A Taxonomy of European Labour Markets Using Quality Indicators

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Abstract

The report proposes a critical approach of European job quality indicators. It relies on both theoretical and empirical analysis, and shows the necessity to introduce complementary variables, such as wages, working conditions and training duration. Comparative results for the EU 27 confirm the heterogeneity of job quality across Europe. Besides, time series analysis shows an upward trend of job quality in Europe since 1994, with a few exceptions. On the whole empirical investigations do not reveal any trade off between quantitative performances and job quality levels.

Executive summary

Job quality has become an economic policy issue at the international level, through the Lisbon Strategy of the European Union, and the decent work agenda of the International Labour Organisation (ILO). In the European context, it participates to the objectives of the European Employment Strategy and testifies from a will to renew the European Social Model. However, the concept of job quality is difficult to define since it involves many dimensions.

The recent developments in economic and socio-economic approaches lead to consider job quality as a multidimensional concept, which main aspects would be: decent wages and employment security, working conditions and intensity of work, training opportunities, and finally the ability to combine work and family life (including the promotion of gender equality). Moreover, economic theories show that there is no trade off between quality and quantity of jobs, both in the medium and long run. Job quality increases productivity (through an increase in human capital, but also through workers' motivation effects), and growth theories suggest that it can be part of a wider growth and development strategy.

As for other performance indicators on the labour market, job quality is likely to be strongly influenced by national institutions and to show a high level of heterogeneity between countries. The empirical analysis attempts to identify different "models" of employment quality in Europe and to discuss them according to a proposed typology. As stressed in these approaches, the existence of such "models" must not be understood in a normative way: first, preferences are heterogeneous across Europe and second several paths can lead to the same performance i.e. there might be functional equivalence across different models.

In the European Employment Strategy, the monitoring of job quality relies on Laeken indicators (2001). Although the Laeken definition provides a broad coverage of job quality issues around ten components, it shows two main limits. First, it includes a wide range of quantitative indicators that do not really fit with the job quality approach. Second, it excludes some paramount dimensions of job quality, such as wages and work intensity. Besides, some aspects are present but could be better covered through complementary indicators, like for instance the cost or the duration of training per participant.

The empirical analysis of job quality in Europe is envisaged in two complementary perspectives. First, a broad comparative perspective, including the 27 member states and a variety of indicators from different sources (LFS, EU-SILC, 4th European Survey on Working Conditions, harmonized data about in work accidents), is proposed for 2005-2006. Second, the dynamics of employment quality over the last ten years is studied for a more limited sample of 18 countries.
The general objectives of these analyses are twofold. First, they pursue a methodological goal, and try to identify some complementary indicators that are missing in the Laeken list and to construct some synthetic indicators that may help monitoring job quality over time. Second, they propose and discuss some taxonomy of the Member States. These results are linked with a general question about the relationships between quantitative and qualitative variables in the labour market.

From a methodological point of view, the empirical investigation relies on data analysis techniques, namely Principal Components Analysis, and Kohonen maps, followed by cluster analysis. The objective of this tandem approach is first to map job quality and then to group Member States in a few distinctive clusters. The time series analysis also uses synthetic indexes of job quality.

The results confirm the heterogeneity of job quality across Europe. In 2005-2006, the European Union divides into five clusters. A *Northern* cluster includes Sweden, Denmark, Finland and the United Kingdom. It is characterised by high participation rates in education and training, high employment rates and high job satisfaction. A *Continental* cluster groups Germany, France, Belgium, Luxembourg, Austria, the Netherlands, Ireland and Slovenia. It is close to the average EU situation regarding most of the indicators considered in the analysis. A *Southern* cluster includes Spain, Italy, Portugal, Greece and Malta. It shows a high

proportion of early school leavers and a high gender employment gap (even if Portugal has a small one), with poor levels of education and training. Apart from Malta and Slovenia that respectively join the *Southern* and the *Continental* clusters, the new Member States are divided into two groups: a first one contains *Poland and Slovakia*, and a second one is composed of *other New Member States* (Estonia, Latvia, Lithuania, Cyprus, Czech Republic, Hungary, Bulgaria, and Romania).

The first group that includes Poland and Slovakia displays high long term unemployment rates and low employment rates. The second group is mainly characterised by very low levels of productivity but high rates of productivity growth, which is typical of countries in a catching-up process. Workers in the second group are less satisfied than in other European countries. The results of this cluster analysis have some common features with usual comparative typologies of European labour markets, except the fact that it does not reveal any liberal model, which suggests that despite different institutions and policies the UK and Northern countries are equally successful in improving job quality.

In addition to the Laeken set of indicators, this taxonomy is robust to the inclusion of indicators on wages, quality of training, and working conditions. All countries belong to the same clusters apart from the Cyprus that join the Continental cluster and the Netherlands that joins the Nordic cluster. Furthermore, Poland and Slovakia are included in the group of New Member States. This extended analysis of job quality reinforces the opposition between Northern countries and most of new Member States in terms of working conditions and socio-economic security. Northern countries are characterised by high wages and good working conditions but also high intensity at work. On the contrary, new Member States experience low socio-economic security (low wages and long term unemployment rate) and rather bad working conditions. Southern countries are characterised by unsatisfactory social dialogue.

In a time series perspective between 1994 and 2004 Northern and Southern countries are opposed, and Continental countries stand in an intermediary position. A fourth cluster appears from 2000 onwards, indicating that heterogeneity in terms of job quality is growing in Europe, which is largely expected given the accession of twelve new Member States.

Besides, time series analysis shows an upward trend of job quality in Europe since 1994, with a few exceptions. Some countries seem to be involved in a process of catching up the highest levels of job quality (for instance Ireland and Austria).

On the whole empirical investigations do not reveal any trade off between quantitative performances and job quality levels.

In a policy perspective, this report leads to three main recommendations concerning European job quality policies.

First, job quality appears like a good policy goal, for both labour market and social policies, and its importance inside the EES should be reinforced. Indeed, good performances in terms of employment quality are correlated with good labour market performances overall, and the countries that exhibit a positive trend in this field have also experienced dynamic growth paths (Ireland, Netherlands, Austria, Finland). Besides, job quality is likely to become a consensual goal for European policies, as it can be supported by workers and trade unions (since it includes working conditions and wages) as well as by employers (since it can favour productivity).

Second, even if Laeken indicators offer a good starting point to analyse job quality, they should be amended in two ways: 1/ limit the number of quantitative indicators reflecting global labour market performances rather than job quality (employment rates, unemployment rates); 2/ add complementary indicators for missing crucial dimensions, especially the level and dispersion of wages, together with the role of work intensification, as well as some important variables for existing dimensions (quality of training).

Third, in order to follow up the dynamics of job quality in the EU, and especially the existence of catching up processes for low performing countries, synthetic indexes of job quality are useful. Despite important data limitations, some indicators can be obtained on a regular basis using the LFS. However, given the difficulties building a single indicator of job quality, partial indexes reflecting some of its dimensions could also be used together with a global index.

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First paper: The concept of job quality

The study of job quality has known major developments in the academic field over the last ten years, especially in economics and industrial relations studies. More recently, it has also become an economic policy issue at the international level, through the decent work agenda of the International Labour Organisation (ILO) and the Lisbon Strategy of the European Union. However, the concept of job quality is difficult to define since it involves many dimensions. In this paper, we will try to clarify the concept, first by looking at the definitions proposed by the international organisations (section 1) and second by reviewing the recent economic literature (section 2). In the last section, we identify some hypotheses for a comparative approach of job quality, especially based on the institutionalist literature.

Section 1- Job quality as a goal for employment policies: the role of international organisations

1.1 Job quality in the European Employment Strategy (EES)

The introduction of employment quality in the European debate about labour market performances and labour market policy dates back to the Lisbon summit, in 2000. It takes place in a context of emerging cooperation between member states in the field of employment and social policies, which is based on the so-called "Open Method of Coordination" (OMC) and on the the European Employment Strategy (Pochet and Zeitlin, 2005).

Indeed, since the Treaty of Amsterdam and the Luxembourg summit in 1997, the European Union has developed an innovative framework in order to promote coordination in fields which are under the competency of Member States, such as employment and social policies. The setting-up of various OMC is supposed to compensate the strengthening of Monetary and Economic Integration. This coordination relies on the definition of common Employment guidelines, the elaboration of National Employment Action Plans by the national governments, which are then evaluated with respect to Employment guidelines. The review process of the adequacy of National Plans to the guidelines may be followed by recommendations from the European Council. All this procedure is public, but the recommendations are not mandatory.

The first Employment Guidelines (in 1997) defined four priorities ("pillars") for Member States labour market policies, namely employability, entrepreneurship, adaptability and equality of opportunities: employment quality is not mentioned. However, this issue appears at the Lisbon Council in March 2000, which puts forward the objective of "more and better jobs for all". The importance of "quality" is also stressed at the Nice Council in December 2000, which also decides to extend the OMC to social inclusion. Indeed, at the Nice summit, employment quality is included in the European Social Agenda, and becomes an objective of the European Employment Strategy. Following this trend, the Laeken summit in December 2001 defines indicators of "quality in work" (European Council, 2001) and stresses the multidimensional nature of the job quality concept: it is based on ten dimensions, including, among others, skills, working conditions, equality, and reconciliation between private and work life (see paper 2 for further details). Two years later, the job quality becomes an official goal of the new EES, set up in 2003, that should promote "full employment", "employment quality and productivity", "social inclusion and social cohesion". These three objectives have been confirmed for the period 2005-2008 in a Council decision of 12th July 2005.

Nevertheless, this growing interest for quality issues in the field of employment also shows signs of fading. First of all, the European definition of job quality is not consensual. For example, wages are not part of the definition of job quality because of lack of political consensus in the Council and among social partners. Furthermore some scholars criticised the European definition, for neglecting (or ignoring) important dimensions such as wages and work intensity (Green, 2006).

In the mid of the current decade, the interest for job quality seems to have declined in the EU policy agenda. For instance, the 2005 *Employment in Europe* report by the European Commission does not include any specific chapter devoted to employment quality, contrary to the four previous years[1]. The report by Wim Kok in 2004 (entitled *Jobs, jobs, jobs*), which deals with employment and labour market policies, focuses mainly on the quantitative aspects of employment (and especially the employment rate and incentives to work).

This history of employment quality at the European level shows the ambiguity of the reference to this concept. On the one hand, it appears like an innovation, which testifies from

[1] EiE (2001), chapter 4, "Quality in work and social inclusion". EiE (2002), chapter 3, "Synergies between quality and quantity in European labour markets". EiE (2003), chapter 4, "Flexibility, security and quality in work". EiE (2004), chapter 4, "Labour market transitions and advancement: temporary employment and low-pay in Europe".

a will to renew the European Social Model, and to achieve a better coordination between the macroeconomic growth strategy, and labour market and social policies. But on the other hand, it is strongly embedded in a given economic and political context. Indeed, the concern for quality has been mainly supported by left governments, which were in a majority in the EU at the end of the 1990s, in a successful economic context, which was characterised by growing employment levels. It seems that both the increase in unemployment and the weakness of social democratic parties in the 2000s have limited the scope for such matters. The employment quality objective is still present in the EES, but its nature has changed, and quality is reinterpreted as labour productivity and the financial attractiveness of employment, the latter to facilitate transitions from non-employment (i.e. unemployment and inactivity) into employment. These hesitations about employment quality would thus reveal the more global ambiguities of the EES (Erhel and Palier, 2005, Barbier and Samba-Sylla, 2004).

The reference to employment quality in EU policy documents since 2000 appears more and more like the result of a political compromise, while the job quality concept has experienced a variable degree of success in its implementation.

1.2 A comparison with similar concepts

The job quality concept fits partially with the goals of the International Labour Organisation. However, this last one refers to the concept of "decent work", that is itself recent. It appears in 1999 in the discourse of ILO, as a "*point of convergence of the four strategic objectives of the ILO, namely the promotion of labour rights, employment, social protection and social dialogue"* (ILO, 1999, p. 3-4). Different definitions, dimensions and indicators were proposed in the *International Labour Review* (Ghai, 2003; Anker *et al.*, 2003; Bescond *et al.*, 2003; Bonnet *et al.*, 2003). Compared to the EES definition of job quality, the definitions of "decent work" have to face a higher degree of heterogeneity, because they have to take into account simultaneously the situation of developed and developing countries, whereas in the latter respect of some fundamental rights might be problematic. That is why the dimensions of labour rights and social protection are present in the definition of the "decent work". Following the framework defined in 1999, several researchers try to apply the decent work approach by developing a set of indicators (Ghai, 2003; Anker *et al.*, 2003; Bescond *et al.*, 2003) or by developing a synthetic index based on the addition of indicators representing the four dimensions of decent work (Peek, 2006).

Furthermore, recent synergies between the decent work agenda and the employment quality goal have emerged. The EU support for the decent work agenda has been emphasised at the turn of the century and reasserted in recent communications[2]. The Commission proposal for the Community Lisbon Programme 2008-2010, dated the 11th December 2007, asserted in particular: "The Community is committed to shape globalisation with a view to maximising its benefits and sharing it with its partners. The Community needs to further engage with key trading partners, including neighbour countries and the emerging economies and should further promote regional economic integration. These negotiations, together with enhanced policy dialogue, can also contribute to further promoting sustainable development in partner countries.

Indeed, the European Union can contribute to promote the decent work agenda in the world though internal and external policies (such as trade, external cooperation, development aid). The EU cooperates with ILO, UN, G8 and WTO in this field. The EU also promotes the goals of decent work in its bilateral and multilateral relations (with the Mercosur, the Andean Community and India, for example).

Among European institutions, the European Foundation for the Improvement of Living and Working Conditions has also developed a framework to analyse job quality. The concept of employment quality is wider, including detailed variables about working conditions, and social protection indicators. The analysis distinguishes four dimensions, namely career and employment security, skills development, health and well-being, reconciliation of working and non-working life (European Foundation for the Improvement of Living and Working Conditions, 2002).

