

The transformation of work?

*D9.2.5 - A quantitative evaluation of the shape of employment in Europe
Introduction and executive summaries*

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1 An introduction to the research reports from the quantitative research of WORKS

1.1 Introduction

The core focus of WORKS is on changes in work caused by global restructuring. These changes concern first of all shifts in employment, job growth and job decline related to the global restructuring of value chains. This restructuring implies that economic activities can be relocated from one location to another or that they can be hived off by one company to be performed by another. A major research question of the WORKS project is therefore to what extent such sectoral and geographical shifts in employment are indeed taking place in the EU.

Second, there are changes in the nature of the work, which globalisation might cause. These are not easily predictable. On the one hand, it is expected that increased competitive pressures will lead to greater technical and commercial innovation, which will in turn require a more flexible, skilled and motivated workforce. On the other, flexibility might become a tool used by employers to extract more value from their workforces. Thus, flexibility is a double-edged concept. Occupations and industries that form part of the 'knowledge society' are expected to be especially subject to these sorts of contradictory pressures, because of the huge new investments they require, because they are particularly competitive sectors, but also because knowledge can itself be used as a tool either to improve or more closely control the nature of the work people do.

The research produced in the frame of the quantitative work of WORKS, which addresses these issues through the analysis of a number of European micro-level datasets, appears in four separate reports, each produced by one research institute and each based on one dataset. In this introduction to these reports we establish the context for these through a discussion of some of the literature and then review the main findings of the reports to see what light they throw on the central issues.

There is a very substantial literature on changing work conditions and changing employment patterns. Overall it would appear that there is little evidence for a general and consistent trend on shifts in employment and on change in the nature of work, in particular of a negative nature. Further, there is no clear-cut national convergence in respect of change on a number of dimensions, nor a consistent means of grouping *types* of countries in a way which is consistent over time and across different dimensions. Rather, we mostly observe a high level of national specificity.

We test these conclusions from the quantitative literature through the linked empirical chapters, which provide new research based directly or indirectly on the key concepts. The datasets used for the research are:

1. the *EU Labour Force Survey*: this is used first to provide basic facts on sectoral and geographical shifts in employment throughout Europe and second to investigate various aspects of work flexibility, in particular to examine trends in these;
2. the *European Working Conditions Survey*: analysis of national variation in work complexity, independence in time allocation, work intensity and quality of working conditions. The analysis is cross-sectional but looks at more than one point in time;
3. the *European Household Community Panel*: as this contains panel data, it is used to look at aspects of individual-level change. The analysis focuses primarily on job skills and on occupational switching over the career.

The main results of each report can be summarised as follows.

1.2 Tracing employment in business functions (HIVA-K.U.Leuven)

1. The aim of this part of the analysis on the EU Labour Force Survey is to measure the effects of global value chain restructuring on employment in the European Union. In line with the qualitative research of the WORKS project, the business function is used as the main unit of analysis. A business function is defined as a unit of activity that can be categorised within a value chain: a cluster of technologically and economically distinct activities which are usually performed together. Business functions refer to both core and support activities in value chains.
2. The main conclusion that can be drawn from the analysis is that several business functions are increasingly performed within specialised service sectors. Evidence has been found of a shift of specific business functions from sectors in which they are 'peripheral' to the production process, towards sectors in which they constitute the core activity. The most obvious example of this trend has been found in IT services and logistics, but this shift can be observed also in marketing and sales, and legal and financial services.
3. In the sectors and occupations under study no evidence is found of a major shift of business activities from the old to the new member states. However, this is partly due to the limitations of the data which do not permit the tracing of a sector or country to which a business service is supplied.
4. In several sectors the core occupations were traced and the employment evolutions in these activities estimated. A growing share of employment in core activities within a sector indicates the increasing importance of these activities in the sectors, a decreasing share a growing relative importance of secondary activities. A growth in the importance of core activities is found in several sectors, for example, in the IT sector in both the old and the new member states. Evidence of a decreasing share of core activities has been found in 'textile and clothing'. Figures show that the huge employment decline in this sector goes together with a considerable reduction of the share of core production workers within the sector. This means that for Textile and clothing companies located in Europe, the importance of previously supporting activities has increased in terms of employment. Most prominent in this respect is the growth of R&D related employment.

1.3 New forms of work organisation and time use (IRES)

1. There has been a substantial increase in temporary employment in the EU-15 over the period analysed (1997-2005). As a proportion of overall employment growth, this is especially large in Germany, Portugal and some other countries, while it has declined in Denmark and the UK.
2. In the EU-15 countries, part-time work as a percentage of total employment increased slightly from 1995 to 2005, from 16 *per cent* to 20 *per cent*, but cross-country variation is far greater than variation over time, with part-time work forming 5 *per cent* in Greece and 46 *per cent* in the Netherlands at the end of this decade.
3. The percentage of female part-time work in total employment was also fairly stable over this period on average. Though it increased considerably in some countries, for instance Austria and Belgium, in others it was stable, or in the case of Sweden, fell. In the new member states, part-time work as a percentage of total employment on average fell slightly between 1997 and 2005.
4. From 1995 to 2005 there was a roughly 50 *per cent* increase in the proportion of employees on shift-work in the EU-15. This fell in Belgium, and slightly in some other countries, but rose markedly in several others, notably Greece, Ireland and Portugal. However, countries do not vary much by the probability that workers have a fixed working schedule.
5. Self-employment is a potential indicator of insecure employment, as it might force people to find their own work. On the other hand, it can be an indicator of increasing entrepreneurship (which is one of the Lisbon goals). Although it is also possible that poor markets force people out of self-employment, here the focus is insecurity derived from changing work conditions rather than from economic downturns. However, from 1996 to 2004 self-employment as a percentage of all work was stable in the EU-15. The biggest changes occurred in countries with generally high levels, such as Greece and Spain, where it fell, but it remained stable in other countries where self-employment is high, such as Italy and Portugal. Self-employment declined as a proportion of total work over the same period, from 28 *per cent* to 24 *per cent*.

1.4 Trends in working conditions in the EU (CEE)

1. Mapping of the national distribution of a number of indicators (work complexity, independence in time allocation, work intensity and quality of working conditions) shows little consistency suggesting that national groupings are difficult to discern. However, two Scandinavian countries (Denmark and Sweden) and the Netherlands provide a specific pattern in terms of working environment. In these countries jobs are complex, provide learning opportunities and the quality of working conditions is high. In contrast, some Mediterranean countries (Greece, Portugal and Spain) are characterised by low quality of working conditions and weak job complexity (routine jobs).

2. The distribution of some work features shows that there are considerable differences in work organisation between the EU-15 and the twelve candidate and acceding countries. In general, jobs in the latter countries are less complex, less intense and the quality of working conditions is lower.
3. On average in EU-15, there was a significant decrease in complexity of work between 1995 and 2000. This means that in 2000, European workers have less possibility of choosing or changing their order of tasks and methods of work; their jobs involve a lower degree of solving unforeseen problems, complex tasks or learning opportunities. Simply speaking, jobs have become more routine on average in the EU-15 during the five year period between 1995 and 2000.
4. At the same time, work in the EU-15 has become more intense. This intensification is mainly market-driven: the pace of work is more and more dependent on the direct demands of customers and clients. In contrast, technical constraints, those linked to automatic speed of a machine or numerical production targets, haven't changed significantly. The percentage of European workers whose job involves working at very high speed and to tight deadlines has slightly increased (from 56 *per cent* to 58 *per cent* and from 54 *per cent* to 57 *per cent* respectively).
5. There is no evidence of any improvement or deterioration of quality of working conditions in the EU-15 during the analysed period.
6. The determinants of work experience depend relatively little on national institutional differences but seem rather to derive from individual-level characteristics, many of which can be taken to be typical or certain types of job.

