figure (34 per cent) of a recent national postal survey on flexible organisations (NUTEK 1996).

Thus, the return rates for Germany, the Netherlands and Sweden were not out of line with what appears to be the norm for these countries. Taking the PWC study in addition, the rates for France, the United Kingdom and Spain in particular seem to be somewhat below expectations.

Comparable though it may be, an 18 per cent overall return rate raises the question of how far the estimated parameters of interest suffer from a probability bias. In other words, are the workplaces with direct participation underrepresented or overrepresented in the EPOC results? Are the data negatively or positively biased? This issue was investigated recently in a project undertaken by NUTEK, dealing with the spread and functioning of 'flexible organisations' in Sweden in preparation for the G7-summit in France in early summer 1996. The representative survey had a response rate of 34 per cent, which is very close to that of the EPOC survey for Sweden. To evaluate the representativity of the data, telephone follow-ups were made to try to establish the degree of flexibility in non-respondent organisations. The verdict was that, 'the non-response sample seems to have a larger proportion of workplaces defined as a flexible work organisation' as compared to the respondents

(NUTEK, 1996, p.195, cf. also p.198). In other words, the survey results underestimated the extent of flexible organisations in Sweden.

It does not necessarily follow that the same is true of the EPOC results. It simply suggests that underrepresentation is a possibility, as is overrepresentation. There is no reason to believe that the EPOC results are biased one way or the other.

The concept of the largest occupational group

The EPOC survey targeted the largest occupational group (the 'largest number of non-managerial employees at this workplace', in the precise words of the questionnaire). This was done for two reasons: to reduce the complexity of answers required of respondents, and to ensure that answers were characteristic of as many employees as possible. Inevitably, however, focusing on the largest occupational group or LOG raises questions about the relationship between these employees and the workforce as a whole. Especially important when the issue of employment is involved is whether or not it is possible to generalise from the experience of the LOG to the total workforce.

The detailed analysis of the ratio between the LOG and the total number of employees in Table A1.3 shows that, on average, the number of employees in the former is about 62 per cent (mean) of the latter and the frequent ratio (mode) is two-thirds (67 per cent). Overall, in 70 per cent of cases, the LOG stood for 50 per cent or more of the establishment's workforce, and in 30 per cent it represented 76 to 100 per cent of it. Only in five per cent of cases did the LOG account for 25 per cent or less of the total number of employees. In short, it seems not unreasonable to generalise from the experience of the LOG to the total number of employees.

Table A1.3 *Ratio of number of employees in largest occupational group to total number of employees*

mean	62 %
mode	67 %
0 – 25 %	5 %
26 – 50 %	25 %
51 – 75 %	40 %
76 – 100 %	30 %
Total	100 %

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Appendix 2

Further Details of the Multivariate Analysis

Multinomial logistic regression

Given the high number of independent variables and the fact that some of them are ordinal scaled, the suitable statistical model is a regression model for a categorial dependent variable.[1] Therefore some assumptions about the probability distribution of the dependent variable are necessary. The two distribution functions are well known in the literature (see references): the normal distribution and the logistic distribution. Models based on the normal distribution, so called 'probit regression models', are computationally arduous if the dependent variable can take more than two possible values. Usually, the estimated parameters of the probit model do not differ much from those of the logistic model. This and the fact that the parameters of the logistic model are easier to interpret are the reasons that the logistic regression model is used here to estimate the relationship between the various measures of flexibility, innovation and employment.

The dependent variable is EMPLOY. EMPLOY=3 (EMPLOY=1) indicates that the respondent reported an increase (a decrease) in the number of employees within the largest occupational group; EMPLOY=2 indicates that no change of the number of employees was observed by the respondent.

