

VALUE CHAIN RESTRUCTURING

Value chain restructuring in Europe in a global economy

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1 Introduction

It is generally agreed that major upheavals are taking place in the organisation of work as corporate structures are transformed in the context of economic globalisation and rapid technological change. But how can these changes be understood? And what are the impacts on social institutions and on workers? The 'Work organisation and restructuring in the knowledge society (WORKS)' project was funded by the European Commission in 2005 under its 6th Framework Programme to investigate these questions. With partners in seventeen different institutes in fourteen EU Member States, this ambitious research project has combined theoretical work and a detailed analysis of a wide range of statistics with in-depth case studies to analyse the forces that shape these changes, including global value chain restructuring and the policy environment.

One of the underlying assumptions of the WORKS project is that the reorganisation of work can only be understood fully in the context of a global restructuring of value chains, entailing a simultaneous decomposition and recomposition of sectors, organisations, labour processes and skills. However, the considerable heterogeneity within Europe of skill supply, levels of employment, welfare systems, and economic sectors makes it especially difficult to disentangle the causes and effects of such processes and to isolate the primary drivers of change. Yet it is particularly important for Europe both to understand the factors that will enable firms to sustain their competitive edge, to ensure a future supply of jobs that is satisfactory both quantitatively and quality and to examine the impact of these changes on the quality of life. At the heart of this is a single issue: how are employment practices adapting to change and with what effect? If we can answer this more effectively on a Europe-wide basis we will be able to propose practical solutions to real problems.

Starting in June 2005, the WORKS consortium, involving partners from seventeen different institutes across fourteen EU member states, carried out an ambitious programme of theoretical and empirical work. This was carried out under five main pillars: 'theories and concepts', 'quantitative research', 'policy', 'qualitative research on organisations' and 'qualitative research on individuals'. The work of these pillars is summarised more fully below.

This is one of eleven thematic reports that brings together the results of all five pillars to deepen our insights into the topic of global value chain restructuring in Europe in a global economy.

The other reports will focus on the topics of: workers' representation and participation in the framework of industrial relations and social dialogue; strategies to reach flexibility in the organisation; skills and qualification policies and HRM; new career trajectories and biographies; changing gender and ethnic relations in the workplace; working time, gender and work-life balance; change processes and future perspectives; changes in work in tran-

sitional economies; health, safety and the quality of working life; and employers' use of technology and the impact on organisational structure.

The material on which this report draws is summarised below.

1.1 Theories and concepts

In the first stage of its work the WORKS partners collectively carried out a review of the very large body of literature with relevance to the project's research questions, in order to map the field, formulate hypotheses to be tested in the empirical work and develop a clear conceptual framework for the research. This was no easy task. There are many lenses through which one can view the restructuring of work in a global knowledge economy. There are the lenses of different academic disciplines, for instance the sociology of work, economic geography, organisational theory, social psychology, ethnography, gender studies, industrial relations or political science. Then there are the lenses of different social perspectives, for instance those of international development agencies, of national governments in developed and developing countries, of technology providers, of statisticians, of employers, of trade unions, of educators, of civil society, of skilled professional workers who are may be beneficiaries of change, and of those groups that are potential losers. There are also differences deriving from different national research traditions, different ideological approaches and many other variables. In each of these many fields, a body of literature has grown up, trying to make sense of the changes taking place and supplying fragments of evidence. Piecing all this evidence together was a major challenge. The very disparity of the origins of this literature means that it is difficult to find a common frame of reference. Even when the same terms are used, they may be used with different meanings and the lack of commonly-agreed definitions can make the refracted pieces of evidence difficult to compare, often giving them a contradictory and anecdotal character.

Nevertheless, in its first six months, the project managed to bring together in a single report (Huws, 2006d) a remarkably comprehensive overview of the available evidence, thanks to the large collective efforts of the interdisciplinary WORKS team. This evidence was carefully sifted with the aim of distilling insights that could help to produce a clear conceptual framework in order to develop hypotheses and research questions to guide the empirical research to be undertaken by the WORKS project. This programme of work was, however, highly ambitious, encompassing the aims of: improving our understanding of the major changes in work in the knowledge-based society, taking account both of global forces and of the regional diversity within Europe; investigating the evolving division of labour within and between companies and the related changes at the workplace; exploring the implications for the use of skills and knowledge, for flexibility and for the quality of working life; and examining the impact on occupational identities; time use and learning; as well as the impact on the social dialogue and the varieties of institutional shaping. Balancing the need to take account of these many dimensions whilst still retaining a focus on clear research questions that could be addressed feasibly within a coherent research design in a relatively short space of time was a major challenge, and we begin by presenting the methodology that was adopted to achieve this.

The first task was to achieve a division of labour that on the one hand took full advantage of the specialist subject expertise of partners whilst also recognising the diversity of national research traditions across Europe and the need to take account of the literature in

all major European languages. Once topics had been assigned to partners, these partners were asked to produce a list of 'key concepts' for inclusion in a glossary.¹ The purpose of the glossary was to ensure that all partners could share a common understanding and make visible any differences of interpretation or definition of key terms so that they could be discussed and agreed, in a process whereby, in its contribution to the cohesion of the whole group, the dialogue involved in producing the entries was as valuable as the end result. The next stage involved the production of draft reports covering the main concepts and the associated literature. Despite the authors' broad knowledge of their chosen topics, and the fact that each report included inputs from institutes in more than one country, it was felt that the only way to ensure that each report covered the full range of relevant European scholarship was to add a further, vital stage in the work. This involved circulating each draft report as it was completed to all the other WORKS partners, including those who had not been involved in the actual process of report-writing. In this stage, partners were asked to draw on their knowledge of the literature in their own language or national setting, as well as their specific subject knowledge, to comment on the reports, point to issues that might be regarded as contentious and add references to relevant sources. This process of peer review enriched and refined the synthesis report which was then used by all partners as an input to the development of research questions, methodologies and research instruments for the empirical research.

1.2 Quantitative research

The 'quantitative research' pillar of the WORKS project studied the changes in work in Europe on the basis of comparative analyses of data from existing organisational and individual surveys. In a first step, major European organisation surveys and individual and household surveys relevant for changes in work were mapped and benchmarked in order to assess their relevance and their strengths and weaknesses for comparative analyses on changes in work. Next, and more important for the thematic reports, the research focused on the secondary analysis of the results of the organisation and individual/household surveys. For the organisation surveys, a thematic analysis of thirteen major national and international organisation surveys, focusing on the major results with respect to the key issues of the WORKS project, resulted in an overview report 'Comparative analysis of organisation surveys in Europe' (Ramioul & Huys, 2007). The key issues addressed in this report are:

- new forms of work organisation, organisational and technological innovation and changes in work. Here in particular some findings with respect to skill-biased organisational change and the role of employee involvement and participation are relevant;
- changes in skills and qualifications and vocational training policies at establishment level;
- work-life balance and working time arrangements. Here conclusions from EU wide research on working time arrangements and flexibility policies are of particular interest;

¹ Available online on http://www.worksproject.be/Glos_and_defint.htm.

- quality of the working life as measured in organisation surveys.

For each of these issues, the most relevant conclusions from the organisation surveys were summarised, leading to a comprehensive overview of organisational changes in Europe based on this particular data source.

For individual surveys, three major sources of individual and household data made it possible to carry out longitudinal and EU comparative analysis on the issues relevant for the WORKS project: the Community Labour Force Survey (CLFS); the European Working Conditions Survey (EWCS) and the European Community Household Panel (ECHP). Based on these three key data sources, four different reports were published, each focusing on the EU comparative analysis and on the identification of trends with respect to key WORKS issues. These reports focused on the following issues:

- tracing employment in business functions: a sectoral and occupational approach: in this report an innovative method was used to measure changes in employment related to value chain restructuring (Geurts, Coppin & Ramioul, 2007). This is discussed more fully in Chapter 5;
- trends in work organisation and working conditions. For this report, three waves of the European Working Conditions Survey were analysed in a longitudinal and EU comparative perspective, shedding light on changes in task complexity, autonomy, working time independency, health and safety issues and working conditions (Greenan, Kalugina & Walkowiak, 2007);
- work flexibility in Europe: a sectoral and occupational description of trends in work hours, part-time work, temporary work, and self-employment was carried out based on the Community Labour Force Survey (Birindelli & Rustichelli, 2007);
- occupational change in Europe aspects of work satisfaction, occupational mobility and overqualification were investigated based on longitudinal data, (Brynin & Longhi, 2007).

1.3 Qualitative research on organisations

The organisational case studies within the WORKS project covered a number of generic business functions that represent a wide variety of activities and labour processes in the 'knowledge society' ranging from highly skilled 'knowledge work' to semi-skilled manual tasks. The selection of cases and research methodology is described in greater detail in Chapter 4.

1.4 Qualitative research on individuals

The organisational case studies were complemented by case studies designed to investigate the impacts of changes at work on individuals and their households. Thirty of these occupational case studies were achieved in fourteen countries, between June 2006 and May 2007. In total 246 in-depth individual interviews were carried out, according to common interview guidelines elaborated in May 2006.

These occupational case studies are closely related to the organisational case studies that were carried out in a selected number of business functions, over the same period. In

the WORKS project, the concept of the 'business function' lies at the core of the qualitative empirical research, since these business functions provide the most useful unit of analysis for studying value chain restructuring and changes in work. In order to study changes in work at the individual level, individual workers were selected within specific occupational groups linked to key business functions.

Six occupational groups were selected: designers in the clothing industry; researchers in information and communication technology; IT professionals in software services; production workers in food and clothing; logistics workers in food and clothing; front office employees in customer relationships in public services. In each occupational group, three to seven case studies were conducted in selected countries, covering a variety of socio-economic and institutional contexts. Each case study relied on seven to nine in-depth individual interviews, including a biographical dimension.

The analysis of the interviews was structured around five themes that grouped together the WORKS research questions. These were: career trajectory, occupational identity, quality of work, knowledge and learning, and work-life balance.

Particular attention was paid to gender issues. Gender was treated as a transversal theme in the analysis of changes in work at the individual level. The principle of gender mainstreaming (*i.e.* taking systematically into account the differentiated experiences of men and women in all items of data collection and analysis), formed one of the basic guidelines for the individual interviews.

1.5 The policy pillar

A central task in WORKS is to examine what effect policy initiatives and regulation at various levels - international, European, national, regional, sectoral and company - actually have on work life and work experience. Especially relevant in this regard is the role of institutions in the determination, implementation and enforcement of policy. We began with the question: Can we expect divergences in the ability to regulate changes in work due to restructuring according to different types of production or employment regimes, different types of industrial relations models, diverse institutional frameworks? Toward this end, all of the organisational case studies included a section on industrial relations and regulation of work. Within each company that was investigated, data was collected on the forms that worker representation took, which issues were negotiated, the role of workplace representation in restructuring (information, consultation, active intervention), the impact of European or national regulations, and the pressures on regulations and institutions due to restructuring. Additional interviews with trade union representatives and works councillors were carried out where possible.

The research aim motivating this line of inquiry was to examine what role the institutions and actors of industrial relations play in restructuring across value chains in diverse settings and across diverse institutional contexts. A further issue is what role workers' representatives have in tempering the effects at the workplace that result from this restructuring, including the terms and conditions of employment, fragmentation and segmentation, gender equality, training and skilling, and quality of work life. Existing studies have shown that existing institutions and forms of social dialogue pose major challenges for dealing with current trends in restructuring and changes at work. There-

fore, the case studies also investigated the impact of restructuring on the strategies or effectiveness of workers' representation and workers' voice.

1.6 Other inputs

Because the concept of the value chain played such a central role in the design of the WORKS project, the work in this field has also drawn on both formal and informal processes of peer review and dialogue with experts in the field. Formal input included papers from academic experts and policy stakeholders from both inside and outside the EU, who attended the WORKS conference in Chania in September 2006 as well as a WORKS workshop on measuring the employment effects of value chain restructuring, held in Leuven in March 2008. The attendance at this workshop of representatives from national statistical offices in the EU and the USA was of particular value here. The project has also benefited from ongoing discussions in other forums, such as the OECD as well as from helpful comments on its work in process by academic researchers from around the world. Finally, the report draws on helpful feedback received on a draft version from external experts who acted as discussants at the concluding WORKS conference held in Rome in October 2008, at which its main conclusions were presented.

2 The historical roots of the concept of the value chain

URSULA HUWS

2.1 Underlying concepts

The concept of the value chain is rooted in some very old theories dating back to the Enlightenment and the beginnings of economics as a discipline in the 18th Century. It links together three crucial concepts, all of which can be found in the work of Adam Smith (1776). These are the concept of the *division of labour*, the concept of the *theory of value* and the concept of *comparative advantage*. In the 19th Century, all of these theories were refined by David Ricardo (1817) and the first two developed further by Karl Marx (1867).

Smith, in introducing the concept of the division of labour, speaks of 'great manufactures ... destined to supply the wants of the great body of the people' being broken down into 'branches' which may be geographically spread, making the division of labour 'not near so obvious' and 'less observed' than if it all takes place in a single 'workhouse'. Giving the example of pin manufacture, he speaks of the 'business' being broken down into 'trades' which in turn involve the performance of several different 'operations', some of which may be performed by several different 'hands'. Such a division of labour is always, in his view, accompanied by an increase in productivity.

'The division of labour, however, so far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labour. The separation of different trades and employments from one another seems to have taken place in consequence of this advantage.' (Smith, 1776: Book 1, Chapter 1)

Three reasons are adduced for this: the greater dexterity of a highly specialised worker, the saving of time that would otherwise be spent in transition from one activity to another, and technologies which 'facilitate and abridge labour and enable one man to do the work of many' (*ibid.*).

The value which is added by any given worker, or group of workers, in this process is also explicitly discussed by Smith, as is the need for managerial control of the work force,

'The value which the workmen add to the materials, therefore, resolves itself ... into two parts, of which the one pays their wages, the other the profits of their employer upon the whole stock of materials and wages which he advanced. He could have no interest to employ them, unless he expected from the sale of their work something more than what was sufficient to replace his stock to him; and he could have no interest to employ a great stock rather than a small one, unless his profits were to bear some proportion to the extent of his stock.' (*ibid.*: Book 1, Chapter 6)

Smith is clear that the value of a final product is not just constituted by the added value of each stage of the manufacturing process but also includes value added by inputs of services: 'In the price of flour or meal, we must add to the price of the corn, the profits of

the miller, and the wages of his servants; in the price of bread, the profits of the baker, and the wages of his servants; and in the price of both, the labour of transporting the corn from the house of the farmer to that of the miller, and from that of the miner to that of the baker, together with the profits of those who advance the wages of that labour.' (*ibid.*: Book 1, Chapter 6)

Smith also explicitly links the division of labour to regional competitive advantages (such as the presence of raw materials, a climate suitable for certain crops, proximity to rivers and ports, *etc.*) and, hence, concludes that, since it is only trade between regions that can deliver the full advantages of the division of labour 'the extent of the division must always be limited by ... the extent of the market' (*ibid.*: Book 1, Chapter 3). He also notes the differences in wages and other costs between regions (*ibid.*: Book 1, Chapter 10, Part 1) and even the ways in which regional differences in labour costs may be affected by public policy.

'The policy of Europe, by not leaving things at perfect liberty, occasions other inequalities of much greater importance. It does this chiefly in the three following ways. First, by restraining the competition in some employments to a smaller number than would otherwise be disposed to enter into them; secondly, by increasing it in others beyond what it naturally would be; and, thirdly, by obstructing the free circulation of labour and stock, both from employment to employment and from place to place.' (*ibid.*: Book 1, Chapter 10, Part 2)

Ricardo refined this theory of comparative advantage to show that it is the *relative* cost advantage rather than the *absolute* one that makes it profitable to introduce an international division of labour.

'Under a system of perfectly free commerce, each country naturally devotes its capital and labour to such employments as are most beneficial to each ... It is this principle which determines that wine shall be made in France and Portugal, that corn shall be grown in America and Poland, and that hardware and other goods shall be manufactured in England ... If Portugal had no commercial connexion with other countries, instead of employing a great part of her capital and industry in the production of wines, with which she purchases for her own use the cloth and hardware of other countries, she would be obliged to devote a part of that capital to the manufacture of those commodities, which she would thus obtain probably inferior in quality as well as quantity.' (Ricardo, 1817: Chapter 7)

In Ricardo's view, however, there were powerful disincentives to taking full advantage of the lower comparative costs of production in other countries, resulting from cultural factors and the political precariousness of trading in foreign lands.

'Experience, however, shows that the fancied or real insecurity of capital, when not under the immediate control of its owner, together with the natural disinclination which every man has to quit the country of his birth and connexions, and intrust himself with all his habits fixed, to a strange government and new laws, checks the emigration of capital. These feelings, which I should be sorry to see weakened, induce most men of property to be satisfied with a low rate of profits in their own country, rather than seek a more advantageous employment for their wealth in foreign nations.' (*ibid.*: Chapter 7)

Here we have in a nutshell a model which is still highly relevant for the analysis of corporate sourcing strategies. 'Businesses' are broken down into separate 'trades' or 'branches' (which might also be termed 'functions' or 'processes') which are in turn sub-

divided into 'operations' (which might also be termed 'subprocesses' or 'tasks') which may in turn be carried out by different specialist 'hands' (or 'workers') using specific labour processes. The more specialist this division of labour is, and the more it can be automated, the greater is the value that is added in any given 'operation'. Provided that constraints on the movement of capital can be resolved and markets are able to operate freely, it is profitable to introduce a spatial dimension to this division of labour so that advantage can be taken of the comparative cost advantages of particular regions. All these interconnected processes which contribute to the whole business (which can be called a 'value chain') have to be centrally managed by what Smith calls 'the employer' (but which might also be called the 'enterprise', 'firm', 'corporation', *etc.*) in a process which might now be called 'value chain governance'.

We can also date back to the 18th Century another important group of concepts, in the work of Francois Quesnay, in France, who developed the idea of a national economy as consisting of the sum of *flows* of *inputs* and *outputs* of goods and services traded between industries and produced a prototype flow table for the French economy (Quesnay, 1758), a remote ancestor of the input-output tables which now form part of the national accounts of most countries.

This concept of flows is also extremely useful for modelling the inter-relationships between different units in the division of labour: each unit can be seen as receiving *inputs* (in the form of raw materials, goods or services), either from an external source or from another unit within the business to which it *adds value* before transmitting it in the form of an *output* either to another unit or to an end customer.

In order to produce this model, Quesnay analysed the economy using a *functional* approach, distinguishing between activities that produced value (in 'the productive sector') and those that did not (in 'the sterile sector') and breaking down the population into generic *classes*. Three basic groups are identified: farmers, landlords and artisans, but the division of labour in his model introduces additional categories: labourers, who add value by making inputs of labour, and merchants, who provide the means to make inputs of foreign goods and raw materials. These groups are *generic* in the sense that they are defined only in terms of their function in the economy, not in terms of the particular products or services they grow, make or trade in, or the types of property from which they receive rent.

The concept of *classes* defined in terms of their functions in the economy was developed further by Karl Marx, who also developed further the *theory of value* found in a simpler form in Smith and Ricardo. Marx also adopted a functional approach to his analysis of the division of labour and insisted on the contributions to the production of value of all those workers, whether manual or non-manual, who are involved in any way in the production of any given commodity: '... the different labour capacities which cooperate together to form the productive machine as a whole contribute in very different ways to the direct process by which the commodity, or, more appropriate here, the product, is formed, one working more with his hands, another more with his brain, one as a *manager, engineer* or technician, *etc.*, another as an *overlooker*, the third directly as a manual worker, or even a mere assistant, more and more of the *functions of labour capacity* are included under the direct concept of *productive labour*, and their repositories under the concept of *productive workers*' (Marx, 1861: 64 - emphasis in the original).

The functional differentiation here is much greater than in Quesnay (not least, perhaps, because of the technical advances in production that had taken place in the meanwhile), but the functions are nevertheless described in *generic* terms.

At the end of the 19th Century, a functional approach to the analysis of the division of labour was taken in new directions by Frederick Taylor, for whom it played a crucial role in the development of his 'principles of scientific management' (Taylor, 1911). Unlike Marx, Taylor believed that: 'the fundamental interests of employees are [not] necessarily antagonistic ... the true interests of the two are one and the same; ... prosperity for the employer cannot exist through a long term of years unless it is accompanied by prosperity for the employee and *vice versa*'.

Nevertheless, Taylor, like Smith before him, also emphasised the importance of managerial control of the work force.

A clearly defined division of labour was fundamental to achieving the improvements in productivity he sought: 'the management must take over and perform much of the work which is now left to the men; almost every act of the workman should be preceded by one or more preparatory acts of the management which enable him to do his work better and quicker than he otherwise could' (*ibid.*: Introduction).

For Taylor, the basic unit of analysis was the *task*. Indeed, he went so far as to say that 'every single act of every workman can be reduced to a science' (*ibid.*: Chapter 2).

'Perhaps the most prominent single element in modern scientific management is the task idea. The work of every workman is fully planned out by the management at least one day in advance, and each man receives in most cases complete written instructions, describing in detail the task which he is to accomplish, as well as the means to be used in doing the work. And the work planned in advance in this way constitutes a task which is to be solved, as explained above, not by the workman alone, but in almost all cases by the joint effort of the workman and the management. This task specifies not only what is to be done but how it is to be done and the exact time allowed for doing it.' (*ibid.*: Chapter 2)

Whilst it is questionable to what extent these principles can in fact be applied to all types of economic activity, Taylor's ideas were enormously important in laying the foundations for several further streams of academic research later in the 20th Century, including what came to be known as management science, and elements that were later incorporated into the sociology of labour.

2.2 The value chain concept in the analysis of organisational structures and business processes

Taylor's concept of scientific management and his functional approach to the analysis of work processes can be seen as underlying many of the concepts developed further in the analyses of the Parsonian school of organisational analysis in the 1950s (*e.g.* Parsons, Bales & Shils, 1953; Baker & Davies, 1954) which also drew on the work of Max Weber (1922) on the nature of bureaucracies and of Emile Durkheim (1893) on the division of labour, to study *differentiation* and 'adaptive upgrading' in organisations using what is known as a *structural functionalist* perspective.

In another approach to analysing organisational structures, during the same post-war period, the concept of 'flows' was also developed beyond manufacturing industries, especially in analyses of continuous process industries that literally involve the 'streaming' of

products to their customers (Lorenzi, Pastré & Toledano, 1980; Schméder, 1984; Morvan, 1985). Examples of such industries are oil, energy, nuclear power and micro-electronics. In flow industries, technology plays a key role in the definition of the value chain. Typically, these new 'post-world war II' value chains do not the shape of a sequential chain, but a treelike structure: starting from the head of the chain (for instance the site of oil extraction), the product is distributed in a branchlike way to different sectoral areas (for instance from the oil refinery into petro-chemicals, pharmaceuticals, agro-chemicals, *etc.*), and each branch of the chain also diversifies into several subchains, which can interact with each other. Nowadays, the biotechnology value chain seems to follow this model, which is rather distinct from sequential manufacturing value chains.²

The concept of the *commodity chain* is also important in World Systems Theory, where it is linked to the concept of the international division of labour. Wallerstein (1974), generally regarded as the founder of this theory, actually defines a 'world system' as 'a unit with a single division of labour and multiple cultural systems' (*ibid.*: 347). The commodity chain, in this approach, is defined as 'a network of labour and production processes whose end result is a finished commodity' (Hopkins & Wallerstein, 1986, 1994 quoted in Raikes, Jensen & Ponte, 2000: 392), Arrighi and Silver (1984 & 1999), following the same approach, present a much more detailed analysis of this division of labour and explicitly link it to corporate value chain restructuring (Arrighi, Barr & Hisaeda, 1999; see also Wallerstein, 1979; Abernethy, 2000; Hopkins & Wallerstein, 1986; Arrighi *et al.*, 1999).

In a detailed critical comparison of the *filière* and global commodity chain (GCC) approaches to the study of economic restructuring, Raikes *et al.* (2000) conclude that, although it is not without its problems and still does not constitute a coherent theory, the GCC approach is more useful for analysing the dynamics of change in the current age of globalisation and holds more potential because 'it is generally concerned with the full length of global chains, while the *filière* tradition mostly focuses on local or national levels of the chain. Also, the GCC approach deals with power relations more specifically and stresses the control of key agents within the chain, while *filière* analyses have generally attached more importance to the technical side of the material flow than to the role of social actors' (Raikes *et al.*, 2000: 409-410).

From the 1970s on, a very large body of literature on organisational restructuring was built up, partly consisting of 'pure' academic research, and partly of popular handbooks and textbooks designed as resources for the rapidly growing field of management education or business studies. It was in this context that Michael Porter's influential (1985) work on *competitive advantage* became a best-seller. This book set out a very clear concept of the *value chain*. In this model, the basic unit is described as an *activity*. Products are made in a sequence of such activities with value being added at each stage, the final value of the product being the added sum of these. Using a functional approach to value chain analysis, Porter identified six basic *business functions*: research and development; design of products, services, or processes; production; marketing; distribution; and customer service. Managers were encouraged to carry out value chain analysis in order to capture the points in the chain where maximum value could be created, with minimum cost. The con-

² We are grateful to Gérard Valenduc for this insight.

cept of the *business function* gave rise to that of the *business process*, arguably a subcategory of it.

During the 1980s and 1990s, when major restructuring was taking place across most industries, using new applications of information and communications technologies, the concept of *business process re-engineering* (sometimes abbreviated to BPR) was popularised by Mike Hammer (Hammer, 1990; Hammer & Champy, 1993). The enormous success of such publications has meant that in practice two generations of managers have been educated to think critically about the businesses in which they work and analyse them in terms of *value chains* broken down into *business processes* which are broken down into *activities* which can then in turn be analysed in terms of separate *tasks*, and to find ways in which these can be streamlined and reorganised in order to maximise the value added at each stage, whilst minimising the costs, in a process often referred to as *value chain management*. It should be noted that (as in Adam Smith, 1776) the concept of the *value chain* used in these models does not stop at the boundary of the organisation, but extends upwards into customer organisations and downward into supplier organisations (Porter, 1985). The term *value chain* is often used in this management literature as a pseudonym, or near-pseudonym of the related term *supply chain*. However the latter term does not necessarily include within it the concept of the value which is added at each stage in the process, but generally refers more directly to the supply of raw materials and components that are needed to manufacture a product, whilst *supply chain management* often refers primarily to the logistical management of this process.

The concept of *global commodity chains* was developed by Gereffi and others within the framework of an analysis of the political economy of development and underdevelopment, originally derived from world systems theory and dependency theory (Gereffi & Korzeniewicz, 1994). Gereffi (1994) refers to four dimensions that can become an object of analysis: (1) the input-output structure of the chain; (2) the territory it covers; (3) its governance structures, which affect barriers to entry and co-ordination within the chain; (4) the local, national and international institutional framework which shape the conditions under which key agents incorporate subordinate agents through their control of market access and information. Focussing on the nature and content of inter-firm linkages pointed to the increasing vertical disintegration of transnational companies and suggested a distinction between 'producer-driven' and 'buyer-driven' commodity chains (Gereffi & Korzeniewicz, 1994). More recently these authors have defined a wider variety of forms of global value chain governance that depend on three variables: the complexity of transactions, the ability to codify transactions, and the capabilities of the supply-base. Building up from these variables, Gereffi, Humphrey & Sturgeon (2005: 5) distinguish between three types of value chains: 'modular', 'relational' and 'captive'. Each of these types shows particular forms of dependence and power relations between the core firm and its suppliers.

Typically, suppliers in modular value chains make products to a customer's specifications, which may be more or less detailed. However, when providing 'turn-key services' suppliers take full responsibility for competencies surrounding process technology, use generic machinery that limits transaction-specific investments, and make capital outlays for components and materials on behalf of the customers (Gereffi *et al.*, 2005: 5).

By contrast, in relational value chains 'we see complex interactions between buyers and sellers, which often create mutual dependence and high levels of asset specificity. This

may be managed through reputation, or family and ethnic ties ... In captive value chains, small suppliers are transactionally dependent on much larger buyers. Suppliers face significant switching costs and are, therefore, 'captive'. Such networks are frequently characterized by a high degree of monitoring and control by lead firms' (*ibid.*).