1.5 A study of skills and occupational switches (ISER)

1. The analysis in the report utilises household panel data in order to measure change in people's working circumstances over their career. It makes use of the European Community Household Panel, the British Household Panel Study, and the German Socio-Economic Panel.
2. The focus of the research is the widespread argument that the nature of work is changing, in particular becoming less stable, and more intense. The research adds to the more common analysis of trends in aspects of work such as unsocial working hours, job intensification, and reduced job tenure, analysis using a measure of relative skills (overqualification) and career flexibility. It also includes measures of job satisfaction. The aim is to see whether overqualification and rapid career moves are a significant part of the occupational scene in Europe, and whether career changes are associated with change in job satisfaction.
3. The results show no decrease in job satisfaction at the aggregate level over time in any country, with the possible exception of Italy. Factors which explain dissatisfaction with work, in virtually all countries, especially include the nature of employment contracts. People with fixed-term contracts or in casual work are especially likely to be

dissatisfied with their work, but this improves if they move to other jobs. A high proportion of workers in Europe feel overqualified for the work they do. This is especially high amongst people with fixed-term contracts or in casual work.

4. There is a very high degree of occupational change in Europe in the aggregate and, on average, over people's careers. This varies enormously by country, being especially high in Belgium, especially low in France. Most of this movement is sideways or upwards but some is also downwards. The factors associated with such occupational moves, whether sideways or up or down, again in particular include being in fixed-term contract or in casual work.
5. IT workers were isolated in the final analysis because IT work is deemed by some to be the epitome of highly flexible work. This was not found to be the case in either Germany or Britain - the two countries for which this could be tested - relative to some other professions. Further, while it is possible (in Britain) to enter IT with lower than average skills for the job, suggesting some downgrading of the work these people do, this did not apply to IT workers more than to workers in some other professions.

1.6 Conclusions

On the basis of these analyses we can conclude that there have been some consistent changes in work caused by global restructuring. On various measures we can detect a significant change in the nature of employment in Europe over the periods of time studied. These are not very substantial but probably larger than we would expect from some of the literature. Some of these effects can be interpreted as having negative consequences for the welfare of workers.

The report on employment changes in the European Union finds that restructuring of value chains causes important sectoral and occupational shifts. Several business functions are increasingly performed within specialised service sectors. Evidence has been found of a shift of specific business functions from sectors in which they are 'peripheral' to the production process, towards sectors in which they constitute the core activity. On the other hand, in the sectors and occupations under study, no evidence has been found of a major shift of business activities from the old to the new member states. Hence, the hypothesis that the latter are becoming a 'back-office' for companies in the old member states, could not be confirmed in the frame of this research. Finally, evidence has been found of a strengthening of core businesses in several sectors, while in others there has been a shift from core to secondary activities.

While there is little evidence from the published evidence so far available of a trend within Europe towards increased job flexibility, especially of the sort that might be predicted on the assumption of a negative effect of globalisation, we do find some evidence, if not very powerful, of such effects. The report on trends in European employment finds an increase in temporary work, shift work and part-time work in most countries. The report on European working conditions, which in common with the above also looks at aggregate trends, finds some deterioration on some indicators. The report on individual-level change using panel data finds that both dissatisfaction with work and skill mis-

matches are widespread, and while tending to be overcome through career switches, thereby contribute to the overall prevalence of work flexibility. People need to move in order to improve their working lives, which are under pressure.

However, even if economic and technological change is influencing the welfare of individuals, it is difficult to discern an overall trend which can be described as overwhelmingly negative. There are negative effects to change, but also signs that as long as economies continue to grow, these are to some extent and partially been compensated. Some of the indicators we have described do not necessarily entail a loss of welfare.

If the reports find evidence of increasingly flexible and uncertain work across a range of countries and dimensions, they cannot point to a single model of change or of adaptation. There seems to be no convincingly useful means of grouping countries, so that we cannot argue for national *types* of response. Rather, there are some national similarities but these are not consistent across all dimensions of change. There is no single European experience but also, even though overlaps certainly exist, no clear-cut set of experiences.

Only greater investment in adequate European-wide data with comprehensive coverage of all aspects of employment and employment conditions can fully answer some of the critical questions with which this set of reports has been concerned.

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2 Executive summaries of the research reports from the quantitative research of WORKS

2.1 Introduction

The central ideas underlying the research contribution to the WORKS project are described in full in the comprehensive summary and discussion of the theoretical and empirical basis for the project, *The transformation of work in a global knowledge society: towards a conceptual framework* (Huws, 2006). The changes that are assumed to be taking place in the ways goods and services are produced through globalisation (and the restructuring of value chains associated with this) are generally held to be linked to the growth of the knowledge economy. This applies both to outputs - new goods and services which either embody new knowledge or create more intelligent ways of doing things (which, though, might in themselves require little knowledge, such as playing computer games) and to processes of production. These are clearly very different things, and yet closely interconnected. On the one hand, there is a growing demand for creativity in production (again, for instance, in the design of computer games). On the other, the development of computerised methods of production, but also of work control, enables work to be produced more cheaply - and implicitly less creatively - than before. In terms of quality of work, knowledge-based change is therefore a double-edged sword. It has two main possible outcomes, which are summarised well by Huws: '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... and the application of new processes to the production of existing goods or services... In the former case... the process may begin with a few creative workers with a high level of tacit knowledge with complex and ill-defined job description... In the latter case... when the change comes, it generally takes the form of systemisation and routinisation...' (Huws, 2006: 24-25).

We clearly have two types of change going on and with different implications for the quality and benefits of work. However, as indeed is often acknowledged, these are not mutually exclusive. Where new processes arise they might eventually be subject to standardisation, or alternatively they might lead to a transfer of skill opportunities to one group of workers at the expense of others whose particular skills are made redundant. Thus, what counts is the overall balance of such effects.

But a further issue arises, and greater uncertainty, in that not everyone has the same interpretation of the data that are available. This is most obvious in the case of female employment, where the increase of part-time work could be seen as controlled use by employers of female labour, for the sake of flexibility, but equally as a demand by women themselves for flexible work (Blossfeld & Hakim, 1997). When we look at the use of skills, while it is generally recognised that Braverman's thesis of deskilling badly underplays the

full range of responses, by both employees and employers, to changing work needs, it is less clear how we can interpret some of the changes that we observe. Against the undeniably negative Taylorist and Fordist forms of work are a panoply of arrangements which are less easily interpreted. Thus, the dividing line between 'control' and 'consent', through incentive schemes, but also through job enrichment, rotation and teamwork, is itself contested (Study, Knights & Willmott, 1992). The literature is by no means clear that the balance of change is, in the aggregate, definitively either negative or positive.

The broad aim of the quantitative work of WORKS is to contribute to the debate. Its initial explicit aims, as specified in the description of work, were to:

1. describe and explain the extent of organisational change in European employment through quantitative analysis of a number of large-scale datasets of individuals;
2. explain the causes of this change and national variation in order to assess the significance of variation for European competitiveness;
3. examine the welfare implications in respect of occupational mobility, the distribution of earnings, and gender equality.