The logistic regression model estimates the effects of independent variables on odds ratios, eg the ratio of the probability that a case belongs to the first rather

[1] According to Long (1997) categorial variables have only few, discrete categories. The measurement level of categorial variables can be nominal or ordinal.

than to the second category of the dependent variable. A logistic regression model based on the assumption that the dependent variable EMPLOY is ordinal scaled (a cumulative logistic regression model) would estimate the effects on the odds that a case belongs to a higher rather than to a lower category of the dependent variable. At first sight, the construction of the employment variable suggests that it should be regarded as an ordinal rather than a nominal scaled variable. Theoretical arguments can be raised against this interpretation of the employment variable. There are at least some independent variables which have to be included in the analysis as dummies, some of which are expected to exhibit non-linear effects on the employment variable, eg, the influence of trade unions on the employment variable is supposed to decrease both probabilities – the probability that a case belongs to category 1 rather than 2 and the probability that a case belongs to category 3 rather than 2. (A strong position of trade unions would serve the interest of the 'insiders', aggravating dismissals of employees. At the same time it would reduce the chance that the firm hires new workers.) It is not possible to account for the possibility of such bi-directional effects in a model with an ordinal scaled dependent variable, as the latter is based on the assumption that the direction of the effect of an independent variable does not depend upon the value of the dependent variable and is either invariably positive or invariably negative. As the independent variables are either ordinal scaled or dummy variables, it is not possible to account for such asymmetric effects by suitable transformations of the independent variables in a sensible way. Hence, the statistical model fitted to the data is a multinomial logistic regression model, estimating effects of independent variables on the dependent variable with three unordered categories.

The logistic regression model estimates the effects of independent variables on odds ratios, eg: the ratio of the probability that a case belongs to the first rather than the second category or that a case belongs to the third rather than the second category of EMPLOY. It follows that a certain category of the dependent variable has to be chosen as the category of reference. Although technically it does not matter which category is taken as the category of reference, it seems reasonable to choose EMPLOY=2 (no changes).

The estimated parameters show the impact of a certain independent variable on the odds that a case belongs to the first (or to the third) category of EMPLOY. Referring to Table A2.1, the odds that a case belongs to the first category EMPLOY=1 rather than to the reference category decreases by the factor 0.56 if the case belongs to the first country C1 (C1 is a dummy variable for Denmark).

At the same time, the odds that an establishment in Denmark belongs to the third rather than to the reference category increases by the factor 1.8. Since the associated probability (also shown in Table A2.1) is lower than 0.05 in both cases, both parameter estimates are significant at the 5% level.

Some test statistics following Table A2.1 show how well the estimated model fits the data. Given these estimated parameter values for all the independent variables, it is possible to calculate the probabilities that a case belongs to the first, second, or third category of EMPLOY. If we assign to every case that category of EMPLOY for which the estimated probability is highest, we can compare the predicted with the actual outcome in the table of the predicted versus the observed cases. For example, of the 940 cases which belong to the first category, only 456 are predicted correctly; 356 (128) cases are predicted to belong to the second (third) category. In the best case only the diagonal elements of the table should depict values different from zero. The larger the deviation from this ideal table (ie: the higher the off-diagonal figures are), the weaker the model-fit. The fit of the model in question is not too good: Only 1814 out of the 3490 cases appear on the diagonal of the table and are predicted correctly.

The improvement of the Log-Likelihood compares the predictive success of a reference model with the predictive success of the estimated model. The reference model predicts the category of EMPLOY for every case according to the marginal distribution of the variable EMPLOY, with the probabilities 0.269, 0.413 and 0.318 for EMPLOY=1, EMPLOY=2 and EMPLOY=3, respectively. The Log-Likelihood improvement can take values in the range of 0.00 to 1.00, higher values indicating a better model-fit. The theoretically possible value 1.00 must be seen as unrealistic because it will never materialise in real analyses. An improvement of 0.2 or better can be regarded a good fit.

The MLR results in detail

The *dependent* variable is EMPLOY with the following values:

EMPLOY=1 employment reduction, decrease
EMPLOY=2 stability of employment
EMPLOY=3 employment increases, growth

The *independent* variables are:

FUNCFLEX - intensity of delegative participation/functional flexibility (value range 0-4)
NUMFLEX - intensity of external numerical flexibility (value range 0-2)
CONTFLEX - intensity of internal numerical (contract) flexibility (value range 0-2)
INNOVAT - intensity of innovation (value range 0-4)
CONSULT - intensity of systematic 'face-to-face' consultation (value range 0-4)

Additional independent variables (structural and context variables):