Gereffi *et al.* (2005) maintain that the value chains emerging in the information economy are similar to the ones in the manufacturing and marketing of consumer goods. However most of this research, perhaps for reasons related to the availability of relevant statistics, which we discuss below, has focused mainly on manufacturing industries, taking a sectoral approach.

2.3 The restructuring of labour processes

Another stream of academic research that can be traced back to Taylor as well as to Marx is to be found in the literature on the sociology of labour. Here, the key author is Braverman (1974) who, though also using the *task* as the basic unit of analysis, viewed changes in work organisation from the perspective of labour, and the societal division of labour, rather than from that of the business (although he drew strongly, if critically, on the management science literature in order to do so). He also highlighted the crucial role in bringing about these changes of workers' skills on the one hand, and technology on the other (again echoing both Smith and Taylor). Although also using a *functional* analysis, Braverman developed the term '*labour process*' (rather than the more management-oriented '*business process*') to describe the unit of analysis for analysing changes in the organisation of work. Whilst the two concepts are distinctly different, emerging as they do from different scientific paradigms, there are nevertheless interesting parallels between them, with the restructuring of business processes being accompanied by the restructuring of labour processes, the introduction of new technologies being accompanied by the need for new skills, the standardisation of tasks being accompanied by the routinisation of work and so on. Bringing together insights from the management literature with those derived from the study of labour processes provides a useful framework for understanding the mechanisms of work restructuring, which, in turn, creates a basis for the analysis of value chain restructuring.

There is not space in this report to summarise the very large body of literature, both theoretical and empirical, which drew on the many other aspects of Braverman's work over the next four decades. In general, this literature does not directly address the concept of the value chain. However we do refer elsewhere in this report to a number of studies which have a particular relevance to this topic.

2.4 The new global division of labour

In parallel with the development of a large literature on organisational structures and on the restructuring of labour processes in the context of technological change, from the 1970s on, there was also a general increase in interest in what became known as the 'new international division of labour' a term first coined by Froebel, Heinrichs and Krey (1977). This work gave a picture of a world in which the international division of labour had progressed very substantially in the preceding two decades, partly as a result of the stan-

globalisation and automation of manufacturing processes and partly as a result of the rise of new industries, such as the manufacture of electronic components. They pointed out that the more standardised and low-skilled the work, the more likely it was to be relocated to a low-wage developing country and the more likely it was to employ a work force made up of women, generally very young women who lacked access to traditional industrial cultures or means of social support in resisting the imposition of punitive working conditions. Many of these new factories, they reported, were located on green field sites, often in 'free trade zones' or 'free enterprises zones' where tax advantages and other inducements had been made available to encourage foreign inward investment (Froebel *et al.*, 1977).

The development of a global division of labour is of course not new. As Ricardo, amongst others, noted, regions have traded their goods with each other for as long as recorded history and raiding other parts of the world for raw materials or slave labour is at least as old as colonialism. At the end of the 19th Century the British Empire exhibited a remarkably developed pattern of regional industrial specialisation knitted together into a global trade network (Arrighi *et al.*, 1999). The 20th Century saw a growth in multinational corporations operating increasingly independently of the interests of the nation states in which they were based. By the 1970s, when this was first noted by Froebel *et al.* (1977) it was clear that companies were, on a large scale, breaking down their production processes into separate subprocesses and redistributing these activities around the globe to wherever the conditions were most favourable.

The new international division of labour concept was taken up in a number of different academic fields, including economic geography, development studies and gender studies, and triggered a wave of empirical research on, *inter alia*, industrial location and employment in multinational companies in the late 1970s and early 1980s (*e.g.* Grossman, 1979; Fuentes & Ehrenreich, 1982; Nash & Fernández-Kelly, 1983). The gender dimension of this global restructuring was analysed during the 1980s by Momsen and Townsend (1987) and Massey (1994) and there was during the 1980s an active discussion of the gender dimension of the restructuring of global supply chains in manufacturing industries (*e.g.* Elson & Pearson, 1981; Huws, 1982; Mitter, 1986; Rowbotham & Tate, 1998).

Taking as a hypothesis the proposition that the nearer the bottom of the value chain an activity is located the more likely it is to be carried out by women and in low-wage regions, a number of research projects were set up that explicitly used the concept of the value chain, which was generally investigated from the bottom up. An example of this was a series of projects by Women Working Worldwide, an organisation formally founded at an international conference in London in 1983 (Women Working Worldwide, 1983) but which brought together pre-existing groups based in Manchester, working on the clothing and textiles industries, and in London, working on the electronics industry. Working closely with NGOs and a range of different research and campaigning networks in both developed and developing countries, these projects led to a variety of practical initiatives such as the *Clean Clothes Campaign*³ as well as to research publications (see for instance: Women Working Worldwide, 1991; Hale & Wills, 2005). Whilst these mainly

³ See <http://www.cleanclothes.org/>.

focused on manufacturing sectors, there were a few exceptions, in the form of studies of women working in data entry and other forms of clerical, which can be regarded as the bottom of the value chain in some service industries, both in developing countries (Pearson, 1991; Soares, 1991) and in forms of outsourced and casualised employment in developed economies (Huws, 1984a; Christensen, 1984).

Less well studied – at least until very recently – was the new global division of labour in white-collar work. Nevertheless, this too has been developing since the 1970s when low-skilled work such as data entry or typesetting began to be exported in bulk from North America and Europe to low-cost economies in the Caribbean, South and South East Asia (Soares, 1991; Pearson, 1991; Huws, 1984b), whilst higher-skilled services, such as computer programming started to be exported to the developed world from developing economies such as India, the Philippines and Brazil (Huws, 1985 & 1996). The first large-scale empirical study was carried out by the EMERGENCE project between 2000-2003, described more fully below, which used the concept of the ‘business function’ to map and measure the international relocation of the types of work whose results could be transmitted by ICTs (Huws, 2003).

This literature too contributed to the contemporary analysis of value chains, not least by emphasising the spatial dimensions of restructuring and the social impacts of this spatial expansion.

2.5 Finding value chains in the statistics

Despite the long historical roots of the concept of the value chain, and the considerable efforts that have been made to anatomise and describe it in functional terms, the concept is surprisingly difficult to operationalise in economic analysis and empirical research.

This input-output model of an economy, first developed by Quesnay, relies for its realisation on the availability of statistics that enable these units to be grouped and categorised, and France was, indeed probably the first country in the world to produce such statistics, under an order issued in 1669 by Colbert that demanded that ‘the situation of the kingdom’s factories be recorded in numerical terms’ (Guibert, Laganier & Volle, 1971) and that resulted in the creation of a remote ancestor of the various industrial classification systems which have since that date attempted to break down economies into their component parts for analysis.

In principle, these statistical systems should give us an accurate picture of the division of labour and the flows of value between its various parts. The cotton plantation produces cotton which is supplied to a spinner who makes it into thread which is supplied to a weaver who makes it into cloth which is supplied to a tailor who makes it into garments which is supplied to a wholesaler who then supplies them to a retailer and so on. To the extent that they are traded between different legal entities within a market, these inputs and outputs should leave a statistical trace, including when they cross international borders, in which case they should appear as imports or exports.

Unfortunately, however, the underlying logic of industrial classification systems is too eclectic to make this easy, since the classification of goods and services does not follow a consistent logic. This is not surprising when one considers the great variety of the purposes for which such statistics have historically been compiled, which range from providing a basis from which to calculate taxes to war-time planning, from designing skills

and training policies to assessing environmental risks, from developing city zoning regulations to planning transport networks not forgetting, of course, the need to predict the future course of national economies.

Goods, and the establishments where they are made and the companies that produce them, may be classified according to what they are made of (*e.g.* ‘metal boxes’ or ‘rubber products’), according to the technologies used to produce them (*e.g.* ‘knitted fabrics’ or ‘telecommunications services’), according to the final product or market for which they are destined (*e.g.* ‘childrens’ games’), according to their relationship with their customers (as in the distinction between wholesale and retail supply) or according to their ownership (this was especially the case in state-owned businesses). Only rarely are sectors classified in a way which makes their function clear (*e.g.* IT services, cleaning services or transport services) and these are generally service sectors. Even here, however, it is rare for it to be easy to distinguish between services supplied directly to consumers and those which are supplied to other businesses as intermediate inputs to their value chains. Telecommunications services, banking services, insurance services and transport services are all examples of sectors that supply both consumers and businesses.

Similarly, the workers who are involved in producing these goods and services may be classified according to the tools or technology they use (*e.g.* ‘lathe operators’ or ‘html programmers’) according to their qualifications (*e.g.* ‘chartered accountants’ or ‘nurses’), according to the sector they work in (*e.g.* ‘civil servants’ or ‘bank clerks’), according to what they produce (*e.g.* ‘glass blower’) or according to their function (*e.g.* ‘cook’, ‘driver’ or ‘supervisor’). These problems are compounded by other issues, including the effects of technological change which not only change the materials from which products are made but also introduce entirely new products and services as well as bringing about the obsolescence of old ones and convergence between formerly disparate sectors. Mergers and acquisitions also bring about cross-ownership between sectors that were formerly separated, whilst outsourcing splits functions from their former parent organisations making them newly visible as separate sectors (Huws, 2005).

The economic statistics that exist are mostly based on the concept of ‘firms’ (the legal entity), or sometimes ‘establishments’ (the geographical entity) which can be allocated to particular ‘sectors’ and which are staffed by employees who are categorised according to particular ‘occupations’ in the production of goods and services (which are subject to further modes of classification). In this context, it is not surprising that most studies of employment restructuring have used one of these basic units as its primary unit of analysis. From the 1970s on, after the widespread introduction of ICTs and the consequent restructuring, it became increasingly apparent that none of these units was adequate for measuring the global restructuring of employment in a context of technological change.

The impact of technological change was bringing about a convergence of skills across sectors and making it possible for activities that had previously been regarded as ‘head office services’ to be made into separate cost or profit sectors or outsourced to companies in other sectors (Huws, 1984b & 1985). Since these developments cut across traditional sectoral and occupational categories, what was needed was a unit of analysis that both *generic* and *functional*. After several trials in various surveys in the UK (Huws, 1992) and

in India and Malaysia,⁴ the concept of the 'generic business function' was first tried out as the basic unit of analysis in a large-scale establishment survey in eighteen European countries in 2000 and in Australia in 2001 (Huws & O'Regan, 2001) in the EMERGENCE project.⁵

Because it reflected the way that managers already perceived their businesses, as noted above, this approach proved to be very useful in gathering information systematically on employers' practices in relation to these generic activities: whether they were carried out in-house, or outsourced or a combination of these; and whether they were carried out on-site or relocated. The results of this survey therefore showed the way to identifying the building blocks of the new global division of labour and revealing the structures of global value chains. However because this survey was limited to analysing those business functions which were capable of being *telemediated* (i.e. those functions that involved the processing of digitisable information that could be transmitted over telecommunications networks), it did not provide the whole picture. The business functions covered in this survey were: creative and content-generating functions; financial functions; software development and support; sales and marketing; data capture; customer services; and management functions (including HR functions and logistics management functions). This lack of universal coverage is, however, in the process of being remedied in Europe by the implementation of a major new survey, the *International Outsourcing Survey*, co-ordinated by Eurostat and carried out by the National Statistical Offices of eighteen EU Member States which uses the *generic business function* approach to capture information about all activities, including production, infrastructure maintenance and other 'physical' activities (Nielsen, 2008). The 'business function' concept has also been used in the United States by the Bureau of Labour Statistics (BLS) as a unit of data collection and analysis in its Mass Layoff Statistics. As part of this process, a new BLS classification of business processes and functions has been developed (Brown, 2008) holding great promise for the future.

In a later section of this report, we will present some of the work carried out within the framework of the WORKS project to identify business functions in the existing European sector-based and occupation-based statistics.

⁴ The 'Telework and Teletrade in India and Malaysia' project, co-ordinated by the UN University Institute of Technology at Maastricht and funded by UNDP and IDRC, carried out comparative establishment surveys in India and Malaysia with questionnaires designed by Ursula Huws which formed a prototype of those subsequently used in the EMERGENCE project. The questionnaire has never been published but some of the results of these surveys have been reported in Mitter (2000).

⁵ See <http://www.emergence.nu> for further information.

3 The current situation

The context of the WORKS research

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The WORKS research must also be placed in the context of the large literature about globalisation in general and the globalisation of business in particular which we have summarised extensively elsewhere (Huws, 2006). In a field first comprehensively mapped out by Dunning (1993), theoretical analyses have been carried out of the factors driving globalisation at an organisational level (*e.g.* Narula, 2001 & 2003) supplemented at a more practical level by empirical research at the level of particular sectors or regions (*e.g.* Boone, 2002; Sahay, Miller & Roode, 2000; Mirchandani, 1999; Kiser, 2003). There is a general agreement about the growing dominance of transnational corporations (Hirsch-Kreinsen, 1998a; Meil, Heidling & Schmierl, 2003), which not only play a critical role in determining what employment gets located where, but also play an increasingly important part in shaping work culture, regardless of where it is located (Kotthoff, 1997a & 2001; Dörrenbächer, 2003).

However, the precise forms that this restructuring takes are difficult to analyse and quantify. This is partly because of the very rapid speed of change, including a change in ownership structure and/or control of many organisations. Lazonick identifies six forms that restructuring can take: buyout, outsourcing, relocation, downsizing and bankruptcy (Lazonick, 2004: 579). Take-overs, mergers and demergers are announced continually. Firms enter into temporary alliances to carve up particular markets or to collaborate on the development of new products. Sometimes they buy stakes in competitors who are too large to be gobbled up. Recent analysis of the growth in mergers and acquisitions at a global level has shown that the majority of corporate growth now comes, not from expansion on existing sites or investment in green field sites but from the acquisition of other companies (EC DG ECFIN, 2007).

In addition to these external realignments, most companies are also involved in a continuous process of internal reorganisation, whereby individual functions are transformed into separate cost or profit centres, or floated off as separate companies. Add to this the impact of outsourcing to external companies and we arrive at a situation where corporations can no longer be regarded as stable and homogenous. Rather, they appear as mutually interpenetrating entities in constant flux, held together by elaborate webs of contracts that are in a continuous process of renegotiation. Restructuring initiatives such as 'Business process re-engineering' (Coulson-Thomas, 1994) rarely take place in a vacuum. They may occur in the context of a take-over or merger, a decision to outsource (or, conversely, to bring back into the company a previously outsourced function), a major technological change, a strong upturn or downturn in the market or some other variable which makes it difficult to isolate the dynamic features (motivation or impacts) of any specific restructuring measure.

Processes of internal and external restructuring have led to decentralisation, outsourcing and networking. However, they have also led to processes of concentration, consoli-

dition and centralisation (Flecker & Kirschenhofer, 2002; Flecker, 2007). As will be argued later, the underlying logic of each of these processes is, however, the same: an increasing standardisation and fragmentation of processes which allows them to be configured and reconfigured in a variety of different ways to suit the needs of a given corporation at any particular time.

The increasing fluidity of corporate structures that has resulted from these continuous and rapid change processes has led some commentators to question whether the individual enterprise or corporation or 'firm' (located, conventionally, in the economic statistics, within a 'sector') is the best unit of analysis for understanding these restructuring processes. An exclusive focus on the company runs the risk of missing the most important changes which take place, so to speak, at the periphery of one's field of vision, in the spaces between companies.

What is clear, is that the concept of the value chain is becoming ever more important as a focus for research which aims to capture the actual changes that are taking place in the organisation of work, as opposed to changes in ownership and structure that are important legally and financially but do not deeply affect the numbers and location of jobs or the characteristics of the labour processes involved.

Our historical overview has shown that in order to understand corporate restructuring in a context of globalisation and a new international division of labour it is necessary to have concepts and approaches that make it possible to understand the impact on work. Both geographical and economic theories provide us with some useful theoretical frames for this aim. The main added value of the value chain approach is the fact that the focus of the analysis can be shifted from the physically limited organisation to steps or nodes in the production process that are not necessarily organised at a single location or within the confines of a single contractual relationship. The value chain approach allows attention to be shifted to the entire production chain and to each of the activities of which it is composed. The advantage of the concept of the business function is that it shifts the analysis from the organisation to the separate activities that compose the value chain. Here the value chain is conceptualised as a complex configuration of interlinked business functions, each of which adds economic value to the end product, while the organisation of the value chain can be perceived as an economically and technologically coherent aggregate of business functions.

However neither economic nor geographical theoretical approaches have been primarily conceived in order to analyse the related changes in work. The aim of the WORKS project, by contrast, is to analyse how workplaces, jobs, allocation, working conditions and industrial relations change in relation to the restructuring of value chains. For our purposes it was therefore necessary to analyse business functions from the perspective of the technical and social division of labour, in the line of the sociological tradition (Ramioul, 2008). From this point of view, the aggregate of the primary and supporting business functions of an organisation can be regarded as the outcome of decisions made about the division of labour. This approach sees process tasks as being clustered or fragmented according to different labour division principles, for instance they may be integrated or fragmented; centralised or decentralised, *etc.* An organisation will also decide which activities will be kept in house and which will be purchased from suppliers, which are automated and which not. Decisions are also made about how to distribute the remaining tasks across workplaces. Hence, the way process tasks are structured, clustered, frag-

mented and distributed results in a specific configuration of physically and technically distinct, and thus observable, business functions. In one case, a specific business function may be concentrated within a single organisation; in the other it might be fully or partially spread over different sites; whilst in yet another, the different tasks may be integrated into other business functions. This results in observable organisational varieties in labour processes, ranging from extremely fragmented, simple tasks to broad, integrated and complex functions.

This can be illustrated by the example of the human resource management (HRM) function. HRM can be described in a generic way as all activities aiming at regulating work in an organisation, including staff selection and recruitment, the compensation and regulation of working conditions, development and training, industrial relation bodies and practices. However, in many organisations HRM-related activities are not organised in a single specific unit, but may be assigned to a variety of staff, including superiors or team leaders with line management responsibilities, for whom these tasks are incorporated into their main job but in which they have secondary importance. It is also possible that some aspects of wage administration and off-the-job training may be outsourced, while the selection and recruitment and the on-the-job training for a particular unit may be the responsibility of the direct supervisor. Huge differences between companies may be observed in how the business function of HRM is organised, especially between large and small companies, because of the very many different possible ways that this function can be organised. Hence, the jobs of HR staff may vary considerably too.

The IT function is another good example and it can be observed in a wide range of organisational varieties. As will be illustrated in the empirical analysis summarised in this report, this specific business function undergoes major transformation related to corporate restructuring, technological innovations and organisational decisions with respect to the organisation of IT activities in new and rapidly-changing corporate environments. These changes imply a new division of labour in this particular business function. As a result of the evolving division of labour, this business function is becoming more generic and is leading to the emergence of new value chains in IT.

3.1 The WORKS approach to value chain definition and analysis

As noted in the introduction, the value chain is a phrase that can be used to describe the summary of each step in the process required to produce a final product or service. The word 'value' in the phrase 'value chain' refers to added value. Each step in the value chain involves receiving inputs, processing them, and then passing them on to the next unit in the chain, with value being added along the way. Separate units of the value chain may be within the same company (in-house) or in different ones (outsourced). Similarly they may be on the same site, or in another location. The term 'value chain', sometimes used synonymously with the overlapping concept of the 'supply chain', was originally coined to describe the growing spatial and contractual complexity of the division of labour in the manufacture of goods but it is now increasingly applicable to services, both public and private. The standardisation of many business processes combined with the digitisation of information and the development of high-capacity telecommunications networks has made it possible for telemediated work to be outsourced and/or relocated, leading to the introduction of an international division of labour in information-process-

ing work. Key to this development is the disaggregation of organisations into smaller functional units which may then be relocated spatially or outsourced.

Spatial relocation may take the form of concentration of functions in large centres, often organised on Taylorist principles, or of decentralisation to smaller units, which may exhibit more flexible forms of organisation (Flecker & Kirschenhofer, 2002). Outsourcing, too, may be to large multinational companies specialising in the provision of a range of components or back-office functions, or to micro-businesses supplying a single business service (Huws, 2003). A space is created for small start-up companies at the innovatory end of the new processes (Dejonckheere, Ramioul & Van Hootegeem, 2003). There is also a role for small firms at the other extreme: supplying goods or services at rock-bottom prices in the areas where competition is fiercest and survival most precarious, often on a 'just-in-time' basis - in the most extreme cases these 'small firms' may in fact be individual homeworkers or day-labourers whose self-employed status is simply an expression of their powerlessness on the labour market. However, there are also countervailing tendencies.

The spread of information and communications technologies, together with a global convergence in standards which has eased interoperability, combined with the near-monopoly use of a relatively small number of software products and the growing dominance of English as the world business language, have created a situation where the standardisation of a very large range of business processes has become possible, and huge economies of scale can be achieved by companies which specialise in supplying them. In the global market for business services a space has opened up in which the terms of trade can increasingly be set by the supply side, as opposed to the demand side.

It is often assumed that outsourcing takes place from a large and powerful organisation to a smaller and less powerful one. In fact, this is not always the case: recent years have witnessed the growth of very large companies offering a range of back-office functions to clients in both the private and public sectors, for instance in payroll administration, human resource management, recruitment, software development, database management, logistics management, design, publishing, customer services and marketing. A feature of these companies is that they operate a highly variable internal division of labour known as 'global sourcing' (EMCC, 2005) whereby teams are put together for the purposes of specific projects based in disparate locations according to the particular requirements of the project (for instance the relative importance of low cost, high quality, proximity to the customer or particular language or software skills). The underlying geographical division of labour may not be visible to the customer who may be dealing with a locally-based front office and have little knowledge of where the work is actually carried out (Huws & Flecker, 2004). A dispersed global base of front offices may conceal high degrees of concentration of certain activities in particular spots. The disaggregation and geographical decentralisation of some organisations is therefore accompanied by aggregation and spatial concentration in others.

3.1.1 The transaction cost approach

An important theoretical approach explaining outsourcing of non-core activities is that of transaction cost economics. This theory has provoked considerable internal debate within the discipline of economics, but the notion of 'transaction costs' itself has diffused far

beyond the field in which it was originally developed and is also used in organisation theory.

The central premise of this theory is that managers take organisational decisions related to whether to 'make' or 'buy' (or 'market' *versus* 'bureaucracy') with the view of minimising transaction costs. These costs are dependent firstly upon the nature of the asset that is subjected to the transaction ('asset specificity'). When an asset is characterised by a high degree of transaction specificity, this requires a high level of investment for the transaction to succeed and for reducing 'opportunistic' behaviour by the economic agents involved. The value of these investments is determined by the nature and the stability of the relationships between the partners in the transaction. A second determinant of transaction costs is the frequency with which the same transaction can be repeated. Generally, transactions characterised by a lower degree of frequency are more likely to be arranged on the market. This has to do with specialisation. Finally, transaction costs are also dependent upon the degree of uncertainty involved in the completion of the transaction: transaction costs can vary according to the extent to which they are liable to disruption (Williamson, 1981: 548-577). It is now argued that the expanded use of ICT is responsible for a reduction on transaction costs (Grimshaw *et al.*, 2002; Dejonckheere *et al.*, 2003). This is because codification of information is a precondition for the usage of ICT and communication and transfer of this codified information is eased by ICT. As a consequence of codification and standardisation, the availability of information for the transaction partners increases. Codification also facilitates commodification. In terms of transaction cost reasoning, 'asset specificity' can be significantly reduced as well, because the process of commodification implies that the asset is more universally available, and the specificity of any given transactions is reduced.

In relation to these processes of codification, commodification, standardisation and fragmentation, and the related decrease of transaction costs, the 'primacy of the core business' in managerial decision making can be explained. Diversification of products and services induces the multiplication of tasks and skills and results in an organisational complexity that can no longer be combined efficiently with mass production. Outsourcing is therefore a managerial solution that accommodates increased organisational complexity while maintaining cost effectiveness (World Trade Organisation, 2005). In the constant dynamics of capitalist restructuring, specialisation and standardisation, companies identify the strategically important tasks and competences and focus in-house production on these. Non-core tasks are purchased from outside suppliers. The observable historical trend is that an increasing number of business functions are considered non-core. The current trend of outsourcing of services can also be put in the historical perspective of growing specialisation and diversification of products and services, and thus on the shift of activities from the core to the periphery in the organisation (*idem*). The implication is a growing importance of the market as the co-ordination mechanism for transactions to the detriment of bureaucratic organisations, or in other words, the disintegration of the vertically integrated firm or sector. It should be noted however, that what is non-core for one company may become a core activity for the company to which it is outsourced. The concept of a 'core activity' is therefore always a relative one. In other words activities cannot be seen as generically 'core' or 'non-core' but must always be described as such in relation to a particular business.

3.1.2 Governance, power and control in global value chains

The role of transaction costs has been acknowledged as a major factor in the theoretical framework to explain different types of governance in global value chains as developed by Gereffi *et al.* (2005). They distinguish five types of global value chain governance, based on the combination of three important variables: the complexity of transactions (related to asset specificity, to requirements of complex co-ordination and opportunistic behaviour control mechanisms), the ability to codify transactions and the capabilities in the supply-base (the latter concept, firm capabilities, mainly refers to the importance of generation and retention of competences that distinguish firms from their competitors). This means that governance models are not only 'market' or 'hierarchy' but that different forms of co-ordination can be observed: 'hierarchy', 'captive', 'relational', 'modular' and 'market'. Moreover, the authors observe the dynamics and overlaps of these governance types within one specific industry.

This has relevance for a better understanding of different mechanisms of power and control at the level of a global value chain. In an economic context with a growing capital concentration and mobility at a global scale, a more finely-tuned typology of (transaction) co-ordination mechanisms is useful to investigate the implications of power and control for work and employment.

In particular, it is important to acknowledge a divergence between financial/economic, legal and functional power. At the top of the value chain financial/economic power is determined by a growing complexity of cross-ownerships, acquisitions and both short-term and long-term alliances, in other words a growing capital concentration that is location-independent because of the worldwide mobility of capital. Legal power within a firm, on the contrary, is essentially still heavily connected to the national boundaries and regulations, at both sectoral and company level (and to an increasing extent also, in response to European regulation) and thus location dependent. 'Functional' power finally, especially within supplier firms in the global value chain, tends to be more and more concentrated in the hands of the customer, through the establishment of a wide and increasing variety of specific contract regulations such as vendor contracts, service level agreements, quality control certification, competence certifications, *etc.* This growing complexity of governance, power and control results in an increased instability, unpredictability and insecurity of power relationships at the level of the organisation, the workplace and for the individual.

New forms of work organisation in many industries are strongly affected by these new developments in corporate governance and interrelations between companies. This is reflected in different bodies of research ranging from analyses of globalisation and multinational companies (*e.g.* Hirsch-Kreinsen, 1998; Bartlett & Ghosal, 1989; Narula & Dunning, 2000), studies of increasingly global commodity or value-added chains (Gereffi & Korzeniewicz, 1994; Altvater & Mahnkopf, 2002; UNCTAD, 2002) and in debates on decentralisation of companies and changing managerial strategies (Kotthoff, 1997b; Sauer & Döhl, 1997).

3.1.3 The role of the institutional environment

An important critique of the transaction costs research, and relevant as well in the frame of WORKS, is the lack of institutional-comparative analysis. This problem is recognised by Williamson himself: 'The correct argument is that institutional environment matters and that transaction cost economics, in its preoccupation with governance, has been neglectful of that' (Williamson, 1996: 230). The black box and underdeveloped conceptualisation of the approach in this respect is primarily related to the 'uncertainty' aspect of economic transactions, which can be connected with the local and institutional environment of firms. The role of the regional-institutional context, which is dynamic and thus 'uncertain', becomes more explicit in a globalised economic environment. However, the precise role and impact of 'uncertainty' in transaction relationships connected to regional institutional context and dynamics is hardly acknowledged in the analysis. In WORKS we assume that organisational development is highly mediated and determined by the regional institutional environment to which organisations are exposed. Organisation theory and institutional theory approaches can therefore offer additional explanatory power to the mechanisms of transaction cost relationships between economic actors and establish a clearer link between organisations and their institutional environment.

3.1.4 The importance of intermediaries

As already noted, different units in a value chain may be separated from each other contractually or geographically or both or neither. Whilst the aim of companies is to achieve as seamless a connection as possible in terms of workflow and communication, no separation – even when it remains within the same company and located on the same site – is entirely self-managing or free of transaction costs (Williamson, 1985).