As work on the project proceeded, it became clear that competitiveness could not be measured directly but would have to be considered in relation to skills, which can be treated as a proxy for productivity. Further, in view of the alignment with the key project assumptions and with the qualitative empirical work of the project, it was found necessary to investigate longitudinal employment shifts throughout the EU in order to test the assumption of the restructuring of value chains and the geographical and sectoral shifts of business functions associated with this restructuring, in particular those business functions that were subject of study in the case study research.

In view of the consistency throughout the WORKS project and the integration of all the research findings in the next steps of the project, additional analyses were deemed to be useful. First, to underpin the qualitative case study research with background data in order to provide comparative background information on the sectors and occupational groups selected for the case study research. Second, where possible and feasible to provide the thematic reports planned for the project's Phase 3 (Theory pillar) with general trends on the core issues of the project, derived from data from existing EU surveys. The core themes that will be dealt with in these thematic reports and that could - to a certain extent - be addressed with the available surveys and data are the following:

- global value chain restructuring and employment shifts;
- new forms of work organisation;
- flexibility and working time;
- skills and qualification issues;
- issues related to the quality of working life.

More generally, we considered it necessary to try to develop new measures and methods for analysing change. Further, there is a scarcity of data in Europe which can give an all-round picture of change in patterns of employment with coverage of all the major significant aspects such as job moves, flexibility, work conditions, job satisfaction, skills. The shortage is especially acute in the case of longitudinal data.

We therefore decided that the research could best contribute to assessment of change through three distinct innovations:

1. because no single dataset contains sufficient information for the purposes of the project, the analysis would use a variety of datasets available at the EU level in order to examine different elements of work patterns and outcomes in as much detail as possible;
2. it would develop new measures and methods for doing this, as well as, for the sake of replication and comparability, using standard methods;
3. in addition to assessment of overall patterns it would focus on specific types of job (business functions) where change is deemed to be especially significant.

We describe the outcome of this research in four separate reports. In this introductory synthesis report we try to bring things together, both through a discussion of the main issues which informed the research and through a summary of the central findings.

2.2 The thematic underpinnings

The core focus of WORKS is on the interrelations between restructuring of value chains, changes in work organisation and the quality of working life. These changes concern first of all shifts in employment, job growth and job decline related to the global restructuring of value chains. Second, there are changes in the nature of the work, which globalisation might cause. This implies change in the quality of work, the conditions of work, and its rewards. The latter include wages but can also include aspects such as job satisfaction, while all three of the elements just mentioned entail consideration of the role of factors such as the extent of work autonomy and of required work skills.

As already mentioned, the results of these changes are contradictory. On the one hand, it is expected that increased competitive pressures will lead to greater technical and commercial innovation, which will in turn require a more flexible, skilled and motivated workforce. On the other, flexibility might become a tool used by employers to extract more value from their workforces. At the most extreme, work is shifted from some occupations or industries to others, or across regions and countries. The competitive pressures to which this gives rise in turn intensifies pressure on workers, exemplified through tighter control over work time and processes or reduced job security.

Occupations and industries that form part of the 'knowledge society' are expected to be especially subject to these sorts of contradictory pressures, because of the huge new investments they require, because they are particularly competitive sectors, but also because knowledge can itself be used as a tool either to improve or worsen the nature of the work people do. To test this we need to examine trends. In undertaking this analysis of trends through the quantitative analysis of WORKS and the reports made with the available datasets, we seek to address the following broad themes:

2.2.1 Value chain restructuring

One of the central aims facing the WORKS project is how to understand the relationship between changes taking place at the level of the global economy and changes taking place at the workplace level. The concepts of the global value chain and of the business function

(jobs of a functional unit) are useful for providing a window into this relationship. The focus of WORKS is on the restructuring of value chains. Restructuring refers here to legal/contractual and/or geographical changes at the level of the value chain: on the one hand processes of outsourcing/insourcing/mergers, *etc.* (legal dimension) and on the other hand the relocation (spatial dimension) of business functions. The increasingly generic ways in which business functions are carried out within sectors suggests that selecting the same business function within the same sector provides a unit of analysis that will allow international comparability between different nations. A major assumption is that there is a shift of certain business functions to other sectors through processes of concentration and outsourcing and to other regions through the relocation of activities.

2.2.2 Work organisation restructuring

Restructuring of value chains implies that the division of labour changes at the level of the work organisation in the firm, in each affected unit and at the workplaces involved. Second, there are other drivers for changes in the work organisation and workplaces. Technological innovations and a growing pressure from markets may affect the job content and the autonomy of workers, both with respect to job content and time use.

Key issues related to changes in the division of labour and changes in work organisation are processes of standardisation of work, specialisation of work into separated fragmented tasks, the division between high-skilled work and low-skilled work, the management co-ordination and governance mechanisms, and the balance between autonomy and control for workers. The core question is for which activities more standardisation and specialisation of work; and for which activities, on the contrary broader jobs, with a high degree of autonomy, self-regulation and delegation of responsibilities are created.

2.2.3 Flexibility and time use

Studies of different forms of flexibility are quite common and experiences with empirical research (both quantitative and qualitative) are considerable. A key issue is the 'flexibility-mix' that companies use to secure a flexible adaptation to a changing or unstable environment (in terms of required changes in production volume, production mix, customer requirements, labour market specificities, *etc.*). This flexibility policy of companies includes forms of temporal, contractual and functional flexibility.

Next to trends with respect to the contractual dimension and related work (in)security, working hours and time use are at the core of quality of working life. Thus, it needs to be explored what are the broad trends in time use. A major research question is: 'Are there identifiable trends in terms of work flexibility, and if so, can we fit these into an overarching assessment or view of change?'. A great deal of evidence now exists which suggests no substantial trend in some aspects of job flexibility but some trend in others. Are the latter decisive in our overall picture? There is also some ambivalence over how to assess the growth in some aspects of flexible employment such as part-time work. The latter can be sought by employers or by employees and therefore for very different reasons

2.2.4 Skills, skill formation and training

It is commonly held that economic growth is closely linked to skill upgrading. Both economists and sociologists have pointed to the importance of technological change to the demand for skills. The former tend to be optimistic that increasing development of technology leads to a rise in demand for skills, and this has clearly had major policy effects. Sociologists are more inclined to be critical and look for negative effects such as deskilling and intensified work processes.

Skills issues are also related to occupational moves over the career. While much analysis of job flexibility over time looks at job tenure, indicating the amount of time spent in a job, the broader question is, as the overall movement between jobs over people's careers, whether this involves an upward, sideways, or even a downward move.

Another issue is whether overqualification and rapid career moves are a significant part of the occupational scene in Europe, and whether career changes are associated with change in job satisfaction. On the assumption that high levels of overqualification indicate high levels of mismatch between the person and the job the person does, then we can assume that this also indicates an inefficient outcome, both at the individual and the organisational level. In particular, high levels are more likely where competitive pressures export work to other countries or downgrade work more generally, because the education system does not adapt to such changes.

2.2.5 Working conditions and quality of working life

Changes in the division of labour along the value chain, in workflows, in control strategies etc. directly impact 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 job security, stress levels and career options.

What is the overall balance of all these trends in terms of welfare? Accounts differ radically depending on whether commentators stress the globalisation element (implicitly negative) or the 'post-industrial' element (viewed by some as positive).