SIZE3: - size of establishment (value range 0-4)
SECTOR - economic sector (dummified as SECTOR1, SECTOR2, SECTOR4, SECTOR5; SECTOR=4, ie the trade sector, serves as the category of reference)
COUNTRY - the ten countries (dummified as C1 to C9, COUNTRY=10, ie the UK, serves as the category of reference)
COLLECT - establishment is bound by collective agreement (dummified as COLLECT)
UNION3 - degree of unionisation (value range 0-4)
ER - establishments with employee representatives (dummy)
VO44 - status of ownership, dummified as
VO44D2 = owned by domestic company
VO44D3 = owned by EU-based company
VO44D4 = owned by non EU-based company
VO44 = 1 (totally independent) serves as the category of reference
VO46 - establishment belongs to the profit-sector (dummy)

Table A2.1 *All estimates of the multinomial logistic regression model – the values marked by an asterix are statistically significant at the 5% level*

	EMPLOY=1		EMPLOY=3	
	exp(b)	Prob.	exp(b)	Prob.
INTDDP	,856055*	,002881	1,027045	,567920
EXTNUM	3,227250*	,000000	,602091*	,000000
CONTFLEX	1,138698	,086442	1,681106*	,000000
INNOVAT	,991270	,839064	1,201964*	,000004
XINTFACE	,920746	,125723	1,160507*	,001179
SIZE3	1,299555*	,001609	1,311348*	,000550
SECTOR1	1,304316	,146746	1,035998	,830531
SECTOR2	1,620587*	,018660	,989929	,958760
SECTOR4	1,135889	,491593	1,086633	,611047
SECTOR5	,846832	,426721	,824806	,301896
C1	,560440*	,012183	1,802866*	,002578
C2	1,443654	,075557	1,179655	,395127
C3	1,877793*	,000743	1,019705	,914813
C4	,786923	,381127	2,147360*	,000426
C5	1,921070*	,002714	1,943461*	,001033
C6	,953632	,819307	1,060530	,752100
C7	1,615001	,070572	1,153876	,573946
C8	3,063658*	,000001	1,416399	,104222
C9	1,287865	,178691	2,013480*	,000157
ER	1,166810	,260129	,957124	,711502
COLLECTD	1,000313	,998395	,797965	,090768
UNION3	1,332524*	,000003	,874032*	,015439
V044D2	,930188	,484276	,833912	,059456
V044D3	1,334823	,054401	1,053074	,717593
V044D4	1,286625	,259017	1,361617	,126076
V046	,863148	,244805	,931252	,528073
CONST.	,106526*	,000000	,401616*	,001102

- effective sample size: 3490
- distribution of EMPLOY

VALUE	FREQ	PERC
1	940	26.9
2	1441	41.3
3	1109	31.8
Total	3490	100.0

predicted versus observed cases:

VARIABLE:	EMPLOY			
Outcome:		OBSERVED		
PREDICTED	1	2	3	TOTALS
1	456	229	127	812
2	356	874	498	1728
3	128	338	484	950
TOTALS	940	1441	1109	3490

log-likelihood improvement:

-2 Log-Likelihood / Estimated Model	6761.321
-2 Log-Likelihood / Constants only	7745.217

Improvement:

Chisq	DF	F-Prob.	Reduction.
953.722	52.000	.000	.124

Table A2.2 *Summary overview of nine multinomial logistic regression models to assess the Log-Likelihood (LL) improvement of each independent variable (statistically significant variables only)*

Variable:	LL-improvement without variable	LL-improvement of the total model	difference
FUNCFLEX	0.122	0.124	-0.002
NUMFLEX	0.063	0.124	-0.061
CONTFLEX	0.103	0.124	-0.021
INNOVAT	0.120	0.124	-0.004
CONSULT	0.121	0.124	-0.003
SIZE3	0.122	0.124	-0.002
COUNTRIES	0.102	0.124	-0.022
SECTOR1	0.121	0.124	-0.003
UNION3	0.118	0.124	-0.006

Note on table A2.2: In each model one of the nine independent variables was omitted to assess the change of value of Log-Likelihood reduction due to this independent variable. The variable omitted in each analysis is listed in the first column under 'variable'.