As value chains become more complex there is therefore an increasing requirement for an array of different intermediaries to play a variety of different roles including supply chain co-ordination (or logistics management), recruitment, identification of subcontractors, negotiating and drawing up legal contracts, site-finding, training, negotiating with a variety of local institutional stakeholders and a range of different types of consultancy.

Even when no geographical relocation is involved, the role of these intermediaries is extensive. However, the costs of using these intermediaries, and the value which is added by them, is not always well understood and is changing rapidly with the extended use of information and communications technologies (Rose, 1999). Benner (2002) used the concept of the 'labour market intermediary' for his study of employment flexibility in Silicon Valley and identified a large and diverse range of these intermediaries, some of which are membership based (such as guilds, trade unions and various self-help organisations and networks) and some of which can more properly be regarded as arms of the private sector (such as temporary employment agencies, consultant brokerage firms or professional employment firms which act as the 'employer of record' for their clients) or of the public sector (such as training providers or job search agencies). This approach recognises the complexity of the relationship between supply and demand and makes it possible to conceptualise value chains both as entities which may contain intermediary links and as embodying relationships which may be structured by forces coming from either direction (demand or supply). The addition of a remote geographical dimension to value chain

separation of course greatly multiplies the number of intermediaries and the range of activities with which they are involved, whether these are carried out in-house or provided by external suppliers.

Whilst the concept of the global value chain is useful in helping to understand the changes taking place in the organisation of work, it is important to avoid an overly deterministic approach. The restructuring of value chains is, of course, itself shaped by the social relations of the actors involved in the chain and there is nothing inevitable about the formations that emerge from this process.

3.1.5 The role played by knowledge

We have already noted the apparent paradox that the restructuring of value chains may involve both centralising and decentralising tendencies, involving both spatial concentration and spatial dispersion and creating both new market niches for small firms and opportunities for the development of extremely large global conglomerates. On closer investigation, however, this apparent paradox disappears. The underlying logic of each of these apparently contradictory developments is the same: an increasing standardisation and fragmentation of processes ('modularisation') which allows them to be configured and reconfigured in a variety of different ways to suit the needs of a given corporation or group of corporations at any particular time. Such standardisation and fragmentation cannot take place without changes in the use of human knowledge and skill in a process of commodification (Huws, 2003).

At the level of the division of labour, two interconnected underlying processes are involved here: the development of entirely new products and processes, forming the basis of new commodities (embodied in new firms or sectors or new subdivisions of old ones); and the application of new processes to the production of existing goods or services, involving an elaboration of the division of labour within their production which may sometimes involve the generation of new activities (perhaps separated geographically or legally from the old ones) or sometimes the recombination and concentration of previously diverse activities into a single process (again, perhaps involving geographical shifts or a change in legal ownership). Both fragmentation and consolidation processes may be at work simultaneously.

In the former case (the development of new products or processes) the process may begin with a few creative workers with a high level of tacit knowledge with complex and ill-defined job descriptions. As the development continues, these work processes will become systematised and standardised and, typically, a more defined division of labour will emerge, with new, demarcated occupational identities, the raw material for new process innovations in the next wave of restructuring. In the latter case (the application of new processes to the development of existing products or services) a division of labour can be presumed to exist already, probably reflected in an occupational structure in which different tasks are recognised as requiring specific skills and knowledge and are, quite possibly, filled by workers with different gender, age and ethnic attributes, who have different degrees of leverage on the local labour market and are differently rewarded. Here, when the change comes, it generally takes the form of systematisation and routinisation, often accompanied by the development or application of quality standards; tacit knowledge is made explicit and extracted from the individual worker to become the collective

property of the team or the private property of the employer or customer; and 'skills' are disembodied from the workers who have traditionally exercised them and analysed to see whether some new configuration might be more productive (Braverman, 1974; Freyssenet, 1974; Coriat, 1975).

Here, depending on the specific circumstances, four different options are possible: first, to subdivide tasks to the smallest separately definable component and spread them across a larger number of workers in the classic Taylorisation model, thus creating a production line of single-skilled workers; second, to subdivide the tasks into separate components but instead of assigning them to different workers to adopt a 'flexible' model in which traditional demarcations are abolished and a pool of multiskilled workers is created who can be substituted for each other at short notice; third, to devise training methods to transfer the skills to another, cheaper, group of workers, perhaps in another country; or fourth, to incorporate the skills into some 'intelligent' software (a new commodity) which can be operated either by lower skilled workers or by users who are not on the company payroll at all (Huws, 2006). Hence, as already noted, the analysis of recent trends in value chain restructuring can be seen as a complementary counterpart to the analysis of the restructuring of labour processes and of changes in the social and technical division of labour. As in the historical development of the division of labour, knowledge codification plays a key role in the processes of standardisation and fragmentation.

The point here is that once tasks have been systematised and codified, their results become quantifiable. And, once the results are quantifiable, they need no longer be carried out under the direct eye of a manager: all that is required is for the requisite quantity of output to be produced to agreed quality standards. The activities can then be carried out on a remote site or by another company under a contract for the supply of services, with payment withheld if the quality or quantity of the output is below specification. The cost of this process, and the value which is added by it, are no longer subsumed into an amorphous general overhead but are separately visible. It has become the basis for a separate profit making enterprise: a new link in the value chain. With each elaboration of the division of labour we have therefore, in effect, the potential for the lengthening of the chain.

The logic of this restructuring, and the chain metaphor, suggest a skein of endlessly lengthening lines; the notion that the global corporation sits at the top end of this line suggests that as the chain continues, the units get smaller, like fish tugged by the giant who constitutes the ultimate customer at the end of the line. In reality, as we have already noted, the emerging corporate landscape is more complex and contradictory than this. There are of course many small companies occupying positions at various intermediate points in the new value chains as well as at their termini. However, there has also been an enormous and rapid growth in very large companies, often many times larger than their clients, occupying strategic places as suppliers of a large number of generic business services to a diverse and geographically diffused group of customers in both the private and public sectors. Such developments raise important questions about where the power lies in differing forms of value chain. Is it possible that, alongside supplier-driven chains and purchaser-driven chains (Gereffi *et al.*, 2005; Sauer & Döhl, 1994), we may also have to posit a form in which the greatest power to determine the conditions of work life, not at either extreme, but at the centre of the chain?

Part of the explanation of this phenomenon is the contradictory nature of the changing division of labour. The commodification process drives a continuous process of restructuring which always has a double edge. Each innovation simultaneously requires a new cohort of creative 'knowledge workers' who, in the very process of developing new innovations, bring about, albeit indirectly, the routinisation of the work of others. 'Upskilling' therefore goes hand in hand with 'downskilling' and new forms of specialisation accompany the development of increasingly generic activities.

Skill does not just have a double-edged character for labour; it has an equally ambiguous meaning for employers. The innovation process which forms the necessary motor of change for capitalist development is deeply contradictory in its need for skill. Before a task can be automated, it is necessary to draw on the expertise and experience of someone who knows exactly how to do it, to anatomise every step in the process and work out how it can be standardised and how a machine can be programmed to repeat these steps. Once expropriated, the knowledge and experience (or 'craft') of these workers can be dispensed with, and cheaper, less skilled workers substituted to operate the new machines. But this is only half the story. Human knowledge, ingenuity and creativity are also essential in order to invent and design new products or processes, to customise them for new purposes, to communicate and provide content for a wide range of products and services, and for a range of other functions, such as education and entertainment. Some of these functions are themselves subjected to processes whereby the knowledge of the workers is expropriated and incorporated into computer programs or databases so that the tasks can be carried out by fewer, or less skilled workers. Here, for instance, we could include the knowledge of specialists working on technical support help desks who are encouraged to put the answers to frequently-asked questions onto databases that can be accessed by more junior front-line staff, or the knowledge of university professors who are asked to convert their lectures into content for standardised eLearning courses. But as one task becomes routinised and deskilled, a new cohort of 'knowledge workers' is required to devise the next stage in the commodification process. Arguments about whether the development of an ever more technologically complex capitalism results in deskilling or reskilling are therefore beside the point. The nature of innovation is such that both processes happen simultaneously: each new development in the technical division of labour entails a new split between 'head' and 'hands'. In order to routinise the jobs of one group of workers, another, generally smaller, group with some sort of overview of the process is necessary.

As workers resist or adapt to change and organise to protect their interests, new occupations are continuously being formed and older ones re-formed. Just as occupational identities can be said to be both exclusionary and inclusive, they can also be said to be in a continuous process of construction and deconstruction. Employers have to balance their interest in cheapening the value of labour with their need to ensure that there is a renewable supply of well-educated and creative workers with fresh new ideas. In some situations, they also want to retain a proprietary control over skills and knowledge that give them a competitive edge over rival companies. This may imply a willingness to pay above-market rates or offer other privileges in order to keep key workers (Doeringer & Piore, 1971). It must be noted, however that, the polarisation implied in this analysis is by no means inevitable. Work organisation is shaped in different ways depending on the specific local context and the balance of power between the actors involved. Commodifi-

cation, standardisation and deskilling may be counterbalanced by a move from productive tasks to relational, communication or commercial tasks, in manufacturing industry as well as in services (Perret, 1995). Case studies often reveal a wide variability of skills configurations depending on managerial options and social relations (Vendramin *et al.*, 2000).

Knowledge also plays a key role in the governance of value chains, which has a large potential impact on the knowledge and skills of workers. But also the role of knowledge in the governance of value chains. Companies such as Microsoft or Cisco with a large number of clients as well as subcontractors can dominate some value chains through exclusive knowledge which allows them to impose certain product standards which, in turn, dictate certain labour processes. These may be imposed directly (for instance when workers are transferred from a client organisation to a business services supplier as part of an outsourcing deal, or indirectly, for instance through certification of IT workers who are actually employed by client or supplier organisations). This may be regarded as an aspect of 'Wintelism' (a term coined from an amalgamation of 'Windows' and 'Intel' to refer to the dominance of global electronics markets by certain *de facto* product standards) and 'CPNs' (cross-national production networks) or 'IPNs' (international production networks) in the shaping of international standards (Borras & Zysman, 1997; Jürgens & Sablowski, 2004; Lüthje, Schumm & Sproll, 2002).

In addition to the fundamental role played by knowledge in the commodification process and the spatial and contractual elaboration of value chains, the concept of a 'knowledge society' or 'information society' is relevant to the study of value chains in other ways. The information and communications technologies which underlie most current conceptions of a 'knowledge society' also facilitate the global redistribution of work by increasing the speed and reducing the cost of communications, by spreading the use of increasingly generic software platforms (and hence of the skills to use them) to increasing numbers of workers, by providing tools for monitoring and knowledge sharing and by reducing transaction costs.

3.1.6 The relationship between the complexity of workers' knowledge and value chain restructuring

It can be argued that the more standardised a labour process is, and the less it involves company-specific knowledge and interaction with other workers, the more likely it is to be outsourced and located at a distance. Another report in this series further elaborates on the specific role of knowledge and skills in global value chain restructuring (Ramioul & De Vroom, 2009). However, the key role of knowledge in restructuring provides important explanations for the different forms of restructuring and their outcomes on labour processes that can be observed. Several authors have concluded on the basis of empirical studies that value chains are fragmenting at those points where knowledge is most explicit and codified (Faust, Voskamp & Wittke, 2004). Gereffi *et al.* (2005) argue that knowledge related to economic transactions is a key factor in the type of economic governance of global value chains, arguing that the complexity of the transactions (and hence the co-ordination requirements) and the ability to codify information, next to the capabilities of suppliers, explain the way business functions are governed: in market relations, in bureaucratic hierarchies or in the other types of economic governance situated in between these two poles that the authors distinguish (Gereffi *et al.*, 2005: 85ff).

Kädtler (2008), drawing on case-study research on the globalisation strategies of multinational companies based in Germany, concluded that their workers fall into three broad groups, which he terms 'leagues'. First there are those whose skills and knowledge are crucially important to the company, such as those in R&D, who have strong bargaining power. These 'first league workers' are likely to remain employees and to be based at or near the head office or privileged sites. In the second league are employees who have important skills requiring company-specific knowledge and specialist training but which are not as irreplaceable as those in the first 'league'. The company is likely to use global sourcing strategies for such workers but only in certain selected sites where these specialist skills are available. This creates a potential competition between such workers in different parts of the globe but only between a small number of known locations. Companies wish to retain strong ties to such workers who are likely to remain employees. The third league consists of workers whose tasks are so routine that their skills can easily be found on the market. It is their jobs which are most likely to be outsourced and subject to a global 'race for the bottom'. This analysis challenges, to some extent, the typology of value chains developed by Gereffi *et al.* (2005) described above in that it suggests that different government modes coexist within the same value chain, with hierarchical or relational modes being used for higher-skilled activities near the top of the chain and market or modular-type modes being used near the bottom.

Evidence from analysis of mergers and acquisitions (M&A) data by the European Commission (EC DG ECFIN, 2007) suggests that this pattern is widespread, at least insofar as it can be presumed that production activities in manufacturing are most likely to fall into Kädtler's 'third league'. In an analysis of deals by sector in 2006, it was found that 'domestic M&A were more skewed towards service sectors (67 per cent). With increasing geographical distance. However, the proportion of manufacturing firms acquired also increases: indeed their share in the total number of targets rises from 27 per cent to 33 per cent, 40 per cent and 48 per cent for deals involving domestic, Community, US and Asian firms respectively. In the US, 70 per cent of domestic M&A occurred in the services sector.' (*ibid.*: 8)

This is explained by the authors in the following way: 'This may in part be explained by the higher tradability of manufactured products and the greater ease of fragmenting the production chain along geographical lines. This allows firms to adjust and optimize their production pattern in such a way as to better seize the opportunities provided by comparably more favourable production conditions in different locations. In contrast, many services are provided locally and there are fewer efficiency gains to be expected from a diversification beyond national borders.' (*ibid.*: 9)

The same report also notes that there has been considerable growth in cross-border M&A involving services, especially noticeable in the case of US firms investing abroad, with 62 per cent of US acquisitions in the EU and Asia involving service sector companies (*ibid.*: 8). This supports the evidence from case study research (Huws & Flecker, 2004) that as labour processes in service industries become more standardised and involves less tacit knowledge and interactions then the barriers to outsourcing and relocation will also be reduced and relations between purchasers and suppliers of these activities will become more market-like.

4 The WORKS research on value chain restructuring

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From the overview of the literature summarised above, a number of conclusions were drawn for the questions to be addressed in the empirical research to be carried out in WORKS and the design of this research.

4.1 Research questions

A starting point for the WORKS project was that the concept of the value chain forms a useful means for examining the relationship between changes taking place at the level of the global economy and changes taking place at the workplace level. It was further assumed that the latter cannot be simplistically read off from the former. In other words, the changes taking place at a global level both shape and are shaped by the practices of actors at a local level, with both being mediated by a range of institutions operating at international, national, regional and local levels as well as by the practices of global corporations.

It can be concluded from the literature review that the concept of the global value chain is indeed useful for providing a window into this relationship making it possible to examine these mutual interactions. A particular advantage of this concept is that it makes it possible to overcome the (often spurious) legal and spatial distinctions implicit in more traditional concepts like those of the 'enterprise' or 'establishment' that sometimes obscure continuities and impede comparisons. It was also noted, however that hypotheses and research questions must be carefully formulated to allow for the direction of causality to be questioned. Drawing on the experience of the EMERGENCE project (Huws, 2004), the 'business function' was selected as the unit of analysis within a value chain.

Bearing this in mind, several hypotheses were formulated, leading to the following research questions:

1. Is it really the case that value chains are getting longer and more elaborated, both contractually and spatially?
2. What is the relationship between codification of workers' knowledge and value chain restructuring?
3. To what extent, and how, do national institutional environments shape decisions to locate particular business functions on their territories?
4. Is there evidence that new types of value chain are emerging in business services? And, if so, do they follow the same patterns as those in manufacturing?
5. What power relationships are emerging, between managers and employees within the units of value chains and between the different units and how is this power exercised?

6. How well do existing typologies of value chains fit the realities to be found in Europe in the early 21st Century?

These were not, of course, the only research questions addressed by the project but they are the main questions addressed in this report. Others are addressed in the companion volumes.

4.2 Research design

4.2.1 Quantitative research

It was recognised from the outset that, because of resource limitations, WORKS would not be able to carry out any new surveys. It was therefore decided to focus on analysing existing statistics in order to attempt to identify trends in value chain restructuring, whilst recognising the limitations of these statistics for that purpose. At a macro level, research into the interrelationship of global restructuring and restructuring at the workplace level is impeded by the lack of clear definitions of business function which could enable these changes to be tracked statistically, whether these changes involve spatial relocation or result from contractual externalisation (outsourcing). However it was thought likely that some clues could be gained through examining shifts in employment between sectors and countries and regions by occupation. An analysis of the Labour Force Survey was therefore carried out, with the aim of identifying proxies for business functions by cross-tabulation of sectoral and occupational data. The purpose of doing this was twofold: to investigate the extent to which the restructuring of value chains is in fact visible in the statistics; and to provide background information on the particular business functions and sectors to be studied in the qualitative case studies.

As business functions are not defined in existing data sets, proxies had to be used to identify them. Therefore, a method was developed to identify business functions by cross-tabulating sectors and occupations. On the one hand, relevant occupational groups within specific sectors were defined. On the other hand, the distribution across sectors of specific occupational groups was examined. In both cases, combinations of sectors and occupations were used as proxies for business functions.

The European Labour Force Survey (LFS) was selected for this analysis because of the detailed level of the combinations required and because the scope of the analysis was employment in the European member states. The LFS provides breakdowns of the employed population by sector according to the NACE Rev. 1.1 classification, and by occupation, based on the ISCO-88. As the sample size of the LFS is large - 1.7 million individuals per quarter - fairly detailed breakdowns of NACE and ISCO groups are possible. The database contains longitudinal information and makes it possible to make comparisons both over time and between European countries. Despite this large sample size, the use of LFS data to define and estimate employment in business functions has its limitations as well. Since detailed NACE and ISCO breakdowns often produce relatively small employment numbers and hence small cell sizes, only major occupational groups that match the targeted business function can be tracked. The analysis is also constrained by the availability of NACE and ISCO breakdowns by year and country. As a result,

depending on the selected sectoral or occupational group, some countries had to be left out from parts of the analysis.

In view of the method selected and the data available, the main research question for this research was broken down into more specific questions:

1. What is the sectoral distribution of the working population in the EU countries, and how has this changed since the mid 1990s? How have sectors involving the supply of business services grown over the past decade and what has been the relationship of this growth to trends in other sectors which are their clients?
2. What is the occupational structure of certain specified sectors? How does this structure differ by country, and how has it changed in the past decade?
3. What is the scale of the specified business functions, in which sectors do they occur, and how are they evolving in the EU countries? Is there any evidence that the increase of business services has been larger in New Member States, giving support to the hypothesis that the latter are becoming a 'back-office' for companies in the Old Member States?

It was hoped that the answers to these questions would provide insights into how business functions have shifted between sectors and countries in the last decade – thus giving an indication of the restructuring of value chains – and into the relationship between job growth and job decline in different sectors and countries.

It was beyond the scope of this analysis to investigate employment in all the business functions that could be found in actual value chains. Therefore, a selection of business functions was made, based on two criteria: first, all the business functions that were central to the case studies of the WORKS project were selected; and second, the method was also applied to a number of other business functions which seemed likely to undergo employment shifts as a result of value chain restructuring.

The analysis was structured around the six business functions which are often regarded as exemplary of the sequences of activities commonly found in different value chains. These six business functions, adapted from Porter (1985), were: core production activities ('operations'), logistics, marketing and sales, customer services, legal and financial services and IT services.

As well as estimating and describing general trends in the evolution of business functions, the aim of this analysis was also to provide quantitative background information for the case study analysis of WORKS. Consequently, the analysis goes beyond the limits of the selected business functions and provides additional information on the five sectors that are central to the case studies.

The analysis was carried out based on two different approaches to measuring employment and shifts in employment in business functions. The occupational approach took as its starting point the description of employment in an occupational group, estimated the distribution of the selected occupation across sectors, and then traced the changes in this distribution. The sectoral approach started from the analysis of employment in a selected sector, defined relevant occupational groups within this sector, and then measured the changes in this occupational structure. Occupational groups within and across sectors are the units of analysis; these are effectively proxies for the business functions.

The results of this research are summarised in Chapter 5.

4.2.2 Qualitative research on organisations

It was concluded, as a result of reviewing the existing evidence, that WORKS qualitative research should focus especially on three dimensions of the development of global value chains: the national context, the corporate context (including the global strategies of the company), and the contribution of knowledge to the restructuring processes.

Four conclusions were drawn that were regarded as of direct relevance for empirical research on the restructuring of value chains:

- the importance of the specific local institutional regime in making particular locations more or less attractive as sites for employment;
- the importance of intermediaries as important actors in the extension of value chains;
- the importance of workers' skills and knowledge; this includes both an analysis of the role of 'creative' and managerial occupations in bringing about innovation and change and an analysis of the routinisation and deskilling of the work of those in older occupational groupings;
- the importance of power relationships within the value chain;
- the importance of the business unit in the value chain and the type of value chain.

It was therefore necessary that the units of analysis should be *business functions* but, in order to ensure comparability, these should be located within certain *sectors*. These business functions within sectors should also make it possible to focus on certain *occupational groups* to make it possible to observe those changes in occupational identities and in career trajectories that were to be studied in other parts of the WORKS research.

Designing research that took account of all four of these dimensions in a manner which was rigorous, focused and enabled international comparability was a major challenge. It implied an extremely careful choice of case studies that (a) were comparable internationally in order to explore hypotheses about the specific impact of the local institutional regime, (b) bridged at least one link in a value chain in order to expose the roles of intermediaries and the changes taking place at either side of the contractual/spatial divide, and (c) made it possible to observe changes in the use of workers' skills and knowledge, encompassing both knowledge-intensive 'creative' work and work which was in the process of become deskilled.

It was also important to choose cases that made it possible to compare the effects of differing national institutional settings. This implied a selection of cases in different countries that were closely comparable in other respects. Here, the concept of the business function became highly relevant. The increasingly generic ways in which business functions are carried out within sectors suggested that selecting the same business function within the same sector could provide a unit of analysis that would maximise such international comparability.

In order to examine the *restructuring* of value chains and changes in skills and knowledge, some other selection criteria were also implied: evidence that significant restructuring had actually taken place in a period before the case study that respondents could still remember clearly; and the need to bridge at least one link in a value chain in order to expose the roles of intermediaries and the changes (including the changes in workers' skills and knowledge) taking place at either side of the contractual/spatial divide, thus making it possible to investigate hypotheses about both deskilling and reskilling as well as about the restructuring process itself.

The research was based on the assumption that value chain restructuring, by changing the position of companies or units in the value chain and by impacting on the power relations along the chain, directly affects both the quality of work and quality of workers' lives. One reason is that the boundaries between countries, sectors, companies and workplaces also constitute differentials in terms of basic employment conditions such as job security, wages, working hours, access to training, *etc.* Both labour market segmentation and industrial relations research suggest that the exploitation of these differentials is one driving force behind restructuring in the first place, with companies seeking access to cheaper, more flexible or differently skilled labour forces. Direct effects of restructuring on work organisation and work processes can be assumed because changes in the division of labour along the value chain influence workflows, skill needs and control strategies and this directly impacts on day-to-day work practices with possible consequences for all dimensions of the quality of work. In addition, the very dynamics of restructuring may increase the level of insecurity and enhance competition. This, in turn, may affect work-life balance, stress levels and career options.

In addition, there are not only direct, but also indirect, effects on employment conditions and work organisation. The quality of work is not only affected by actual shifts of boundaries or changes in functional relations: the mere existence of differentials also impacts on the bargaining position of actors within countries, sectors and companies because potential outsourcing or relocation can be used as a credible threat by management. Power relations between management, employees and other stakeholders thus change as management's range of strategic options increases. The impact of such changes can be seen most clearly in processes of 'concession bargaining' (Marginson & Sisson, 1996), but they may also become evident in extended working hours and flexibility arrangements.

The organisational case studies within the WORKS project covered a number of generic business functions that represent a wide variety of activities and labour processes ranging from highly skilled 'knowledge work' to semi-skilled manual tasks. The research also aimed to focus on those business functions that feature prominently in the external restructuring of companies and thus in the restructuring of global value chains. The selected business functions were:

- research and development;
- production;
- logistics;
- customer service;
- information technology.

To study the restructuring of value chains these business functions had to be located in specific sectors. The selection of sectors reflected the emergence of global value chains in different historical stages: sectors where vertical disintegration and internationalisation is already a rather old fact, and sectors where these have developed only very recently.

The first sector under study was the *clothing industry* as an example of an 'old' industry where restructuring of global commodity chains was already an issue in the 1970s. Recently, the integration of Central and Eastern Europe in pan-European production networks and the phasing out of the Multi-Fibre Arrangement and the WTO Agreement on Textiles and Clothing have considerably changed the trade regimes and resulted in a new wave of restructuring mainly affecting production in Southern Europe and the CEE

countries. The sector also provides interesting examples of 'head and tail'-companies which focus on high-skilled work within Europe.

The *food industry* is the largest manufacturing sector in terms of employment in the EU. It was subject to major restructuring after the completion of the single market in the European Union in the early 1990s which allowed companies to replace their country-by-country organisation with a pan-European structure. In contrast to parts of the clothing industry, food production is by and large highly automated. Both industries are interesting as examples of buyer-centred value chains in which the demands of the retail trade play a pivotal part.

The *IT industry* is a growing industry that saw a major wave of restructuring during and after the boom years in the late 1990s and around 2000 partly resulting in offshoring. Internationally, this has contributed to the emergence of a 'new breed of TNCs', global companies that supply services to other companies. To a large extent the IT service provider companies have grown through large outsourcing contracts that included the transfer of personnel from the client company or public sector organisation, a tendency highly relevant for the research questions of WORKS.

Public sector organisations and services of general interest are currently subject to far-reaching restructuring because of liberalisation and privatisation policies, budgetary constraints and initiatives designed to provide 'one stop shops' to citizens taking advantage of enabling ICTs. In these sectors the lengthening of value chains through large scale outsourcing is a most recent phenomenon. The consequences for the quality of work are highly influenced by the traditional differences in the regulation of work between the public and the private sector.

Table 4.1 Sample of case studies

	R&D/design	Production	Logistics	Customer service	IT
Textiles/clothing	BE; FR; DE; PT; IT	BE; IT; PT; HU; GR	FR; DE; NL; PT; HU		
Food		GR; BG; IT; NO; DK; UK	BE; NO; BG; GR; UK		
It	DE; AT; UK; BE; FR; NO	DE; AT; HU; BG; SW			
Public sector administration				AT; BE; BG; HU; IT; UK; SW	BE; NL; UK; FR; DE; NO; SW; PT
Services of general interest: post and rail				DE; AT; SW; NL; GR	

Each business function located in a particular sector was studied in a range of countries with diverse employment and welfare regimes (liberal, conservative, socio-democratic, *etc.*). This made it possible to analyse the influence of institutional frameworks on the consequences of restructuring. Overall, 58 case studies were conducted in thirteen countries. Table 4.1 shows the distribution of case studies.

For each case study, eight to ten interviews were conducted with management, key employees, and workers' representatives in the selected business functions. The inter-

views were complemented by company documents and other material that made it possible to produce a comprehensive picture. Researchers in the respective countries synthesised the individual case studies from the interview data. On the basis of the individual case study reports, comprehensive comparative analyses were carried out to compose a synthesis report (Flecker, Holtgrewe, Schönauer, Dunkel & Meil, 2008) on which this report draws. All company names were changed to assure anonymity.

The results of this research are discussed in Chapter 6.

5 Tracing employment in business functions

A sectoral and occupational approach

KAREN GEURTS

The aim of this analysis was to develop a quantitative method to estimate the effects of global value chain restructuring on employment in the European Union. Because it was decided to use existing statistics, the European Labour Force Survey was selected for the analysis. In line with the qualitative research of the WORKS project, the ‘business function’ was used as the main unit of analysis. Business functions are identified in the data by crosstabulating sectors and occupations. The analysis is based on two different approaches. The occupational approach takes as its starting point the description of employment in an occupational group, estimates the distribution of the selected occupation across sectors, and then traces the changes in this distribution. The sectoral approach starts from the analysis of employment in a selected sector, defines relevant occupational groups within this sector, and subsequently traces changes in this occupational structure. Occupational groups within and across sectors are the units of analysis; these are effectively proxies for business functions.