2.2.6 In general...

We might expect there to be some universal consequences of change, as most of the more industrialised countries are subject to the same pressures. However, it might be the case that these are mediated by the particular institutional arrangements of each country. Insofar as such arrangements are common across various groups of countries (Esping-Andersen, 1993; Hall & Soskice, 2001), we will then get a limited number of forms of change across Europe. However, it is possible that even this level of aggregate is unrealistic, as organisational development is highly mediated by very specific institutional factors (Huws, 2006). If so, national convergence is unlikely and we would have to speak of at best modified trends. Therefore, how nationally specific are the trends we are able to identify?

We believe that two main themes are central to the discussion of changing work patterns: work flexibility and skill utilisation. Both put into question the nature of change in

employment. Both relate to a need to improve competitiveness (or the burden on taxation in the case of the public sector) through reducing the cost of labour. The first implies that workers have to become more malleable in response to management needs: work becomes less secure, the conditions of work more exploitative. The second stems from Braverman's deskilling thesis, implying greater management control over skills, such as their standardisation through the imposition of centrally planned work routines. Next to our initial question to what extent there are employment shifts related to the restructuring of value chains and business functions, these themes are at the heart of the combined reports from the quantitative research of WORKS.

2.3 Tracing employment in business functions

2.3.1 Measuring global value chain restructuring

The effects of global value chain restructuring on employment in the European Union have been measured by making use of the European Labour Force Survey (LFS). In line with the qualitative research of the WORKS project, the business function has been used as the main unit of analysis. A business function is defined as a unit of activity that can be categorised within a value chain: a cluster of technologically and economically distinct activities which are usually performed together. Business functions refer to both core and support activities in value chains.

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

In view of the detailed level of the combinations and the scope of the analysis being employment in the European member states, the European Labour Force Survey (LFS) has been selected to perform the analysis. The LFS provides breakdowns of the employed 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 of 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 between European countries. Despite the large sample size, the use of LFS data to define and estimate employment in business functions has its limitations as well. In the WORKS report 'The transformation of work? A quantitative evaluation of the shape of employment in Europe (D9.1)' which precedes this report, the possibilities and limitations of the use of LFS data for our purpose have been described in detail.

Given the selected method and the available data, the main research question for this research has been detailed into more specific questions:

- What is the sectoral distribution of the working population in the EU countries, and how has this changed since the mid-nineties? 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?

- What is the occupational structure of distinct sectors? How does this structure differ by country, and how has it changed in the past decade?
- What is the scale of different business functions, in which sectors do they occur, and likewise what are the trends and evolutions 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?

The answers to these questions will provide insight in how business functions have shifted between sectors and countries in the last decade - thus giving an indication of the restructuring of value chains - and in the relationship between job growth and job decline in different sectors and countries.

In the first WORKS report, a method has been developed to measure employment in business functions by means of the sectoral and/or occupational classifications available in the LFS. The feasibility of this method has been assessed by applying it to a number of sectors and business functions which are under study in the WORKS case study research. The main methodological conclusion that has been drawn from this feasibility study is that it is indeed possible to trace business functions by making use of combinations of NACE and ISCO codes, but that the dataset has its limitations. 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 traced. 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, specific countries had to be left out from the analysis.

In this second report, the developed method has been expanded to a broader range of activities in the economy. It is beyond the scope of this report to investigate employment in all business functions that can be found in actual value chains. Therefore, a selection of business functions has been made, based on two criteria. First, all business functions that are central to the case studies of WORKS have been selected. Second, the method has also been applied to a number of other business functions which are likely to undergo employment shifts induced by value chain restructuring.

The analysis has been structured along six business functions which are exemplary of sequences of activities found to be common in different value chains. The value chain model developed by Porter (1985) has been used as the underlying model for classifying these business functions. This way, the analysis spans a wide range of possible types of business functions. The six business functions under study are 'core productions activities' (operations), 'logistics', 'marketing and sales', 'customer services', 'legal and financial services' and 'IT services'.

Besides the estimation and description of general trends in the evolution of business functions, the aim of the analysis also has been to provide quantitative background information for the case study reports of WORKS. Consequently, the analysis goes beyond the limits of the selected business functions and provides information as well on the five sectors that are central to the case studies. For that reason, the headings 'operations' and 'customer service' include not only the analysis of the business function concerned, but also of the specific WORKS sectors these business functions are located in. The results of this analysis will serve as introductions to and quantitative enrichments of the sectoral

and occupational reports that will be produced in the qualitative research of the WORKS project.

The analysis is based on two different approaches to measuring employment and shifts in employment in business functions. The occupational approach departs from 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 the business functions.

2.3.2 The shift of business services to specialised sectors

The main conclusion that has been drawn from the analysis is that several business functions are increasingly performed within specialised service sectors. Evidence has been found of a shift of specific business functions from sectors in which they are 'peripheral' to the production process, towards sectors in which they constitute the core activity. The most obvious example of this trend has been found in 'IT services' and 'logistics', but also in 'marketing and sales', and 'legal and financial services' this shift can be observed.

The shift of business functions towards specialised sectors has been measured as following. An occupational group has been defined corresponding to the tasks performed in the business function concerned. Next, the distribution of employment in this business function across sectors has been traced. This has allowed us to identify the sectors where the business function has to be considered as part of the core activities. It has further been looked at whether in the past decade the selected business activity was kept 'in-house' by companies from a wide range of sectors, or whether it has increasingly been outsourced, resulting in a concentration of this activity in specialised sectors. The latter can be traced by a growing share of the selected business function in specialised sectors, the former by the opposite evolution:

- in IT services, the number of employed has increased substantially over the past decade (+76 *per cent* between 1996 and 2004 in the old members states; +35 *per cent* between 1999 and 2004 in the new member states). Both in the old and in the new member states, there has been a shift in IT employment towards 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 has increased to 42 *per cent* in 2004. This happened at the expense of other sectors of activity, where the proportion of IT workers has decreased. In the new member states, the same evolution has been found. A concentration of IT functions in the specialised IT sector is thus taking place;
- with regard to the business function of Logistics, a similar evolution has been found. Trade, Transport, and Packaging have been identified as the sectors where Logistics represent part of the core activities of companies. Around 50 *per cent* of all logistic workers are employed in these sectors. In the beginning of the observed period, logistic jobs were relatively more scattered over all sectors of the economy: a higher share of them was located in production sectors and in other service sectors. Between 1997 and 2004, the concentration of logistic jobs in 'trade, transport and packaging' has grown, which makes it likely to conclude that logistic activities in Europe are increasingly out-

sourced to be performed within specialised service companies. Hence we again observe that ‘peripheral’ activities of organisations become the ‘core’ activity of specialised companies providing business services to other firms;

- ‘marketing and sales’ could only be analysed from 2001 onwards and for a limited number of countries. ‘Wholesale and retail trade’ have obviously been identified as the core sectors for this business activity. In the old member states, the share of ‘marketing and sales’ employment has remained stable in ‘wholesale’ and has increased in the ‘retail trade’ sector. This happened at the expense of the Marketing and sales employment in most other sectors. A slight concentration of Marketing and sales activities in ‘wholesale’ and ‘retail trade’ thus has been found. Exceptions to this trend of outsourcing seem to concern those sectors where specific product knowledge of the salespeople is required. In the new member states, Marketing and sales activities are much more concentrated in specialised trade enterprises than it is the case in the old member states. An unambiguous trend, however, could not be observed in that part of Europe;
- in the ‘financial and legal services’, which also could only be analysed from 2001 onwards and for a limited number of countries, the trend is again more obvious. A growing concentration of ‘financial and legal functions’ in two sectors has been found: the ‘financial sector’ and the ‘business activities sector’. The latter groups all enterprises which provide financial or legal service to other organisations. Again we can conclude from the data that an increase in the outsourcing of these activities, and a concentration in specialised companies is likely to have taken place between 2001 and 2004.