Initially, the OECD employment strategy did not take into account the quality of jobs, at least explicitly when it was first developed, in the mid 1990's (OECD, 1994). However, the last analyses from the OECD show a growing interest in themes that deal with some of the dimensions of job quality (e.g. satisfaction with job security, work and family balance). The editorial of the 2003 *Employment Outlook* refers to the objectives of the Lisbon strategy, "*towards more and better jobs*". On the whole, the convergences between the EES and OECD

[2] see the 2001 Communication on core labour standards, the 2004 Communication on the social dimension of globalisation, the 2006 ECOSOC ministerial declaration on "Creating an environment at the national and international levels conducive to generating full and productive employment and decent work for all, and its impact on sustainable development", the 2006 Communication on "Promoting Decent Work for All" and the Council Conclusions on "Decent Work for all", 30th November and 1st December 2006.

Employment strategy are striking, in particular in the field of employment quality. Both stress the importance of human capital investment and work-life balance, for example.

The decent work or job quality indicators promoted at the international level are not used directly in the national debates, but some related concepts are well present. Indeed, the term "quality of working life" was already used in the 1970's debates about the critics of the Tayloristic organisations and the « human workplace » that developed across Europe and particularly in the Nordic countries. These debates were more focused on one dimension, i.e the working conditions, without due consideration to employment conditions and work and family life reconciliation, because the majority of workers were men and the new risks on the labour market (part-time jobs, temporary contracts) were not as developed as they are now. The 1990's debates were more focused on the precariousness of employment, that is to say the type of contract, at least in the Mediterranean countries, including France. More recently, the working poor situation has given cause for concern in Continental countries, such as France. In Germany, the Hartz reforms and the current debates about the minimum wage raise issues related to the job quality concept. At the turn of the century, in the UK and in the US, the growing number of so-called "bad jobs" (low skill, low wages, worsening working conditions)[3] has generated a debate about the potential trade-off between the quantitative growth of employment and its quality. Full employment is no longer the only goal of employment policies and the British Government puts forward the objective of a *"full and fulfilling employment"* (Department of Trade and Industry, 2002). In this perspective, some studies have been devoted to analysing the dynamics of work quality.

Some are based on the exploitation of workers' surveys. Green (2006) includes skill level, effort and work intensity, autonomy, wages, risk, job security and workers well-being. Brown *et al* (2006) focus on similar dimensions, in work satisfaction, stress and effort, job security, working relations inside firm, wages and wage inequalities. The Canadian Research Policy Networks has developed a framework to analyse quality of work, based on four dimensions: health and well-being, skills development, career and employment security and reconciliation of working and non-working life (Brisboit, 2003). Other studies are based on aggregate data. The index of employment quality calculated by CIBC World Markets and applied to Canada and the United-States is based on a macroeconomic and sectoral focus: it is obtained using the

[3] Kalleberg *et al*, 2000 ; Appelbaum *et al*, 2003

full time/part time ratio, the wage earners/independent workers ratio, and a ratio of high wage sectors labour force/low wage sectors labour force (Tal, 2006). In the United-States, the debate on job quality included initially only a few dimensions (mainly wages and fringe benefits) (Costrell, 1990). Recent research has developed a larger framework including part-time work, transition from non-employment to employment for example (Meisenheimer, 1998; Houseman, 1995).

Indeed, in these contemporary international and national debates, most authors consider that quality in work is a multi-dimensional concept, but the dimensions they actually take into account vary between studies. Green (2006) and Brown *et al.* (2006) concentrate on the content of work and working conditions (in a broad sense, including wages), whereas the Canadian index or the Laeken indicators relate to more general labour market characteristics. According to the Commission, the two first dimensions of Laeken concern the "characteristics of the job itself", whereas the other eight dimensions concern "the work and wider labour market context". The definition thus puts the focus on the labour market components of quality, which is besides taken in a very broad sense. For instance, global employment rate and long term unemployment belong to context indicators, although they are traditional indicators of quantitative performances. These differences reflect the concept of quality being used. Although the original English term used in the EES is "quality in work", the French translation is "*qualité de l'emploi*", which is more macroeconomic oriented and seems more accurate. Its English translation "employment quality" is also used in some European texts, which reinforces the idea of a focus on labour market. Hesitations about the denomination of the concept also reveal some difficulties to define it at the European level. The Laeken approach would correspond to a concept of « employment quality », whereas the approach of Green (2006) is best captured by the terms « job quality » or « work quality », because it stresses the importance of the quality of job itself, in particular wages level and working conditions (for example, the work intensity).

Section 2- Job quality in economic theory

The concern for employment quality is still recent in economics. This section will review some important theoretical developments which allow defining the concept.

In the standard neo-classical model, work is a disutility and wages are the only motives of workers. At the market equilibrium, the wage level fully captures job quality, which equals the level of productivity and compensates the disutility of work. The heterogeneity of jobs is fully taken into account by wage differences so that job quality is not a matter of concern within this framework. However, some recent developments in economic theories can contribute to the definition of job quality.

2.1 Labour economics: from wage to human capital

With the theory of human capital (Becker, 1964), jobs and workers' heterogeneity is fully recognised, and a first step can be made to differentiate jobs' quality, according to the skills involved in the job or the skill matching between the workers and the jobs. Furthermore, in a policy oriented perspective, the distinction between general and specific human capital opens up the way for state intervention: firms do not want to finance general skills that could be profitable for other firms. Incentives to invest in education are important for individuals, but they cannot always afford it. In case of imperfect credit markets, the optimal level of skills will require public intervention. In this perspective, investment and participation in education and training activities could be an indicator of employment quality.

In the framework of compensating wage differentials theory, other amenities and displeasures are taken into account in the utility function: injury and occupational diseases, commuting costs, training at work, job security, working hours, insurance, etc. (Rosen, 1986). According to this theory, disamenities should be compensated by a wage premium. As a consequence, the wage level is still the ultimate scale in the compensating wages differentials theory. The main question of the empirical literature is to know whether and to what extent the labour market provides compensation for the non pecuniary attributes of work, such as occupational risks. Empirical results are usually disappointing and inconclusive, except for the risk of death (Smith, 1979). Furthermore, theoretical literature recognises that incomplete information will lead to market failures i.e. wages not fully compensating for differences in amenities, thereby state intervention may be necessary (Lang and Majumdar, 2004). Therefore, this approach finally points out to the necessity of including other characteristics of the job in addition to wages in any framework for job quality evaluation (e.g. working conditions, working time, etc.). Consequently, looking at the wage premium cannot help to understand the preferences of workers, i.e the wage variation that they could accept for a change in his/her work and

employment conditions. Therefore, compensating theories give only a limited contribution to assessing job quality. The wage does not capture all the components of job quality and job satisfaction is now more and more used as an alternative benchmark of job quality.

2.2 Happiness economics: job satisfaction as a benchmark

In the recent framework of the "economics of happiness" (Layard, 2005), the approach to job quality is enriched by the consideration of workers' point of view, thanks to the development of surveys on job satisfaction and workers' well-being. Psychologists are also more and more interested in the "well-being", after decades of research more focused on pathology using a behaviourist perspective (Kahneman, Diener, and Schwarz, 1999). In sociology, the tradition was to study jobs through occupation hierarchy (Jencks, 1988). But a growing and interdisciplinary literature tries to define a good job thanks to surveys on satisfaction. In the methodological debate on job quality and its dimensions, studies of job satisfaction can have two aims. First, in a global approach of job quality, job satisfaction can sum up employment quality (Kalleberg and Vaisey, 2005). The main advantage of this approach is to take into account the heterogeneity of preferences. Second, it is also possible to determine the dimensions of job quality by asking people what is more important in their eyes: for instance, according to ISSP[4] data (Clark, 2005), "job security" and an "interesting job" are "very important" for a majority of people, and seem to be more important than other items, like "being allowed to work independently", "good opportunities for advancement", "high income", "being useful to society" , and "Allows to help other people" and "flexible working hours". However, such declarations could be subject to a social desirability bias, so that most of the research tries to explain job satisfaction by objective variables and, above preferences heterogeneity, to find regularity and the average point of view. For example, it appears that the absolute wage level is not so important. Comparison and habit effects dominate: workers are unhappy if they are less paid than their colleagues or peers (everything else being equal), and the wage rises have a transitory effect (Clark, 1999). These results suggest that decent living standards, wage equity, and good wage mobility could be taken as indicators of

[4] International Social Survey Programme.

employment quality. This literature also points the importance of "procedural utility": job satisfaction is not only influenced by the wage, but also by the way work is organised: the possibility of democratic debate at the work place, autonomy and social dialogue are key factors of well-being (Freeman and Rogers, 2006; Bauer, 2004). A modern definition of job quality should also take into account the impact of employment on the other spheres of life. Indeed the possibility of reconciliation between work and family life would also be a very important dimension of job quality according to the workers' answers gathered by the European Social Survey. Finally, comparative studies suggest that some characteristics can be more valued in a country than in another, according to the institutional and cultural background. For example, part-time workers are happier in the United-Kingdom than in France (Clark and Senik, 2005). Multi-level modelling is now showing that the importance of each job facet is influenced by institutional, economic, social and cultural background (De Witte, Halman, and Gelissen, 2004; Huang and Vliert, 2003; Hui, Au, and Fock, 2004). Most of the time, the meaning (positive or negative) is the same across countries (at least at the European level), but their importance differ. That is why the institutional background should be kept in mind.

In order to define, measure, estimate and delimit employment quality, taking into account workers satisfaction is therefore useful, but may not be sufficient, because workers are not completely informed and they can adapt unconsciously their preferences to their situation without imaging a better situation (Llorente and Macías, 2005). Other principles such as merit or equity could be relevant to determinate employment quality. Happiness is not the only goal, but it is certainly not empty (Kahneman, Wakker and Sarin, 1997). Lastly, the preferences expressed through the questionnaire allow avoiding a paternalistic and ethnocentric approach of job quality where the criteria are influenced by the researchers' point of view on each country. That's why different approaches appear complementary, including objective, declarative and subjective indicators.

2.3 A multi-dimensional concept: socioeconomic approaches

These developments in economic theory point out to the multi-dimensional character of job quality, which includes both objective variables like wages and equity, skill level, working conditions indicators, and subjective measures of workers' satisfaction. Nevertheless, in the academic field, attempts to identify dimensions of employment quality and set up indicators

to estimate these dimensions by using objective and subjective indicators in a macroeconomic perspective are scarce. The recent framework suggested by Green (2006) is an exception. He studies job quality through the evolution of different dimensions, including skills, work effort and intensification, worker's discretion, wages, risk and job insecurity, and workers' well-being, and thus takes into account the multidimensional nature of job quality. Most of these indicators are indicators of "output" in the language of the EES: they are focusing on the results, and not on the policy measures necessary to improve employment quality. Furthermore, the comparative perspective is secondary in Green's analysis, as most of the data come from rich British surveys that do not exist at the European level. That is why his analysis cannot be replicated at a European level.

To cope with the EES perspective, which also includes some variables related to labour market opportunities rather than to the characteristics of the job itself, Green's framework should be further enlarged. To set up such an employment quality concept, we propose to complement it with some results from the Transitional Labour Market (TLM) perspective (Schmid and Gazier, 2002). The latter approach takes into account the "erosion of standard employment" (defined as full-time and permanent contracts), and the development of a diversity of working times, employment contracts, and intermediate statuses between work, unemployment and inactivity. This school stresses the importance of studying transitions (not only within work), but also between work, education, training, unemployment, inactivity, non-paid activity and family care. The transition matrix is an important descriptive tool. One key issue is to distinguish between good and bad transitions. For example, how many workers in fixed-term contract are in permanent work one year later? Are fixed term contract a stepping-stone or a dead-end job? Are choices reversible? Does a temporary part-time work used to provide family care endanger training and career mobility? The TLM perspective adds a dynamic and life-cycle perspective to employment quality issues. According to this school, employment quality systems should provide flexible arrangements, particularly as regards working time, while also enhancing security. More generally, in addition to decent wage and safe working conditions, the TLM perspective fully recognises the importance of other quality dimensions, like the right to training, to occupational redeployment or retraining, to a family life, to decide ones working hours throughout the life cycle (Schmid, 2006). As a consequence, gender issues are at stake. In brief, the TLM perspective can contribute to the definition of employment quality by focusing on life cycle specificities and recognising the interactions between employment and other life spheres.

Summing up, this review of literature shows that employment quality is gaining prominence in the research agenda of labour economists, and that it is preferentially treated as a multi-dimensional concept, covering the following four main aspects:

- socio-economic security (i.e. decent wages and good transitions);
- skills and training;
- working conditions;
- ability to combine work and family life, and promotion of gender equality.

This typology is similar to the framework developed by the European Foundation for the Improvement of Living and Working Conditions, which includes four dimensions, namely career and employment security, skills development, health and well-being, reconciliation of working and non-working life (European Foundation for the Improvement of Living and Working Conditions, 2002).

These dimensions can be captured through a combination of objective and subjective data, and should be interpreted in a static as well as in a dynamic perspective, using data on transitions.

Section 3-Institutional approaches and job quality: towards national models?

In a comparative perspective, we need an analytical framework which clarifies the relationships between national institutions, on the one hand, and the various dimensions of employment quality, on the other hand. In economics as well as in sociology or political science, a growing number of approaches have been dealing with the relationships between economic performances (including labour market performances), and national institutions. Following Jackson and Deeg (2006), we can regroup this literature under the heading of "comparative capitalisms", although it appears very diverse, including both synthetic approaches like the "varieties of capitalism" (Hall and Soskice, 2001), and more partial comparative frameworks, focusing on industrial relations, welfare systems or work organisation. These recent developments draw on a well established tradition of comparative institutional analysis, including for instance the French Regulation School, or the societal effect approach, which highlights the existence of country specific institutional arrangements, resulting in differentiated performances. Without aiming at an exhaustive review, we will examine the extent to which such approaches could be applied to analyse and compare quality

of work between countries. We will first focus on some common methodological issues, which are crucial for the interpretation of empirical results in a comparative perspective, and then discuss some lessons from this literature when applied to employment quality issues.

3.1 Comparing national performances : some theoretical and methodological hypotheses

The comparative capitalism approach is unified by three analytical assumptions (Jackson and Deeg, 2006).