5.1 Sectoral specialisation in business services

One important aim of the research was to study the concentration of business functions in specialised sectors. This was measured in a series of steps. First, the business function concerned was defined by the occupational groups performing the tasks corresponding to the business function. Next, the distribution of employment in this business function across sectors was traced. This allowed us to identify the sectors where the business function is part of the core activities of firms. These sectors can be considered as specialised in providing the business service concerned to companies in other sectors. In the next step, we looked at to what extent, in the past decade, the selected business activity was kept ‘in-house’ by companies in a wide range of sectors, and to what extent it was outsourced, resulting in a concentration of the business activity in specialised sectors. The latter could be identified by having a growing share of the selected business function in specialised sectors.

This picture can be seen in greater detail by concentrating on particular business functions. Here, we look at IT services, logistics, marketing and sales and legal and financial services.

5.1.1 IT services

IT services are identified by two large occupational groups in the ISCO classification which refer to those employed performing IT functions: *Computing professionals* (ISCO 213), and *Computer associate professionals* (ISCO 312). In IT services, the number of

employees has increased substantially over the past decade (with a 76 per cent increase between 1996 and 2004 in the old members' states and a 35 per cent increase between 1999 and 2004 in the New Member States). Both in the old and in the New Member States, there has been a growing concentration of IT employment in the specialised IT sector (NACE 72). While in the Old Member States in 1996, only 34 per cent of all IT workers were active in this sector, this percentage had increased to 42 per cent by 2004. This happened at the expense of other sectors of activity, where the proportion of IT workers decreased. In the New Member States, the same evolution can be seen. A concentration of IT functions in the specialised IT sector is thus taking place.

5.1.2 Logistics

A similar pattern can be seen with regard to the business function of logistics. Logistics are defined on the basis of the logistic occupations that can be found in the ISCO classification at three-digit level: *Material-recording and transport clerks* (ISCO 413) and *Transport labourers and freight handlers* (ISCO 933). Trade (NACE 51-52), transport (NACE 60-63), and packaging (NACE 74.82) were identified as the sectors where logistics can be said to represent part of the core activities of companies. In 2004, around fifty per cent of all logistic workers were employed in these sectors. In the beginning of the observed period, logistic jobs were relatively more scattered over all sectors of the economy, with a higher share located in production sectors and in other service sectors. Between 1997 and 2004, the concentration of logistics jobs in trade, transport, and packaging grew, which makes it reasonable to conclude that logistics activities in Europe are increasingly outsourced, to be performed within these specialised service companies. Hence we can observe in this case too that the 'peripheral' activities of some organisations are becoming the 'core' activities of specialised companies providing business services to other firms.

5.1.3 Marketing and sales

Sales and marketing managers (ISCO 1233), *Advertising and public relations managers* (ISCO 1234) and *Technical and commercial sales representatives* (ISCO 3415) are the occupational groups which represent the Marketing and sales functions in the ISCO classification. Since these groups are identified at four-digit level in the classification, it was only possible to analyse the marketing and sales functions from 2001 onwards and for a limited number of countries. For other countries and years, information at four-digit level is not available. Wholesale and retail trade (NACE 51-52) were identified as the core sectors for this business activity. In the Old Member States, the share of marketing and sales employment has increased in the retail trade sector, and remained stable in wholesale. This happened at the expense of the marketing and sales employment in most other sectors. A slight concentration of marketing and sales activities can thus be found in the wholesale and retail trades. In the New Member States, marketing and sales activities are much more concentrated in specialised trade enterprises than is the case in the Old Member States. However it was not possible to identify an unambiguous trend in that part of Europe.

5.1.4 Financial and legal services

The *Financial and legal services* could also only be analysed from 2001 onwards and for a limited number of countries. Four occupational groups correspond to financial service activities: *Finance managers* (ISCO 1231), *Accountants* (ISCO 2411), *Bookkeepers* (ISCO 3433), and *Accounting and bookkeeping clerks* (ISCO 4121). For the identification of the legal functions, two categories have been selected: *Legal professionals* (ISCO 242) and *Legal and related business associate professionals* (ISCO 3432).

Financial and legal functions are increasingly performed within two specialised service sectors. These are the financial sector (NACE 65-67) and the business activities sector (NACE 74). The latter sector groups together all enterprises which provide financial or legal service to other organisations. Again we can conclude from the data that there is an increase in the outsourcing of these activities, and a concentration in specialised companies is likely to have taken place between 2001 and 2004.

5.1.5 Conclusion

The main conclusion that can be drawn from this detailed analysis of LFS data is that several business functions are increasingly performed within specialised service sectors. Evidence was found of a decreasing share of specific business functions in sectors where they are 'peripheral' to the production process, and a growing concentration in sectors in which they constitute the core activity. This suggests that there is an increase in the outsourcing of these business activities. The most obvious example of this trend was found in IT services and logistics, but it was also clearly visible in marketing and sales, and in legal and financial services.

5.2 Geographical moves

A second aim of this research was to investigate whether there was any clear evidence of shifts of employment from the Old Member States to the New Member States that could support the hypothesis that the latter were becoming a 'back-office' for the former.

5.2.1 Business services employees

As already noted, in the business services that are outsourced, total employment in Europe did not decline. On the contrary, overall employment in these business functions has strongly increased in the old European member states, which means that outsourcing of these business services happens to a great extent within the borders of the old European member states.

5.2.2 IT workers

Employment for IT workers also increased substantially over the past decade, both in the old and New Member States and the share of IT workers in total employment considerably increased as well. In the Old Member States, 1.8 *per cent* of all those in employment are in IT functions, compared with 1.2 *per cent* in the New Member States. The difference

between these two shares, however, has remained more or less stable, which suggests that there has been no increase in the relative importance of IT employment in the New Member States, although this did increase in percentage terms much more than in Old Member States between 2000 and 2003 (Huws, Flecker & Dahlmann, 2004). Whether these countries are becoming a 'back-office' for companies in the Old Member States remains an open question, requiring investigation by other means; our research findings did not produce conclusive evidence on this question.

5.2.3 Logistics

A similar conclusion can be drawn with regard to logistics. In the old European member states, there has been an increase not only the absolute number but also the share of logistics jobs in total employment since the mid 1990s. In most New Member States, by contrast, logistics employment has decreased and the share of logistic jobs in total employment has decreased as well. Hence we can conclude that logistics has strengthened its position within the old European member states, and that, on the basis of these data, it is unlikely that there will be a major shift took place of logistics jobs from the old to the New Member States.

5.2.4 Shifts outside the EU

Since the dataset used for this analysis is limited to European countries, the analysis does not enable us to trace employment shifts from or towards other parts of the world. The interpretation of some of the trends we observed therefore has to rely on other sources of information. The large decline of production activities in textile and clothing, for example, can be explained by the massive relocation of these activities to low cost countries. A similar picture can be found in relation to trends in customer service employment in the financial sector. The number of customer service clerks in the Financial sector considerably decreased. This trend, which is observed both in the old and in the New Member States, can possibly be explained by the relocation of such back-office service activities in this sector towards developing countries. However it may be caused by automation and the growth in self-service in this industry.

5.2.5 Conclusions

We can thus conclude that in the sectors and occupations under study no evidence was found of a major shift of business activities from the Old to the New Member States. We have to remark that this is partly due to the limitations of the data: the LFS does not allow us to trace the sector or country of the company to which a business service is supplied. It is anticipated that the results of the Eurostat *International Sourcing Survey* (Statistics Denmark, 2008) carried out in eighteen EU member states will rectify this situation.

5.3 Concentration on core activities

A third aim of the research was to examine the trends in employment in the core activities of sectors. In several sectors, core occupations were traced and employment trends in these activities were estimated. A growing share of employment in core activities within a sector is an indication of an increasing importance of these activities. A decreasing share of core activities within a sector is an indication of a growing importance of secondary activities, or of a shift of formerly secondary activities towards the core business of companies.

5.3.1 The IT sector

In the IT sector (NACE 72), a growing importance of core activities was found, in both the old and the New Member States. The core activities in the sector have been identified by means of three occupational groups: *Computing professionals* (ISCO 213), *Computer associate professionals* (ISCO 312) and *Architects, engineers and related professionals* (ISCO 214). Along with the steep increase in total IT employment in the past decade, employment figures show a growing importance of the core activities within the sector, which occurs at the expense of other activities. In the Old Member States, 50 *per cent* of employment in the IT sector involved core activities in 1996, and by 2004 this percentage had increased to 56 *per cent*. In the IT sector in the New Member States, a similar evolution was found.

5.3.2 The food industry

In the Food industry (NACE 15), there are differences in the trends between the old and New Member States. In the New Member States, the importance of core production activities within the sector has increased, whereas in the Old Member States, the share of core production workers has remained relatively stable in the past decade. The following ISCO categories have been identified as being representative of core production in the food industry: the craftsmen, which are in the category of *Food processing and related trades workers* (ISCO 741), the skilled factory workers, which are in *Food and related products machine operators* (ISCO 827) and in *Other machine operators* (ISCO 829), and finally the low-skilled *Manufacturing labourers* (ISCO 932). With this classification, we find that in 2004, 46.5 *per cent* of the EU-15 employed in the food industry work in core production activities, which is similar to the 47.5 *per cent* share of 1996. In the New Member States, the share of core production share increased from 38.1 *per cent* in 1999 to 43.9 *per cent* in 2004.

5.3.3 The textiles and clothing industry

In the textiles and clothing industries (NACE 17-18), however there is evidence of a decreasing share of core activities. Three occupational groups can be indicated as the core production workers of the sector: *Textile, garment and related trades workers* (ISCO 743), which are the craftsmen, *Textile-, fur- and leather-products machine operators* (ISCO 826), which are the skilled factory workers, and finally the unskilled *Manufacturing labourers* (ISCO 932). Figures show that the huge employment decline in this sector has been accompanied by a considerable reduction in the share of core production workers within

the sector: from 67 to 60 *per cent* in the Old Member States between 1999 and 2004. In other words, other occupational groups in Textile and clothing saw job losses as well, but their decline was more moderate. This means that for Textile and clothing companies located in Europe, the importance of activities previously regarded as supporting activities has increased in terms of employment. Most prominent in this respect is the evolution of R&D. This is the only occupational group in Textile and clothing that has been able to maintain its absolute employment level during the past decade. R&D in the sector can be estimated by *Architects, engineers and related professionals* (ISCO 214), *Physical and engineering science technicians* (ISCO 311) and *Designers* (ISCO 3471). R&D, and more specifically design, is closely linked to the end products in textile and clothing industry. On the basis of these trends, we can conclude that European firms keep this core activity in-house, while other activities are being outsourced or relocated elsewhere in the world.

Another significant conclusion can be drawn regarding the changing importance of core activities in this sector. In contrast with the overall decline of the sector in Europe, textiles and clothing has maintained an important position in the total national employment of a few member states. In these countries (and only these) textiles and clothing employment still relies heavily on core production activities. In Portugal and Poland, for example, the share of core production workers in the sector is 78 *per cent* and 73 *per cent* respectively, whereas in Germany and the United Kingdom, this share has declined to 45 *per cent*. This points to the fact that the textiles and clothing industries in the former countries were able to prevent a similar steep drop in employment by means of a sustained concentration on core production activities, and not by means of a major shift towards other activities.

5.4 Conclusions

We can conclude from this analysis that measuring employment in business functions on a European wide scale is possible, and that the first analyses on the basis of this method have resulted in relevant and innovative research findings. The method reveals the relative importance of business functions in sectors and clearly traces shifts in employment in particular sectors and business functions. The main conclusions concern the shift of certain business activities to specialised services sectors, the occurrence or absence of geographical moves, and the strengthening or shifting of core business. Future research could concentrate on other sectors and business functions, and a promising line of study would be to assess the qualitative characteristics of the employment changes.

6 Restructuring across value chains

Case study evidence from the clothing, food, IT and public sectors

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6.1 Introduction

Since the early 1990s, there has been a general trend in corporate restructuring towards a 'concentration on core activities' and outsourcing of tasks in a range of business functions. Companies seeking to focus on what they define as their core business tend to outsource non-core activities to other companies that are specialists in those areas (OECD, 2004: 32). Apart from costs, this is motivated by considerations relating to management capacities, human resource and knowledge management and quality aspects. More recently, the relocation of work and the emergence of global value chains in more and more industries has triggered a vivid debate on 'offshore outsourcing' in particular of service activities and high-skilled work (Huws, Flecker & Dahlmann, 2004; WTO, 2005; OECD, 2005). These processes of restructuring, which involve a decomposition and re-composition of sectors, companies, workplaces and jobs, obviously have far-reaching consequences for employment levels, job security, work organisation and the quality of work life. The restructuring may also intensify the segmentation of labour markets and lead to a fragmentation of employment both in the private and the public sector (Marchington, Grimshaw, Rubery & Willmott, 2005). Moreover, the growing complexity of governance and control of the new organisational relationships results in an increased instability, unpredictability and insecurity of power relationships at the level of the value chain or network, the organisation, the workplace and for the individual (Gereffi *et al.*, 2005; Huws, 2006c). While subcontractors or supplier companies are often SMEs that are in a dependent position *vis-à-vis* their clients, it is also true that outsourcing is part of a structural shift in the economy that is leading to the emergence of large scale, global service provider and supplier companies (Faust *et al.*, 2004; Flecker, 2007).

The WORKS project aimed to shed light on these issues by looking at the relationship between changes taking place at the level of the European and global economies and changes taking place at the workplace level. To analyse this relationship, the concept of the global value chain is used because it makes it possible to examine the interactions between the different levels. To investigate current restructuring processes, the concept is extended beyond manufacturing to cover the service and the public sectors. On this basis, the division of labour along value chains and changes in workflows were analysed that directly impact on employment relations and day-to-day work practices. Organisational case studies were conducted to provide windows into the restructuring of value chains at strategic points to illuminate changes in the organisation of work within and between organisations. The data capture the effects of restructuring by going beyond the boundaries of individual companies and sectors. The WORKS project selected a range of business functions in particular sectors for investigation. A business function was defined as the

ensemble of specific tasks or activities which contribute to the overall process of producing goods and services.

In order to ensure international comparability, with the aim of comparing the impact of the national institutional context on value chain restructuring, it was decided to ensure that the business functions selected for the case study research were situated in the same sectors in contrasting national contexts. These sectors, of course, share many common features. In this chapter we therefore summarise the case study evidence on a sector by sector basis.

6.2 The clothing industry

From early on the clothing industry has been highly internationalised and characterised by strongly fragmented value chains and cost-driven competition. Nevertheless, until quite recently, trade barriers have been in place. During the 1990s, the Multifibre Arrangement (MFA) and the liberalisation of EU trade with countries in Central and Eastern Europe (CEE) shaped the development of the industry in the EU and neighbouring countries in Eastern Europe and the Mediterranean Rim. Outward processing trade (OPT) arrangements allowed for export of materials to these low-wage countries by European producers and the re-import of finished garments with minimal trade tariffs charged on the value added abroad (Smith, 2002). This led the CEE clothing industry to increase its clothing exports to the EU from 3,710 million USD to 8,824 million USD (+237 per cent) between 1990 and 1999 (Smith, 2002). In the EU, the industry downsized considerably while retaining higher value-added functions. However, in the EU-25, some 2,7 million workers are still employed in the textile and clothing sector (European Monitoring Centre for Change, 2004b). After the phasing out of the MFA and the WTO Agreement on Textiles and Clothing in 2004, current global competition is putting considerable pressure on EU clothing companies (Lane & Probert, 2006), but also opens up new markets for them. Outsourcing to CEE countries that in the 1990 was characterised by wage-cost sensitive, short-term and arm's length relationships with customers has resulted in upgrading processes, as a result of business models adopted by Western European companies that favour proximity of production and speed over cost reduction (Faust *et al.*, 2004; Pickles *et al.*, 2005).

The concentration process in the retail industry and the development of their own labels and brands by retail companies further weakened the market position of clothing producers. They increasingly relocated and outsourced production to low-cost countries which often meant a vertical disintegration of the companies. The 1990s saw the triumph of the 'new verticals' that followed the textbook example of Benetton (Belussi, 1987), companies such as Hennes & Mauritz and Zara that completely control the entire value chain. Because of their success and the competitive pressure they exerted on other European clothing companies these became an industry model. Other companies followed the strategy of forward (or backward) integration, and some manufacturers are now establishing their own sales outlets. Value chain restructuring has thus been at the core of company strategies of adaptation and competition during the last decades.

The value chain of the clothing industry includes several links that represent different activities: planning and development of collections; design and prototyping of models; production design, planning and monitoring; manufacture and assembly of garments;

marketing; distribution and logistics; post marketing; and sales (Lane & Probert, 2006; Faust, 2005).

These activities or functions may be carried out by one company in one or several regions or countries (vertical integration). The value chain may be fragmented so that the various functions are carried out by separate companies, often in different regions and countries (vertical disintegration). Individual clothing or fashion firms may cover different steps of the value chain and hold different strategic positions within it. This is often depicted in typologies (Faust, 2005). Lane and Probert (2006) distinguish between five types ranging from branded marketers to retailers with backward integration.

Faust (2005) adapted the typology on the basis of a study of the German fashion industry and describes the following types in relation to the above-mentioned steps of the value chain they cover:

Table 6.1 Typology of clothing and fashion firms

	Collection development	Design and prototyping	Production planning & monitoring	Manufacture
Branded producers	X	X	X	(X)
Private label producers	X	X	X	(X)
Manufacturing subcontractors				X
Backward verticalising retailers	X	X		
New verticals	X	X	X	(X)
	Marketing	Distribution, logistics	POS Marketing	Sales
Branded producers	X	X		
Private label producers	X	X		
Manufacturing subcontractors				
Backward verticalising retailers	X	X	X	X
New verticals	X	X	X	X

Source: Adapted by the authors from Lane and Probert (2006) and Faust (2005)

The difference between the types does not only lie in the functions or steps in the value chain the company covers, but also in its relative power position. 'Private label producers' cover the same steps as 'branded producers' but, without the brand reputation or the ability to offer complete collections, they are in a weaker position *vis-à-vis* the retailing companies.

In the description of the findings from the WORKS case studies we take these typologies as a starting point. Because of our focus on value chain restructuring we emphasise both the dynamic aspect of the types and the relations between the different players. In

fact, value chains in the clothing industry are highly dynamic as companies constantly try to improve their competitive position by outsourcing or insourcing, by forward integration ('verticalisation') or disintegration. Power relations are key to the understanding of these dynamics. For example, in order to escape from the dependence on powerful retailers, producers aim at creating strong brands and establish their own sales outlets.

Some of the types described in previous research are illustrated by WORKS case studies. Some of the cases however do not fit that neatly into these typologies. Fashion companies with a background in logistics, for example, organise whole value chains on behalf of their clients who may be retail companies or brand holders. Faust (2005) already mentions the emergence of specialised logistics companies, covering several steps of the value chain, but does not include these in his typology.

The first group of cases in our research (in France, Italy and Belgium) comprised a group of companies that were branded producers with strategies that involved forward integration on the one hand, including the opening of their own branded chains of stores, and outsourcing of production on the other (Pedaci, 2007a & c; Muchnik, 2007b, c & d).

These cases do not simply follow the model of the 'new verticals' although as brand owners the companies would be in a rather good position to do so. Rather, they pursue different strategies that partly include further fragmentation. One path seems to be forward integration by developing or strengthening their own retail units while outsourcing core functions such as collection development. The other path is the strengthening of design and prototyping without forward integration. Production may be relocated in-house to low cost regions or outsourced or both. A common feature of these cases is the tendency of acceleration of business processes and the significance of ICT, in particular for organising fragmented value chains.

A second group of cases included two companies based in Germany and one in Portugal (Bechmann, Krings & Nierling, 2007; Vasconcelos da Silva, Woll & Moniz, 2007). These were private label producers who had had to develop responses to competition and retail power, by outsourcing production and taking on additional functions (such as storage and labelling) previously carried out by the retailers. The Portuguese company, itself a subsidiary of a textile producer and therefore without a great deal of market leverage, had also carved out a role for itself as an intermediary, creating samples, negotiating contracts and carrying out quality control on manufacture taking place in North Africa, Latin America and elsewhere.

In these cases too, production had been relocated partly to companies' own subsidiaries and partly to formally independent suppliers in low cost countries. The taking over of functions of the retail trade was described as 'verticalisation' by respondents but could be interpreted more negatively. On the one hand, powerful retail companies have managed to unload tasks onto their suppliers and, on the other, suppliers have increased their influence over logistics and sales. Either way, the interdependence between retail and manufacturing has increased. And, again, acceleration and implementation of IT are common developments coinciding with the restructuring of the value chain.

The next group of cases involved companies lower down the chain, located in Greece and Hungary, that were more focused on manufacture but were nevertheless in the process of subcontracting to other companies further down the chain, respectively in Romania and in Romania, Bulgaria, Ukraine and Turkey (Makó, Illéssy, Csizmadia & Bácsi, 2007; Gavroglou, 2007a).

These manufacturing companies are under pressure to reduce costs and as a consequence follow the model of their customers and relocate parts of the production to countries with even lower wage levels. Again, relocation of production might mean outsourcing or the establishment of their own subsidiaries. This leads to a further fragmentation of the value chain.

The next group of cases involved fashion logistics companies and intermediaries. Located in Germany, Denmark and Portugal, these had diverse origins, coming from backgrounds in wholesaling, mail order and logistics but these companies had succeeded in capturing central positions in the value chain, in some cases very powerful ones that enabled them to exert considerable influence on manufacturing companies lower down the chain (Woll, Vasconcelos da Silva & Moniz, 2007; Krings, Bechmann & Nierling, 2007b). They illustrate that restructuring may also include changing relations with the parent company or the integration into a new parent company after a take-over. Logistics is a crucial function within the clothing value chain, all the more so when the pace of fashion change speeds up and innovation cycles become shorter. This function can be organised separately and carried out by specialised service providers or it can be combined with the organisation and control of several steps within the chain.

The final case involved a Dutch textile company whose main market is in West Africa (Hoogenboom, Bannink & Trommel, 2007). In response to the recent entry of Chinese competitors into its main market, this company responded with a restructuring plan which included increasing flexibility to pre-empt their competitors from copying motifs and selling fabrics before a second delivery could be organised from the company's own fabrics. The plan also involved forward integration by opening 'flagship stores' in West African capitals and the establishment of a marketing and market research apparatus in West Africa combined with intensified advertising in order to establish brand awareness.

6.2.1 Conclusions

Overall, in the countries participating in the study, we were observing the restructuring of the 'higher end' of the value chain in the clothing industry. This includes the transformation of former outsourcing destinations, manufacturing and retailing companies in Southern Europe into providers of higher value-added functions covering design, co-ordination and/or logistics. However, this development does not necessarily shift power to companies that are upgrading their business in Europe, and it may be temporary. Smith (2002), for example, shows how in the case of Slovakia, Eastern European companies were able to act as intermediaries to provide access to even lower-cost labour markets but then were replaced by more immediate collaborations of local entrepreneurs and transnational companies.

Even when clothing value chains are not exclusively driven by large buyers and retailers (Gereffi & Korzeniewicz, 1994) and some companies are making inroads into retail or services for retail themselves, the pressures of the market are increasing across the board. Fashion becomes more short-cycled and the availability of ICT-based merchandise information systems allows for feeding sales information immediately back into the production and design function (Muchnik, 2007b). Value 'chains' thus contain loops of information feedback and knowledge circulation between customers and suppliers (cf. Smith, 2002).

However, regional and cultural proximity still play a part in companies' selection of subcontractors, as fashion cycles are shortening and reliability and responsiveness continue to matter in addition to cost considerations. Hence, Eastern European countries, Turkey, Egypt, Tunisia and Morocco figure as important outsourcing destinations, and in addition to India and China, manufacturers in Brazil and Honduras were producing clothes for our case study companies. However, we are not sure that these inter-firm relationships are likely to evolve from cost-based competition to more trust-based, longer-term collaborations as Kalantaridis *et al.* suggest for the case of Transcarpathia in Ukraine (Kalantaridis, Slava & Sochka, 2003).

It could well be that the case study companies' moves up the value chain may not be sustainable over time. Upgraded, more skilled and knowledge-intensive work requires an institutional environment that provides training and innovation facilities, as the literature on industrial districts has argued, and a 'critical mass' of skill in the region. Such regional infrastructures are being eroded in Hungary, Greece and Belgium while they apparently remain in place in Portugal. Companies in eroding environments face skill shortages that eventually lead to further relocation of work.

6.3 Research and development in IT

R&D in software development is not necessarily already a business function and part of a value chain, since a considerable part of it is to some extent carried out in academic environments. However, restructuring in these cases is about linking research closer to possible commercial innovation and the market for products and services, speeding up the transfer of technology or generally changing the sequence from basic research to commercial application to 'a non-linear, recursive interaction between theory and practice, academia and industry ...' (Etzkowitz, 1998). This, however, is not a mainly economic activity but one in which companies, universities and public bodies interact (Etzkowitz, Webster, Gebhardt & Terra, 2000). The organisations investigated hence seek to connect themselves to software development value chains by finding industry collaborators, applying research findings to 'practical' problems, and eventually contributing to the creation of marketable products and services.

In a corporate context, software research covers the initial conception of products or systems; design and prototyping; and software development (the process of building the product using the outcomes of the research phase), which includes understanding and enumerating the requirements, translating the specifications into instructions for the computer, testing the software to make sure the specifications and translations are correct, fixing problems and bugs, documenting the system, and modifying it to customer requirement (Barr & Tessler, 1996).

Research appears specifically embedded in the institutional environment since it often takes place at the boundaries of publicly-funded and for-profit activities, somewhat remote from the 'immediate' market. In our sample, two cases, *A NOR* (Norway), *VR2* (Germany) and *Lab 1* in the *Austrian IT Research Labs* were originally university spin-offs aiming for the commercialisation of research findings, which in the cases of *A NOR* and the main customer of *Lab 1* were bought up by US-based IT multinationals (Holtgrewe, 2007; Torvatn, Anthun & Dahl-Jørgensen, 2007; Meil, 2007a). The *Austrian IT Research Labs* and *CharleTIC* (Belgium) are research organisations originating in the public sector with

increasing proportions of private sector research funding (Holtgrewe, 2007; Vandenbussche, 2007). As such, they represent new intermediaries between academia and start-ups or other businesses. *Comtel* (France) is the R&D division of a large telecommunications company that has been privatised (Muchnik, 2007a), and *UK Lab* (UK) is one of three research units of a Japanese multinational technology company which has been located close to a university centre of expertise in its field (Gosper, 2007).

Hence, even in formerly publicly-funded or cross-subsidised organisations, new units are established in order to find or to construct markets for the intended products and outcomes. The fully or partly publicly-funded organisations do not necessarily experience immediate market pressure, but being proactive with regard to the marketisation of research is nevertheless an issue of institutional legitimacy and policy. From the side of potential customers, we find both some integration of innovative start-ups by large IT companies and some outsourcing of innovation and R&D. Large companies' concentration on core competencies and products also opens up some space for smaller organisations in areas that are not deemed 'core'. Research departments of companies that generally allocate some time and resources to 'basic' research, also take on an increased proportion of product development work, and closer ties to marketing.

Thus, customers have moved closer to IT researchers across the cases, but the value chains, where they exist already, are quite complex, especially in internet-related software R&D. Customers are companies that develop and sell products, but frequently these products are bundled with others into complex configurations of goods and services that may be produced or sold to final users by, again, other companies, and/or finally may be cross-subsidised or paid for by advertising.

All our case study companies were active in key technologies and expertise such as search engines, artificial intelligence, virtual reality, geo-informatics and language processing. Research in these contexts takes more fields into account than just the 'state of the art'. It is increasingly about identifying marketable products and niches, staying ahead of competition, and thus market and technology observation becomes part of research. Hence, even research organisations that are (partly) funded publicly add new functions such as marketing and customer contact, and generally, boundary-spanning functions multiply (Marchington, Vincent & Cooke, 2005). With R&D as a transnational activity and also with companies internationalising and the public sector under some cost pressure, consolidation of R&D activities is frequently a threat on the horizon.