2.3.3 No clear evidence for geographical moves

A second conclusion is that in the sectors and occupations under study no evidence has been found of a major shift of business activities from the old to the new member states. 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:

- employment for IT workers has 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 employed hold an IT function, against 1.2 *per cent* in the new member states. The difference between these two shares, however, has remained more or less stable, which means that no catching up of the relative importance of IT employment in the new member states has taken place. We consequently do not find support for the hypothesis that these countries are becoming a ‘back-office’ for companies in the old member states;
- with regard to ‘logistics’ a similar conclusion can be drawn. In the old European member states, not only the absolute number but also the share of logistic jobs in total employment has increased since the mid-nineties. In most new member states, by contrast, logistic employment decreased and the share of logistic jobs in total employment decreased as well. Hence we can conclude that Logistics have strengthened their position within the old European member states, and that no major shift took place of logistic jobs from the old towards the new member states.

Since the used dataset is limited to the European countries, the analysis does not enable us to trace employment shifts from or towards other parts of the world. The interpretation of some observed evolutions hence has to rely on existing literature. The large decline of

production activities in Textile and clothing, for example, is to be explained by the massive relocation of these activities to low cost countries. Also with respect to the evolution of 'customers service' employment in the 'financial sector', for example, interpretation of the results has to rely on the findings of other research. 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 most probably be explained by the important relocation of back-office service activities in this sector towards developed countries.

2.3.4 Strengthening or shifting core businesses

A third conclusion concerns the trends in employment in the core activities of sectors. In several sectors, the core occupations have been traced and the employment evolutions in these activities have been 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:

- a growing importance of core activities has been found, for example, in the IT sector in both the old and the new member states. Along 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 the employed in the IT sector were occupied with core activities in 1996, and in 2004 this percentage has increased to 56 *per cent*. In the IT sector of the new member states, a similar evolution has been found;
- in 'food industry', the trends in the old and new member states differ: 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;
- evidence of the a decreasing share of core activities has been found in 'textile and clothing'. Figures show that the huge employment decline in this sector goes together with a considerable reduction of the share of core production workers within the sector. 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 previously supporting activities has increased in terms of employment. Most prominent in this respect is the evolution of R&D: it 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, and more specifically 'design', is closely linked to the end products in textile and clothing industry. On the basis of the observed evolution, we can conclude that European firms keep this core activity in-house, while other activities are being outsourced or relocated.

With respect to the changing importance of core activities in the sector, another significant conclusion has been drawn. In contrast with the overall decline of the sector in Europe, 'textile and clothing' has maintained an important position in total national employment of a few member states. Precisely in these countries, 'textile 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 was reduced to 45 *per cent*. This points to the fact that 'textile and clothing' industry in the former countries was able to prevent a similar steep employment decrease thanks to a sustained concentration on core production activities, and not by means of a major shift towards other activities.

The conclusions of this report confirm that measuring employment in business functions on a European wide scale is possible, and that the first analyses on the basis of the developed method have resulted in relevant and innovating research findings. 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 shifts.

2.4 Trends in work organisation

On the basis of the EWCS (European Working Conditions Survey), trends in work organisation in Europe are mapped, and their determinants are identified. The aim of the analysis is to improve the understanding of changes in work and their implications for the use of knowledge, for flexibility and for the quality of work in Europe. Performing international comparisons requires assuming the consistency of working environment's norms across individuals in different countries even if legal and cultural differences between countries may influence the way the questions are understood and the answers are given (Paoli & Merllié, 2001). However, such an analysis does provide a picture of the situation and trends for the working population in Europe.

The analysis on work organisation has three main objectives. First of all, to map work organisation and work environment through key synthetic indicators relevant to capture different dimensions of work. Important workplace features are analysed, such as job complexity, degree of independence in time allocation, intensity of work and quality of working conditions in 27 European countries in 2000-2001. The second objective is to measure trends in these indicators for the EU-15 between 1995 and 2000. The third aim is to identify the determinants (at a micro and macro level) of the organisation of workstations in Europe. The empirical research is based on EWCS data from 1995, 2000 and 2001.

The report on work organisation also provides a methodological contribution at three levels. Firstly, in order to capture the most important dimensions of work, they are summarised in few synthetic indicators. Secondly, trends in work organisation in Europe between 1995 and 2000 are measured. Measuring trends is quite challenging since the data structure is cross-sectional. A metric has developed in 1995 which has been reproduced in 2000. Thirdly, in order to perform international comparisons, multilevel models are estimated which allow distinguishing micro and macro drivers of organisation of workstations through the EU-15.

2.4.1 Mapping work organisation

Mapping of the national distribution of a number of indicators (work complexity, independence in time allocation, work intensity and quality of working conditions) shows little consistency. This suggests that national groupings are difficult to discern. However, two Scandinavian countries (Denmark and Sweden) and Netherlands provide a specific pattern in terms of working environment. In these countries jobs are complex, provide learning opportunities and the quality of working conditions is high. In contrast, some

Mediterranean countries (Greece, Portugal and Spain) are characterised by low quality of working conditions and weak job complexity (routine jobs).

The distribution of some work features shows that there are considerable differences in work organisation between the EU-15 and the twelve candidate and acceding countries. Jobs in the latter countries are less complex and less intense, while the quality of working conditions is lower.

2.4.2 Trends in work organisation

On average in the EU-15, there was a significant decrease in complexity of work between 1995 and 2000. It means that in 2000, European workers are less able to choose or change the order of tasks and methods of work; their jobs involve in a lesser degree solving unforeseen problems, complex tasks or learning opportunities. Simply speaking, jobs have become more routine on average in the EU-15 during the five-year period between 1995 and 2000.

At the same time, work in the EU-15 has become more intense. This intensification is mainly market-driven: the pace of work is more and more dependent on direct demands of customers and clients. In contrast, technical constraints, those linked to automatic speed of a machine or numerical production targets, have not changed significantly. The percentage of European workers whose job involves working at very high speed and to tight deadlines has slightly increased (from 56 *per cent* to 58 *per cent* and from 54 *per cent* to 57 *per cent* respectively).

There is no evidence of any improvement or deterioration of quality of working conditions, degree of independence in time allocation and intensity of technical constraints in the EU-15 during the analysed period.

2.4.3 Determinants of the organisation of workstations

The question is whether these trends reflect a convergence or divergence between European countries. Multilevel models allow answering this question. There is a divergence between European countries at the end of nineties as regards to the complexity of work and the intensity of market constraints. At the opposite, the degree of independence in time allocation and the intensity of technical constraints do not vary a lot between countries in 2000 and tend to converge between countries of the EU-15. For the index of quality of working conditions, no convergence or divergence between countries over time has been identified.

The determinants of these organisational characteristics of workstations can be summarised as follows.

The typical employee in a work station that requires performing a complex job is a man, who is not too young, working in public firm or self employed. This worker has an unlimited contract. He works with a computer, has supervision responsibilities and is in a skilled occupation of the trade sector. On the contrary, the typical employee in a work station with intense market constraints is more often a young women working in the private sector, the other characteristics being similar.