First, it differs from the standard concept of economic rationality, and considers economic action as a special case of social action that needs to be coordinated or managed by institutional arrangements. This hypothesis is consistent with the recent developments of economic sociology, which stress that economic action takes place within social contexts and is mediated by institutional settings (according to the concept of "embeddedness", as defined by Granovetter, 1985), but also with "new institutional economics". In such a perspective, given the bounded nature of rationality, institutions provide guidelines for action, and might be informal (habits, routines), as well as formal (rules, incentive systems) (Hodgson, 1998; North, 1990). Consequently, the research agenda goes beyond the comparison of formal rules or state policies, but includes social organisation and informal principles (like the concepts of social justice or the role of the state).

Second, comparative analysis builds the core of the research strategy: its aim is to identify similarities and differences between institutions and governance mechanisms, and to understand the impact of these institutional differences on various economic outcomes. Most studies focus on institutional diversity at the national level, although regional or sectoral variation of institutional arrangements can also be taken into consideration. In this perspective, it has become increasingly common for comparative research to rely on typologies as a means of clustering countries for the purpose of comparison.

Third, these comparative approaches conceptualise the various institutions within an economy as being interdependent: the concept of "complementarity" is central to this type of analysis. In short, complementarity implies a functional interdependence, i.e. institutions in a given domain affect the outcomes or utility of institutions in other domains. Complementarities and interdependence do not guarantee economic efficiency, and may even lead to stable suboptimal arrangements. But on the other hand, they also create space for diverse organisational patterns, creating some room for learning from "natural experiments". An important result is that different institutional arrangements may be associated with similar

socio-economic outcomes, i.e. they are functional equivalents. A corollary of this is that a given institution cannot be considered to be efficient independently from the more general context. As a result, comparative analysis should not aim at giving normative recommendations about each institution, because good employment quality patterns may result from different combinations of institutions.

3.2 Employment quality: what can we learn from recent comparative studies?

Comparative studies based on the hypotheses above-mentioned have been developed in two directions: some of them concentrate on a given institutional domain, whereas others build general typologies of capitalism. We will consider here these two lines of research, which correspond to two steps in the theoretical definition of the relationships between employment quality and national institutions. Employment quality does not appear as a specific item in this literature, but having identified its components, we can derive some hypotheses for comparison from the existing typologies.

According to the literature, the four dimensions of employment quality are likely to be influenced directly by the following institutions: industrial relations (wage bargaining system), education and training systems, welfare systems and labour market policies, work organisation arrangements (see table 1.1). We have chosen not to mention here some institutions that might have an indirect effect, such as the financial system, corporate governance and inter-firms relations, and innovation systems. Under the assumption of interdependence and complementarities, the effects of the latter institutions on job quality are taken into account by the synthetic models used.

It is difficult to draw general conclusions concerning the situation in Europe regarding the education and training systems, and work organisation arrangements. Whereas it is clear that the global intensity of the education and training effort has an impact on employment quality, the relationship between the type of company governance and skills policies is unclear. In the 1980s, a usual split was made between high-skill and low-skill countries, which were exemplified by Germany, on the one hand, and the UK, on the other hand. Nevertheless, recent studies have shown that countries actually combine different governance mechanisms: direct state provision, free markets, institutional companies, firms' networks, and corporatist associations, making it difficult to define a relationship between a given type of governance

and skill outcomes (Crouch, Finegold and Sako, 1999). As far as work organisation is concerned, the most innovative forms of work organisation (post-fordist forms) have ambiguous effects on job quality. They tend to favour higher wages and increased autonomy, but at the price of some work intensification and/or higher stress (Askenazy and Caroli, 2002; Green, 2006).

Industrial relations affect labour market outcomes, particularly unemployment and wages, according to the neo-corporatist literature in the 1970s, but also to more recent approaches (Calmfors and Driffill, 1998; Crouch, 1993). Regulated and centralised wage bargaining systems (such as in Northern Europe, but also in Germany or the Netherlands) are favourable to employment and economic stability, but also to greater wage equality among workers, and tend to favour employees' involvement. Conversely, "pluralistic bargaining", which is characterised by a weak union-employer articulation and/or by weak unions leads to worse performances in terms of employment and equality/solidarity. Thus there seems to be a link between some aspects of employment quality and the wage bargaining system.

The same holds for welfare systems. Esping-Andersen's (1990) original typology includes three models of the welfare state: the liberal, the conservative, and the social-democratic. This typology was then adapted to include southern European countries (which would make a fourth type). One of the ambitions and strengths of this approach has been to link welfare state provision clearly to labour market outcomes, and especially to employment outcomes and gender issues. Esping Andersen's typology is thus clearly related with the gender dimension of employment quality: liberal welfare states are likely to create polarised employment opportunities for women in the private sector, whereas in the social-democratic regime jobs for women are more likely to be found in the public sector. In both regimes, the employment gap is limited, but differences between men and women in terms of job characteristics (share of part time, wage level, etc.) are likely to be higher in the liberal model. From that respect, employment quality is lower in the liberal regime. Conservative and Southern Europe countries are characterised by low participation of women in the labour market, and difficulties in reconciling work with family life/formation (low provision of childcare).

Table 1.1- Potential job quality effects of various institutions

Institutional domain	Job quality effects	Representative typology
Industrial relations	Wage levels, wage mobility, working conditions, unemployment	Conflictarian/pluralist/corporatist
Welfare and ALMP	Labour market transitions, gender equality	Liberal/Continental/Social-democratic

Work organisation	Working conditions	Fordism/flexible specialisation/diversified quality production

General typologies also deal with some dimensions of employment quality. Hall and Soskice (2001) compare capitalisms as production regimes and focus on firms' behaviour as a starting point of their analysis. Firms are supposed to be embedded in a context which encompasses four institutional domains that define their incentives and constraints, financial systems and corporate governance, industrial relations, education and training systems, and the governance of relations between companies. On the basis of this framework, the authors distinguish two basic types of production regimes, namely Coordinated Market Economies (CMEs) and Liberal Market Economies (LMEs). This dichotomy relies on a fundamental feature, which is the nature of coordination within the economy. In LMEs, coordination proceeds from market mechanisms, whereas in CMEs it is based on non-market mechanisms, strategic coordination and cooperation, favouring investment in specific goods. CMEs thus encourage long term financing relationships, cooperative industrial relations, serious initial vocational training and substantial cooperation on setting technological standards. Within LMEs, financial systems impose relatively short term horizons and high risk taking, labour markets are deregulated with weak forms of industrial relations, vocational training is also low with more encouragement of general education, and finally there is a high level of inter-company competition limiting cooperation possibilities. This typology clearly has consequences in terms of employment quality: it suggests that a good level of employment quality is likely to be observed in the CMEs, and especially in Europe among the sub-type designated as "Industry Coordinated Economies Industry", which corresponds to the countries of Northern Europe, whereas the LMEs (represented in Europe by the UK) would be characterised by a higher proportion of poor quality jobs.

Amable (2003) attempts to improve on this two-way typology by considering a broader set of institutions. Indeed, he considers that Soskice and Hall's (1990) framework relies on an implicit hierarchy between institutions, where the firm is at the centre of the analysis. Amable uses five institutional domains to generate his typology: i) product market competition; ii) the wage-labour nexus and labour market institutions; iii) finance and corporate governance; iv) social protection/welfare state and; v) the education/training systems. On the basis of theoretical analysis of possible combinations of institutions within and between these domains, and of cluster analysis, Amable distinguishes five types of capitalism: i) a market-based model; ii) a social-democratic model; iii) a continental European model; iv) a

Mediterranean model and, v) an Asian model. In this typology, the differentiation in terms of employment quality is more complex. Poor employment quality can still be associated here to the market-based model, which is close to the LME in Hall and Soskice's approach. But it also characterises the Mediterranean model, where the education and training levels of the workforce are relatively low, not enabling any high wage industrial strategy, and limiting the generosity of the welfare system due to financial constraints. Still, contrary to the market-based model, employment is rather well protected. At the opposite, the social-democratic model, as developed in Northern Europe, exhibits a high welfare level, good training opportunities and generous active policies for the unemployment, and coordinated wage bargaining systems. The continental model is more ambiguous in terms of employment quality: it is close to the social-democratic model in the sense that it includes quite generous welfare, a certain degree of wage bargaining cooperation, active policies and training, but all these characteristics which favour employment quality are less developed than in the social-democratic model. Employment protection stands at a higher level in the continental model, which has an ambiguous consequence in terms of employment quality, since it favours insiders, but reduces employment opportunities for job seekers.

This comparative literature has mainly focused on OECD countries. However, the frameworks of the "Varieties of Capitalism" and of Amable's work have been recently applied to analyse the institutions of the Central and Eastern countries. We can conjecture that New Member States share similar institutional characteristics. Except Malta and Cyprus, they all have experienced communism and their transition to capitalism is still recent. The common past and recent history could explain some similarities. Indeed, in extending the analyse of Amable to three New Member States (Czech Republic, Poland and Hungary) and Turkey, Berrou and Carrincazeaux (2005) find a "Central and Eastern European model". This model is characterised by a flexible labour market and an underdeveloped financial market. However, the authors point out that their results need to be confirmed and they do not guarantee the existence of a well-defined Central and Eastern Model. The institutional complementarities are less robust than in the other models (see also Hancké, Rhodes and Thatcher, 2007). Furthermore, the Central and Eastern countries are not a homogenous cluster according to other studies. Differences can be found on two main areas: first, their institutions, particularly their centralised system of industrial relations and industrial specialisation were already different during the Communist area, and second their transition paths are very diverse as well. Some case studies based on the framework of the Varieties of Capitalism approach stress this diversity. For instance, Slovenia would be close to CMEs and Estonia close to

LMEs (Feldmann, 2007). Other economies (such as Poland) would resemble the Mediterranean mixed market economies (Mykhnenko, 2007).

Along the lines of recent comparative literature in economics, we can consider employment quality as one dimension of economic performances, which is likely to be influenced by institutions and policies. Our empirical analysis will attempt to identify the different "models" of employment quality in Europe and to discuss them according to a proposed typology. As stressed in these approaches, the existence of such "models" must not be understood in a normative way: first, preferences are heterogeneous across Europe and second several paths can lead to the same performance i.e. there might be functional equivalence across different models.

Section 4- Job quality, economic growth and the economic integration of the new Member States

Apart from the definition of job quality and its components, economic theory can also help establishing the links between job quality and growth. At the macroeconomic level, it suggests a positive link between job quality and economic growth, and thus the absence of any trade-off between job quality and quantity in the long run.

There are a number of well known arguments linking human capital and economic growth. Endogenous growth models (Lucas, 1988) show that human capital accumulation increases the growth rate. Investment in training and education has increasing returns, generating positive externalities i.e. a higher education level not only increases individual productivity, but also the productivity of co-workers. There are network effects, making a given training all the more effective as there are positive spillovers affecting others workers in the network. That is why governments should invest in education and training, in order to raise human capital levels. Endogenous growth models can justify public investment in general training and education, correcting for the presence of market failures (e.g. externalities). Training for specific skills may be funded by firms, but the risk of under investment also exists in that case, which justifies some public intervention even for some more specific needs (Cahuc and Zylberberg, 2004).

There are also some links between workers security and economic growth. Security must be understood here in a broad perspective, including job protection, but also safe working

conditions, fair wages and access to social protection. All these components of security in work may increase productivity.

Empirical evidence on this matter include for instance the study by Auer *et al* (2005), who have shown that labour productivity is positively related to job tenure. The International Labour Office (ILO) has also carried out analyses of social protection as a production factor, a notion that can also be related to the concept of decent work (ILO, 2005). A good level of social protection increases labour productivity, because it preserves and increases human capital through health policies, but also through unemployment insurance and active labour market policies (Boyer, 2006). Many security mechanisms work as automatic stabilisers, which is particularly helpful during economic downturns. Increasing economic security in general, and that of workers in particular, can foster productivity growth. Work organisation practices that appear heterogeneous in Europe (Valeyre and Lorenz, 2005), also may influence innovation within the firms, and therefore favour productivity and growth.

The diverse dimensions of job quality can increase workers productivity. Indeed, both are linked, but they mean different things. Job quality is a broader concept than productivity and it focuses on workers well-being, and not the firms' productions. However, job quality can also be a competitive factor for firms and for the macro economy.

All considered, these mechanisms suggest that promoting job quality should favour the catching-up of new Member States. At this stage, the existing literature shows that most of these countries have social protection systems targeted to older people needs, under spending in labour market policies. On average education levels are quite high in new Member States, but the corresponding competences are often obsolete. According to endogenous growth theory, a strategy of increasing job quality should also favour labour productivity and growth, thus enabling some convergence within the EU 27.

Conclusion

Despite the diversity of job quality definitions and of indicators used in empirical studies, some consensus appears to have emerged on the following points:

- job quality is a multidimensional concept;
- among the key dimensions, we can retain the following: wages, employment security, working conditions, training opportunities, and gender equality.

In a European perspective, we propose to address the following two hypotheses, particularly on the paper on job quality regimes in the EU:

- job quality largely depends on national institutions and shows a high degree of heterogeneity across countries;
- job quality can be part of a strategy to foster productivity growth.

Second paper: Job quality indicators in a European perspective

This paper will review the indicators adopted at the European Summit in Laeken and discuss their availability in section 1. Then, we will compare them to the decent work concept of ILO in section 2. Finally, we propose some complementary indicators and we present the structure of our data bases.

Section 1- Laeken indicators: availability and main limitations

As stressed in the first part of the report, job quality is a multidimensional concept[5]. The European definition, which was adopted at the Laeken Council, involves 10 dimensions, namely: i) intrinsic job quality; ii) skills, lifelong learning and career development; iii) gender equality; iv) health and safety at work; v) flexibility and security; vi) inclusion and access to the labour market; vii) work organisation and work life balance; viii) social dialogue and workers involvement; ix) diversity and non discrimination; and x) overall economic performance and productivity.

For each dimension, an attempt has been made to propose a key indicator and context indicators. Nevertheless, some dimensions are not defined, because of the absence of political consensus.

In this section, we will review these Laeken indicators by dimension. For each dimension, we present the key and context indicators, their availability in both a cross-section and time series perspective, their meaning with regard to the job quality concept, and the methodological problems they raise.