The linear probability method

Underlying LPM is a linear regression model in which interval and nominal variables can be entered as independent and as dependent variable. In our case, the dependent variable Y (EMPLOY) is of nominal level, and the model is a multivariate linear regression model. Y is conceived as a set of dummy variables with one dummy variable Yj for each category. Yj is 1, if the respondent/workplace belongs to category j, and zero if it does not.

On the predictor side of the model, nominal variables are used. The nominal predictors are dummified in the same way as Y. It is assumed that in the regression equation each error term is normally distributed with an expectation of zero and a variance that is the same for all error terms (assumptions of normality and homoscedasticity).

The variables in the model are the same as in the MLR analysis described above. The computer programme used is called RENOVA (Regression Analysis with Nominal Variables), developed by Lammers and Pelzer (1992).

A part of the output of the RENOVA program – the explained variance and the (comparison of) uncontrolled and controlled bivariate relations is presented in Chapter 8 (Tables 8.2 and 8.3). Another part of the output of this type of regression analysis consists of so called 'controlled' contingency tables. In these controlled tables the column-percentages are cleared from influences of all the other attributes. These controlled contingency tables are the input for the correspondence analysis, described below. A detailed description of the linear regression model and RENOVA is given by Lammers and Pelzer (1992).

Correspondence analysis

Like MLR, correspondence analysis is a statistical technique for analysis of nomial data. However, a disadvantage of MLR and other loglinear regression techniques is that the parameters in the output are difficult to interpret, making it less attractive to many researchers and other users of empirical data. Correspondence is a suitable alternative. The results of correspondence analysis are visualised in a graphical display which, even in case of complex contingency tables, permits rapid interpretation and understanding. The graphical display makes possible that we see at a single glance the way the data are related to each other, and we more easily see regularities such as patterns and profiles in the data. A further advantage of CA compared to other visualisation techniques is that the only output are pictures that contain all the information in the data. There is no loss of information between the data and the graph. CA neither models nor summarises the data, 'it expresses the data in a different format which communicates the information in a different way' (Greenacre, 1993, p. 4-5).

Normally, CA is based on bivariate contingency tables: in our case, for example, employment (change) by country, by sector, by functional flexibility, etc. What these contingency table(s) – and hence the CA based on it – would not reveal, is whether and to what degree the relations between employment (change) and the other variable(s) in the table are influenced by other workplace and/or possible relevant contextual factors. After all, we want to know what the relation is between eg 'size of the workplace' and employment (change), cleared from the influences of other variables. There are several ways by which these controlling

procedures can be realised. We chose a method based on linear regression analysis described in the former section.

Having constructed all the controlled contingency tables of employment change by each of the other variables in the model, we used these tables in the CA. Instead of performing a standard CA on each of the controlled tables apart, we applied a specific version of CA called 'composite' CA (Israel, 1987). Composite CA is especially suited for situations like the one we had, where the relation of a single variable with a number of other variables is studied.

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European Foundation for the Improvement of Living and Working Conditions

Findings from the EPOC Survey – (Employment through Flexibility – Squaring the Circle?)

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Employment through Flexibility – Squaring the Circle?

The 1990s have seen a strong revival of the debate on work organisation and how to achieve the optimal input from the workforce, in particular, through direct employee participation. Within the European Union, the European Commission, the social partners and governments of the Member States began an intensive debate on the need for structural adjustment, which became increasingly urgent as Europe slipped into its worst post-war recession.

The Foundation's EPOC Project (**E**mployee Direct **P**articipation in **O**rganisational **C**hange) has, over the past few years, examined the various European experiments in direct participation. The earlier research in this project identified an information gap in what we know about practices in European workplaces. What is the extent of direct participation? What form does it take? Why does management introduce direct participation? What are the economic and social effects? To what degree can employees influence the organisation of work or control their working environment? What are the sectoral differences?

To answer these and other questions the Foundation undertook a postal survey of European workplaces during the summer and autumn of 1996, and the results of this survey were published in 1997. The survey covered all business sectors and included a range of questions on the effects of direct participation on employment levels and workplace flexibility. It also covered different approaches to innovation in the establishments surveyed.

This book is the result of the analysis of the data in the EPOC survey pertaining to the effects of direct participation on employment levels, and how these relate to aspects of workplace flexibility such as downsizing, part-time work or the consultation of workers, as well as to the level of product and process innovation in European enterprises.

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