The divergence of EU countries as regards to complexity of jobs and their market driven intensity can be explained by macro-drivers. Countries where work complexity is high

have a well educated workforce strongly feminised, with an important share of part-time workers and a weak share of young workers. Countries where intensity of market constraint is high have a lower educated workforce. The workforce is also strongly feminised and once again the share of young workers is weak.

The typical employee independent in her/his time allocation not too young, working in a private firm or self employed. This worker has an unlimited contract. He scarcely works with a computer, has no subordinate and is in an unskilled occupation or legislator. His/her firm is from public sector. Workers with the best working conditions are women working, as a clerk in private firms with computers. On the contrary workers with intense technical constraints are young men of the private firm of the manufacturing sector, working with computers and with supervision responsibilities. They are most often employed with temporary contracts.

2.5 Work flexibility

2.5.1 Trends

The assumption that globalisation might be enforcing flexible work conditions and perhaps also intensifying work processes is not easy to prove, in part because the concept of work flexibility includes several elements, not all of which are closely related. The common distinction between numerical and functional flexibility can be broken down into further categories. For instance, in some accounts numerical flexibility is applied to flexible employment (especially fixed-term or casual contracts), leaving worktime flexibility to describe adjustment of working hours, especially through non-standard work hours such as overtime, part-time work or shift work (*e.g.* Boje & Grönlund, 2003). But having a fixed-term contract is very different from working part-time.

The indicators usually used to describe numerical flexibility are job tenure (expected to reduce if the flexibility thesis is correct) and job turnover, which however is much harder to measure, while part-time work is often taken as the main indicator of worktime flexibility. We summarise some of the main changes in these indicators in Europe for the period 1993-2004 in Table 2.1. This includes, for context, information on related aspects such as rates of economic activity and of self-employment. The former is especially important. Most of the 1990s were economically buoyant across the region, which implies increasing work opportunities: the first row of the table shows that there was an increase in activity (labour-market participation) in most countries in this period, at least where this was not already high at around 70 *per cent* or over, while there was a decline in unemployment in most countries - shown in the second row. This is important as cycles are very clearly different from trends. For instance, there might be a trend towards reduced job tenure as a result of increasing job insecurity, but boom periods encourage people to seek new job opportunities, thus reducing job tenure, while slumps lead to lay-offs, with similar effects. Tenure is a highly imperfect indicator of job flexibility. At this stage at least it can be said is that if decreasing job opportunities do arise as a result of globalisation, then this is insufficient to overcome the effects of economic upswings.

Despite this sort of problem it is possible to discern some change in Table 2.1 in terms of the main dimensions. The last two rows show an increase in part-time work and, to a lesser extent, in fixed-term employment. It is therefore possible on the one hand that some

of the increase in employment just mentioned has only been possible through the growth of these forms of work. On the other hand, there has been a slight decline in self-employment in many countries over the period, which perhaps suggests that employment has offered better prospects.

Table 2.1 Change in selected employment indicators for 14 EU countries and EU-15 average

	Belgium		Denmark		Germany		Greece		Spain		France		Ireland	
	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004
Activity ¹	61.0	65.9	81.4	80.1	70.6	72.6	59.0	66.5	58.4	68.7	67.3	69.5	61.2	69.5
Unemployed ²	8.6	7.8	9.6	5.4	7.7	9.5	8.6	10.5	18.6	11.0	11.1	9.7	15.6	4.5
Self-employed ³	18.2	16.3	9.2	7.0	9.7	10.9	44.5 ^a	40.2	19.2	14.8	11.6	8.8	20.5 ^a	17.4
Part-time ³	13.1	21.4	23.1	22.2	15.2	22.3	4.3	4.0	6.4	8.7	14.3	16.7	10.5	16.8
Fixed-term ³	5.1	8.7	10.6	9.5	10.3	12.4	9.5	11.9	33.0	32.5	10.9	12.8	9.3	4.1

	Italy		Netherlands		Austria		Portugal		Finland		Sweden		UK		EU-15	
	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004
Activity	58.3	62.7	67.9	76.6	71.1 ^b	71.3	69.4	73.0	72.6	74.2	77.7	77.2	75.5	75.2	67.1	70.6
Unemployed	10.1	8.0	6.2	4.6	4.0	4.5	5.6	6.7	16.3	8.8	9.1	6.3	10.0	4.7	10.0	8.1
Self-employed	26.7	25.2	15.6	14.1	21.0	18.9	25.2 ^c	24.1	13.9	11.5	5.5	4.9	13.5	12.8	16.2	14.9
Part-time	5.5	12.7	35.2	45.5	12.6 ^b	20.2	7.3	11.3	11.3	13.5	20.5	23.6	23.6	25.8	14.8	19.4
Fixed-term	6.2	11.8	10.5	14.8	4.8 ^b	9.6	11.0	19.8	18.1 ^c	16.1	12.0	15.5	6.3	6.0	11.0	13.6

Notes: ¹ % total population aged 15-64, ² % labour force aged 15+, ³ % total employment.

^a 1995, ^b 1996, ^c 1997.

Source: European Commission, Employment in Europe 2005

While Table 2.1 shows some increase in numerical flexibility, this is by no means substantial, and also not consistent across all countries. It is not surprising, therefore, that most observers fail to find quantitative evidence for the flexibility thesis. Overall, there is not much general support for the view that there has been a trend towards increased flexible employment and job insecurity (European Commission, 2003: 125-155; Gregg & Wadsworth, 1995; OECD, 2003: 50-52; Auer & Cazes, 2003; Boje & Grönlund, 2003). Green (2005), for instance, dismisses the idea as a media myth.

2.5.2 Welfare effects

Even if no clear trends can be identified which convincingly prove that employment is moving into a new phase of individual uncertainty and insecurity, this does not mean that the reverse is occurring. Further, there are some signs of more mixed changes. There is some evidence of increased functional flexibility, and of negative impacts on social welfare as a result. For instance, Green (2005) finds that in some countries there has been both a rise in work intensification and a fall in task discretion. Further, it is possible that we should not be in awe of the apparent stability Table 2.1 presents. True, fixed-term contracts are a small proportion of all employment, but according to Auer and Cazes (2003: 45), the percentage increase in the 1990s in this form of contract in the EU-15 was 24 *per cent*. Auer and Cazes argue that this makes far more difference to *flows* than to *stocks*, with much and sometimes most new employment being characterised by fixed-term contracts.

This means that some aspects of employment, for some individuals, or groups of individuals, and perhaps in some circumstances or countries more than others, are subject to considerable change. Some elements of this are potentially negative in their effects on the individual.

2.5.3 National and supra-national characteristics

Is there any structure to the national variation we observe? One approach to this is to distinguish between groups of countries by their institutional differences, as in the welfare state approach of Esping-Andersen (1993) or the varieties of capitalism approach (Hall & Soskice, 2001). However, such schemes perhaps explain rather little. In general, it is to be expected that liberal countries would have higher job insecurity, social democratic countries the least, while 'corporatist' ones would be somewhere in between.