1.1 Intrinsic job quality

Dimension 1 : **Intrinsic job quality**		
Indicators	**Possible sources**	**Availability and limits**
Transition between non employment and employment, and pay transitions (by deciles), between	ECHP EU-SILC	1994-2001 for the EU15 Since 2004 for 13 countries (BE, DK, EL, ES, FR, IT, LU, AT, PT, FI, SE, IE et EE) and since 2005 for the EU27

[5] COM(2003) 728 of 26.11.2003.

year t and t+1	LFS	Available for LFS countries (see table), but without desegregation by pay level in the public data base sent to researchers
Job satisfaction	ECHP EVS (European Values Survey) ISSP (International Social Survey Programme)	1994-2001 for the EU15 1981, 1990, 1999 (all Member States in the last wave) 1989, 1997, 2005 for 19 countries in the last wave (DE, AT, BG, CY, DK, ES, FI, FR, UK, HU, IE, IT, LV, NL, CZ; PL, PT, SI, SE) and Flandres.

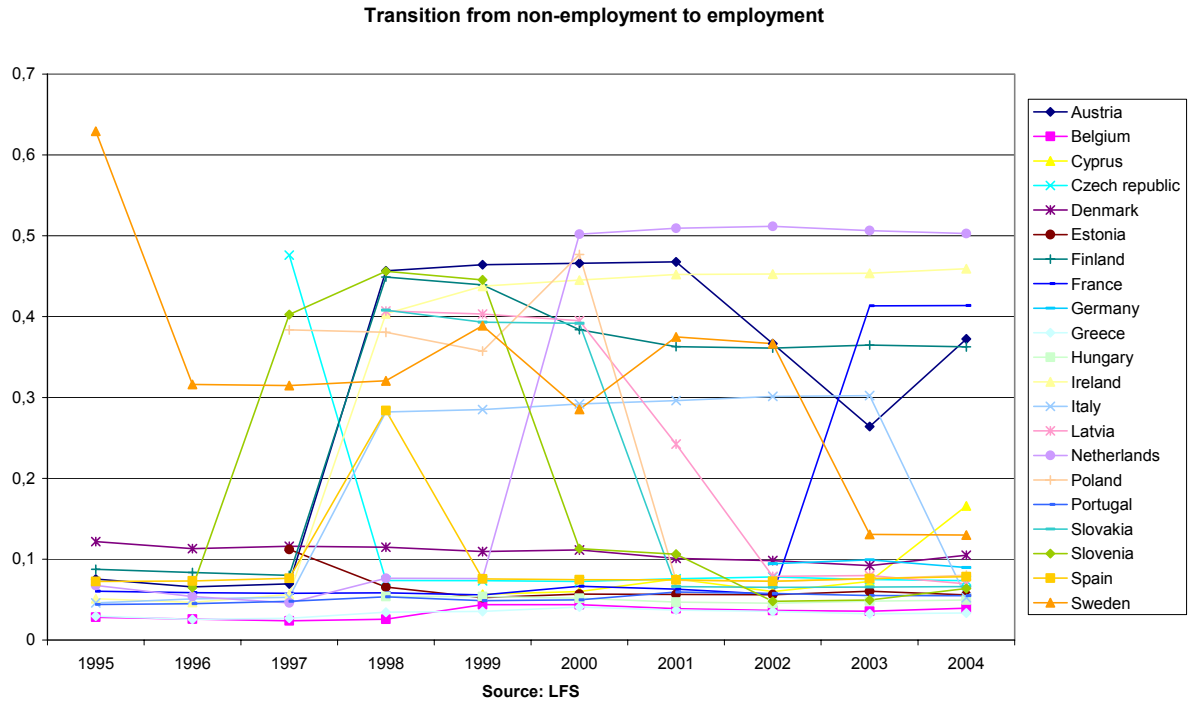
The indicators do not really correspond to the title of the dimension, but they reflect employment quality from a labour market point of view. It corresponds mainly to a dynamic perspective on employment quality, which is interesting, since "happiness economics" empirical literature suggests that workers are happier when they experience good transitions, for example an increase in wages (Clark, 1999). This also fits well with the TLM framework that has shown the importance of studying transitions rather that status (Schmid, Gazier 2002). The reference to job satisfaction in the context indicators is also interesting, since it shows the will to use both subjective and objective indicators of job quality: from that point of view, Laeken indicators follow the recent developments in economics (that have been presented in the first paper). While some researchers are in favour of such subjective indicators, others argue that the level of satisfaction may not be the best benchmark, because a high level of satisfaction may only reflect a lowering of social expectations or norms[6].

Despite their interest, transition data are difficult to obtain. Transition rates are better calculated with panel data (ECHP, EU-SILC), unfortunately these sources do not allow to build long time series, and they may involve some problems of sample size (when disaggregating for instance by type of contract and by age). The results are reliable only at a rather aggregate level, but do not enable to go into very detailed analyses. Nevertheless, if one remains at a relatively aggregate level, these panel data provide the best information about transitions[7]. The LFS does not enable to calculate observed transitions, since it does not authorize to follow individuals from one year to another. It includes retrospective questions about the individual's situation the year before interrogation, and thus some transition rates can be calculated. Nevertheless, this method leads to very unstable results for some countries (like NL, SE, CZ, AT, SI): the figure below, which covers the years 1995 to 2004, makes

[6] See paper 1 (section 2.2)
[7] They have been used in paper 3, section 2.

these difficulties quite clear. That's why we have only considered one transition indicator in our longitudinal analysis[8], in order not to give too much weight to these data.

Figure 2.1- An example of the instability of LFS transition data: the transition from non-employment to employment[9] (1995-2004)



The transition rate is therefore not a good indicator, because of problems relating to both availability and quality of data.

1.2 Skills, lifelong learning and career development

Dimension 2 : Life long learning and career development		
Indicators	**Possible sources**	**Availability and limits**
Participation in education and training	LFS	Available for LFS countries (see table A1 in appendix), but missing values for IE, CZ, LV (1998-2001) and PL(1998-2000), SI (1998-1999)
Participation in education and training by gender, age group, employment status and education level	LFS	Available for LFS countries (see table A1), but missing values for IE, CZ, LV (1998-2001) and PL(1998-2000), SI (1998-1999)

[8] Section 3.3
[9] Non-employment refers to unemployment and inactivity.

Percentage of the labour force participating in a job related training, by gender, age group and economic activity	Continuing Vocational Training Survey – CVTS	1993 (CVTS1), 1999 (CVTS2), 2005 (CVTS 3). CVTS3 and CVTS2 cover the 27 EU Member States (excluding Cyprus , Malta and Slovakia in CVTS2 – Poland only Pomorskie region in CVTS2)
Share of the labour force using computer for work, with/without specific training	Eurobarometer survey on ICT and employment European Working Conditions Survey	2000 for EU15 Proxy variable : working with computer in main paid job (2005 for EU 27)

Education and lifelong learning are recognised as major dimensions of job quality in several theoretical approaches (human capital, TLM). Laeken indicators are consistent with such approaches. Nevertheless, they focus on vocational training episodes, while some indication of its volume (number of hours) or intensity (cost per participant) could also be useful to evaluate quality. Indeed, a high participation rate can correspond to very short training sessions that do not really increase human capital.

Furthermore, Laeken indicators focus on the supply of skilled labour and few indicators reflect the demand for skilled labour (except maybe the use of computers). This imbalance is regrettable because the quality of job also relies on a good match between labour demand and supply. Investments in initial education may have a low return if job qualifications do not improve simultaneously. Young adults with a diploma may fear a drop-in-status for example, and experience dissatisfaction when entering the labour market (Belfield and Harris, 2002).

1.3 Gender equality

Dimension 3 : Gender equality		
Difference between men's and women's average gross hourly earning as percentage of average men's hourly earning (for paid employees at work)	ECHP EU-SILC	1994-2001 for the EU15 Since 2004 for 13 countries (BE, DK, EL, ES, FR, IT, LU, AT, PT, FI, SE, IE et EE) and since 2005 for the EU-27

Employment rate gap between men and women	LFS	Available for LFS countries (see table A1)
Unemployment rate gap between men and women	LFS	Available for LFS countries (see table A1)
Occupational segregation (*)	LFS	Available for LFS countries (see table A1) since 1992 with computation using information on ISCO
Segregation by sectors (**)	LFS	Available for LFS countries (see table A1) since 1992 with computation using information on NACE

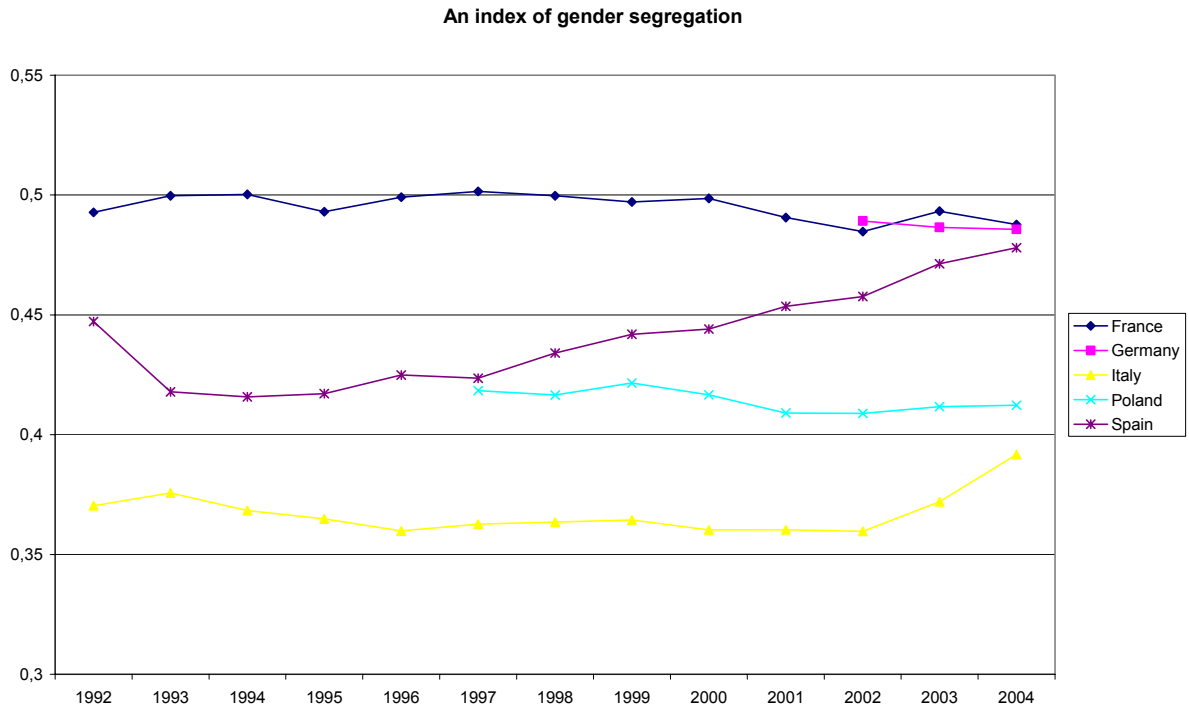
(*) Occupational segregation (using ISCO1D and ISCO2D). The index of dissimilarity is defined as : $I = \frac{1}{2}\sum_i \left|\frac{M_i}{M} - \frac{F_i}{F}\right|$ *where M represents the total number of males in employment,* M_i *the number of males in occupation i, F the total number of females in employment,* F_i *le number of females in occupation i (Emerek et al., 2003)*

(**) Segregation by sector: same method, using NACE1D

This component of job quality reflects the importance of gender issues in the EU, and constitutes an originality of both the European and the ILO approaches.

Segregation indicators (by sector and occupation) are interesting concepts, but they are quite difficult to interpret. Indeed, they appear to be quite stable over time for a majority of countries (figure 2.2), but this can hide very different phenomena (Emerek *et al.*, 2003): more women have access to hierarchical responsibilities, but at the same time, many women tend to access the labour market through low qualified jobs or female dominated ones. That is why a global segregation indicator is insufficient to characterise trends in female employment. It is therefore necessary to take into account the situation at both ends of the occupation spectrum. If one considers the share of women in managerial and professional positions (ISCO 1 and ISCO 2, see figure 2.3), it shows an increase in the share of women among managers in all countries except Portugal, and an increase in the share of women among professionals, with the exception of Finland, Italy and Sweden, where they were already a majority. Nevertheless, during the same period, the share of women has also increased in some categories where they were already overrepresented, like service workers (ISCO 5) and clerks (ISCO 4). This trend is very important in Southern countries. Three countries make exception to it, and experience a decrease in women share in the occupations 4 and 5: Denmark, Sweden, and France.