Three of our cases represent R&D units within larger companies that acquire their projects from other units within the company, mostly through a combination of contracting and professional negotiation that gives them some influence over their own research agenda. The other three are independent units.

In the first three cases, in Norway, France and the UK, the R&D units studied could be regarded as internal services and cost centres within their respective companies. All these internal company R&D units were moving closer toward the market or product development. For their situation and the scope for negotiation they have, the location of funding sources matters: business units, verticals and marketing departments may contract more or less explicitly in line with the R&D unit.

In the next three cases, in Austria, Belgium and Germany, the units are specialised ones, which act as external contractors. The Austrian and Belgian cases are research institutions with a considerable proportion of public funding and close connections to

universities, but with an explicit mission to transfer technology, increase the proportion of third-party funding and move research closer to the market. The German case is a former university spin-off and has ongoing relations with the university but operates as an independent business.

If we assume a continuum of IT and software research between 'basic' research and development of marketable products, all the R&D units we investigated have moved or been pushed towards the product development side. Although they represent a range of positions in a chain (or network) of innovation, they are all instances of complex articulations of technology push, market pull and iterative loops and incremental search processes between both sides.

The move closer to markets and customers has two implications: functions such as marketing and sales or, more generally, project acquisition, have both been added to the tasks of researchers and new jobs have been created for specialists in these areas. There is some experimentation with both alternatives in R&D units especially in the public sector cases, but R&D organisations generally have learned that not all customer contact and marketing can be assigned to specialists, since detailed technical knowledge is essential.

Further down the value chain, as products are developed and reach maturity, software implementation, adaptation to different systems, testing, documentation and fit with other applications on the customer side are functions that are not necessarily attached to researchers' tasks, and R&D units tend to hand over their work in this area elsewhere, with the exception of Germany's *VR2* who build entire systems for customers. In small projects with a narrow pilot user base, some support may be provided by researchers. In the case of *A NOR*, a separate group for 'delivery' has been built up to look after this aspect, and there is a separate support team located in California, who mostly rely on written documentation and only pass on problems that they cannot solve to *A NOR*. Austria's *Lab 2* has a different business model. Specialising in geo-informatics, they do not develop products but focus on 'research-based consultancy', that is, offering customers maps of particular indicators and their geographical distribution. This allows for an incremental build-up of data sets and knowledge while keeping software tools in-house.

Actual research may be spatially distributed as in the Austrian *IT Research Labs*, the French *Comtel* or the British *UK Labs*. Such distributions follow different logics. The *IT Research Labs* and also *UK Labs* are intentionally located close to a university or research institute centre of expertise as part of regionally specialised clusters. *VR2* and *A NOR*, as university spin-offs, also remain close to their university of origin. The Austrian *Lab 1*, however is in the same building as its former mother company, which allows for frequent meetings and close collaboration. The French *Comtel*, by contrast, during reorganisation has disrupted these networks of face-to-face presence. Here, the separation of expertise and location and the introduction of virtual teams has apparently had some adverse effects. It dilutes the 'critical mass' that makes expertise visible and renders collaboration attractive for other partners. Interestingly, when locations are no longer identified with clusters of expertise by definition, such collaborations are not necessarily abandoned but become more contingent on local contexts and histories of collaboration.

Generally the degree of influence and power in the value chain in the cases of R&D manifests itself in influence over the direction of research and autonomy in choosing projects as well as influence on the location – and conversely, being located in a recognised centre of expertise enhances the power of the R&D unit. The prime example here is

A NOR whom their mother company meant to move to California upon acquisition but who, because of the expertise and coherence of the group, managed to resist this pressure and stay in Norway and turn the possibilities of virtual collaboration to their advantage. When research projects are spatially distributed (something that R&D organisations tend to do to a limited extent only, except for *Comtel*), the history and ‘ownership’ of a technology influences decision making.

6.3.1 Conclusions

In general, we can conclude from these cases that R&D jobs in IT are still quite attractive. Still, ivory tower situations are on the decrease, and actual products, market observation, closer relations with customers and an anticipation of market needs are on the agenda across the diverse types of R&D organisation. However, this is not a unidirectional process of marketisation. We also observed increasingly complex articulations of market, professional and political logics (Lam, 2005). All in all, power becomes more perceptibly dialectic as MBO, management indicators and market data creep in as well as the formalisation of scientific evaluation criteria. Thus, we see power associated with technological and organisational exigencies, but also with professional/technical consensus building.

Time horizons matter increasingly. Generally, R&D is speeding up, ‘time-to-market’, or time to the next milestone is shortened, and software engineering methodologies intended to speed up R&D are implemented. Such methodologies aim for shorter, iterated development cycles, and some informalisation. On the other hand, company standards for documentation and knowledge management are also increasing. This creates some dilemmas in relation to temporal demands.

A similar temporal dilemma applies with regard to external customer relations and collaborations. The shortened time horizon for projects puts multiplied demands on senior researchers especially, and may be at odds with the need to build collaboration, trust and knowledge exchange with external partners. This is a more incremental process of exploration and communication which requires some time and continuity. However, demonstrations of speediness and the capability to come up with a working prototype quickly also play a part in this trust-building. Hence, the development of collaborative customer relations does not just take place in a tension between short-term and long-term time horizons. The speedup that researchers generally feel, upon closer examination, translates into the need to manage timing, and to articulate simultaneously different time horizons that result both from the inherently uncertain character of research work and from external demands for both speediness and long-term collaboration.

6.4 Software development

Software development is an activity that has experienced considerable transnationalisation. EU New Member States play a large part and have been doing so for quite a while. As outsourcing destinations, they still represent an attractive combination of high skills and low pay, although pay differentials between CEE countries are beginning to matter in choosing location (for example Hungary *versus* Slovakia). We are also witnessing a development in which CEE companies are originating their own outsourcing. Here, Vietnam emerges as an attractive location. Patterns of outsourcing are generally related to complex

ownership and takeover histories rather than purely market- or company-driven strategies.

Among the cases studied in the WORKS research, the German case of Business-Software is the prime example of a very co-ordinated, top-down transnationalisation with multiple aims, including cutting costs as well as gaining access to foreign markets and to IT talent abroad (Krings, Bechmann & Nierling, 2007a). The Hungarian Domainsoft is the subsidiary of a German multinational's Austrian software company, and is similarly integrated (Makó, Illéssy & Csizmadia, 2007a). Bulgaria's SoftServ is the only genuine subcontractor in the sample, but as far as we can see, offshores in an integrated way (Galev, 2007). The cases from Austria/Croatia (Messenger/Digit) and Sweden (INIT) represent companies that have grown through mergers and acquisitions, are now (partly) US-owned and have more idiosyncratic histories of outsourcing and offshoring (Flecker & Schönauer, 2007; Tengblad & Sternälv, 2007a). In the integrated cases, offshoring happens from the top-down through owned subsidiaries. This does not, however, necessarily imply a coherently hierarchical form of governance.

Conversely, these multinationals have come the farthest in establishing internal tender procedures and having their subsidiaries both compete with one another and specialise. In the more fragmented cases, we observe offshoring relations based on more ad hoc decisions, less competition and more hierarchical governance. Indeed, the Swedish case reports a history of a more or less unsuccessful outsourcing attempts based on a long-term collaboration with Indian partners which is being replaced by a captive subsidiary in the Philippines that is both cheaper and more tightly controlled. The Croatian part of the Austrian case was assigned to Austrian project managers after a period of disorientation.

Hence, there was considerable variety in the strategies of all the cases, and in particular among the Eastern European cases in our sample. This is, in part, related to the management of internal competition in the cases of subsidiaries. Hungary's Domainsoft is a unit within the software subsidiary of an electrical engineering multinational based in Germany, where projects are assigned by internal tendering on the basis of fixed hourly costs. Since the company also has units in lower-wage countries such as Slovakia, the Hungarian unit has moved further up the value chain and taken over more value-adding tasks. On the other hand, the Croatian company Digit, whose position in its US-owned mother company is mediated through the Austrian subsidiary Messenger, works as a remote operative unit ('verlängerte Werkbank') and has no incentive or interest in taking over other tasks. The Bulgarian case of SoftServ is complementary: this is a local company specialising in international outsourcing and aiming for the higher-quality end of the market, for long-term customer relations, and offering its services to small and medium enterprises as well.

Projects and parts of projects within a value chain are thus assigned through any combination of hierarchical governance, networked co-ordination and negotiation or market-like tender procedures (Gereffi *et al.*, 2005). Indeed, the more integrated a multinational is (as in the cases of Domainsoft and German Business-Software), the more likely is it to use tenders. However, even when projects are assigned by tender as in the cases of the multinationals in Germany or Hungary, competition is moderated both by the need for collaboration and the location-specific build-up of particular expertise.

In terms of workflow, typically, with the relocation of software development in general, remote locations tend to take over the more standardised functions first: circumscribed

modules of software development, maintenance, quality assurance and testing. The amount of value-added and management functions they take over varies, and this kind of work tends to get relocated at a later point in time. Customer contact, especially, is likely to be concentrated close to the centre and not devolved to offsite locations, although occasionally direct contact by these locations with customers happens informally. The location of project management varies – but in the case of remote project management the availability of project managers for questions and clarification may become a bottleneck. Some companies have matrix organisations with overlapping functions of project and line management.

In general, as we might expect, the definition of tasks and interfaces is critical for virtual collaboration. The German case represents a textbook example of the interaction of internationalisation and standardisation that is characteristic of German medium-sized multinationals (Morgan, 2005). Such straightforward standardisation, however, is more an exception than the rule across cases. Messenger on the other hand still assigns circumscribed tasks to its Croatian subsidiary, leaving Digit in the kind of operative position that the East European subsidiaries of Domainsoft have left. ‘Industrialisation’ in this context does not address individual workplaces in a Tayloristic mode, but means a systemic approach that introduces formalised development processes that span the whole lifecycle of software, co-ordinate work on a global scale within the company, and try to assure quality control of a range of very complex products. Thus, integration is achieved by multiple means, not just technically by using common code libraries, but also by project management and social processes such as a formalisation of requirement and architecture definition, feedback loops, testing procedures and so on. However, locations are not interchangeable. Indeed, they are forced to develop a profile of competencies, and especially higher-wage locations come under some pressure to justify their costs.

A similar configuration with, apparently, less standardisation and more micropolitics is found in Hungary’s Domainsoft which, for CEE, has already become a higher-cost location compared with Slovakia or Romania. Hence, it has moved from a body-leasing type of operation to higher value-added services. (Makó *et al.*, 2007a). Generally, CEE subsidiaries also compete with Western locations on the basis of greater flexibility, longer working hours and willingness to work weekends. This results from their accepting fluctuating workloads and tight deadlines.

Offshoring in software development thus emerges as a dynamic and indeed, recursive process. When companies develop the processes and routines that support the co-ordination of distributed development projects by standardising requirements, architectures, feedback and quality control routines, further relocation of work or the take-over of projects by other teams become increasingly easier over time, increasing the competition between locations unless they manage to specialise.

6.4.1 Conclusions

It can be concluded that the restructuring of software development is characterised less by linear processes or a neo-Taylorist ‘one best way’ but by interlaced loops of changes that are embedded in the history, market and institutional environment of a company or network. Relocation, either as outsourcing or in-house offshoring both requires and enhances some formalisation of specifications, interfaces or modules. However, it is also possible to

hand over modules or ‘black boxes’ of sub (projects) (a matter of longer-term collaborations) or smaller, circumscribed or standardized tasks. Hence, we observe both ‘modular’ and ‘captive’ value chains (Gereffi *et al.*, 2005).

Standardisation implies an increase in communication, and formal specifications may be supplemented by more narrative or exemplary ‘cases’ as bases for understanding functions. As an interviewee of Adler (2005: 423) put it in a truly Durkheimian way, ‘Process means that people play more specialised, defined roles, but also that these specialists get involved earlier and longer as contributors to other people’s tasks’. Hence, while work may have changed from a more traditional craft-based mode that developers occasionally conjure up somewhat nostalgically, we do not observe any deskilling.

In a similarly mutually enforcing way, internal competition is supplemented and limited by specialisation and building of competencies in the integrated cases of *Business-Software* and *Domainsoft*. However, as we have seen, a basically competitive governance structure actually hampers the circulation of knowledge. This configuration is particularly visible in the Hungarian case, a former body-leasing operation that has now moved up the value chain and successfully taken projects from older, Western locations. Now, it finds itself undercut by other, newer CEE locations, which renders the Hungarian subsidiary somewhat reluctant to share knowledge with these ‘European works councilors’. With regard to overall knowledge circulation and innovative capabilities of the company as a whole, units thus find themselves pitched against each other in a prisoners’ dilemma of knowledge retention that may prevent them from making use of synergies.

Compared with previous findings on MNC strategies (Morgan, 2005) and value chains (Gereffi *et al.*, 2005), transnationalisation has advanced further in software development, but has led to a range of company-specific patterns rather than an industry-wide ‘story’ of value chain fragmentation or company restructuring. In the German-based multinationals we still find the most co-ordinated and integrated top-down efforts at transnationalisation. In the other cases, mergers and take-overs or joint ownerships with US-based companies complicate the question of nationally embedded strategies. US involvement seems to encourage companies to offshore operations to Asia. It also leads to a transfer of formalised practices in HR and software engineering in Sweden which is at odds with the more informal Scandinavian style.

6.5 Production and logistics in the food processing industry

The food industry, particularly in production, is a sector utilising a relatively high share of low-skilled labour and displaying traditional forms of work organisation and division of labour. Nonetheless, there are aspects of work that are quite knowledge-intensive, for instance, in the R&D function, with the introduction of new genetic bio-technologies, freezing techniques, use of flavouring or chemical additives. This is also the case in logistics, where world-wide distribution networks are highly computerised and customer orientation has led to large increases in product diversity and short delivery time frames. These new developments stand side-by-side with conditions in a sector still closely linked to the agricultural resources that form its base, and the demands for their quick and hygienic processing. The WORKS case studies examined to what extent work in this sector is changing given these various trends and to what extent restructuring, whether through merger, acquisition, outsourcing, selling off, *etc.* affects work and employment.

The food industry is, in turnover, the largest sector in the EU, ahead of the automobile and chemical industries. It is also the leading employer in manufacturing in the EU. Yet, it still reveals a very low level of R&D expenditure, and that which is undertaken is mainly concentrated in the largest multinationals in the sector. SMEs still dominate the industry, accounting for 50 *per cent* of its turnover (CIAA (Confederation of the food and drink industries of the EU), 2006). Although a shift in production activities toward Eastern and Southern Europe is visible, in fact, France, Germany, Italy and the UK, and Spain are the leading producers of food and drink, accounting for 70 *per cent* of total EU turnover. Aside from the textiles sector, personnel cost per employee is the lowest in manufacturing, underscoring the use of low-skilled labour. Despite the low cost of labour, the industry has been investing for some time in automation in production, process and logistic functions, increasing capital utilisation and changing skill demands (Pollert, 1993).

The organisations represented in these analyses (most of them consist of numerous companies) are situated in Belgium (logistics of beer), in Bulgaria and the UK (production and logistics of beer), in Italy (production of frozen vegetables), in Greece (production and logistics of frozen vegetables), in Denmark (production of meat), and in Norway (production and logistics of fish).

An analysis of these cases shows that in the food industry restructuring on an international level is very important, although this sector is strongly locally embedded. Restructuring takes many different forms, including outsourcing and subcontracting as well as centralisation, mergers and take-overs. *Maltco*, for example, is a multinational concern with its headquarters in Belgium and recently taken over by another multinational company (De Bruyn & Ramioul, 2007b). Its export operations department was relocated to a *Maltco*-owned business shared service centre in Prague, Czech Republic. Another example is the Greek case study on production of peas (Gavroglou, 2007b), which analyses consequences of the opening of a plant in Bulgaria instead of importing large amounts of peas from companies abroad (Sweden, Hungary, Serbia). In the case of beer production in Bulgaria (*Beer AD*) restructuring was also part of a global project (Kirov, 2007). Beer AD was bought by a multinational company, the global management structure was changed and decision making was moved to Moscow as part of the multinational's move to create regional centres serving world zones. Important departments such as general management, marketing, purchasing and sales were concentrated in Sofia. Logistics were centralised at the level of Bulgaria in another city. Another example of such global restructuring is the Danish company *Meat Inc.*, which has facilities for slaughtering and food processing in Germany, Poland, the UK and the USA (Gorm Hansen, 2007). Even the Italian case on vegetable production (*ND*), which mainly focuses on national partners, has subcontractors abroad (Pedaci, 2007b). The small company *FC* in Norway is part of a multinational network of supply and logistic functions (Saetermo, Torvatn & Dahl-Jørgensen, 2007).

All the companies have in common that they feel an increasing pressure of international competition, but their strategies to survive on the market are very different. Several of the agricultural organisations we looked at started as or still are cooperative movements, which are based on a democratic principle, meaning that all members, no matter the size of their farm, have equal opportunity for influencing decisions. One example is the Italian producer of vegetables *ND*, which resulted from the merger of a number of farming cooperatives. Also *Meat Inc.* in Denmark had its start hundred years ago with the

formation of the Danish cooperative movement, making the Danish pig farmers the owners of the Danish slaughterhouses.

Other cases begin with a restructuring deriving from the privatisation of formerly state-owned companies. *Beer AD* in Bulgaria is such an example; it became independent 'after the fall of communism, when state owned enterprises were "de-monopolised"' (Stoeva, 2007). When the company lost its status as a state monopoly it was suddenly confronted with competition on the local and on the global market which was accompanied by demands for organisational and technological changes within the company. An Austrian consultancy company was hired by the Belgian multinational company that had acquired it, and consultants suggested the outsourcing of some activities.

Our case studies show that the outsourcing of parts of production or logistics is not always a successful strategy in the long run. The case of *ND*, an Italian producer of vegetables and frozen foods, is, at first sight, a prime example of outsourcing. The decision to outsource parts of the production was initially undertaken due to capacity problems caused by unexpectedly high demands for frozen vegetables. The company outsourced processing and freezing of fresh produce, while retaining the packaging internally. Also R&D was kept in-house, for strategic reasons, as R&D is seen as one of the core business functions. However, *ND* is currently planning to gradually reinternalise those segments of production that have been outsourced or are currently purchased on the market. The reason for this is that in-house production 'would allow them to maintain a strict and more direct control on food processing and thus keep down wastage and delays due to the shortcomings of third parties' (Pedaci, 2007a: 5).

In the Norwegian case *FC* on fish production, management also decided to insource a former contract partner. The motivation was that 'FC felt that they did not really have control over the supplies except through legal ownership' (Saetermo *et al.*, 2007: 11). *FC* does not own the majority of their insured partners, leading to an element of uncertainty. Insourcing of secure suppliers seems to be an important strategy of *FC* for the future.

An example of a decision against outsourcing in the form of subcontracting is the Greek case of production of peas *CO.A*, which decided to open its own plant in Bulgaria rather than buying the peas of other companies abroad. An additional motive was the reduction of expenses, because the import of peas from Hungary and Sweden is more expensive than production in Bulgaria because of higher wages. After its accession into the EU, Hungary lost its big advantage of location and 'setting up a plant in Bulgaria is also considered a good foothold in the emerging Balkan markets which the company aspires to penetrate in the near future' (Gavroglou, 2007a: 6).

Another form of value chain restructuring, which is very common in our case study sample, is centralisation. In the Danish company *Meat Inc.* the main interest of farmers in meat production was to get a good price for their pigs. The aim was to cut production costs through centralisation, automation and specialisation. This was reached by a division of labour between slaughterhouses and meat processing companies, which led to the closing of slaughterhouses, the construction of a new, larger and more Taylorised one and the relocation of parts of production abroad.

The workflow of the production function in the food industry begins with raw materials, whether this is vegetables, as in the cases from Italy and Greece, fish (eggs) in Norway, pigs in Denmark, or malt in Bulgaria. An important part of the pre-production

process is securing a reliable source and delivery of the raw materials. The next stage involves transport, usually outsourced to external transportation companies in these cases. Then the agricultural products are processed into industrialized products: frozen or ready-to-eat food, meat, frozen fish or fish preserves, or beer. This can involve a relatively simple processing procedure, such as in pea production, which mainly involves sorting and freeze-storage, or more complex ones as in the case of brewing beer (fermentation, distillation, filtration) or fish processing (smelt production, fish farming). The next stage is a production process which prepares the food for packaging, such as cutting and deboning meat, filleting fish, bottling beer, and freezing and storing vegetables. Finally, the products are packaged and distributed through the logistics and sales divisions.

Restructuring in the cases presented here often involved a lengthening of value chains in the form of take-overs (Greece, Bulgaria) or outsourcing (Italy and Denmark for some processes). However, there were also simultaneous trends towards centralisation and an accompanying standardisation, for instance the establishment of a new large scale slaughterhouse facility in Denmark which made the work more efficient and the tasks more specialised, the closing of two production sites for beer in Bulgaria and concentration in one site, and the insourcing of fish farming in Norway.

Even given restructuring and modernisation, food production remains quite traditionally organised. Nevertheless, the workflow has been affected by an increasing automation in most of the cases. In Bulgaria, technological modernisation followed privatisation as well as rationalisation of site use (brewing is concentrated at one site) while logistics and cultivation of malt are carried out at the two former production sites.

The attempt to respond rapidly to market demand and the fact that the products have to be processed quickly has led to increased pressure for efficiency and speed in all of the cases. ICT tools have been installed in several cases (Italy and Bulgaria) to co-ordinate and revise labour distribution plans.

Quality control is a major component in the workflow of food production and has taken on greater weight in the increasing 'agro-business' character of the sector.

6.5.1 Conclusions

The food chain begins with agricultural raw materials which go through a processing stage, a distribution stage and finally end up in wholesale or retail centres for consumers. There have traditionally been links between these stages. However, there seems to be a current trend that, 'global food chains are increasingly subject to the process of vertical co-ordination' (ILO, 2007: 3). This has the consequence that large lead firms either buy up entire parts of the chain or have enormous influence in the distribution process to customers, and therefore 'exercise considerable power throughout the chain' (*ibid.*). Particularly in the brewery case, which covered three countries in our sample, there is a clear trend towards concentration and control of large percentages of market share. The other cases also revealed the increasing weight of large customers in determining what is produced in what quantities and in what time frames.

The food companies in the WORKS sample engage in mergers and acquisitions for a number of different reasons: logistics companies and processing companies buy up companies to control raw material supply (as happened in the Norwegian and Greek cases) and buy up competitors to secure access to a variety of different markets and expand

market share (as happened in the brewery cases of Bulgaria, the UK and Belgium). In both logistics and production, the centralisation of functions by large multinationals often resulted in redundancies at the local level. Another outcome was standardisation of reporting systems and procedures as well as a formalisation of organisational practices.

Some of the flexibilisation demanded due to time pressures and cost pressures of being part of highly concentrated and co-ordinated global food chains results in the use of outsourcing and subcontracting, entailing the export of poor working conditions outside of the main production or logistics company. Thus even in the highly regulated Scandinavian cases, there was a tendency to outsource bad jobs and bad working conditions outside the firm and outside the country. The Danish company outsourced low-skilled work to Polish workers in Germany, who received low levels of pay and had no contract protection. In Norway, some temporary seasonal workers are used in fish filleting and packing. In fact, the authors of the case study report that their company, *Larry*, is exceptional in their employment of local labour on regular contracts. Most seafood companies either send their products to Asia for the peeling or deboning processes or use low wage minority ethnic labour at home for these processes. In Italy, the use of an outsourced firm in a less regulated region was meant to save costs by using lower skilled, lower wage labour. In the Greek and Bulgarian cases, seasonal Roma workers with temporary labour contracts and low wages were used to cover peak periods.

The concentration and vertical integration of companies as well as the concentration and expansion of their end customers has led to an increase in demand for product diversity in all the food cases examined here. This made the work of the logistics departments more complex. They had to process diverse orders, co-ordinate with the production departments to ensure that the correct mix was being produced, optimise container and transport efficiency, and keep costs as low as possible. Often in the face of increasing complexity, the concentration of operations in large centres is part of an effort for the standardisation and centralisation of procedures in logistics.

Our cases involve multinational enterprises with a worldwide distribution of products. Yet what the cases reveal is that the production sites themselves are strongly embedded in regional and local contexts. Thus, as long as the effects of rationalisation or job loss are not directly felt, the local actors do not experience major changes in their actual working and employment conditions due to restructuring across the value chain.

6.6 IT service outsourcing in the public sector

Information technology services is one of the few 'sectors' that can also be described as a 'business function'. It is, in effect, a business function that provides IT infrastructures, including hardware, software and support, to other business functions in an organisation. The main tasks include the implementation and maintenance of hardware in a computing centre or in various users' offices, the development, implementation and maintenance of software, and the training and support of users. This business function can be organised in-house (*i.e.* within the same organisation, *e.g.* in the form of an IT department) or the tasks can be outsourced. Outsourcing does not necessarily involve the work being carried out in a different location. It is increasingly common, for instance, for IT functions to be outsourced to an external company whilst still being carried out on the premises. In such cases, the people carrying out the work may be employees of the external IT supplier who

have been brought in especially for this purpose or they may be former employees who have been transferred to the external IT supplier'. (WORKS Glossary)⁶

The outsourcing of IT is often seen as part of a tendency of decomposition or 'hollowing out' of the vertically integrated company. The other side of the coin is the emergence of new business-service providers that form a new industry. Outsourcing to IT service providers means that the IT infrastructure, including hardware and software and related services, is provided by a specialised company external to the client company or the public administration. The French term for this is 'infogérance'. The subcontracting of software development alone does not fall under this definition.

The software and IT service industries have become major employers in most EU member states. The sector definition used in the official statistics of NACE 72 (Computer and related activities) includes software consultancy and supply, data processing, database activities and other computer-related activities. In 2004 this sector employed 573,000 people in the UK, 370,000 in Germany, 345,000 in France and 358,000 in Italy. In relative terms, the share of total employment of IT services is highest in the UK, where it reached 1,8 *per cent* (Grimshaw, Miozzo, Berry & Lallement, 2007). Given the levels and prospects of employment in this sector, relocation of work both within Europe and beyond is of considerable significance for regional and national labour markets.

The rapidly growing market for IT outsourcing is increasingly international, and the major companies are global players or, as the World Investment Report put it, 'a new breed of multinationals' (UNCTAD, 2004). IT outsourcing accounts for nearly one third of the total market for software and IT services (Grimshaw *et al.*, 2007).

There are various drivers for the growth of IT service providers and the corresponding structural shift in the economy. One has to do with access to specialised knowledge, which can be illustrated with one example. In the last decade, information technology and the internet have become increasingly important in all credit institutions. Through online-provision to private customers and business-to-business solutions, the tasks of the banks' IT departments increased and with it the related demands. Often companies decided to outsource the IT function to a specialist IT company in order to guarantee the necessary expertise, reduce development costs and increase the speed of development. 'The proliferation and complexity of capital goods have outrun in many cases the capability of internal IT departments in firms to manage them. These technological opportunities, however, rather than resulting in a supply base of small and medium-sized firms, have been accompanied by the development of a concentrated IT outsourcing industry dominated by a small number of large firms' (Miozzo & Grimshaw, 2005: 31).

The oligopolistic nature of the IT services business can be explained with reference to a reputation effect related to the inherent uncertainty in skill-intensive business services and economies of scale stemming from the pooling of skills and cheap access to new technologies (Miozzo & Grimshaw, 2005). The success of the large IT outsourcing firms is in particular based on the 'recombination' of technology and organisation and on learning-based processes including the pooling of skills through staff transfer from clients, the

⁶ Available at http://www.worksproject.be/Glos_and_defint.htm.

bundling of services, the use of distinctive processes and the increase of productivity through re-allocation of staff and reduced headcount (*ibid.*: 32).