However, there are always important anomalies in the application of such classifications. One might be the difficulty of meaningfully describing 'southern' (implicitly family-based) systems. 'Southern' is not a logical social or political term. Another type of anomaly arises from exceptions to the rule. For instance, Muffels and Schils (2004) use the European Community Household Panel (ECHP) to examine job mobility and find that while movement into less secure (less permanent) work from any specific employment situation is higher in 'liberal' countries than in the other forms ('social-democratic', 'corporatist' and what they call 'residual'), so is mobility into more stable (*i.e.* more permanent) employment. In addition, workers in social-democratic countries are less likely than those in corporatist countries to move into more stable work (Muffels & Schils, 2004: 129). In the case of the rise in female employment, the comparative work by Blossfeld and Ha-

kim (1997) suggests some support for expectations based on standard classifications. For instance, Scandinavia has high female participation and full-time work; conservative or corporatist Germany has moderate female employment with high full-time work; liberal UK has high participation and low full-time female employment, while the southern countries (Italy and Greece) are low on both counts. But there are important anomalies, with Portugal for instance having high female employment and a very high proportion of women in full-time work. Special factors, such as concern over fertility, have played a role in France. The authors argue that specific country differences are fundamentally important. How similar do countries have to be to fall into a category? To put it another way, can country differences within groups be overlooked? For instance, defining 'standard' work as permanent employment (*i.e.* excluding self-employment) of thirty hours a week or over, and using the ECHP, Kaiser (2004: 99-119) finds that between roughly a quarter and one half of employment is 'non-standard', but there are big country differences even within categories, so that some countries could be placed in other groups with no damage to the facts.

A final problem with classification schemes is that countries rarely (or consistently) fall into a group on all dimensions. Equally, countries which differ considerably in their policies and institutional frameworks might perform equally well on specific employment indicators. For instance, both France and Denmark have strong social security systems, but Denmark has a low score on the OECD employment protection strictness ranking, making it an unusual 'flexicurity' system, while France has very strong employment protection. The UK has more limited support on either count. In the case of specific indicators the outcome is not always what might be expected. In 2000 one account puts job tenure at 8.2 years for the UK, 8.3 for Denmark, but 11.1 for France. Yet change in tenure from 1992 to 2000 was strongly negative in Denmark, strongly positive in France, and marginally positive in the UK (Auer & Cazes, 2003: 25).

Changes in job tenure have a great deal to do with growing female employment, with female tenure generally rising relative to that of men (Auer & Cazes, 2003: 36-41). Boje and Grönlund (2003) argue that the Scandinavian experience in respect of tenure, temporary employment, job turnover and perceived job security is closer to the US than to continental Europe. Yet the reason given is that the trade unions there have, *unlike in the US*, played a major role in facilitating change. Thus similar outcomes can also have very different causes.

Let us now return to Table 2.1. There is very little support in this table for the notion that job flexibility varies in any clear way with national institutional frameworks, let alone of national 'types'. For instance, the UK, a 'liberal' country, has a small proportion of workers on fixed-term contracts. The reason is possibly that with its relatively liberal hiring and firing laws employers have only a limited need for this type of contract. France, with its much higher level of job protection, has a higher proportion of fixed-term contracts. Employers use such contracts to avoid the rigidities of the legislation. Furthermore, in France, agency and temporary work grew three-fold between 1983 and 1998. This increased job insecurity was concentrated amongst young people, women, and the low skilled; (female-dominated) clerical work was particularly subject to this change. Here we have a nationally specific 'solution' for coping with change, with strong employment laws protecting a large core of employment while shifting insecurity onto specific groups of workers, especially the young (Galtier & Gautié, 2003). Indeed, it has been argued, for instance, that there is a fairly close positive correlation between temporary work and leg-

islative strictness over permanent contracts (OECD, 2004: 87). In Sweden, however, a big increase in temporary employment could be put down to changes in supply rather than demand, as it occurs there also mostly amongst young people who might therefore be 'job hopping' (Boje & Grönlund, 2003: 198).

Overall, there is little evidence that countries can be grouped consistently into *types*. Countries are in fact highly distinctive entities even where changes like globalisation, which might be expected to affect the more industrialised countries in similar ways, are concerned.

2.6 Educational and skill differences between countries

It is commonly held that economic growth is closely linked to skill upgrading. The OECD have for long argued that this link exists: in some countries the average annual growth in employment has risen, while growth in jobs for the low educated has been negative. Even where demand for low skilled jobs has risen, this has been by less than the demand for all work (OECD, 2004).

Both economists and sociologists have pointed to the importance of technological change to the demand for skills. The former tend to be optimistic that increasing development of technology leads to a rise in demand for skills, and this has clearly had major policy effects. Sociologists are more inclined to be critical and look for negative effects such as deskilling and intensified work processes. But some economists also recognise such negative effects. For instance, while Green (2005) argues that computer usage at work (as one example of work technologies) is associated with a positive wage impact (though this has been contested, for example by Entorf and Kramarz (1997), he also suggests that the extension of the global economy puts greater emphasis on reduction in labour costs. Later cohorts in some surveys seem to have experienced a decline in work discretion as use of advanced technology has risen. It is possible that technological change combined with greater managerial control is reducing the inherent value of work itself, even if it simultaneously raises wages.

2.6.1 Trends and national groupings

We consider both trends and national classification together here, as trends imply some sort of national consistency, for instance in the demand for skills. How far is this the case?

The most obvious comparison is of structures of education and training. In respect both of levels of provision and of access to education, Müller and Wolbers (2003) group European countries into three categories. One, comprising the Scandinavian countries, Germany, the Netherlands and Austria has a large proportion of people with middle-ranking vocational qualifications and a relatively small proportion with low levels of education. The emphasis in these countries has therefore been on middle-ranking skills, while tertiary education is fairly small (except in Scandinavia). The second group - the UK, Ireland, France and Belgium - has more tertiary education but also a higher proportion of people leaving education with little or no qualifications. Vocational education also tends to be limited. In the southern countries - Greece, Italy, Portugal and Spain - significantly larger proportions of people have low levels of education, while vocational education is very limited. (However, Spain has far more tertiary education than the others.) Thus we have

one apparent system with a very solid middle core of education and training, one where the emphasis is far more on the extremes, suggesting some sort of polarisation, and one where provision is generally low. It is difficult, however, to see much logic in these particular groupings. In fact, it is perhaps in the area of skills production that we can observe the most significant country differences.

It might be possible to explain some of these differences simply through differences in GDP. However, international comparisons (OECD, 2002: 46; Eurostat, 2005) show that Sweden has the highest proportion of entrants into tertiary education, but Spain is at about the same rate as Denmark despite having half its per capita GDP. Spain, Portugal and Poland come well above the Netherlands and Germany. Educational differences in fact have profound historical and traditional foundation, especially in respect of the role of vocational education (Thelen, 2004). Green, Wolf and Leney conclude that there is 'a great deal of variability which can only be explained in terms of particular characteristics of national systems' (Green *et al.*, 1999: 38-39).

In this case the processes and structures of skill upgrading are likely to vary considerably by country. Yet even if there is no clear association between educational outputs and national income, the demand for skills always bears some relationship to the demand for work in general, so that economic growth is important. For instance, in the UK, growth in less skilled work has kept pace with overall growth in employment while in the Netherlands growth in overall employment has been about 50 *per cent* larger than less skilled jobs, and in Spain even more so even though in these two countries unskilled work is nevertheless expanding. The results suggest that as economies grow, so does demand for less skilled work, if relatively slowly. Those countries with the biggest fall in less skilled work, such as Germany, Austria and Italy, have seen lower overall growth in jobs (OECD, 2004: 188).