Figure 2.2- The time profile of the segregation indicator



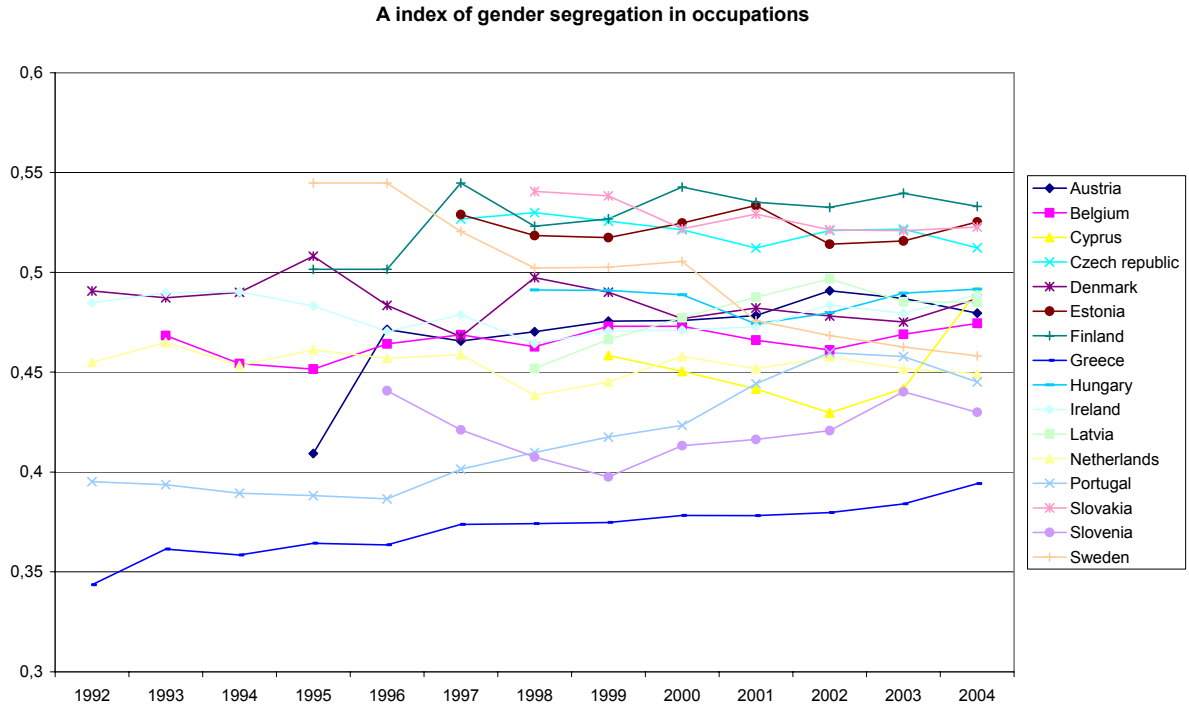
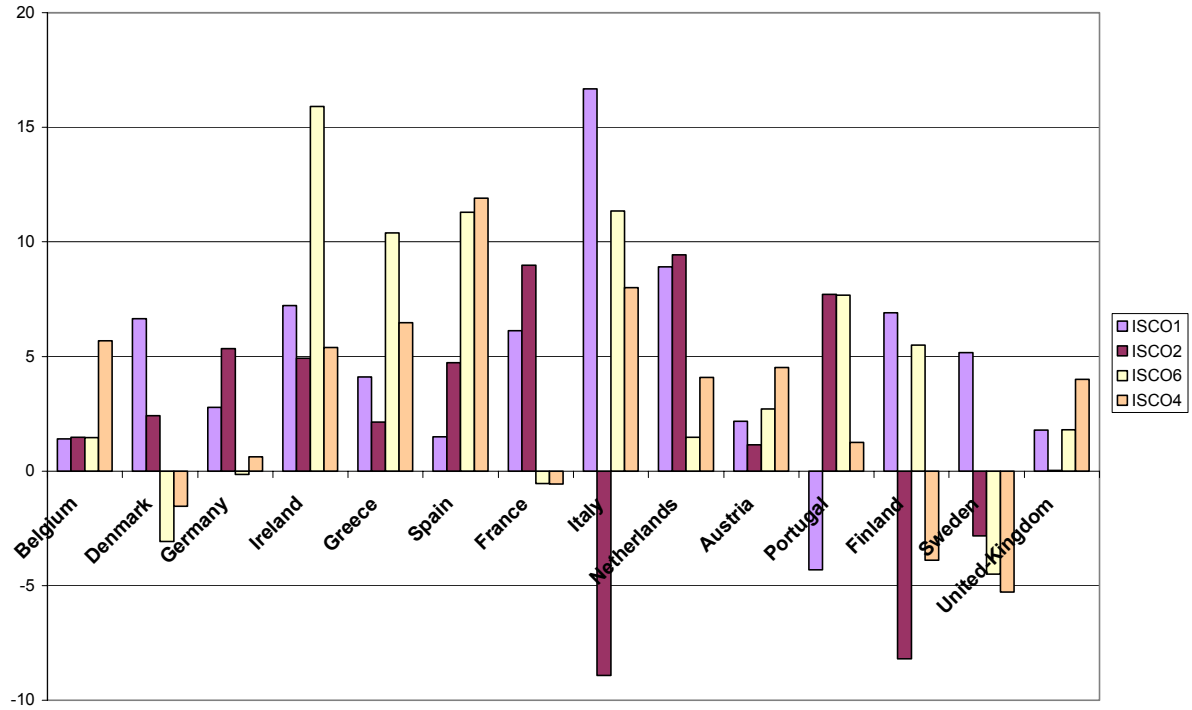


Figure 2.3- Evolution of the female share in some occupations since 1992: the difference in percentage points between 1992 and 2005



For most countries, the observation period is 1992-2005, with the exception of Belgium (1993-2005), Austria (1995-2005), Finland and Sweden (1997-2005). Source : LFS

1.4 Health and safety at work

Dimension 4 : **Health and safety at work**		
The evolution of incidence rate defined as the number of serious accidents at work per 100 000 persons in employment	ESAW (European Statistics of Accidents at Work)	1994-2004 (except IE)

Health and safety at work represent an important dimension of job quality. Nevertheless, the rate of accidents at work raises a number of problems. First, it does not reflect all the risks at work, like occupational diseases. Besides, it raises problems of cross-country comparability - even after Eurostat's harmonisation of data. The observed differences in incidence rates between Member States could come from differences in coverage and reporting legislation, largely resulting from differences in welfare and health care systems. In countries with a broad coverage of risks secured by public systems, such as Germany or France, there might be

a financial incentive for both employers and employees to report accidents. In other countries accidents registration relies on voluntary reporting, which tends to underestimate the number of accidents. In the latter case, Member States are supposed to provide an estimation of the reporting level in order to allow Eurostat to correct this bias, but the comparability of the data is not completely guaranteed. The fact that only the evolution is taken into account avoids this problem, but the evolution of accidents rates is also biased, for instance by the economic cycle - it raises when an economic upturn occurs (Boone and van Ours, 2006)-, and by the evolution of economic activity per branch e.g. changes in the weight of services versus industrial sectors in the economy[10].

1.5 Flexibility and security

This dimension has recently been redefined as the "flexicurity" concept[11]. The Communication from the Commission (COM (2007) 359), which is based on a report of the European Expert Group on Flexicurity that was delivered in June 2007, promotes the combination of increased security for workers (employment and social security) and flexibility of labour markets, work organisations and labour relations. Flexicurity relies on four policy components: flexible and reliable contractual arrangements; comprehensive lifelong learning; effective active labour market policies; and modern social security systems.

Dimension 5 : Flexibility and security		
Part-time employment as a percentage of total employment and fixed-term contracts as a percentage of total employment (total, voluntary, involuntary)	LFS	Available for LFS countries (see table A1), except FR (1983-1991 for involuntary part-time and 1983-2003 for involuntary fixed-term contracts), SI (1996-2004), PL for involuntary fixed-term contract (until 2000)

The focus of this component in Laeken indicators is more limited. It concerns here only the first policy component (contractual arrangements), considering that the type of work contract, as well as working time arrangements, contributes to job quality. Nevertheless, these Laeken

[10] See also paper 3

[11] "A political strategy to enhance, at the same time, flexibility of labour markets, work organisation and labour relations, and security – employment security and social security." (COM (2007) 359 final).

indicators do not explicit the sign of the contribution to job quality, and besides they increase the ambiguity by making reference to "flexicurity". "Flexicurity" is on its own a goal of European Employment Strategy, but its association with job quality might be difficult to articulate.

Indeed, if we take the worker's point of view, fixed term contracts reduce job satisfaction, and so contribute negatively to job quality. Part time plays a more ambiguous role: in some countries, such as the Netherlands, or Nordic countries, it is considered favourably as a way to reconcile work and family life, therefore it is rarely involuntary, and so would rather increase employment quality. In other countries, such as France, it is perceived negatively and results mostly from a labour market constraint, and would be considered to contribute negatively to employment quality. Besides, in most countries, part time work is estimated to slowdown career development. The contribution of part time to job quality is thus ambiguous.

The involuntary part time indicator, which affects job quality negatively, can also raise some interpretation problems: if involuntary part time is low, this can also be due to the lack of full-time caring facilities for children.

1.6 Inclusion and access to the labour market

Dimension 6 : Inclusion and access to the labour market		
Transitions between employment, unemployment and inactivity between year t and t+1	LFS	Available for LFS countries (see table A1), except for the transitions between unemployment and employment or inactivity: AT (1998-2001), BE (1984), DK (1984), FR (2003-2004), IE (1998-2004), IT (1984-1991), NL (2000-2004), SW (1995); CZ (1997), LV (1998-2000), PL (2000), SI (1998-99), SK (1998-2000)
Transitions between non employment and employment or training	LFS	Available for LFS countries (see table A1), but missing values for IE, CZ, LV (1998-2001) and PL (1998-2000), SI (1998-1999). The transitions to training can not be calculated in the public data base sent to researchers.
Total employment rate	LFS	Available for LFS countries (see table A1)
Employment rates by age groups and education levels	LFS	Available for LFS countries (see table A1) since 1992
Total long term unemployment rate, by gender	LFS	Available for LFS countries (see table A1) since 1992
Percentage of the population with 18-	LFS	Available for LFS countries (see table A1) since 1992

24 years of age with lower secondary education level, or with a lower level, and who are not in education and training		
Youth unemployment ratio: total unemployed young people (15-24 years) as a share of total population in the same brackets	LFS	Available for LFS countries (see table A1)

This dimension offers a quantitative approach of the labour market. Through these indicators, included in the EU's quality concept, it is possible to have an overview of labour market outcomes. Although good labour market outcomes are usually associated with job quality, particularly in a dynamic perspective, such indicators do not really contribute to the definition of job quality.

The data on transitions derived from the LFS raise some problems with regard to their availability and reliability (see above 1.1).

1.7 Work organisation and work life balance

Dimension 7 : Work organisation and work life balance		
Employment impact of parenthood for men/women: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6.	LFS	Available for LFS countries (see table A1). The public data base does not allow to calculate this indicator, but it is included in the Compendium since 2000 for EU27
Childcare: children cared for (by other formal arrangements than family) up to 30 hours a usual week as a proportion of all children of the	National data available in the Compendium	

same age group This share should be detailed by age and type of care (pre-school, primary education)		
Number of workers who have left their last job to assume family responsibilities in the last 12 months, who intend to go back to work in the future, but are not available for work (% employment, by gender)	LFS	Available for LFS countries (see table A1). The public data base does not allow to calculate this indicator, but available in the Compendium (LFS, 2006).

This dimension confirms the gender orientation of the European concept of job quality. But it also introduces a life course perspective, taking into account the possibilities of reconciliation between work and family life for both men and women. The quality of jobs depends also on the existence or not of some social services, such as good care systems for children and older people.

However, these indicators raise problems of availability, either requiring national data or complex computations using LFS.

1.8 Social dialogue and workers involvement

Dimension 8 : Social dialogue and workers involvement	No agreement	

At present, there is no agreement upon indicators to cover this dimension of job quality. Some corresponding indicators can be found in ILO's "decent work" approach (see below section 2).

1.9 Diversity and non discrimination

Dimension 9 : Diversity and non discrimination		
Difference in employment rates between 55-64 years old and 15-64 years old	LFS	Available for LFS countries (see table A1).

Difference in employment rates between ethnic minorities + migrants and the general	LFS	

This component is complementary to the gender dimension, and introduces age, country/nationality origin and other potential discriminatory factors in the analysis of job quality. Here the main problem comes from the availability of statistics by country of origin or nationality, which do not exist in all European countries.

1.10 Overall economic performance and productivity

Dimension 10 : Overall economic performance and productivity		
Growth in labour productivity (GDP per hour worked)	Eurostat, DG ECFIN	
Growth in labour productivity (GDP per person worked)s	Eurostat, DG ECFIN	
Percentage of the population having achieved at least upper secondary education, by gender, age group (25-34, 35-44, 45-54, 55-64 et 25-64) and employment status	LFS	Available for LFS countries (see table A1) since 1992

Except for the last indicator, which relates to the education level and human capital, this dimension relies on the growth rates of labour productivity. This raises a major issue. Employment quality is likely to be positively associated with the level of productivity, through human capital, but negatively correlated with the growth rate of labour productivity, because poorer countries tend also to be catching up countries, such as most Southern and Eastern European Member States. Therefore, high growth rates of labour productivity cannot be interpreted as an indicator of job quality. And finally, a higher productivity growth rate may also be associated with increased work intensity, which tends to deteriorate job quality.

To summarise, EU indicators of job quality offer a broad definition, which includes both in work quality and labour market characteristics. Among its strengths is its dynamic perspective

that takes into account both labour market and pay transitions, but also a well developed gender and work life reconciliation perspective. The main drawbacks are the exclusion of indicators on wages and work intensity.

Section 2- A comparative analysis of job quality concepts - EU's versus ILO's

Empirical analyses of "decent work" have been using different lists of indicators and dimensions, always based on the seminal ILO report (1999). According to Ghai (2003), the concept of "decent work" includes the following four main dimensions:

1. *Labour rights*
2. *Employment*
3. *Social protection*
4. *Social dialogue* (see table 2.2).

This four pillar approach remains valid, but has been implemented around different classifications or indicators.

Following Anker *et al* (2003), more recent research addresses six dimensions of decent work (ILO, 2006):

1. *Opportunities for work* ensuring all persons who want to work will be able to find work.
2. *Work in conditions of freedom* in order to avoid forced or slave labour
3. *Productive work*
4. *Equity in work* in order to avoid discrimination and unfair treatment
5. *Security at work* encompassing health, but also the provision of financial insurance.
6. *Dignity at work* including the possibility of participation in decision-making.

Both the EU and the ILO promote a broad concept of job quality or decent work, taking into account the ability of labour markets in offering employment opportunities for all: this idea corresponds to the category 1 of the ILO (2006) approach and to the dimension “Insertion and access to the labour market” in the European perspective. Both views also recognise the importance of security. However, the two approaches are rather different: ILO stresses the “stability of work”, whereas the European Union promotes “flexibility and security”. In other words, the length of tenure is a factor of quality according to ILO, while the European perspective emphasises more the notion of employment rather than job stability, although

involuntary transitions should be avoided.

Several dimensions are more detailed in the ILO approach. For example, the European perspective only puts forward the wage mobility whereas the ILO approach recognises the importance of the wage level and its adequacy. In the same vein, both consider the danger of underemployment and involuntary part-time, but the ILO approach also looks at the problems of long hours of work. Regarding working conditions, both perspectives suggest an indicator of injury rate, the European Union putting forward the serious injury rate and ILO the fatal accident rate. However, the ILO tries to grasp the situation of labour inspections and occupational injury insurance coverage as well.