In addition, the competitive advantage of transnational IT service providers stems from the fact that they find it easier to follow their transnational client companies around the world and to offer seamless services. T-Systems, for example, claims to be able, within three months, to follow any of its sixty international top clients to a new location (Ramioul, Huws & Kirschenhofer, 2005). In addition, these international service providers utilise cost differentials between countries and continents by way of distributing activities internationally within the corporation or by outsourcing parts of the work. For years, German companies such as Siemens and T-Systems have applied 'mixed rates' that have enabled them to cut the cost of software development by establishing cooperation within projects between units in Germany or Austria and newly established subsidiaries in central and Eastern European countries. While customer relations and system design remain with establishments situated close to the customers, programming and coding are being relocated within the transnational corporation to central Europe, Russia or India (Huws & Flecker, 2004).

The public organisations surveyed in the WORKS research include two local government authorities, two regional state administrations, a public employment service, a regional health authority, a regional public hospital and a public-service organisation. The restructuring of these public organisations and the external relationships that have resulted take basically three forms: *IT outsourcing*, involving private IT service provision for public administration organisations; *centralisation*, involving IT outsourcing to a newly established, central IT service provider in public ownership; *business-process outsourcing*, involving public organisations outsourcing back-office functions to private companies; and *public-private partnerships*, involving joint technology development and application.

In the cases of 'IT outsourcing' and 'centralisation' the internal provision of IT services, e.g. by an internal IT department, was replaced with external service provision, thus substituting contractual relations for hierarchical ones. The case studies covered both the externalisation of continuous service provision and the externalisation of one-off projects, for example software development. The private companies providing IT services were either large multinational companies or subsidiaries or spin-offs of such companies or national companies of different sizes ranging from two hundred members of staff in one Benelux case (Vandenbussche, Devos & Valenduc, 2007) to 5,000 in the Swedish one (Tengblad & Sternälv, 2007b). The 'centralisation' case covers a public IT service provider company in the Norwegian health sector (Dahl-Jørgensen & Torvatn, 2007). It is economically independent but fully owned by a regional health administration and was founded in an attempt to centralise the IT of fifteen hospitals and health centres.

In 'business-process outsourcing', it was not the IT function itself but ITC-enabled back-office functions such as wage administration or running a database that were outsourced to private IT service provider companies. The 'public-private partnership' was formed in a German case in which a regional public administration entered into a joint venture with an IT service provider to develop and maintain a new training portal (Meil, 2007b). The two organisations share the costs; the public organisation holds the right to use the system in all its ministries while the private company may sell the system to other public administrations worldwide.

The reorganisation processes under investigation differed in scope, content and employment consequences. In five cases the development of particular IT systems or applications (workflow software, internet application, training portal, municipal database) was farmed out to a private IT company or to a joint initiative in the form of a public-private-partnership. The content of the deals was new work and therefore as such does not have immediate employment consequences. In the other three cases previously existing internal departments were affected by outsourcing of all IT activities or back-office functions to a private service provider or by centralising IT within a health authority. In these cases, workers were transferred from their previous employer to the new service provider. Yet, all cases have in common a lengthening of the value chain, in the sense that more organisations are involved in the provision of the service, implying cooperation and service delivery across both organisational boundaries and the public-private divide.

The main motives and aims of the reorganisation concern the updating of the IT infrastructure, including the digitisation of records, and cost reductions. While economic gains rank high among the aims and expectations, the outsourcing decisions themselves do not seem to be based on detailed cost-benefit analyses. The local government in the UK saw outsourcing as a more 'businesslike approach' (Dahlmann, 2007b) and the Swedish public-service organisation decided to outsource the wage administration although a study concluded that the costs were the same as for in-house delivery (Tengblad & Sternälv, 2007b). The argument was that they wanted to bring down the fixed costs. The Norwegian health authority, in contrast, first considered both outsourcing to a private provider and a centralisation within the health authority. The outsourcing to a private provider, however, was rejected not because of cost considerations but on the grounds that special health sector knowledge would be needed. It should be noted that the trade union has a strong influence in this organisation (Dahl-Jørgensen & Torvatn, 2007). In contrast, in the Portuguese case study there was no concern about keeping the knowledge and supply of IT services in the public sector. The use of services provided by large private companies specialising in complex and specific health care technologies is seen as a strategic investment from the public sector, because it allows access to innovation in a short period of time (Vasconcelos da Silva, Woll, Moniz & Paulos, 2007b). Overall, rather than resulting from strict cost calculations, the outsourcing decisions seem to be based on political considerations or to follow general trends in the country.

In some cases, the business relationship with the service provider was extended to other areas and projects. A Benelux regional administration, which had already taken the basic decision to outsource in 1988, now selected an IT company for a specific IT project from the consortium with which it already had a long term IT outsourcing contract (Bannink, Hoogenboom & Trommel, 2007). Similarly, in the French case the consulting project studied was part of a long-term business relationship between the public organisation and the IT service provider (Muchnik, 2007c). In the German case, the public administration looked for a private technology partner for the joint development of a new IT system (Meil, 2007b). In the Portuguese case, large hospitals have developed long-term cooperation with IT service providers that provide different services ranging from tailored and specific management software to health care technology (Vasconcelos da Silva *et al.*, 2007b).

The contractual arrangements do not only reflect the forms of cooperation; they also shape dependency and power relations between the client and the service provider. High

levels of asset specificity increase the degree of mutual dependency. In the case of outsourcing to private IT service providers, contracts are usually long term (e.g. ten years) and contain detailed service level agreements. In one Benelux case the relationship is exceptionally long-term. The regional administration concluded an open ended contract with the service provider consortium *EIG* that can only be terminated at ten years' notice. Only the terms of reference, however, are renegotiated every three years (Vandenbussche *et al.*, 2007). In this case the public administration made itself completely dependent on the service provider – to the extent that even IT managers in the public organisation are on the payroll of the private IT service provider company. Alluding to the typology of forms of value chain governance developed by Gereffi *et al.* (2005), we could call this relationship 'reverse captive' because the client company has made itself fully dependent on the supplier company. Similarly, in the Portuguese case, the IT Health care company assumed responsibility for all IT equipment and there is no longer an IT department in the hospital (Vasconcelos da Silva *et al.*, 2007b).

Other cases showed contractual arrangements that are intended to limit dependency. The Benelux municipality of *Easttown* outsourced the back-office function of keeping citizens' personal records to the service provider company *GBA*, which now owns the database for municipal personal records while the local government owns the data (Bannink *et al.*, 2007). In such a constellation the service provider company tends to monopolise the function, while the public organisation attempts to avoid dependency. The related strategies greatly impact on the development of value chains, as the Benelux example of local government authorities shows. In this case, in order to re-collectivise IT activities, several municipalities established a joint organisation intended to play the role of an independent adviser and ICT intermediary for local governments. The aim is that this intermediary should develop 'modular, generic and interchangeable ICT-systems' and therefore reduce the dependence of municipalities on private IT service providers and operating system providers such as Microsoft (Bannink *et al.*, 2007: 11).

In the Swedish case of the outsourcing of wage administration, the outsourcing management made great efforts to specify the terms, which led to a comprehensive contract but also to the establishment of cooperative bodies to implement the new relationship (including systems development). The contract specified the demands to be met in terms of service levels, *etc.* in a 70-page text intended to be a basis of a long-term service provision/purchaser-supplier relation (Tengblad & Sternälv, 2007b). The German public-private-partnership with shared ownership in a joint system development seems to be a rare case of balanced power relations and mutual dependency (Meil, 2007b).

In the cases that included a transfer of personnel from the public administration to the private service provider company, the outsourcing contracts also regulate employment issues. In the case of the UK *Citycouncil*, this includes the right of workers to return to the public-sector employer if the outsourcing contract is discontinued (Dahlmann, 2007b).

In spite of contractual caveats, factual power relations also depend on knowledge, the actual options for changing service providers and the possibilities for re-internalising the service. In this respect the case studies showed that crucial knowledge tends to move from the public organisation to the service provider, limiting the capacities of the former to control the service provision and to keep open alternative options. The research thus indicates that the contradictions involved in outsourcing relationships shape their dynamics.

There is thus no one best way of organising IT services nor is externalisation necessarily a one-way street.

In terms of workflow, the most usual pattern of IT outsourcing is that the IT service provider company runs hardware, software and networks for the public organisation on a contractual basis. This also includes the development of software and the support of users in the form of training and help desk services. In the cases investigated, the restructuring had different consequences for the distribution of functions and the workflow. In some cases there were hardly any changes apart from the fact that the tasks are now carried out by workers employed by a service provider company. In others, not only were operational tasks outsourced but so were more strategic functions such as purchasing. Finally, many of the case studies revealed that new functions and work roles had to be created for liaison and co-ordination tasks.

This brings us to the conclusion that there are two separate levels of functions to be analysed in the service provision chain. First, there is the *operational level*, e.g. of running and maintaining the IT for the client organisation, which can include purchasing and other functions. At this level, the tasks can be largely externalised and thus cooperation can be limited. Nevertheless, there remains a need for liaison roles or joint project teams to bridge the organisational boundaries. Second, there is the level of *contractual relations* between the client organisation and the service provider. New and usually complex processes – obviously much more complex than the previous internal procedures – can be observed relating to contract negotiations, legal aspects, definition and monitoring of service levels, renegotiation of terms of reference, revision of agreements, etc. Thus, with externalisation new tasks are being introduced into the value chain that can be termed ‘transaction work’, and some of these are bundled into newly created functions.

In the case studies we concentrated on the relations and the workflow between the client organisation and the IT service provider. But the service provision chain may be longer and may contain more than these two links. In the Norwegian case, the new centralised IT service provider cooperates with external R&D companies and university centres; in the Benelux case the IT service provider commissions software development from another IT company; in the UK case there are rumours that the international IT service provider company might further outsource part of the *Citycouncil* IT that it has recently taken over. This further lengthening of the value chain obviously has impacts on employment and work. One possible consequence became obvious in the Benelux case of software development for the public administration. The subcontract between the private consortium *EIG*, which has a long-term contract with the public administration, and the software company *ITPRO* did not contain the task of organisational design and no workers’ participation was foreseen in the software development process. As a consequence, the previous workflow was simply represented in the new software, thus missing the opportunity for innovation and adaptation.

6.6.1 Conclusions

These cases illustrate the tendency of externalisation of the business function IT in particular to private international IT service provider companies. There are national variations however. In contrast with their UK counterparts, the Norwegian trade unions managed to inhibit a privatisation. Yet, the initial centralisation and outsourcing within the

public sector may be followed by a privatisation later on. The outsourcing relationships and, in particular, the degrees of dependency and the power relations are often contested between the contracting parties too. Public organisations try to avoid making themselves too dependent on the service provider and to keep open the option of putting the service out to tender again. Only in one Benelux case did the public administration completely surrender to the private partners. In another Benelux case, public administrations have started bringing the IT function back under their control by establishing a public independent advisor and an ICT intermediary. Power relations are obviously influenced by the ability of organisations to monopolise knowledge and infrastructures. IT outsourcing leads to a shift of knowledge in which the service provider gains knowledge of public administration. In some cases the knowledge tends to be fully transferred from the public to the private sector organisation.

Outsourcing and thus lengthening the value chain has significant consequences for work. New functions and roles were established because of the great need for liaison and co-ordination. There is not only the operational level of cooperation across organisation boundaries, there is also the level of contractual relations, or 'transaction work', dealing with complex processes of contract negotiations, renegotiations of terms of reference, monitoring of service levels, *etc.* In some cases, new jobs were created for these tasks; in others, workers took over such tasks without training and official recognition. One reason for changes in work is differences in the standard procedures between the public organisation and the private service provider. As a rule, work becomes more standardised as a consequence. Another reason lies with the contractual relations: service level agreements impact on the day-to-day work, increasing the paperwork and creating stress and pressures. In part, workers experience the changes in work as deskilling, partly there is a shift from organisation- or public-administration specific knowledge to more general knowledge. Yet, training for transferred workers is not so much aimed at providing new knowledge but to convey company culture and to change work attitudes.

6.7 Customer service in the public sector

The section focuses on the business function of customer service in a public sector context. For a better understanding of this business function, it is useful to have a look at the specifics of services. Korczynski (2001) names the following five characteristics of services that have proven their worth: *intangibility* - the product of service work is not or only partly of a tangible nature; *perishability* - the product is 'temporary' and thus cannot be stored; *variability* - the product is not homogeneous, because it can vary according to the persons involved (for instance through the perception of the service on the part of the customer); *simultaneous production and consumption* - the product is produced and consumed in one and the same situation (*uno-actu* principle); and *inseparability* - the product is produced by service provider and receiver together (co-production).

As we will see, these characteristics set constraints for the organisation of work as well as for the restructuring of the value chain. Looking at work organisation, we are confronted with a service triad, in which organisation, service provider and receiver all have their own agendas, which do not necessarily accord with one another (Weihrich & Dunkel, 2007). In many cases a fourth actor comes into play, an external contract partner. Those organisations, which outsource certain tasks to a subcontractor, play an important

role, especially when we analyse the restructuring of value chains. 'Front-line workers' (Frenkel, Korczynski, Shire & Tam, 1999) have to deal with the requirements of both the customers and the service organisation. In doing so they provide interactive service work and try to come to terms with the principles of *uno-actu*, co-production and variability. Qualitative studies (Hochschild, 1983; Leidner, 1993; Macdonald & Sirianni, 1996; Holtgrewe & Kerst, 2002; Dunkel & Voß, 2004; Korczynski & Ott, 2004; Voswinkel & Korzekwa, 2005; Böhle & Glaser, 2006) provide detailed insight into this world of interactive service work. The focal point of interest of such studies is on services in which there is direct contact between the service provider and the customer. This includes a wide heterogeneity of activities such as physical and emotional care work, guiding, catering, accommodation, transport, entertaining, teaching, selling, counselling, educating, providing therapy or providing protection.

Looking at the value chain, it can be expected that the specifics of services also play an important role. Firstly, the customers may be regarded as part of the value chain, because they are able to add value to the service (Böhle & Glaser, 2006) or even become sources of innovation (Prahalad & Ramaswamy, 2004). Secondly, the characteristics of service goods such as intangibility, perishability and simultaneous production and consumption preclude specific options of restructuring (such as separating the time and space of production and consumption of goods) as well as opening options (such as communicating intangible information services via the Internet).

We also look at the institutional framework of the customer service analysed in the WORKS case studies: we are dealing with public services and with public administration. Therefore processes of privatisation of companies owned by the state, country specificities and the mixture of the role of citizen with the role of customer are of major importance here. And we are dealing with a special class of services that meet the basic needs of citizens: security, public transport, labour, housing, communication.

The concept of customer care has evolved over recent years in a way that now involves both private companies and public sector administrations. Work in the public sector was once well regarded relative to private-sector equivalents. Today this image may have been severely damaged, as Pupo (2007) has argued for the Canadian public sector, where many jobs have been restructured, downsized and degraded. Customer service in the public sector seems to be specifically prone to outsourcing efforts. On the one hand, it is labour- and cost-intensive and traditionally characterised by working conditions well above those in private-sector companies such as retail or call centres (*ibid.*). Hence, the savings through outsourcing appear attractive. On the other hand, the quality of customer service is by definition critical for the legitimacy of public-sector privatisation and liberalisation, since losses in quality affect 'customers' who are tenants, citizens and voters as well. Here, an expansion of service availability may be perceived as an improvement in customer orientation, but at the same time may lead to longer and more flexible working hours for service workers.

The cases represented in the WORKS research (most consist of numerous organisations) were situated in Austria (Schönauer, 2007), Belgium (Devos & Valenduc, 2007), Bulgaria (Jeleva, 2007), Denmark, Germany (Dunkel, 2007), Greece (Gavroglou, 2007c), Hungary (Makó, Illéssy & Csizmadia, 2007b), Italy (Piersanti, 2007), Netherlands (Trommel, Bannink & Hoogenboom, 2007), Sweden (Tengblad, 2007) and the UK (Dahlmann, 2007a). Five of them offer services of general interest, such as the postal service and the railways.

The other seven organisations are responsible for public administration in different areas (for example public housing, employment services and local government administration).

Most of the restructuring in these cases was embedded in a much wider context of reorganisation of public services, which differed between countries. In some, such as Italy, outsourcing strategies are relatively new. Other countries, such as Britain, have already had years of experience of reorganisation of public services. Case studies on services of general interest show that a major factor in restructuring has been the privatisation, for example, of post and telecom or rail, and the ongoing liberalisation of such markets. Since then, cost efficiencies has become crucial to survival. Increasing customer orientation and the rising need for efficiency are other important factors behind restructuring processes in public services. It is apparent from these cases that it is not only a question of time or how countries organise their public services, but more a question of country-specific factors, such as the institutional framework, that influence developments in the public sector.

The forms of restructuring of value chains that were found in the different countries and organisations are manifold. Examples range from full outsourcing of customer service to internal reorganisations of work. The *DVLA* in Italy, *Citylife* in Austria and the *Swedish* and *Austrian post* are examples where restructuring was characterised by full outsourcing of parts of customer service to private contract partners. In the case of *Dutch Telecom*, there was a range of different manoeuvres of in- and outsourcing, buying and selling shares. An important form of organisation is a public-private partnership, such as *Customer* in the UK, where city councils cooperate with a multinational private-sector service provider. The *Greek post* and *German railways* have in common that for certain services they founded subsidiaries that are still part of the parent companies. In the Greek case, the city is the owner; in the case of *German railways* the increasing number of smaller companies is subject to the overarching structure of the concern. Others did not make any changes in ownership structure, but underwent major internal restructuring, including the closing or formation of units, followed by standardisation of processes and rationalisation. Examples of this approach are *Intermed* in Hungary and *NEA* in Bulgaria. Furthermore, there are processes of centralisation, such as *EWA* in Belgium, where an ICT unit was given an autonomous status outside the administration structure. In the case of *PCC* in Sweden, there was the centralisation of telephone services to call centres, which are still part of public police administration.

It is not possible to analyse all these developments in detail, but the chosen examples offer a good insight into some of the strategies, motivations and decision making processes of complex organisations.

Eastern European countries, especially, have very different preconditions for restructuring than their counterparts in Old Member States, due to their socialist past. Restructuring in these cases is often characterised by an orientation towards western forms of customer relations management. In connection with restructuring, many organisations in Eastern Europe have used consultants from abroad. *Intermed*, the Hungarian employment service, had the support of the PHARE (Programme of Community aid to the countries of Central and Eastern Europe) and cooperated with Swedish and Danish labour-market experts to create a nationwide, integrated system of local labour market offices. The Bulgarian *NEA* was also the object of intensive assistance – especially from Britain (e.g. KPMG) – throughout its existence and was also supported by EU-funded programmes.

Since its foundation, the *NEA* has been involved in numerous projects intended to contribute to its modernisation and to make it more effective and efficient.

Compared to this, western countries more often tend to use national consultants. In the British case, *Customer*, it was the analysis by a national IT consultant that intensified the perception of the need for modernisation and efficiency improvements. In addition to consultants' suggestions, customer surveys, undertaken mostly by independent external organisations, have played an important role in the restructuring process and have often been used to legitimate changes. This was seen in the Austrian case of *Citylife* as well as in the Bulgarian *NEA*.

The aim of the two organisations dealing with employment services in Hungary and Bulgaria (*Intermed*, *NEA*) was to create a nationwide, integrated system of labour-market offices serving both job seekers and employers. Strategies to increase client orientation, standardisation of processes and rationalisation are very similar to all the other organisations analysed in this report. Services such as training and psychological counselling are mostly outsourced to private providers, whereas services defined as core business have not yet been outsourced. The priority instead has been to keep these tasks inside, but rationalise and standardise them. Under the assumption that the development in Eastern Europe lags some years behind, this internal restructuring could be interpreted as kind of preparatory work, which might make outsourcing easier in the future. Devos and Valenduc have comparable thoughts on the Belgian case, *EWA*. In this case, there was an internal externalisation and centralisation of IT tasks at one provider within a regional administration. This ICT unit received a transversal role covering several departments, and was given an autonomous status outside the administration structure. The authors argue that 'in other countries or under quite different political circumstances, the functions of *EWA* might have been easily outsourced to a private service provider' (Devos & Valenduc, 2007: 5). In some countries this could have been interpreted as preparatory work to outsourcing, but no such strategies were actually seen in the Belgian case.

Another group of case studies, *Swedish post*, *Austrian post*, *Greek post* and *German railways*, shows that the customer service function may sometimes merge with logistics, because the postal and railway services in fact involve the transportation of goods and people. Deregulation and privatisation play an important role in all cases. The time when these sectors were opened to the market was also the beginning of restructuring. Both the *Swedish post* and the *Austrian post* were transformed from public utilities into state-owned companies, thus being able to operate on the same legal status as private limited companies. In both countries, opening the postal market to competition was a slow process. A few private operators focused on the most profitable, big-city markets (Tengblad & Sternälv, 2007c) and in both countries general post offices were closed and more or less replaced by facilities in food-supply chains, petrol stations, tobacconists, pharmacies, municipal offices, etc., which store for collection and take delivery of customers' packages. In contrast, the *Greek post* has not gone so far. It founded a subsidiary that operates under different organisational and labour relations principles from its parent company, to which parts of its courier services were outsourced. The situation at *German railways* is very similar. *German railways* is founding an increasing number of smaller companies, which fulfil several tasks such as running and maintaining stations and shops, keeping up the necessary sales system and sales infrastructure for the rail system, running the long-dis-

tance trains, running the local and regional trains, and so on. At the same time, all of them are still part of the main concern, the Deutsche Bahn AG (*German railways*).

Power relations between organisations change as a result of restructuring within organisations and across organisational borders. Contracts between organisations have to be established where there has not previously been any contractual relationship. Practices in contractual relationships are very different from country to country, *e.g.* concerning the ownership structures. An example of a long-term contract is *Customer* in the UK, where the public-private partnership model is currently based on a ten-year deal. At the other extreme is the *DVLA*, which has already changed its call centre provider four times within the last ten years.

There are also big differences in ownership structures. There are cases of full outsourcing, such as *Citylife* and the *DVLA*, where the duration of contracts is simple and clear, but there are a lot of cases between full ownership and full outsourcing. In cases like *German railways* and the *Greek post*, subsidiaries were founded that were 100 per cent owned by the parent companies. In the case of *Customer*, under UK government rules the council owns a maximum 20 per cent holding in the public-private partnership. In the Austrian case, *Citylife*, the public authority has the outsourcing contract with a city-owned intermediate organisation, which itself has a contract with a consortium of private call centre providers. This intermediary has gained significant power over the years. It still depends on the requirements of the public authority, but it has achieved a position where it is almost irreplaceable. The company owns the service number and the electronic knowledge base used by agents and it is totally independent of its call centre subcontractors.

In all forms of contracts, service level agreements (SLAs) with partners, in-house as well as subcontracting, are gaining importance and are also used to pass on the risks, caused by changing workloads arising from unpredictable events, to subcontractors and their employees. At *Customer*, for example, the private contract partner is the largest shareholder and has to make sure that performance meets agreed targets every month; otherwise penalties have to be paid to the councils. In the case of *Citylife* in Austria, regulation according to SLAs is similar. The subcontracting company has to ensure that a certain service level, stipulated by the council, is maintained. Otherwise penalties have to be paid. There are also SLAs in public in-house call centres, such as the *PCC* in Sweden, where 90 per cent of incoming calls have to be answered within three minutes.

6.7.1 Externalisation of functions

One common trend has been the outsourcing of customer services that can be standardised and formalised as well as technically empowered and supervised. Here, public administrations have partially made use of a form of a value chain restructuring that dramatically gained worldwide importance during the 1990s: the outsourcing of telephone services to call centres as a first possibility of outsourcing. Most of these cases have in common that there was no relocation of an existing department, *e.g.* of a separate call-centre unit, but the call centre services were entrusted to external companies right from the outset. In all telephone service cases, the reorganisation led to a centralisation of services that had all previously been carried out by different service units. In the Italian case *DVLA*, at *Customer* in the UK, at Austrian *Citylife* and at *PCC* in Sweden, telephone ser-

vices used to be handled by employees in addition to their counter work and face-to-face service. In the wake of increasing customer orientation and technological innovation, these tasks have now been handed over to call centres.

In the case of *Citylife*, the spatial and personal separation of face-to-face and call centre services led to an improvement in the working situation of employees engaged in face-to-face interactions with customers, because there were no more interruptions by telephone calls. On the other hand, employees had to fulfil additional functions and are subject to stricter time controls (each request has to be handled within 24 hours), so that work density and co-ordinating demands have not decreased but increased. The functions performed at the call centres, which serve as gatekeepers for the walk-in-centres, have been expanded over the years: more and more requests can be handled by the call centres without passing them on to the employees at the walk-in-centres.

Looking at the relocation of functions, these telephone contact cases have a lot in common. Telephone services are centralised in a call centre, functions in call centres are highly standardised and the work force is confronted with a comparably narrow range of tasks. A second and different form of relocation of functions is the outsourcing of a wider range of services carried out in a face-to-face customer contact. This applies to the restructuring of the postal services (see the Austrian, Swedish and Greek cases: Hermann & Schönauer, 2007; Gavroglou, 2007c; Tengblad & Sternälv, 2007c). Front-desk activities, which were formerly executed solely in public post offices, are now spread over a number of smaller and bigger private post partners, who sell postal services in food stores, convenience stores, filling stations and the like. In the Greek case, a different function of postal customer services – parcels delivery – was outsourced to a subsidiary. But the overall process is the same as with the outsourcing of front-desk activities: Whereas outsourcing of telephone services coincides with a process of centralisation, outsourcing of face-to-face services leads to decentralisation (many private partners at different locations). Both processes are combined with an advanced technical infrastructure, which allows surveillance of the activities of the private partners. However, the autonomy of the employee working on their own as a representative of the post is much higher than the autonomy of the call-centre agent, who is acting under tight technical and personal control such as probe calls (*DVLA & Citylife*).

A third form of relocation of functions is externalisation to customers through the introduction of self service. Customers become part of the value chain and service companies are increasingly trying to make use of the potential of customer integration. There are some examples of this in the case studies. A very important component of restructuring the services for job seekers in Hungary (*Hungary Intermed*) was the introduction of a self-service model, in which clients are treated as competent customers, who, if supplied with the appropriate technological tools, are able to look for a new job by themselves and in this way reduce the workload of the *Intermed* staff. Quite similarly, *German railways* have attempted to replace labour-intensive sales by sales via the internet and ticket machines. Outsourcing to the customer is taking place to a quite significant extent: service is to be replaced by self-service. Strategies to establish the Internet as a primary source of information customers can use without personal assistance from front line staff are also becoming increasingly important. The Walloon portal (Belgium-*EWA*), designed to promote eGovernment, is an example of this, as is the provision of timetable information and information about postal services over the Internet.

6.7.2 Development of new functions

Besides privatisation and rationalisation, the changing relationship between public administration and the citizen, between public service and service receiver, is of major importance for understanding the restructuring of the value chain. If the citizen or the service-receiver are regarded as customers, service quality becomes a value in its own right and in this way the value chain is transformed. Customer service functions, which were previously not fulfilled or only implicitly fulfilled, have now become explicit tasks. This can be illustrated by the case of the *German railways* (Dunkel, 2007: 2). Here, new centres were set up at stations to provide customer service functions. In this case there was also centralisation, not only of functions, which before the restructuring were performed elsewhere, but also of new customer service functions that *German railways* previously did not regard as part of the value chain. Other case studies provide further examples of additional tasks that customer service workers have had to take on during restructuring. For instance, at the Austrian *Citylife*, staff have had to take on new tasks such as visiting clients at home, which are regarded as positive for service quality.

6.7.3 Internal rationalisation

In many cases internal rationalisation measures can also be found. These include modernisation of physical working conditions (Hungary-*Intermed*, see also the architectural redesign of the sales situation at *German railways*) and improving the IT infrastructure (e.g. introduction of SAP at the *Swedish post*), making work more effective (Bulgaria *NEA*, Belgium *EWA*) and more productive (strategies to encourage staff to sell harder at *Swedish post* or by paying individual commission on sales at *German railways*).

In some cases, internal rationalisation has been combined with outsourcing or developing new functions; in other cases (Bulgaria *NEA*, Belgium *EWA*, Hungary *Intermed*) internal rationalisation is all that restructuring is about.