Overall we find little evidence for national convergence in educational outputs. However, even though the national context defines what skills are available in the first place, given the same sort of economic pressures on countries with roughly similar industrial structures there should be converging trends towards a general form of skill usage. Nevertheless, it is difficult to know what sort of trends we should expect as a result and this also affects the sorts of measures we can use to analyse change. Growth in educational outputs tells us little. Education has been growing almost everywhere for over a century. Economists have instead emphasised the value of educational investments, whether individual or national, through measurement of the wage returns to education. Here, though, it is difficult to talk of *growth*. Returns have by and large remained at a constant high level. That this occurs despite the growth in the supply of qualified people indicates that demand has risen too. However, despite arguments to the contrary (*e.g.* Machin, 1996) it is really very hard to be sure that recent years have seen an increase in demand over and above what might be expected as a result of general economic growth. This makes the international comparison of rates of return especially difficult.

For this reason we look below at some additional measures of the supply of (and implicitly demand for) skills: first, the increase in enrolments into technical subjects at university and graduations from these. The results are shown in Table 2.2. The first two columns show a high proportion of enrolments into science or engineering at university in the smaller countries such as Ireland, Greece and Finland but a low proportion in some of the bigger or richer countries, or original EU member states, such as Belgium and the Netherlands. When this is compared to the grouping of educational provision described

above of a high level in Germany and Scandinavia, middling and polarised in Britain and Ireland, and low in the south, we now see that there is a stronger science bias in these two latter groups, with enrolments into science, maths and computing on average several percentage points higher (though this does not apply to engineering). This suggests that the production of high level skills in Europe is gradually shifting away from the countries with higher original strengths in these fields.

Table 2.2 Enrolments into and graduations from tertiary education in the sciences and technical subjects

	Enrolments			% increase in number of graduates 1998-2003	
	Science, maths, computing	Engineering, manufacturing, construction	Total	Science <i>etc.</i>	Engineering <i>etc.</i>
EU-25	11.0	14.9	25.9	36.3	19.2
Belgium	9.0	11.5	20.5	34.6	
Denmark	8.9	10.8	29.7	60.3	27.2
Germany	14.6	15.3	29.9	-10.5	-13.6
Greece	16.0	3.8	19.8		
Spain	13.5	17.6	31.1	50.2	65.9
France				13.8	15.9
Ireland	17.1	13.5	30.6	24.9	15.5
Italy	7.7	16.4	24.1	37.4	62.9
Netherlands	6.1	10.2	16.3	13.0	4.1
Austria	11.7	13.6	25.3	-17.8	-1.7
Portugal	7.9	21.1	29.0	62.5	53.2
Finland	11.6	26.6	38.2	16.7	6.6
Sweden	10.1	17.3	27.4	56.9	71.5
UK	15.5	8.9	25.4	58.0	-7.6

Source: Statistics in Focus, Eurostat, 2005, 19/2005

The columns to the right, showing growth in science and engineering graduations, reveal a picture in which it is even more difficult to see any structure. Sweden has a high growth rate but in Germany, Austria and the UK it is negative, while it is low in the Netherlands. It is not even the case that countries with relatively low initial rates have grown the fastest, as Spain starts off higher and grows faster than Denmark. However, as just suggested, one possible interpretation of the decline or stagnation in graduations in some countries (albeit highly conjectural), is that globalisation is having an effect, with the balance in new graduations, especially in computing, transferring from the bigger or richer states to other countries.

As a second potential measure of the growth in the need for skills, in Table 2.3 we show the percentage of GDP spent on R&D twenty years apart. Here we now see a much simpler picture, which is also in stark contrast to that for education. Not only is there consistent growth over the period but we can detect a national structure to this, with the richer countries spending a higher proportion of their national income on R&D than do the less well-off countries. However, it is equally not clear that technological development itself is important here. Rather, as economies grow they can afford to spend more on R&D both absolutely and relatively.

Table 2.3 Percentage of GDP spent on R&D

	1981	2001
Austria	1.13	1.90
Belgium	1.62 ^a	1.96 ^b
Denmark	1.06	2.19 ^b
Finland	1.17	3.40
France	1.93	2.20
Germany	2.43	2.49
Greece	0.17	0.67 ^b
Ireland	0.68	1.17
Italy	0.88	1.07 ^c
Netherlands	1.79	1.94 ^c
Norway	1.17	1.62
Portugal	0.30	0.83
Spain	0.41	0.96
Sweden	2.17	4.27
UK	2.38	1.90
EU-15	1.69	1.93

Notes: ^a 1985, ^b 1999, ^c 2000.

Source: OECD, 2005: 117 & 125

2.6.2 Welfare

We have just considered the economic implications of educational growth, at the same time suggesting that the measurement of the individual returns to education is not very useful in this respect. Here, instead, we consider the individual returns to education in terms of welfare. The 5th Framework project, 'Public funding and private returns to education (PURE)' estimated the percentage return to each year of education, controlling for other factors, including an estimate of work experience. This research produced the results shown in Table 2.4, for men and women separately. While there are issues of data quality and comparability (and also in the use of years of education where this itself varies nationally), the results indicate both high returns, more often than not higher for women than for men, and considerable variation in these returns by country. Returns to education in Scandinavia (except Finland) are relatively low while in the UK and Ireland they are well above average, especially for women, and somewhat above average in Germany. Returns are average in the southern countries, except in Portugal, where they are high. This suggests that high levels of provision, as in Scandinavia, do not necessarily follow the needs of employers. The relatively low returns in most of these countries combined with high levels of provision suggest that social demand for education is especially important in these countries.

Table 2.4 Average percentage returns to each years of education

	Men	Women
Austria	7	7
Denmark	6	5
West Germany	8	10
Netherlands	6	5
Portugal	10	10
Sweden	4	4
France	7	8
UK	9	11
Ireland	9	14
Italy	6	8
Norway	5	5
Finland	9	9
Spain	7	8
Switzerland	9	9
Greece	6	9
Average	7	8

Source: Harmon *et al.*, 2001: 11

Some countries like Germany put a great emphasis on training in work and this gives a somewhat different picture. The effect of training on wage growth is low in Austria, Belgium, France, Greece, Ireland, and the UK; it is significantly higher in Denmark, Finland, Italy and Spain, and especially high in Germany (OECD, 2004: 198).

2.7 Conclusions

As described above, the research results are presented in separate reports, each by one research institute and each on one European dataset. Here we summarise some of the main findings of each.

While there is little evidence from the published evidence so far available of a trend within Europe towards increased job flexibility, especially of the sort that might be predicted on the assumption of a negative effect of globalisation, we do find some evidence, if not very powerful, of such effects. The report on business functions finds increasing outsourcing accompanied by retrenchment of work in the remaining functions. The report on trends in European employment finds an increase in temporary work, shift work and part-time work in most countries. The report on European working conditions, which in common with the above also looks at aggregate trends, finds some deterioration on key indicators such as work complexity. The report on individual-level change using panel data finds that both dissatisfaction with work and skill mismatches, and the latter are widespread, tend to be overcome through career switches, contributing to the overall prevalence of work flexibility. People need to move in order to improve their working lives.

However, even if economic and technological change is influencing the welfare of individuals, it is difficult to discern an overall trend which can be described as overwhelmingly negative. There are negative effects to change, but also signs that as long as econo-

mies continue to grow, these are to some extent and partially been compensated. Some of the indicators we have described do not necessarily entail a loss of welfare.

If the reports find evidence of increasingly flexible and uncertain work across a range of countries and dimensions, they cannot point to a single model of change or of adaptation. There seems to be no convincingly useful means of grouping countries, so that we cannot argue for national *types* of response. Rather, there are some national similarities but these are not consistent across all dimensions of change. There is no single European experience but also, even though overlaps certainly exist, no clear-cut set of experiences.

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