The social dialogue is explicitly recognised as a dimension of job quality by both concepts, but only the ILO proposes some concrete indicators. This dimension would be monitored by the union density rate, the coverage rate of unions, and the frequency of strikes and lockouts.

Some categories of the ILO "decent work" indicators do not have a direct correspondence in the EU notion of job quality. For example, child labour is not included in the EU definition of job quality, mainly because this issue is less relevant for the evaluation of the European labour markets. However, a significant problem of child labour still remains in few European countries, such as Bulgaria and Romania. In the former, a number of actions coordinated by the ILO are currently being undertaken in order to reduce chid labour, notably in the agriculture sector. In Romania, the International Programme on the Elimination of Child Labour (IPEC) tries to tackle the problem of working streets children (ILO, 2002). Furthermore, this issue could also be relevant for the appraisal of candidate countries.

Social security (see category 8 in table 2.3) is also explicitly included in the ILO approach whereas it is absent from Laeken indicators. In a more general perspective, it has been recently reintroduced though the flexicurity component of job quality, which implies “modern social security systems”[12], and it is also included in the Open Method of Coordination for Social Inclusion, which involves a series of indicators that are part of the Lisbon Strategy. If security is at stake, the coverage of social security systems and the generosity of replacement rates are also important[13]. This kind of indicators cannot be calculated only using surveys, but should also be based on a qualitative analysis of the legislation.

Finally, some dimensions are more detailed in the EU perspective. For example, education

[12] COM(2007) 359, see above 1.5.
[13] “Feasibility study: indicator on coverage of social security systems for people in flexible employment”, study undertaken by Alphametrics Ltd for DG-Employment

and lifelong learning is more developed in the European definition. The indicators focusing on gender disparities and the balance between working and non-working life are also more detailed in the EU definition, but the segregation phenomena may be more explicitly described in the ILO list which includes not only an index of gender segregation, but also the female share of employment in managerial and administrative occupations.

Table 2.1 : The "decent work" framework according to Ghai (2003)		
Dimension	**Sub-dimension**	**Indicators used**
Employment	Employment opportunities	Employment rate
		Unemployment rate
	Remunerative employment	Poverty rate
		In-work poverty rate
		Human development indicator
	Working conditions	
Social security		Public social security expenditure
Fundamental rights	Forced and child labour	Proportion of child labour
	Discrimination at work	Percentage of women among administrators and managers and professionals and technicals
		Earned income shared by women
	Freedom of association	Civil liberties index
		Union density
		Collective bargaining
Social dialogue	Collective bargaining	
	Economic democracy	
	Participation at the national level	

The analysis of Ghai (2003) applied to developed countries	
Dimension	**Indicators**
Gender disparities	Female labour force participation
	Female administrative and managerial workers, female professional and technical workers
	Female/male unemployment rate
Employment	Labour force participation
	Unemployment rate
	Gini Coefficient
Social security	Public social security expenditure as percentage of GDP
Social dialogue	Union membership as a proportion of employees

Table 2.2 : The "decent work" framework according to Anker et al. (2003) and ILO (2006)		
Category 1: Employment Opportunities		
1. Labour force participation rate	2. Employment-population ratio	3. Unemployment rate
4. Youth unemployment rate	5. Share of wage employment in non-agricultural employment	
Category 2: Unacceptable Work		
6. Children not in school	7. Children in wage employment	
Category 3: Adequate Earnings and Productive Work		
8. Inadequate pay rate	9. Average earnings in selected occupations	10. Employees with recent job training
Category 4: Hours of work		
11. Long hours of work	12. Time-related underemployment rate	
Category 5: Stability and Security of Work		
13. Tenure less than one year	14. Temporary work	
Category 6: Fair Treatment		
15. Occupational segregation by sex	16. Female share of employment in managerial and administrative occupations	
Category 7: Safe Work		
17. Fatal injury rate	18. Labour inspections.	19. Occupational injury insurance coverage
Category 8: Social Protection		
20. Public social security expenditure	21. Public expenditure on needs-based cash income support	22. Beneficiaries of cash income support
23. Share of population over 65 benefiting from a pension	24. Share of economically active population contributing to a pension fund	25. Average monthly pension
Category 9: Social Dialogue and Participation		
26. Union density rate	27. Collective wage bargaining coverage rate	28. Strikes and lockouts

Section 3 – Complementary indicators

On the basis of the theoretical framework proposed in the first paper, our analysis of job quality will be based on four main dimensions that roughly correspond to the EU's dimensions of job quality as defined by the Laeken indicators (and also to the ILO "decent work" concept), but at a more aggregate level.

A reduced number of dimensions can help taking into account some complementarities between several aspects of job quality (e.g. gender equality and work/family life reconciliation, or the security of job contracts and transition probabilities in the labour market). In addition, from an evaluation perspective, it might be more effective to monitor job

quality using a limited, but more visible, number of indicators.

These synthetic four dimensions are the following:

- Socioeconomic security, corresponding to the Laeken dimensions 1, 5, 6, 9;
- Training, corresponds to the Laeken dimensions 2 and 10;
- Working conditions, corresponding to the Laeken dimensions 4 and 8;
- Reconciliation of work/family life and gender balance, corresponding to the Laeken dimensions 3 and 7.

The Laeken indicators are at the centre of the databases used and of the empirical analysis carried out in the third chapter. However, a number of variables were added to the Laeken set of indicators in order to address some issues raised by various theories, having a direct bearing on job quality. Although the Laeken definition provides a broad coverage of job quality issues, it excludes some paramount dimensions of job quality, such as wages and work intensity. We envisage adding a wage variable to the set of indicators used in order to characterise job quality. We will add both an indicator of wage levels that is comparable across countries, namely the mean wage in purchasing power parities, and an indicator of wage "dispersion", namely the working poor rate, which has been adopted in the framework of the Open Method of Coordination (OMC) for Social Inclusion. These wage indicators are part of the socioeconomic security dimension.

Whenever possible, supplementary variables were added to the database in order to get a better view of different aspects of job quality. Concerning the skills and training dimension, the Laeken indicators of job quality focus only on the occurrence of job vocational training episodes, neglecting aspects related to the volume or intensity of these activities. For that reason, we added variables for the average number of hours spent on formal training, the cost of formal training by participant, and the participation rate in informal vocational training. It was difficult to find a time-series variable that would capture these qualitative aspects related to vocational training. We propose an indicator that can be calculated using the LFS.

In order to evaluate and monitor working conditions, we used both administrative data gathered by Eurostat on accidents at work and declarative data from the 4th European Survey on Working Conditions (ESWS) managed by the European Foundation for the Improvement of Living and Working Conditions. The 4th ESWC gives information on physical risks and pains, stress, working hours and working conditions. It provides a rich overview of working conditions from a European perspective, which goes beyond the Laeken indicator of serious

accidents at work. The richness of the ESWC should be qualified however in two ways, first by the fact that this is a small sample survey, and second because it is available only every five years. As regards time-series data, working conditions data were gathered from the LFS questions concerning unsocial working hours (e.g. work on Saturdays on Sundays).

We have constructed two databases. The first presents comparable cross-section data for various job quality indicators, mostly covering the period 2005-2006. It provides the wider coverage possible in terms of Laeken indicators, together with some supplementary variables on some aspects that are neglected (or remain underdeveloped) in the EU concept. The second covers a longer period (1983 to 2004 for 6 countries; 1995 to 2004, for 12 countries at the beginning and 18 at the end of the period), but the availability of indicators is more limited. We have mainly constructed this second data base using the European *Labour Force Survey* (LFS)[14].

A detailed list of the two databases is provided in appendix A.

[14] Although some limitations in the public data base, due to anonymisation, do not enable researchers to calculate some indicators (especially those related to wages or more complex indicators which would necessitate the use of the identifying number).

Third paper: Job quality regimes in the EU

The empirical analysis of job quality regimes in Europe starts from the Laeken indicators, supplemented by a number of additional variables, either to deal with some interpretation problems, or to take into account the conclusions from the theoretical framework.

The aim of the empirical investigation is twofold: first, proposing a taxonomy of Member States based on the Laeken indicators, together with some supplementary variables for the period 2005-2006; second, characterising the dynamics of job quality over the last ten to twenty years. The focus here is also on the 27 Member States, but data availability constraints limit in practice the dynamic (or time-series) analysis.

The analysis proceeds in three steps. First, section 1 presents a taxonomy of Member States based on the complete set of Laeken indicators. Second, section 2 considers introducing a number of supplementary indicators necessary to analyse some aspects of job quality. These analyses include the 27 EU Member States and are based on the most recent data available, mainly covering the period 2005-2006. Thirdly, in section 3 a time series analysis of job quality is carried out across EU Member States, using the longitudinal data base. The scope of the latter approach is more limited, given the availability of time series data. Nevertheless, all new Member States present in the LFS user's database are covered for a maximum number of years in the period 1983-2004.

Section 1- How many models of job quality are there in Europe? An analysis based on the Laeken indicators

1.1 Methodology: PCA and cluster analysis

Principal Components Analysis (PCA) is used (see Box 1) in order to obtain a comparative view of job quality regimes in Europe, taking into account their different dimensions. PCA identifies a limited number of factors or components that can account for most of the correlation matrix of the variables considered in the analysis. PCA is followed by a cluster analysis. The objective of this tandem approach is first to map job quality and then to group Member States in a few distinctive clusters.

Box 1: Principles of PCA and a guide for reading the Figures.

Principal Components Analysis (PCA) is a technique to describe large correlation matrices[15]. The value added of PCA is its ability to "reduce" large datasets to a few factors or principal components. Linear combinations of the principal components should be able to account for a high proportion of the total variation in the original data. A very useful property of PCA is that the principal components are uncorrelated and thus they can be seen as representing different "statistical dimensions" of the original dataset. However, it must be stressed that PCA cannot always reduce a large number of variables to a small number of transformed variables. In fact, a significant saving in reducing the dimensionality of the data set can only be obtained when the original variables are highly correlated (either positively or negatively). PCA is of no value if the original variables are uncorrelated.

The greater the proportion of the variation in the data explained by the first two axes, the better the graphical representation.

The contribution and meaning of these axes are detailed. The third and following axes are also mentioned when they provide valuable information.

For each PCA, two figures are presented. The first shows the contribution of each variable to the first two axes[16]. The second figure presents the factor scores for EU Member States on the first two axes. The size of each point is proportional to the relevance of each country in defining the space represented by the first two axes[17].

The description of clusters analysis is made in appendix B.

The first step of the clustering which is called hierarchical ascending clustering method consists in gathering together the most resembled individuals or classes of individuals according to the Ward criterion (minimization of inter-classes and maximisation of intra-classes). The output of this step is a classification tree or dendrogram that is presented in annex. In a second step, the tree is partitioned in order to get an optimal number of clusters. Several partitions are proposed by the software. Generally, we have chosen an intermediary number of clusters (for example, 5 instead of 3 or 10). These clusters should be considered with care, as it appears that adding or suppressing few variables can slightly modify the clusters. But the position of the countries on the map exhibits only small variations.

[15] The software used for these PCA is SPAD.

[16] The variables are all active.

[17] For the global analysis based on Laeken indicators, given the relatively high number of variables, we only show the representation of countries' positions (second figure).

1.2 The results: Five regimes for the EU27

Figure 3.1 presents the results of a PCA based on the full set of Laeken indicators (both key and context indicators) covering the period 2005-2006. The first axis explains 36.4% of the total variation (in the correlation matrix) and the second 18.9%. The first axis is positively correlated with participation in education and training and employment rates. Although to a lesser extent, job satisfaction and childcare services are also positively correlated with the first axis. This axis is negatively correlated with long term and youth unemployment rates.

The second axis is positively correlated with the proportion of people who have achieved upper secondary education (ISCED 3) and productivity growth; and negatively correlated with the proportion of early-school leavers, the employment rate of low educated people, and the gender employment gap.

The third axis accounts for 8.6% of total variance in the data and is mainly defined by the proportion of early school leavers, the evolution of work accidents, and inequalities on the labour market (women, seniors and young people).

Figure 3.1- Job quality in the EU 27 according to Laeken indicators (2005-2006)

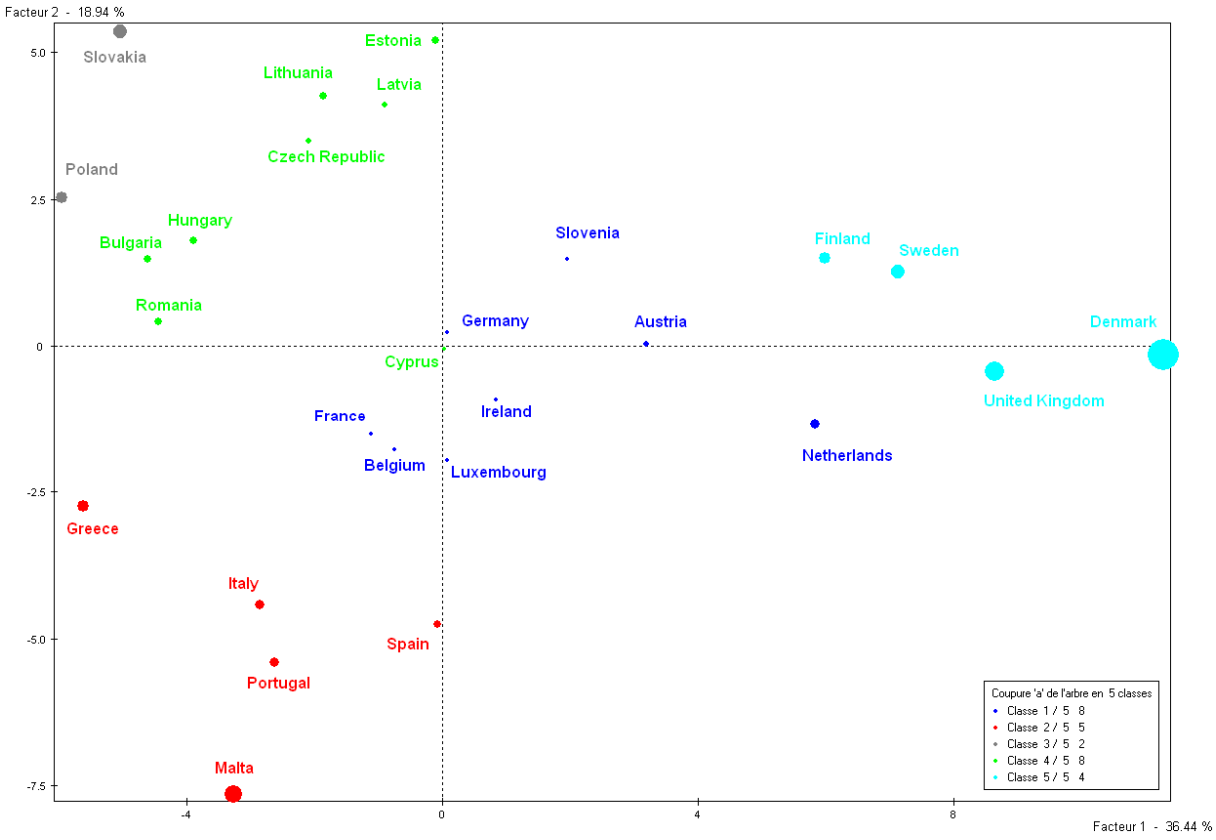


Figure 3.1 maps job quality in Europe in the first two dimensions of the PCA. Furthermore, a cluster analysis divides the 27 EU Member States into five clusters. Figure 3.2 shows the position of each cluster in terms of the Laeken key indicators.