A crucial role in the restructuring of the value chain in all of its forms is played by new information and communication technologies (ICT). Most reorganisation cannot be implemented without far-reaching changes in technical infrastructure. For example restructuring at the *DVLA*, *Citylife*, *PCC* and *Dutch Telecom* depends on the introduction of call centre technology; without this the reorganisation of value chain and functions, in the way it happened, would have been unthinkable. The introduction of new forms of ICT often pursues the aim of a one-stop service concept, which should enable customers/clients to receive all the information they need in a single phone call or visit to an office or website.

6.7.4 Conclusions

Restructuring of customer service is embedded in a broader context of reorganisation of public services: privatisation of formerly state-owned companies, liberalisation of markets, increasing customer orientation and rising need for efficiency. The forms of restructuring of value chains exhibit considerable variety. They include full outsourcing of customer service, public-private partnerships, the founding of subsidiaries for services, which are still part of the parent companies, internal restructuring and centralisation.

The cases representing outsourcing of telephone services to call centres have in common that there was no relocation of an existing department, but outsourcing to external companies. A second and different form of relocation of functions, which could be seen in the cases of postal services, is the outsourcing of a wider range of services delivered by means of a face-to-face customer contact. Whereas outsourcing of telephone services coincides with a process of centralisation, outsourcing of face-to-face services leads to decentralisation (typically many different private partners at different locations). Both processes rely on an advanced technical infrastructure, which allows surveillance of the activities of the private partners. A third form of relocation is externalisation of tasks to customers: This trend towards increasing self service can be understood as customer integration into the value chain. Finally, understanding citizens more and more as customers, service quality has become a value in its own right and in this way has changed the value chain. None of these forms of restructuring can be conceived without the implementation of new forms of information and communication technologies (ICT).

What conclusions can we draw for value-chain restructuring of the 'customer-service' business function? As in other business functions, many forms of restructuring were found. But some features are specific to the customer service business function. First, the general characteristics of services play an important role: customers may be regarded as part of the value chain, because they are able to add value to the service, the characteristics of service goods like intangibility, perishability and simultaneous production and consumption preclude specific options of restructuring (such as separating time and space of production and consumption of goods) as well as opening options (such as communicating intangible information services via the internet). Second, it makes a difference that part of the services is locally and personally limited: face-to-face customer contacts are localised and the public-administration services are in part exclusively for citizens of the territory in question. These characteristics set limits on globalisation. Third, it makes a difference that we are dealing with the public sector. This is not only because traditional labour regulations are partly still in effect, but also because restructuring may become a public affair and therefore has to be legitimated politically.

6.8 General conclusions

The case studies within the WORKS project aimed to contribute to a better understanding of the impacts of value chain restructuring on employment and work. For our research questions, a crucial finding is that the position in the value chain, the degree of dependence and the way power operates in supply relations has direct consequences for work and employment. Existing literature on global value chains pointed out that there are different forms of value chain governance and that inter-firm relations involved are often highly dynamic (Gereffi & Korzeniewicz, 1994). However, the aspect of work organisation is rarely covered in the research following the value chain approach.

Research in the field of industrial relations has repeatedly suggested that external restructuring of companies through outsourcing and the reorganisation of the value chain weakens labour and destabilises institutions of industrial relations. There are two reasons for this: First, outsourcing accelerates tendencies of deregulation and decentralisation of bargaining because suppliers and service providers are less likely to be covered by (sector) collective agreements (Hendrix, Abendroth & Wachtler, 2003). Second, similar to

internationalisation and relocation of work, outsourcing options change the power relations between employers and labour and thus put pressure on the core work force to make concessions regarding their employment conditions (Caprile, 2000; Marginson, 2005; Doellgast & Greer, 2007).

Another prevailing view on supply chains is that subordinated companies, mostly SMEs, help large companies to save costs and reach flexibility and thus have lower wages and unfavourable working conditions (Rainnie, 1991; Semlinger, 1993). Thus, restructuring across the value chain creates segmented labour markets. The traditional view has been that outsourcing and thus segmenting work serves the interest of buffering the core workers, and leaving the peripheral workers with all the disadvantages and risks of cost cutting and flexibility. The underlying assumption is that core and periphery are clearly distinguished according to levels of skills and commitment needed (Atkinson, 1984). More recently labour market segmentation theorists have argued that subcontracting 'may be motivated by interests of tapping into different market segments where wages are at a lower level, even though the work still requires commitments and skills' (Rubery, 2006: 9). While subcontractor or supplier companies are usually rightly presented as being in a dependent position with their clients passing on risks and flexibility demands to them, outsourcing can also be seen as part of a larger structural shift in the economy resulting in the emergence of large and powerful service provider and supplier companies (Flecker, 2007). This has consequences for power relations within the value chain. In this perspective, the peripheral work force of one company, created by way of outsourcing, is the core work force of another. Thus, even in outsourcing relationships, workers may be integrated into internal labour markets and benefit from employment stability and workers' representation.

Nevertheless, flexibility is a central issue both in inter-firm relations and within the organisation. Organisations increase their flexibility by outsourcing activities to suppliers and service providers and these usually pass on the flexibility demands to their employees. Thus the external flexibility of organisations intensifies the pressure for flexibilisation within service and supplier organisations (Arzbächer, Holtgrewe & Kerst, 2002; Lehndorff & Voss-Dahm, 2005: 293).

Furthermore, given the overall changing dynamic in power relations between employers and labour as a result of outsourcing and restructuring, it is an open question to what extent outsourcing and subcontracting still buffer core work forces and whether these are, on the contrary, negatively affected by value chain restructuring. The growing dynamics of value chain restructuring as such certainly lead to increasing insecurity for an ever larger part of the work force (Huws, 2006c).

Overall, the case studies showed that restructuring often deeply affects employment and working conditions. Differences in wages-levels and employment regulations between countries, sectors and companies directly impact on employment conditions in the case of value chain restructuring. The research findings also show that contractual relations at the level of the value chain, *e.g.* between the client organisation and the supplier or service provider organisation, have consequences for or even directly shape employment relations and working conditions within the organisations. Moreover, the cases illustrate that the power relations between organisations within the value chain have immediate consequences for labour. The position that an organisation holds is not static, however, and thus a movement along the value chain also impacts on the quality of

working life. In spite of some general findings, the empirical material on different sectors and business functions also reveals great differences in these aspects. Quite diverse logics seem to be at work both regarding the restructuring of value chains and the impacts on work and employment.

In the *clothing industry*, we observed the transformation of former outsourcing destinations, manufacturing and retailing companies in Southern and Eastern Europe into providers of higher value-added functions covering design, co-ordination of production, consulting and/or logistics. In other European countries, the industry has mainly evolved along a path involving considerable job losses accompanied by an upgrading in skills and increasing demands for the remaining work force. Value chains are becoming longer, so that fragmentation of labour and employment often only becomes visible if we include sites outside the EU in the analysis. Italy and Portugal still seem to be the exceptions where pronounced differentials could be found between the core firms and their local suppliers. Moving up the value chain does not necessarily shift much power to companies who are upgrading their business in Europe. The clothing industry value chain remains buyer- or, more specifically, market-driven, even when clothing companies are ‘verticalising’ and moving into retail themselves. The upgrading may also be temporary, if manufacturers outside the EU, faced with their own low-wage competition, pursue a similar upgrading strategy or if (less likely) large retailers take over these functions themselves.

In *software development* the dynamics of outsourcing and relocation are certainly initially driven by differentials in wages and employment conditions. However, offshored or outsourced operations can also move up the value chain of the core firm as a result of their high-level skills and experience gathered in the business. Although management often initially argues that outsourcing and relocation secures the employment of the core work force because the overall ‘mixed wages rates’ make the company more competitive, the upgrading of subsidiaries and external service providers in the long run tends to build up pressures on core firms and their work forces. One of the case studies showed the strategy of a market leader in a particular business segment of leaving the adaptation and implementation of software to local firms or independent, thus keeping away excessive demands for flexibility and mobility from the core work force.

In the case studies in the *food industry* we find a variety of forms of value chain restructuring: outsourcing and subcontracting, insourcing and centralisation, mergers and acquisitions. Mergers and acquisitions occur for a number of different reasons: logistics and processing companies engage in take-overs to control raw material supply and buy up competitors to secure access to a variety of different markets. In both logistics and production, the centralisation of functions by large multinationals often resulted in redundancies at the local level. Another outcome is standardisation of reporting systems and procedures as well as a formalisation of organisational practices. Some of the flexibility demanded due to time and cost pressures involved in highly concentrated and co-ordinated global food chains results in the outsourcing of poor working conditions outside of the main production or logistics companies. Some of the worst working conditions are being shifted onto companies in low cost countries or to workers with precarious employment arrangements. For the regular workers remaining in the core companies, restructuring has not resulted in broader, more challenging jobs. The general outcome has been increased standardisation and some flexibility in time use, while sustaining existing wage and overall working time levels. Patterns of restructuring and internationalisation

also follow sector-specific traditional segmentation of the work force along gender and ethnic lines.

The case studies on *IT research and development* focused on start-up and spin-off companies at the boundaries of university or publicly funded and for-profit research. Here, there are tendencies of commodification and marketisation as these organisations attempt to become integrated into the value chains of the corporate sector. This leads to long-term, ongoing relations with their customers, who need their services, sometimes because they have eliminated or outsourced their own R&D departments. Workers in these small units experience changes brought about by commercialisation, in particular, higher levels of formalisation and, to some extent, standardisation of work. In general, the need to be attentive to the market and market pressures are increasing.

In the two cases of set-up or takeover by international IT companies, small R&D companies with special expertise and knowledge have become part of the lengthened value chains of their new multinational owners. In both cases, being part of the multinational's value chain implies high levels of dependency (having no direct contact with customers and interfacing mainly with the multinational's headquarters), and this has affected their product range. However, these units have been able to retain a large amount of independence in the operation of their sites and the work organisation of their employees because of their relatively high bargaining power, resulting from the expertise knowledge they command. These cases have also avoided intensification and worsening of working conditions.

The outsourcing of IT from the public sector or from public services to *IT service provider companies* often leads to highly contested relationships in which the public organisation aims at limiting its dependence on the external service provider. This seems to result in rather balanced 'relational' value chains. In one exceptional case the public administration ended up in what could be called a 'reverse captive' value chain relationship because it became fully dependent on the private service provider. There is a general tendency, however, by which outsourcing IT entails a shift of knowledge from the public organisation to the service provider that in the long run will have effects on the power relations between these organisations. Regarding employment conditions, no big differentials were found between the public organisations and the service providers. Rather than different levels of terms and conditions, there are different systems of employment relations. Both a fragmentation of employment and attempts at harmonising diverse conditions for workers doing similar jobs could be found. There are clear indications in this business function that value chain restructuring and the power relations in the value chain have consequences for work and employment: The demands on workers for mobility and working towards service level agreements were the most obvious issues. Although the internal labour markets of large service provider companies offer opportunities to the transferred former public sector workers, these new possible career prospects have little relevance for them.

In contrast with IT, the business function of *customer service* shows large differentials regarding employment and working conditions between the public organisations and the private service providers. The centralisation and externalisation of telephone customer service makes it possible for public employers to circumvent employment regulation and to use new transitory work forces. This was also found in the case of face-to-face customer services, where a decentralisation of the business function took place. service level agree-

ments that are implemented to monitor subcontractors impact on working conditions at the subcontractors in the form of high levels of standardisation and direct control. Surprisingly, such tendencies could also be found within the core work forces of the public client organisations.

Overall, the case study evidence indicated that the dynamics of change are much more varied than generally portrayed in the literature on labour market segmentation and value chain typologies. For one thing, a simple core-periphery dichotomy or dependency-non-dependency relationship does not always apply. Also, the sectors and business functions seem to be worlds apart regarding their value chain relations, differentials in employment conditions and consequences of value chain restructuring for work and employment. There are some general tendencies, however, that we that will describe below: fragmentation of employment, standardisation and formalisation of work, the emergence of new functions and work roles, temporal and spatial aspects, and knowledge and skills.

6.8.1 Information technology and co-ordinating functions and work roles

The case study findings strongly underline the fact that it is advanced information and communication technologies that enable companies and networks to develop complex and geographically distributed value chains. Information technology makes it possible to integrate fragmented work processes and to support information sharing and communication in geographically distributed work. It enables the control of remote activities, for example in externalised call centres, and rapid adaptation of strategies to respond to market developments as, for example, in the immediate adaptation of fashion design to the feedback of sales figures observed in the clothing industry. The use of ICT in work processes requires the digitisation of all information, the adaptation of work processes and reliable access to information systems across organisational boundaries and geographical distance. Advanced 'informatisation' thus impacts on work organisation, usually further contributing to tendencies of standardisation and formalisation. However, informatisation does not replace skilled human labour. Indeed, the IT-enhanced integration of value chains and workflows is complemented and enabled by new functions and work roles that are needed for liaison and co-ordination between organisations and the digitised information they exchange (Braczyk, 1993). Outsourcing brings into being new tasks and specific new work roles that are needed not only for co-ordinating workflows across organisational boundaries, but also for (re)negotiating and monitoring outsourcing contracts.

The social implications of the outsourcing and restructuring processes we investigated may also be addressed along the lines of time, space and knowledge. As Castells has argued, in the 'network society', electronically mediated, networked relationships between companies and people have fundamentally changed social structures and processes, times and spaces. In general, the circulation of capital and knowledge compresses time and space, which leads companies and investors to *manage* time in new, relational ways: 'time is managed as a resource not under the linear, chronological manner of mass production, but as a differential factor, in reference to the temporality of other firms, networks, processes or products' (Castells, 1996: 439). In analogy, space matters in terms of the relocation of business functions, but also with regard to the physical delivery of actual

products and services to where they are needed. Indeed, while value chains are expanding across time and space, time and space are not rendered irrelevant but are both managed and articulated in different ways.

6.9 Spatial relocation and mobility

At first sight, the case studies seem to suggest that restructured value chains compress time while expanding spatially. However, expansion may mean different things in different contexts. Work and companies may be relocated, demands on workers' mobility may change, and the role of regions as environments and resources for value creation may also change.

Relocation of work and production is neither arbitrary nor entirely driven by cost differentials. Indeed, in clothing and food production and logistics, where physical products need to be delivered, we see that compressed time horizons put particular constraints on spatial arrangements. Because reliability and responsiveness to customer demands matter, work is relocated in the (extended) region rather than globally. For the manufacturing of clothing, this often means outsourcing to Central and Eastern Europe and to countries in the Mediterranean Rim rather than China or Vietnam. This is less of an issue in software development, because these products are immaterial. Here, company strategies and ownership histories make most of the difference. However here, continental European MNCs combine their offshoring of programming for cost reasons with attempts to move closer to foreign markets. Hence, they tend to own their subsidiaries abroad. Outsourcing moves to India or South East Asia mostly occur in companies with a US involvement in ownership or top management. In the case of Bulgarian *SoftServ*, itself a software outsourcing destination, customers participate in decisions whether to locate part of the coding work in Asia or have it all done in Bulgaria. In both clothing and software production, there are also examples of outsourcing attempts that have failed for quality reasons. IT services frequently need to be even closer to their customers. This is often achieved by transferring personnel from customers to service provider companies.

In both the IT and the clothing industry, the role of regions is changing. Regions used to be resources for innovation and knowledge with the location of spin-offs (in Norway, Germany and Austria) or new company research facilities close to universities (UK) in IT research, and with innovation centres and training institutions in the industrial districts of the clothing industry. Where the reconfiguration of value chains relocates key activities to a critical extent, these regional bases may erode. In IT this can be observed in France, where research sites used to have their own specialisations until 1997 when specialisations were assigned across sites ('multisites', Muchnik, 2007a). This separation of expertise and location has occasionally diluted the 'critical mass' that renders a regionally based unit recognisable and attractive for potential partners. It has also increased inequalities between sites in terms of collaboration opportunities. These opportunities are not affected where the sites fit into a dense research environment. The green field research sites that the company had established previously for political reasons of regional development especially tend to isolate their researchers and restrict them to virtual collaboration.

In Hungary and Belgium, clothing companies who upgrade their activities in the region by relocating production complain that they lack the skill base in the region to recruit skilled production workers. As young people observe and anticipate the industry's

demise, they avoid the respective occupations even when the remaining work is being upgraded and becoming more skilled. Consequently, training institutions also erode through lack of trainees or political perception of a declining industry, and the skills shortage may even become a reason for relocation of work abroad. In other regions, where there is a sufficient amount of companies and institutions which collaborate, such social and knowledge capital is retained and may attract new business as in *JapTech's* UK Lab in Cambridge. *WW-DK* in Portugal also successfully collaborates with the clothing technology centre in the region. However, it appears that the increasing options of companies for relocation and restructuring can be risky for regionally-based social capital and knowledge, especially in non-academic fields.

7 The WORKS research questions revisited

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7.1 Introduction

In Chapter 4 we summarised some of the aims of the WORKS project's research on value chains under six research questions. Here, we summarise the answers to these questions based on the research outlined in the preceding chapters, together with an additional analysis of all the case studies designed to test the extent to which the patterns identified within particular sectors might be found across other sectors.

7.2 Is it really the case that value chains are getting longer and more elaborated, both contractually and spatially?

Our first question concerned the extent to which value chains really can be said to be becoming more elaborated, contractually and spatially. The answer to this question is extremely difficult to determine from the available economic statistics. However the analysis of labour force survey data designed to identify employment in particular business functions did demonstrate a strong tendency for an expansion and concentration of core occupational groups within certain sectors which can be seen as proxies for business functions, notably IT and business-related services. This suggests that there is indeed a tendency to outsource these functions. It was not possible, on the basis of the available data, to establish conclusively that this contractual shift (from the original sector to the one to which it was outsourced) of these occupational groups is also associated with a geographical shift from Western Europe to New Member States of the EU. However a similar analysis in the clothing sector provided strong evidence that, with the exception of some countries where a significant amount of clothing manufacture still takes place, such as Portugal, companies based in the EU are concentrating on activities near the top of the value chain with, it can be presumed, production jobs outsourced outside the EU (Geurts *et al.*, 2007).

The evidence from our case studies, however, supplied considerable evidence of value chain elaboration, which, however takes a variety of different forms.

The clothing industry is an example of a sector with a well-established global division of labour, whose value chains have been studied for over three decades and where such technological advances as have been made in the production process have, on the whole, been made some time ago (Hale & Wills, 2005). One might, therefore, expect a certain saturation point to have been reached, with rather little further elaboration taking place. However our case studies suggest that ongoing elaboration of value chains continues to take place in this sector, where competitive pressures are leading manufacturers who were previously near the bottom of the value chain, for instance in Portugal, Greece and

Bulgaria, to outsource production to subcontractors whose costs are even lower. Although further up the chain there is evidence of integration, this does not mean a simplification in terms of a reduction in the number of separate operations. On the contrary, not only are new intermediary companies entering the field at various midpoints in the chain, for instance in logistics management, but companies that in the past concentrated only on manufacture are increasingly taking on additional functions that were previously carried out by retailers. The practice of outsourcing within the same region in order to take advantage of a dual economy forms something of an exception to the general rule that low-value manufacturing activities tend to be resisted to distant sites.

In the outsourcing of IT and customer services from the public sector, we also see a particularly clear example not only of contractual elaboration in the actual outsourcing relationship itself, but of new intermediary functions being introduced in order to manage and monitor the outsourcing process. This sector presents a strong contrast to the clothing industry, being one in which spatial and contractual functional separation is in its infancy. Nevertheless, it seems clear that the trend is in the same direction. It should be noted that the distinction between contractual and spatial restructuring is particularly difficult to disentangle in the IT sector because of practices such as employees of external companies working on clients' premises.

The forms of restructuring are, however, diverse. Across all 54 case studies, and in all sectors, there were cases involving both centralisation and decentralisation of activities, and both relocation to new sites and integration of multiple functions on particular sites. Cases involving outsourcing outnumbered cases involving re-integration of previously outsourced functions, but both were to be found. However even when functions were re-integrated, for instance in several cases in the food industry and in one case in the public sector, this was still on the basis that the formerly outsourced functions now constituted separate units within the organisation. In other words, the underlying logic of modularisation that had allowed outsourcing to take place in the first place had not been undone.

Patterns of spatial division of labour varied greatly by sector. The great majority of the WORKS case studies in the clothing sector involved companies at or near the top of the value chain, in a position to control the activities of the production companies further down the chain, most of which were outside the EU. The two sectors in which our European cases included subsidiaries of larger organisations based outside the EU were the food industry and IT. Global companies, some based outside the EU, also featured on the supply side in the outsourcing of IT services from the public sector. In general, however, these cases illustrate the findings of the European Commission (EC DG ECFIN, 2007) that, at least in merger and acquisitions situations, manufacturing activities are most likely to be sited at the greatest distance, whilst service activities are more likely to be supplied proximately. The cases in IT, food and clothing also supplied evidence that countries in Southern Europe and Central and Eastern Europe are to some extent moving up the value chain, becoming intermediaries, or outsourcing, either partially or fully, some of their activities to countries outside the EU. There is considerable differentiation between European countries, leading to the development of shifting pecking orders which vary, to some extent by business function. Benelux countries outsource customer services to the Czech Republic; Greece outsources food production to Bulgaria; Hungary ranks higher than Slovakia for software development, and so on.

On the basis of this evidence we can conclude that value chains are definitely becoming more elaborated but that this elaboration does not take a single constant form. Some value chains are becoming longer, having more units and interfaces; some are becoming more complex in geographical terms; others in contractual terms; some are highly dynamic; whilst in yet others vertical integration is taking place reducing the complexity of the contractual and spatial division of labour. Dynamism is also a feature of the spatial elaboration of value chains, with different regions jostling for position in a constantly changing geographical division of labour.

7.3 What is the relationship between codification of workers' knowledge and value chain restructuring?

Having established that value chains are indeed becoming more elaborated, the next question to be addressed is what logic drives this process and what part is played by workers' knowledge in this logic. Which functions are most likely to be separated contractually or spatially and why?

When we looked at the initial triggers for restructuring across all our case studies, we again found that many of the patterns were sector-specific. In the *clothing industry*, the majority of respondents referred to market pressures, which included increasingly intense competition as well as pressures to speed up delivery to market in a context of accelerating fashion change. The need to respond to market pressures was seen as the most important trigger of restructuring in eight out of the thirteen cases. In the *food industry*, by contrast, the context was one of sector-level restructuring, with mergers or acquisitions playing a major triggering role in six out of the eleven cases. In this context, it is perhaps not surprising that it was the food sector that gave us the most cases which were situated at the bottom of the value chain. In the *software sector*, the triggers were much more diverse, as were the restructuring patterns. In the *public sector*, of course, political decisions were generally the decisive trigger for restructuring.

These different triggers, to some extent, created different corporate goals for the restructuring which, in turn, determined the forms that they took. Here, the patterns are not so much sector-specific as function-specific.

Cost reduction played a major role in the restructuring of the *production function*, whether this was in clothing, in food production or in software development. However this need to reduce costs existed in a certain tension with the need to ensure quality. It is perhaps no accident that this function was also the one that was most likely to be outsourced. It is here that the workers' skills were the most standardised and most likely to be found in a variety of different locations. This, arguably, means that it is also the function most amenable to market-like value chain relationships, making it easier to locate at a distance. However even in the clothing and food industries, which exhibited the most extreme form of this from among our case studies, the need for quality control did create some transaction costs and place certain limits on the degree to which it was possible for a company to switch seamlessly from supplier to supplier. Some of the clothing companies we studied, for instance, had had to appoint specialised staff at the remote location to carry out quality control, or set up separate units for this purpose. Some of the food companies had brought previously outsourced work back in-house because of quality concerns. Nevertheless, there seems to be a clear relationship between the low-skills

required for these tasks and the likelihood of spatial or contractual separation, or both, in the structure of the value chain. In software production, the patterns are more diverse, but here too there appears to be a relationship between the degree to which a task is standardised, the replaceability of the work force, and the likelihood of outsourcing, offshoring or both. The increasing demand for precise documentation of work leads to a greater codification and pooling of knowledge, thus making it easier to transfer tasks from one group of workers in one location to another.

In the *logistics* function, cost was also a consideration but there was also a strong goal of increasing efficiency and integrating previously separate operations, often using technological innovation to achieve this. This function involves a wide range of different tasks, at different skill levels, ranging from 'pickers and packers' and fork-lift truck drivers at one extreme to senior IT specialists and managers who design and manage complex just-in-time supply chain co-ordination systems at the other. Whilst this is a function that is clearly undergoing major restructuring across the industries covered in our case studies, and, in some cases, emerging as a new sector in its own right, it is difficult to see clear patterns in the form that restructuring takes. In general, it seems to be the case that whilst simpler functions capable of being monitored remotely using ICTs may be relocated (like the Benelux brewery's customer service function that was relocated to Prague), the tendency is to keep these contractually in-house, in pursuit of as seamless and integrated a logistics operation as possible.

In the *IT support* function, cost reduction also played a role, but more indirectly, a strong motive for outsourcing this from the public sector to private companies being to take advantage of the economies of scale offered by global service suppliers. Typically this function requires a considerable amount of tacit customer-specific knowledge which, in many cases, might act as a disincentive to outsourcing. However, at least in some countries (notably the UK in our case studies), this problem is solved by the transfer of personnel. Thus the same people continue to do more or less the same tasks, but under a situation of contractual outsourcing. Although it can be separated contractually by such means, the need for this knowledge amongst the work force does, however, appear to act as a strong disincentive to spatial relocation. It is possible that in the future an internal division of labour will develop within the global companies that carry out much of this outsourced IT support work, meaning that some tasks will be carried out remotely, even if some staff remain at or near the customers' premises, but our public sector case studies did not provide any specific examples of this. These cases did, however, provide several examples where the terms on which the restructuring had taken place had changed as a result of pressure from the workers or their trade unions. This provides further evidence that their specialist knowledge continues to provide them with some bargaining power which, in turn, limits the forms of value chain restructuring that can take place.

Restructuring of the *customer support* function was often driven by a logic of rationalisation. This generally meant a fundamental restructuring of workers' job descriptions, which took one of three forms. In the first form, tasks were abstracted from specialist workers, previously based in separate departments, and repooled to become part of a generic customer service function (typically in a call centre). In the second form, tasks which had previously been centralised under bureaucratic forms of control were decentralised to local agents (for instance when postal services were placed in local shops, or ticketing services in local railway stations) where they could be indirectly monitored by

ICT-based means. In the third form, they were transferred to the customer, as unpaid self-service tasks. Here, there were major changes in workers' skills and knowledge which do appear to have affected the forms of restructuring that have taken place. In some cases, for instance the UK local government customer service function that was reorganised in a public-private partnership arrangement, the range of knowledge required of the new call centre work force (requiring in this case, knowledge of four hundred different local government services) clearly placed constraints on the extent to which an entirely new work force could be recruited from scratch, and considerable efforts were made to retrain the existing staff who, on the whole, did not experience the change as negative. In Austria, however, a similar restructuring led to the recruitment of transitory staff to whom no long-term commitment was made by the employer. In this function, it seems likely that in the future there will be few constraints on the development of value chains in which there is both spatial and contractual separation.

In the *R&D* function, where the motives for restructuring were more strategic, the main purpose of the restructuring was generally to bring the process closer to the market. However this is a function involving a high level of very specialised knowledge. As a result, with only one exception among our cases, it is a function which is strongly anchored spatially, either by the need for proximity to a university or to the parent company or, as in the case in Norway, by the desires of the work force who were able to use their strong bargaining position, based on their irreplaceable specialist knowledge, to insist on remaining where they wanted to be.

On the basis of this evidence, we can conclude that workers' skills and knowledge play an important role in determining the forms of value chain restructuring that are possible or desirable in any given case. However the direction of causality does not necessarily flow in only one way. Just as the standardisation of skills and knowledge can lead to a greater likelihood of outsourcing or relocation, it is also the case that the process of outsourcing or relocation may also lead to further standardisation, driving a 'snowball effect' (Ramioul & Huws, 2008) of continuing restructuring. The main brakes on this process appear, on the basis of these case studies, to be the need for quality control, combined with a continuing (and sometimes underestimated) need for tacit knowledge.

In the companion volume on global value chain restructuring and the role of knowledge and skills (Ramioul & De Vroom, 2009), these and other limitations of value chain restructuring along the process of knowledge codification are identified on the bases of the empirical evidence. The impact of this restructuring on the use of knowledge and skills, as well as on skills and qualification policies in the restructured companies is also analysed in more depth.