A *Northern* cluster includes Sweden, Denmark, Finland and the United Kingdom. A *Southern* cluster includes Spain, Italy, Portugal, Greece and Malta. A *Continental* cluster groups Germany, France, Belgium, Luxembourg, Austria, the Netherlands, Ireland and Slovenia. Apart from Malta and Slovenia that respectively join the *Southern* and the *Continental* clusters, the new Member States are divided into two groups: a first one composed of Estonia, Latvia, Lithuania, Cyprus, Czech Republic, Hungary, Bulgaria, and Romania and a second one that contains Poland and Slovakia.

The results of this cluster analysis have some common features with previous results for the EU15 (Davoine, Erhel, 2007)[18]. Compared to Amable's and the extended Esping-Andersen's typologies, the so-called "liberal model" disappears. The United Kingdom is included in the *Northern* cluster, while Ireland joins the *Continental* one. As it has already been mentioned in a previous paper (*ibid*), this counterintuitive result reflects the existence of functional equivalences across different institutions and/or policies that are equally successful in improving job quality.

The *Northern* cluster is on the right hand side of figure 3.1, being characterised by high participation rates in education and training and high employment rates, close already (or even above) the European Employment Strategy (EES) targets for 2010. Job satisfaction is also higher than in other countries: almost 90% of workers are satisfied with working conditions. Childcare structures are very well developed compared to the rest of Europe. These characteristics are illustrated by the descriptive figures presented below (figure 3.2).

The *Southern* cluster is characterised by a high proportion of early school leavers. These countries experience high gender employment gaps (even if Portugal has a small one) but little segregation, and low gender pay gaps. Their relative performance in terms of education and training is poor, although Spain performs relatively better in this respect.

The *Continental* cluster is close to the average EU situation regarding most of the indicators considered. For example, the countries in this group have average values for participation in education and training, the proportion of early school leavers, the proportion of people who have achieved the ISCED3 level of education. Furthermore, this cluster is characterised by high productivity and important differences in employment rates between seniors and the rest

[18] See appendix C for the corresponding figures.

of population. This high level of inequalities between generations on the labour can be seen on the third axis. However, there is some heterogeneity in this group. For example, Austria and the Netherlands tend to be closer to the *Northern* cluster. This can be explained by their relatively high participation rates in education and training compared to other *Continental* countries. Slovenia joins the *Continental* cluster in the PCA carried out in this section, because of its relatively good performances in terms of employment rates, and education and training compared to the other new Member States.

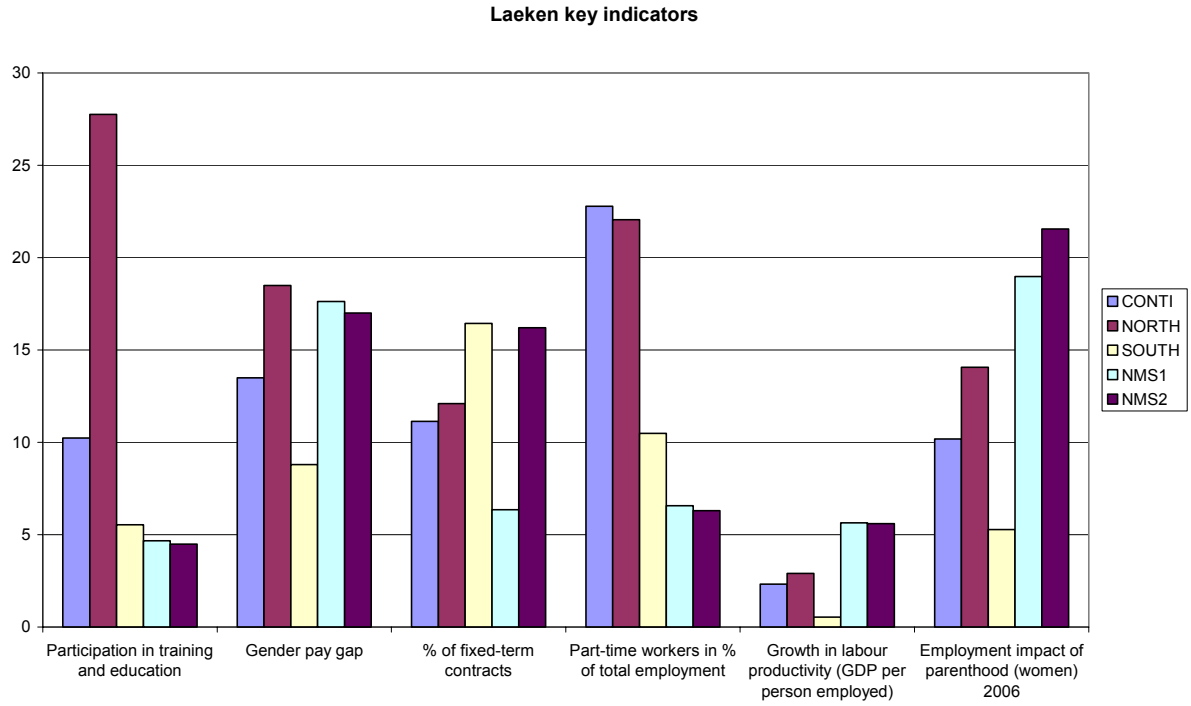
Although Ireland and the UK have many common features, such as a low level of long term and youth unemployment rates, high job satisfaction, low provision of public childcare services, they do not belong to the same group. That is mainly due to their marked different performances in terms of education and training: the UK is characterised by a high proportion of people participating in training measures (26.6%), which compares with only 7.5% in Ireland.

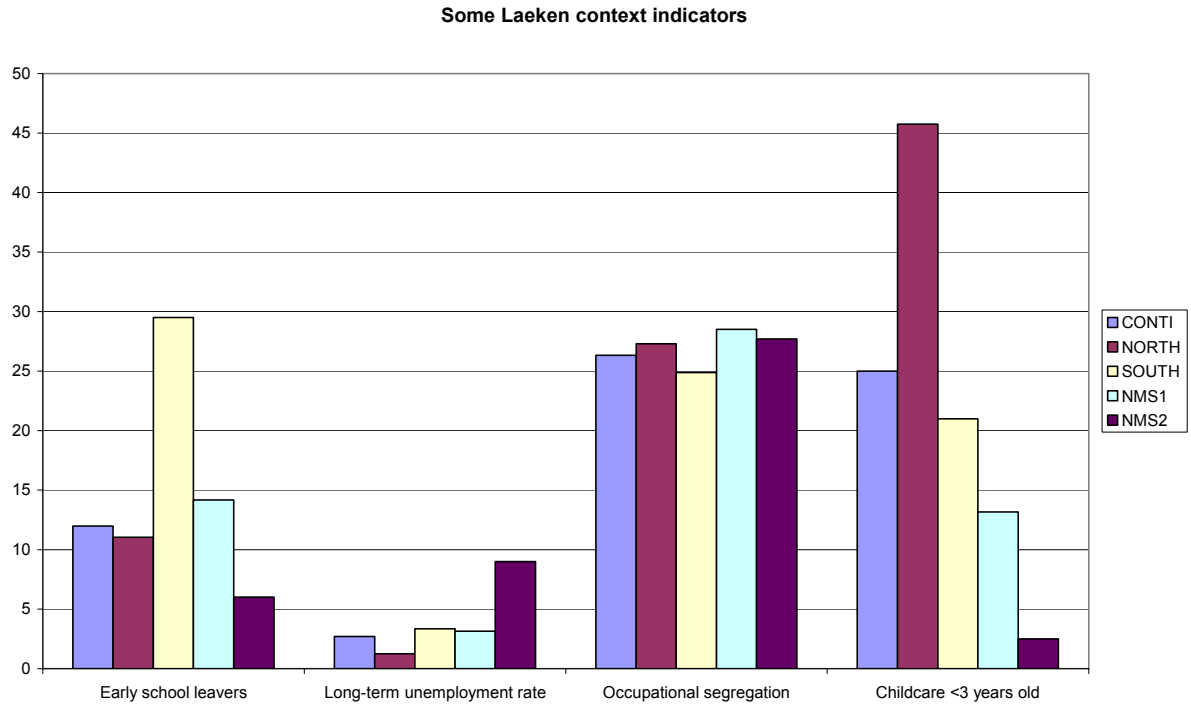
In New Member States, participation rates in training are low, while low-skilled employment rates are also rather low. Poland and Slovakia exhibit high long term unemployment rates and low employment rates. The other New Member States are mainly characterised by very low levels of productivity but high rates of productivity growth, which is typical of countries in a catching-up process. Workers in this group are less satisfied than in other countries.

As regards initial education, the performance of new member states is very good: they have a low proportion of early school leavers and a rather high proportion of people who achieve the ISCED3-level of education. However, Bulgaria and Romania perform less favourably than the other countries in the group.

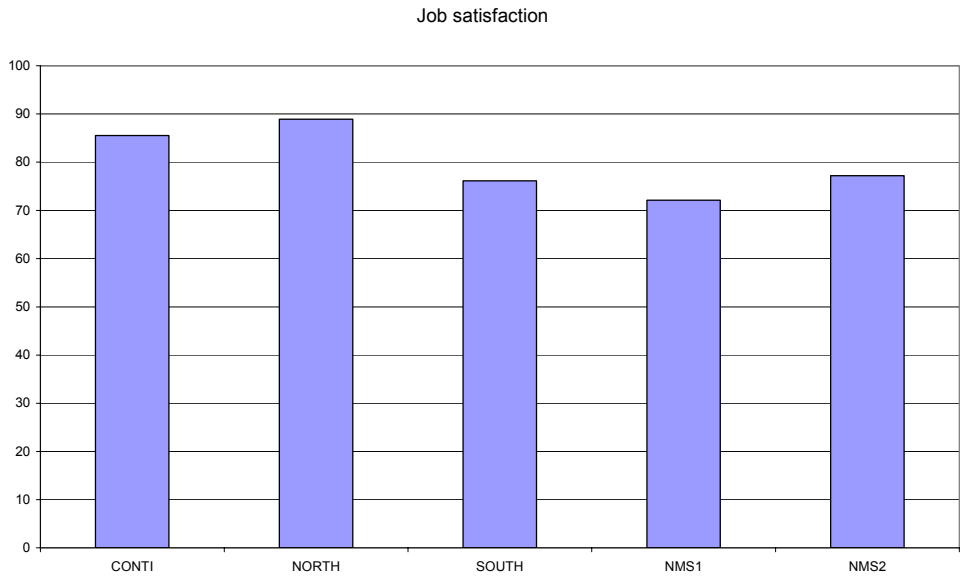
All considered there is a significant degree of heterogeneity across the EU27 as regards job quality. As suggested by the institutional complementarity framework (e.g. Amable, 2006), different institutional settings can lead at times to similar performances i.e. there might be functional equivalence. For instance, the UK is close to *Nordic* countries despite having different institutions. At this stage, these results suggest that there is no trade-off between job quantity and quality. Denmark, Sweden as well as the UK exhibit good outcomes in terms of employment quality as well as high employment rates.

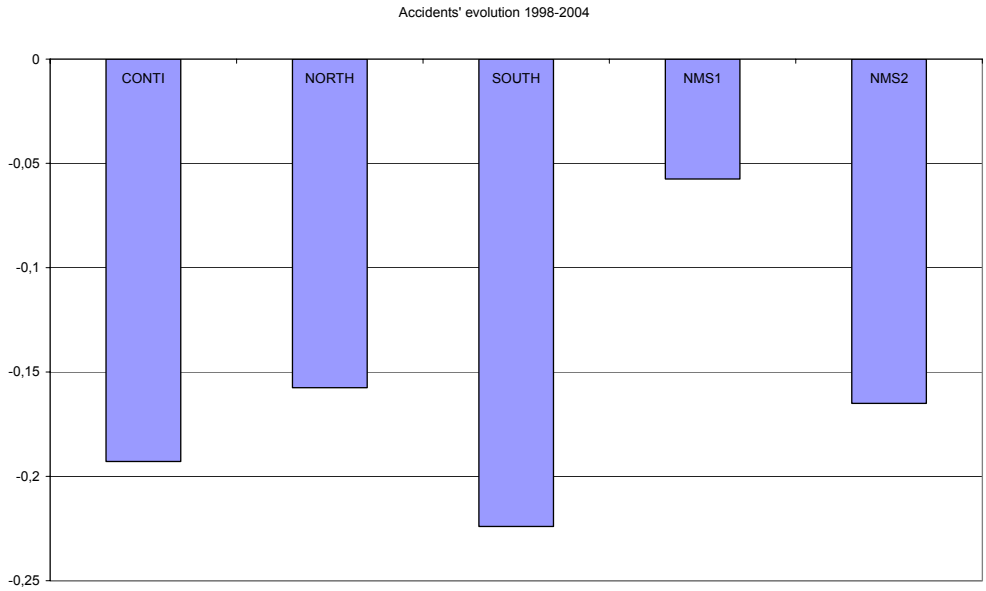
Figure 3.2: Some characteristics of the five regimes[19]





[19] NMS 1 refers to Estonia, Latvia, Lithuania, Cyprus, Czech Republic, Hungary, Bulgaria and Romania; NMS 2 includes Poland and Slovakia.