7.4 To what extent, and how, do national institutional environments shape decisions to locate particular business functions on their territories?

Although we were not able to find firm quantitative evidence for this in the statistics, it is clear from the qualitative case studies that the restructuring of value chains has a strong spatial dimension. We have already commented on the shift of production activities out of Europe altogether in the case of the clothing industry and some parts of the software industry. There was also evidence of international shifts in the location of activities in the

food industry as well as evidence of a growing presence of multinational companies in the supply of public services.

How are these shifts to be interpreted? Are they simply evidence of a general growth in the dominance of multinational companies, and the continuation of a more general trend to seek the lowest labour costs? Or are there more complex patterns at work? It is often argued by supra-national and national government organisations, as well as by academic researchers (e.g. Hall & Soskice, 2001) that patterns of labour market regulation, national training systems and other institutional factors make a difference in decisions about what economic activities to locate where.

The evidence from these case studies does confirm a classical 'race to the bottom' strategy for low-skill production activities, notably in the clothing industry. It also confirms the relative geographical 'stickiness' of some more high-skilled activities: in the case of R&D in software development, in their traditional locations, generally in or near universities which are centres of excellence; and in the case of clothing design, near company headquarters or important markets. These, it could be argued, correspond to the third and first 'leagues' of work as identified by Kädtler (2008). However for many activities in between and, arguably, even some that overlap with these categories, the picture is much more mixed.

In cases where work had been moved across borders (notably in software development) the reasons given by respondents were more likely to relate to cost and workers' skills than to the institutional environment, although here it could, perhaps, be argued that the availability of workers with the appropriate skills was itself an effect of government training policies. The obverse of this effect could be observed in a Belgian case study in the clothing industry, where the lack of appropriate training in Belgium had created a skills shortage which drove the employer to relocate work abroad which might otherwise have been carried out locally.

It was in the food industry that the impact of national regulation was most visible in its effects on locational choice. The Danish slaughterhouse, for instance, whilst using standard employment contracts for its workers in Denmark, carried out some work in Germany to take advantage of employing Polish workers on precarious contracts there. This sector also provided other examples of national differences in employers' strategies for managing flexibility, which are discussed in more depth in companion volumes to this (Flecker *et al.*, 2009; Meil, Tengblad & Docherty, 2009).

What we can conclude, somewhat tentatively, on the basis of this research is that, whilst national institutional environments may provide both 'push' and 'pull' factors in value chain restructuring, these are generally not the most important determinants of locational decisions, although they may well determine the specific forms that employment restructuring takes in any given location.

The spatial location of activities seems predominantly to be determined by other factors: in the case of low-skill production activities, by comparative labour costs; in the case of high-skilled R&D activities, by proximity to sources of knowledge and excellence; and in the case of other activities by a complex mix of factors including proximity to customers and markets, availability of skills and the traditional location of the activity or company in question.

In the cases involving the restructuring of public services, the influence of different national policy contexts was clear: in the case of the police call centre in Sweden regional

labour market policy played a role, and in the hospital IT service case in Norway a decision was taken against privatisation. These Nordic cases contrast with those in the UK where the restructuring appeared to be more driven by motives of efficiency and marketisation.

It should be noted, however that national systems of regulation are not the only institutional factors shaping the restructuring of value chains. There are also aspects of sectoral governance that also have an influence, for instance in relation to the organisation of vocational training, the recognition of professions and the structures of collective bargaining. These factors are examined in greater depth in Meil, Tengblad and Docherty (2009).

7.5 Is there evidence that new types of value chain are emerging in business services? And, if so, do they follow the same patterns as those in manufacturing?

Perhaps in part because they have been the easiest to study, the value chains on which most research has been carried out in the past have been those in manufacturing industries. Typically, they have been analysed as vertical chains, with raw materials at one end and the final delivery to the customer at the other, and with various other processes taking place in between. Although the inputs of raw materials may be defined as coming from another sector (*e.g.* agriculture or extraction or a metal-processing or chemicals-processing industry) and the final delivery to the customer may also be seen as an output to another sector (*e.g.* wholesale or retail distribution), the intervening processes are generally defined as lying within the boundaries of a particular sector. Whilst various business services may be seen as adding value at various stages in the process (*e.g.* design, quality control, packaging, logistics, sales, marketing or customer service) these have traditionally been seen as residing within the company or sector under study, either forming an inseparable part of 'head office services' or 'overheads' or as being so specific to the company or sector in question as to form a part of it (examples of this might be 'fashion design' or 'auto sales'). Such essentially linear models make it possible to model the patterns of control within the chains in a manner which is also essentially linear, with control being exercised, typically, either from the demand end (purchaser-driven chains, for instance in the clothing industry) or from the supply end (supplier-driven chains, for instance in the auto industry). Such typologies can be further refined to reflect differences in the modes of transaction between the parties, ranging from the simple market relationships at one extreme to complex transactions involving considerable interaction and mutual dependency at the other.

The emergence of separately defined business services sectors that may add value to commodities across a number of different sectors is historically relatively new. Perhaps the first of these to be officially defined as a separate sector was IT, although even here there has been considerable confusion between the notion of the IT *sector* as a manufacturer of IT products and services and the concept of IT *services* as intermediate inputs to the development of other products or services. This confusion is not simply a conceptual one but results from real changes over time: the industry has been characterised by a rapid evolution from the supply of large mainframe systems requiring 'bespoke' software to the supply of standardised computers designed to be networked together using stan-

dard interoperable software and systems. In the process, the nature of the products and services being supplied has changed. Outputs that, thirty years ago, were highly customer-specific, have now been replaced by increasingly generic ones. Hence, we see that the growing standardisation of IT related knowledge, products, services and processes entails fundamental changes in the division of labour within this function, resulting in a delineated, 'isolatable' or separatable business function and eventually leading to the emergence of a new sector.

Similar developments can be observed across a range of other business services, some of which might be said to add value directly to products and services (for instance logistics, advertising, or customer services) and some which add value less directly, by providing cross-the-board services to companies (for instance payroll management, accountancy services, staff recruitment or training services).

To the extent that they are genuinely generic, and to the extent that they are outsourced and grouped together in separate organisational units, these business services can be seen as adding value to the products and services produced by their customer organisations from 'outside' rather than 'inside' the sectoral boundaries within which manufacturing value chains have traditionally been analysed. Although this is not always reflected in the official classification system, they can, indeed, be seen as forming new 'sectors' which make inputs to, and receive outputs from, other sectors. To make matters even more complicated, the production of these business services can increasingly be seen as entailing the development of their own value chains, some, but not all of which are internal to the newly emerging sectors and each involving its own contractual and spatial division of labour.

In relation to the value chains in the 'old' manufacturing sectors, this raises the question whether the linear notion of the 'chain', which is, by implication, organised vertically, or the tree-like structure of the 'filière', is sufficient to capture the complexity of a set of relationships within which increasing numbers of the inputs appear to be coming, so to speak, laterally, from other sectors. As each value chain becomes more elaborate, the points of intersection with other value chains multiply, making alternative metaphors, such as that of the 'network' increasingly appealing. However the network metaphor also has its problems, not least because, as an image for capturing the relationship between two complex entities, it fails to offer any clues as to the direction of flows or to the power relations between the interacting parties. It thus does not help to answer such questions as which activity is making an input to which other activity; where and how value is being added; or which party is driving this process. Whilst drawing attention to this problem, we continue to use the term 'chain' in the remainder of this report for the sake of consistency.

The emergence of 'new' value chains in the production of business services does not just challenge the way we conceptualise the 'old' chains in manufacturing; it also raises the question of how to analyse these new chains. Do they also follow linear paths, with control being exercised from the supply or the demand end? Or do they exhibit different patterns?

What is the evidence from the WORKS case studies? The business service functions which were examined in these cases were R&D, logistics, IT support and customer services. In the cases involving *R&D*, this function was supplied in a highly sector-specific manner: clothing designers were designing only for the clothing industry and those

involved in supplying R&D to the software industry were also supplying only that industry. Whilst it is possible to argue that there may be other companies supplying design services in a more generic manner to clients in many different sectors, no cases of such companies were included in the WORKS sample. It can therefore be argued that this particular function, at least so far as our research is concerned, poses no fundamental challenges to traditional models of value chains: the service can be regarded, conceptually speaking, as residing within the same sector as the client companies to which it offers its services.

The situation with regard to *logistics* was not dissimilar. Whilst many of the activities involved in this function are generic, in the cases actually studied in the WORKS research, the logistics function was firmly rooted within a sector (in our cases, either food or clothing). In seven cases out of nine the function was in-house, *i.e.* owned by a company in that sector, generally a production company. The strong need for integration and rapid response to changing market conditions seemed to play a strong role in keeping these functions in-house in the majority these cases. They were, in other words, examples of functions which, albeit subjected to major restructuring, either because of mergers and acquisitions or because of a need to respond quickly to market demands, essentially followed a traditional pattern: they were company-specific or sector-specific functions situated within supplier-driven chains. There were no examples among our cases of logistics companies owned by retailers or wholesalers in customer-driven chains.

In *IT services*, the picture was very different. The cases in which IT services were studied *as services* were all situated in the public sector. Here, there was a clear pattern whereby services that had formerly been carried out in-house, generally on a 'bespoke' basis involving skills that were extremely specific to the public sector, if not to a specific customer, were being outsourced to companies that also had customers in other sectors, where they were being carried out in increasingly generic ways.

The WORKS project also studied R&D and production functions within IT *as a sector*. This made it possible to observe IT production as a value chain in its own right as well as in relation to the value chains of other industries.

From an analysis of these cases we can conclude that the software value chain follows that of manufacturing industries in many respects. There is a developed global division of labour in software production which, to the extent that the processes are standardised, follows a market logic but which generally develops more complex and interactive ties with suppliers for a variety of reasons, including quality control. This division of labour, as in some manufacturing industries, is volatile, with movements up the value chain by stronger players and the addition of new links below them. All five cases in our sample in which the IT production function was studied involved some work being passed down the line to other facilities in other countries, generally on an in-house basis. However none of these cases lay at the top of the chain which, in two cases was a head office in the USA, in one case a holding company outside the EU and in the other two cases a head office located elsewhere in the EU where the R&D function was also located.

Centralising and integrating tendencies in some parts of this industry coexist with fragmentation and decentralising tendencies elsewhere. We have no reason to believe that such varied and geographically distributed patterns are untypical of the sector as a whole. Further up the chain, as we have seen, the R&D function in our cases was carried out in a manner which was very sector-specific, whether this took place within the company, in a

university or within some more complex partnership arrangement. Here, however, the modes of interaction were longer term and involved more mutual dependency.

We have here a picture of large companies, with their own hierarchically-organised internal value chains controlled, generally speaking, from the top, even though the relationships between the various links in these chains, especially near the top, may be mediated through relationships which involve considerable mutual dependency between units involving highly skilled workers. Given this structure, how can we define their relationships with their customers? Traditional models of value chains in other sectors would regard suppliers of software services in one of two ways: either as dependent companies providing sector-specific or company-specific services to the customer's specification; or as suppliers of standard services in an open market. The first of these scenarios assumes a complex product, requiring an ongoing relationship but one in which the customer company is dominant. The second implies a simple commodity that can be exchanged in an anonymous market. It could well be the case that there are sectors where one or other of these scenarios fits quite well. However this was certainly not the case in the WORKS cases, where the customer in question was from the public sector.

The public sector is one in which the concept of the value chain is very difficult to apply since, with a few exceptions, it has traditionally operated outside the market, producing what Marx would have called 'use values' directly to consumers rather than 'exchange values' to be measured by monetary means. The standard mode of governance has thus been a bureaucratic one, with decisions (made on political, rather than commercial, grounds) being implemented through hierarchical chains of command (sometimes mediated through professional modes) and monitored, if they have been monitored at all, by indirect performance measures. The process of rationalising and standardising internal processes within the public sector and opening them up to the market is still relatively new. This makes it possible to observe the process of transformation at first hand. The WORKS case studies involving the outsourcing of IT services have enabled us to do this. However they do not enable us to examine the longer term effects of this restructuring.

What these cases show is a type of relationship in formation. Formally and legally the most powerful party is the purchaser of the service: a public sector organisation which is in a position to lay down the terms of service level agreements with some precision, manage a tendering process, award a contract and exact penalties when the terms of that contract are met. However in many of our cases the seller of this service is a large global company with considerable market power, both in terms of establishing generic standards and in terms of being able to implement major economies of scale. In some cases, the outsourcing deal involves a transfer of personnel, implying that the balance of power will in the future tip further away from the purchaser, who may thereby lose the bargaining power that comes from being able to switch back to in-house service supply if the relationship comes to an end. It seems likely that in the case of the public sector we are moving towards a situation whereby the IT service function is becoming increasingly generic and standardised, leading to a situation in which it becomes a simple commodity to be bought on the market from one of a (perhaps limited) range of global suppliers.

If this development were limited to the public sector, this would not necessarily challenge our models of value chains, since it is a sector which is not seen as value-generating in any case. However many of the IT service suppliers in our case studies do not only supply the public sector. Indeed, their position as suppliers to that sector has been won

precisely on the basis that they are already supply generic IT services to many other sectors and have built up huge economies of scale by so doing. We can conclude from this that developments in the supply of business services have consequences for the value chains of these other sectors since the same transformation from a supplier of customer-specific bespoke services to a market provider of standard solutions must also be taking place elsewhere. To the extent that inputs from in-company or in-sector supplies of IT services in the past added value to their products, and to the extent that these services are now supplied from outside the sector, and that the bargaining power derived from a relationship with a dependent supplier is reduced, we must assume that the added value has also migrated to these new sectors. In other words, as the squeeze on margins becomes ever-more acute in the conditions of heightened competitiveness in manufacturing industries with global production networks, so the scope for generating extra value from these manufacturing activities in the new service sectors expands. This is not to say that these service sectors are immune from their own internal competitive pressures. Indeed, the evidence from our case studies is that in software production the patterns of competitive pressure are very similar to those in production in other industries. Nevertheless, this development does indicate a huge scope for expansion of the new business service sectors – with the public sector representing a particularly attractive green field for so doing. With expansion, it seems likely that we will witness a growing complexity in the spatial and contractual division of labour within these sectors.

The final business service function examined in our case studies was *customer services*. Here, because the setting was also the public sector, we found a similar logic to that found in IT services. However we were not able to analyse customer services as a sector in its own right which made it impossible to identify any specific value chain patterns within it. The relatively low-skill requirements of much (but not all) customer service activity and the ease with which it can be reorganised using ICTs suggest that the speed with which this activity becomes standardised, commodified and subject to market logic may be even greater than in the case of IT services, where considerable amounts of customer-specific knowledge are still required.

7.6 What power relationships are emerging, between managers and employees within the units of value chains and between the different units and how is this power exercised?

We saw in Chapter 6 that it is difficult to make broad generalisations about changes in the power relationships between managers and employees as a result of global value chain restructuring, since these vary considerably by sector and by business function as well as by other factors, including the national institutional environment. However it is possible to conclude that shifts in power relationships between different units along the value chain translate quickly into new pressures on workers within those units. It cannot be assumed that these pressures will fall only on the most ‘peripheral’ workers. On the contrary, it appears that the very existence of a periphery (or of alternative ‘cores’) is used to bring pressure to bear on workers who might traditionally have been regarded as ‘core’.

The case studies supplied a number of illustrations of strongly contested power relationships along the chains that were studied. In the clothing industry, this was particularly evident between producers and retailers, with retailers forcing producers to take on

more and more functions formerly carried out within the retail sector, and producers fighting back by setting up their own retail outlets. In the IT sector, there was a continuing pressure from units lower down the chain to bid for higher value-added work, competing with higher units and, in turn, pushing the lower value-added activities downwards towards suppliers in cheaper locations. In the public sector, albeit choreographed through complex legal and bureaucratic procedures, there was a clear contestation of power between the public sector organisations and their private sector suppliers, with public sector organisations resisting the increasing power of the private suppliers by such means as changing contractors, taking suppliers to court for failure to meet targets or (in one case) bringing the work back in-house, whilst the suppliers, on the other hand, attempted to consolidate their positions by building up their knowledge base, standardising procedures and making it possible to carry out the work using less skilled workers. In the food industry too, there were several examples of power shifts, and sometimes conflicts, between acquiring companies and their targets, and between outsourced and in-house suppliers.

This power is, however, exercised in a range of different ways. As we have seen, in the case of the relationship between the public sector and its clients the relationship could be defined as a legal-bureaucratic one with pressures brought to bear using formal means. In the case of outsourced lower-skilled and standardised activities (*e.g.* clothing production), they are brought to bear through the market. Suppliers who do not deliver to the required standards are simply dropped. Clothing producers, in turn, are disciplined by their customers – the wholesalers, retailers or direct customers to whom they supply their goods. Where standard production activities are carried out in-house (*e.g.* in the case studies in the brewing industry and in some clothing companies setting up their own subsidiaries in low-wage countries), the power is exercised more directly and hierarchically, in the form of new standards emanating from head offices that are imposed on local plants, cascading down through various levels of management. In the case of the R&D function, the degree of mutual dependency between the partners creates a much more nuanced and finely balanced relationship. Whilst R&D workers are being pulled closer to the market and, in some cases, facing increasing pressures to document their work and adopt more standardised procedures, they are also able to exert their considerable bargaining power, based on the scarcity of their specialist skills and knowledge, to resist unwanted changes and make demands for conditions that allow them a considerable degree of autonomy.

The case study evidence also suggests that the effects in terms of power on the one hand and dependency on the other do not necessarily differ very much across different modes of value chain restructuring. In other words, companies aiming at externalising, for instance production, activities may do so by setting up new subsidiaries in other (low-wage) countries or by outsourcing those activities to existing third companies in these countries or by combinations of these. In terms of dependency on the supplier and the influence exerted on the provider, this does not necessarily make a huge difference. In the clothing and the food sector, both relocation to wholly-owned subsidiaries and outsourcing were found as well as the combinations of these two forms. In the software industry the mechanisms of global sourcing and internal tendering seem to make it a rather trivial matter whether the activity is outsourced contractually or whether it remains within the (larger) company: sites have to compete both internally with other establishments belonging to the same company and with competitors on the market for acquiring a

product portfolio or parts of it. Hence, for each position in the value chain different forms of economic co-ordination of the organisations involved can be found alongside each other: hierarchical relationships (between parent companies and subsidiaries), market relationships (involving internal, sometimes combined with external, tendering on the global market), long-term collaborations (for instance with specific customers), and *ad hoc* assignments (*e.g.* to make use of spare production capacities in cases of peak demand).

It is too speculative to conclude on this basis that spatial and contractual forms of externalisation are equivalent substitutes in the process of value chain restructuring, and there is no doubt that decisions whether to opt for outsourcing or not are influenced by a broad variety of factors. However, this observation does confirm that the mechanisms and factors that play a role in changes in the spatial co-ordination of value chains are essentially very similar to those that are involved in changes of the economic co-ordination of value chains. These factors include the complexity of products and processes, the ability to codify knowledge and the capabilities in the supply chains: the three key variables of changes in the contractual co-ordination of value chains identified by Gereffi *et al.* (2005).

The importance of this spatial dimension might be regarded as a first important qualification of the thesis of these authors who primarily consider differences in *economic* co-ordination of value chains, as will be elaborated in the next section.

7.7 How well do existing typologies of value chains fit the realities to be found in Europe in the early 21st Century?

We referred in Chapters 3 and 6 to the typology of value chain governance developed by Gereffi *et al.* (2005). Their five types of chain (market, modular, relational, captive and hierarchical) are based on combinations of three variables: the *complexity* of transactions; the ability to *codify* transactions; and firm *capabilities*. These variables certainly offer extremely useful tools for analysing the inter-relationships between different units in any given supply chain. On the basis of our research, however, we would question their applicability to a chain *as a whole*. Although they claim that their typology is 'dynamic', any typology, by its very nature, can be said to be descriptive of static entities, with a single dominant characteristic applied to the whole. Typologies therefore are at their strongest as tools of classification at any given point in time. Their weakness is that they tend to make it difficult to analyse change processes over time and to characterise hybrid cases or cases that are in transition from one mode to another. Whilst it is in principle possible to classify a case, for instance, as 'hierarchical moving in the direction of captive' or 'partly modular, partly market' the more qualification of this type that is carried out, the greater the diminution of the power of the typology.

Our case studies were, of course, selected specifically to illustrate restructuring, so it is not surprising that many of them exhibited a transition from one form to another. More importantly, however, we also discovered that many were hybrid forms. The relations that were to be found between units near the top of a value chain were not necessarily similar to those to be found near the bottom. Furthermore, in our cases involving the supply of business services to the public sector, we found a form of governance which might be termed 'legal-bureaucratic' which did not fit easily into any of the five types identified by Gereffi *et al.* (*ibid.*). Finally, as stated earlier, we found that transitions did not necessarily imply a change in contractual relationship *sensu strictu* but might only involve a

geographical shift, but, because this was accompanied by the introduction of 'market-like' mechanisms it produced similar effects in terms of shifting power balances.

We thus did not find it easy to classify the case studies in our research according to this typology. However this does not invalidate the usefulness of the work of these authors. Whilst the types do not necessarily fit value chains *as a whole* with great precision, their separate components (the variables of *complexity*, *codification* and *capabilities*) are very useful, in a disaggregated form, for analysing the characteristics of the transactions between any two given units in the chain and for analysing the direction of change.

Let us take, for instance, a unit in software production that is in the process of moving up the value chain. Its relationship with the unit which lies above it in the chain might be becoming more complex as a result of the greater range of tasks being taken on; however the same unit may simultaneously be developing relationships which are less complex with supplier units further down the chain. In the process, there might be an increase in capabilities at the unit which might strengthen its bargaining power with the supplier units. However it is equally possible that the capabilities at the top of the chain are such that this intermediate unit may be bypassed, thus increasing its dependency on the unit up the chain. Similarly, changes in codification must be treated as separate variables. Tracking the changes in relation to each of these variables separately and plotting the ways in which they are combined might give us an extremely useful means for gaining insight into the changes at each stage. Applying this analysis on a function by function basis also makes it possible to escape from the straitjacket of studying only linear chains within sectors by enabling a comparison across sectors. This also makes it possible to see the extent to which these functions are becoming generic in nature and the same logics apply across sectors. This in turn provides a starting point for identifying economy-wide trends.

Following this logic of taking a few standard variables and applying them in a disaggregated way on a function by function basis, does not, of course, preclude assigning existing or new types to particular designated combinations, either on a 'whole chain' basis or applied separately to single links. However it seems to us that the main value of this approach lies not in definitively labelling any given case but in the careful selection and application of the separate variables. This raises the important question of how adequate the three variables identified by Gereffi *et al.* (*ibid.*) are for our purposes. They are, of course, broad categories, and much depends on what is included within them.

Looking first at *complexity* the evidence from our case studies is that this is indeed an important factor. We would not, however, wish to limit it to requirements of complex co-ordination and control, but to include in it the complexity of the knowledge required of workers. Our case studies of R&D demonstrated that where the work requires specialised knowledge this confers on the workers, and the unit in which they are based, considerable bargaining power in relation to other units in the chain which in turn affects the nature of the relationship and the governance mode. Although closely allied to it, this factor is different from the more general need for complex and interactive forms of collaboration. It is also separate from the concept of codification. It is possible, for instance for work to require extremely deep and broad knowledge on the part of the worker but nevertheless be highly codifiable (for instance work involving high level mathematical skills or legal knowledge). It is also possible for it to involve a great deal of deep and tacit knowledge but nevertheless to require little complexity in its interaction with other parts of the value

chain (for instance in the work of the fashion designer whose creativity is often regarded as a self-contained 'black box'; the knowledge is complex but the results may be handed over in the simple and highly codified form of a pattern, requiring little ongoing interaction or collaboration).

The *codification* variable is also, as already indicated, strongly relevant to the analysis of value chain restructuring (and is, indeed, addressed in greater depth by Ramioul & De Vroom (2009) in a companion volume to this one). However it too requires some further investigation. In our case studies it was relevant in at least two distinct ways. In one type of case (*e.g.* in production functions) tasks that were highly standardised and quantifiable, and thus easy to codify, were the most likely to be outsourced and relocated at a distance under terms that were strongly market-like. There was thus in such cases a strong relationship between codifiability and the development of market-like relationships, which in turn implies low transaction costs.

However in the cases involving outsourcing from the public sector, we found extremely elaborate forms of codification, embodied in voluminous service level agreements and legal documents which were used to govern relationships in which transaction costs were extremely high and the degree of mutual dependence between the parties, although formally of a market-like type, suggested that relationships were likely to be relatively long-term. This difference would make it difficult to apply the 'codification' variable usefully in isolation. However in combination with the 'complexity' variable it enables us to identify four possible relationship types: low complexity, low codification; low complexity, high codification; high complexity, low codification; and high complexity, high codification.

Finally, we have the *capabilities* variable. This is defined by Gereffi *et al.* (*ibid.*) mainly in relation to the generation and retention of competences that distinguish firms from their competitors. This factor certainly played a role in many of our case studies, particularly in determining which factors remained in-house and which were outsourced, and exhibiting a strong link to the importance of quality to the company or brand image. However in order to understand the dynamics of the restructuring of value chains found in our case studies we would wish to expand this variable (or, perhaps, add an additional variable) in two different ways. First, one should take into consideration that firms do not operate in a vacuum and that these capabilities may be highly influenced by the corporate environment, notably the regional labour supply, labour market institutions and VET structures. Several case studies suggest that the availability of a local qualified labour force, possibly enabled by adequate training provisions, may be a key factor influencing restructuring decisions. Equally some cases, notably in clothing, showed how the regional erosion of such local VET structures strongly accelerated further relocation of, in this case, production activities. Hence, capabilities are not only determined by the way organisations are able to retain the necessary competences in house but also by regional labour market structures and policies.

The second revision of the capability variable aims at including much more explicit references to *power* and to *dependency*. Like the other variables, the term 'power' requires some qualification. It can refer simply to general *market power* of the type wielded by market leaders or dominant global brands. This type of power can be exercised monopolistically, when organisations dominate the market in their capacities as purchasers, or monopolistically, when they dominate it as suppliers. In either case this power can be exercised

indirectly, for instance through the setting of standards, or more directly, through price mechanisms. A large retail chain might be an example of purchaser power on the market, whilst a supplier of a standard software package might offer an example of supplier power on the market.

However such simple forms of market power, on the evidence of our case studies, are not the only form of power which is exercised in the restructuring of value chains. Our case studies also supplied examples of power being exercised through control of logistics in the delivery of time-sensitive products to the market (such as food); of power exercised through the control of scarce skills and knowledge (*e.g.* in R&D) and of power exercised more formally and legalistically, as in the drawing up of tender specifications by public sector bodies. The outsourcing of public services here provides a particularly interesting example of formal demand side power in contestation with supply side market power. The relationship between power and dependency is equally difficult to model, although the two factors are obviously strongly related.

Whilst we would argue that the Gerreffi *et al.* approach would benefit from some further differentiation in respect to these variables, it clearly offers an extremely useful starting point for analysing trends in value chain restructuring.

Whilst considerably more research would need to be done to establish the universal applicability of this approach, in combination with the use of the 'business function' as a unit of analysis it does seem to offer a promising way forward for research on changes in work in the future.

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- In order to understand the impact of globalisation in Europe it is necessary to understand the place occupied by European workplaces in global value chains, how the structure and governance of these value chains is changing, and what the impact is on work organisation and on workers.

As well as making an important theoretical contribution to the conceptualisation of value chains, this report draws on the quantitative and qualitative research of the WORKS project to examine the impacts of value chain restructuring. Fifty-eight case studies in the food and beverage, textiles and clothing, IT and public sectors were analysed to shed light on questions such as:

- Is it really the case that value chains are getting longer and more elaborated, both contractually and spatially?
- What is the relationship between codification of workers' knowledge and value chain restructuring?
- To what extent, and how, do national institutional environments shape decisions to locate particular business functions on their territories?
- Is there evidence that new types of value chain are emerging in business services? And, if so, do they follow the same patterns as those in manufacturing?
- What power relationships are emerging, between managers and employees within the units of value chains and between the different units and how is this power exercised?



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