Job satisfaction
100
90
80
70
60
50
40
30
20
10
0
CONTI
NORTH
SOUTH
NMS1
NMS2


Accidents' evolution 1998-2004
0
-0,05
-0,1
-0,15
-0,2
-0,25
CONTI
NORTH
SOUTH
NMS1
NMS2

Section 2- An extended approach of job quality

This part aims at identifying key variables that are absent from the Laeken indicators. The section proceeds in two steps. First it realises a disaggregated analysis, using the four synthetic dimensions of job quality that were defined in paper 2 (socio-economic security, education and training, working conditions and gender), and tries to identify the most important indicators. Second, it includes a selected sample of supplementary variables in the job quality indicators, and analyses the consequences of these additions on the comparative results.

2.1 What supplementary indicators? A disaggregated approach

Job quality can be disaggregated into four dimensions corresponding to the theoretical analysis (see paper 2). Some of them are quite well represented in the Laeken indicators, like training or gender, others are hardly present, like socio-economic security and working conditions. For each of these dimensions, PCAs have been performed on a set of indicators that enable to identify those variables that bring important information. The correlation circles allow visualising correlated indicators (that may be redundant in the analysis of job quality) and independent indicators (that should be integrated to get a broader view of job quality)[20].

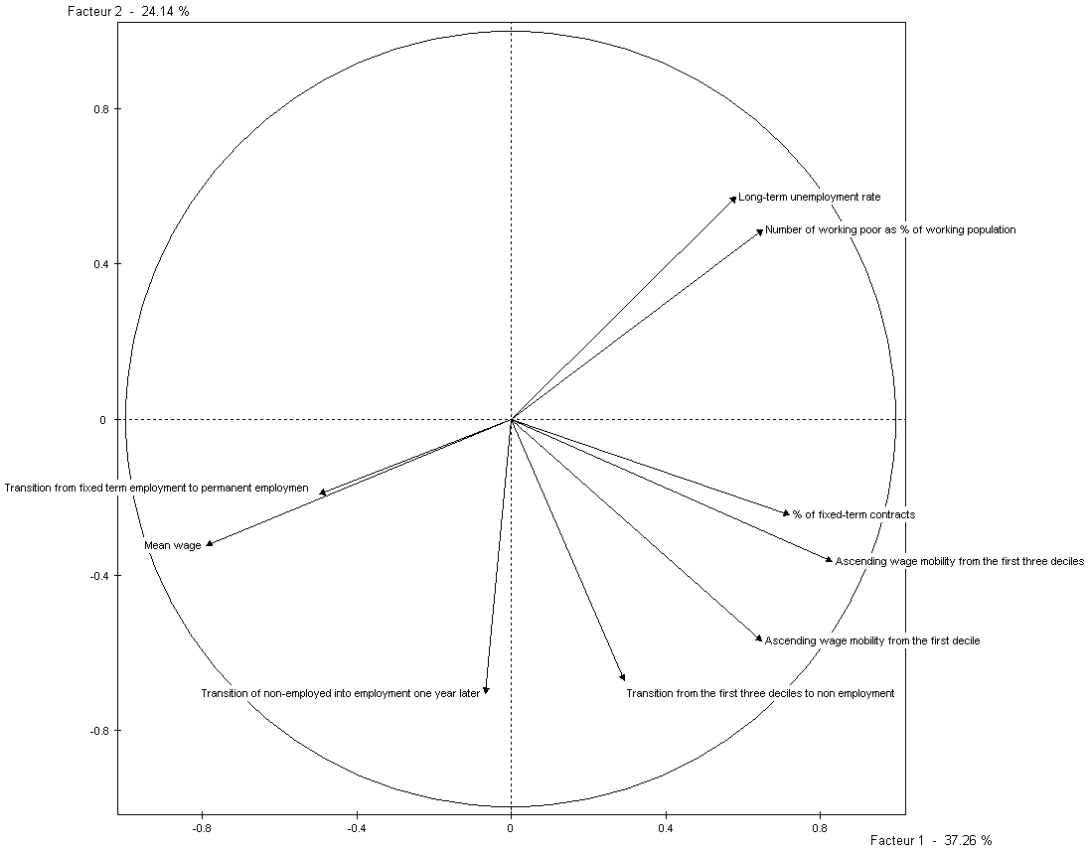
- Socio-economic security

The Laeken indicators take into account the transitions between different economic situations, but the only indicator about the present level of economic security is the proportion of fixed term contracts. The levels of wage and income dispersion are absent (whereas they are crucial in economics analysis and job satisfaction studies). This PCA[21] shows that transitions rates are not correlated to the level of wage and the working poor rate. Thus, it is necessary to add these two variables to get a global picture of socio-economic security.

[20] In this section, we focus on variables and therefore we do not comment the corresponding clusters. These can be found in appendix B.

[21] This PCA is based on EU15 as no data is available on transitions for New Member States.

Figure 3.3: Job quality in the EU 15: socio-economic security (2000-2001)



- Education and training

Figure 3.4 displays the results of the PCA analysis for the skills and training component of job quality[22].

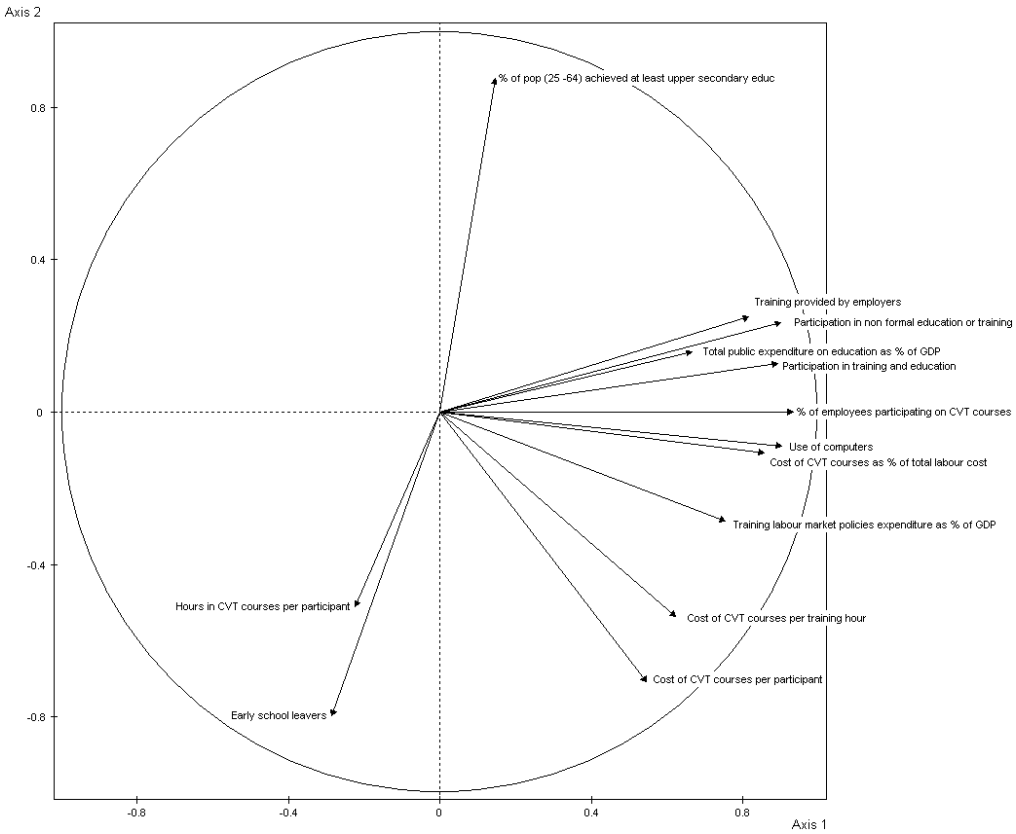
The first axis, accounting for 50.3% of the total variance in the data, can be interpreted as 'vocational training'. It is positively correlated with the percentage of employees participating to training and education[23], and the expenditure on labour market training policies. The second axis accounting for 20.9% of the total variance in the data can be named as 'initial education', because it is strongly positively correlated with the proportion of people who have achieved at least upper secondary education, and negatively correlated with the percentage of early school leavers.

[22] Appendix A: Description of the databases, 3-education and training.
[23] continuous vocational training as measured by the CVTS survey as well as all forms of training and education as measured by the LFS

The variables “hours” and "cost" in CVT courses per participant appear to be independent from participation rates in vocational training. They should thus be integrated in an enlarged framework of job quality.

The third axis is mainly defined by cost variables such as cost of training and public expenditure on education. Neither the proportion of early school leavers, nor the percentage of people who attained ISCED3 level of education seems to be correlated to expenditure on education.

Figure 3.4: Job quality in the EU 27: education and skills (2005-2006)



- **Working conditions**

In the principal components and clustering analyses carried out in this section, Laeken indicators are supplemented by a number of variables from the fourth European Working Conditions Survey (EWCS) (2006, European Foundation)[24].

[24] Appendix A: Description of the databases, 5-working conditions.

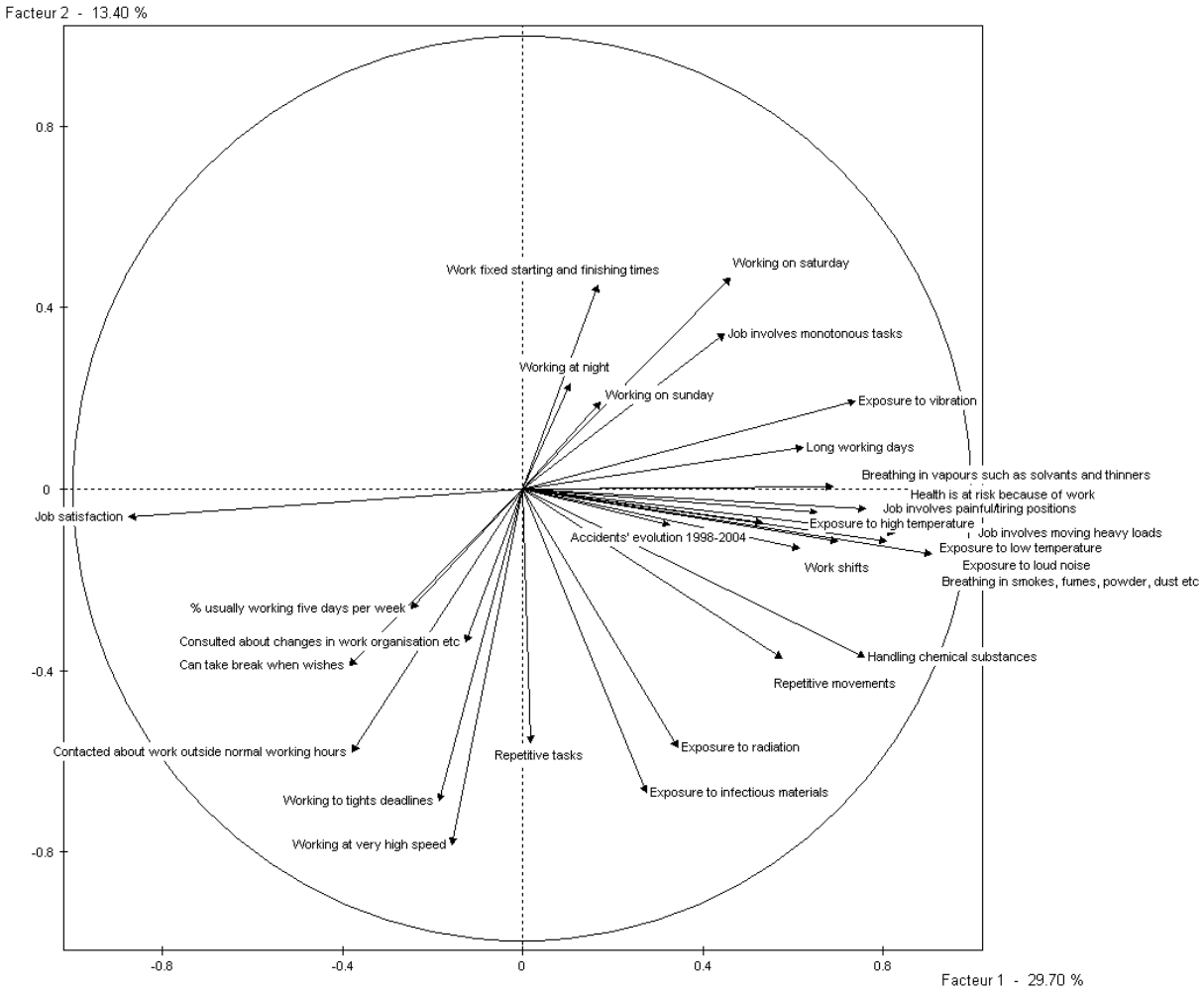
Figure 3.5 displays the results of the PCA analysis for the working conditions component of job quality[25].

The first axis, which accounts for 29.7% of the variance, sums up the physical risks associated with work, like "breathing in smokes, fumes, powder, dust, etc.", "job involves moving heavy loads". According to these results, the variable "health is as risk because of work" can summarise these physical risks in a broader approach of job quality. The opposite side of the axis is mainly characterised by high levels of job satisfaction.

The second axis, which represents 13.4% of the variance, can be interpreted as work intensity, with indicators like "working to tight deadlines" and "working at very high speed". This problem is absent from the Laeken definition of job quality, and should be integrated in the analysis. Besides, the results suggest that the Laeken indicator (accident's evolution) has only a limited contribution to the first axis. The variable on social dialogue does not seem to be correlated to indicators on working conditions. The variables summing up atypical hours contribute to the second axis but more strongly to the third axis.

[25] Appendix A: Description of the databases, 3-education and training.

Figure 3.5: Job quality in the EU 27 (2005-2006): working conditions



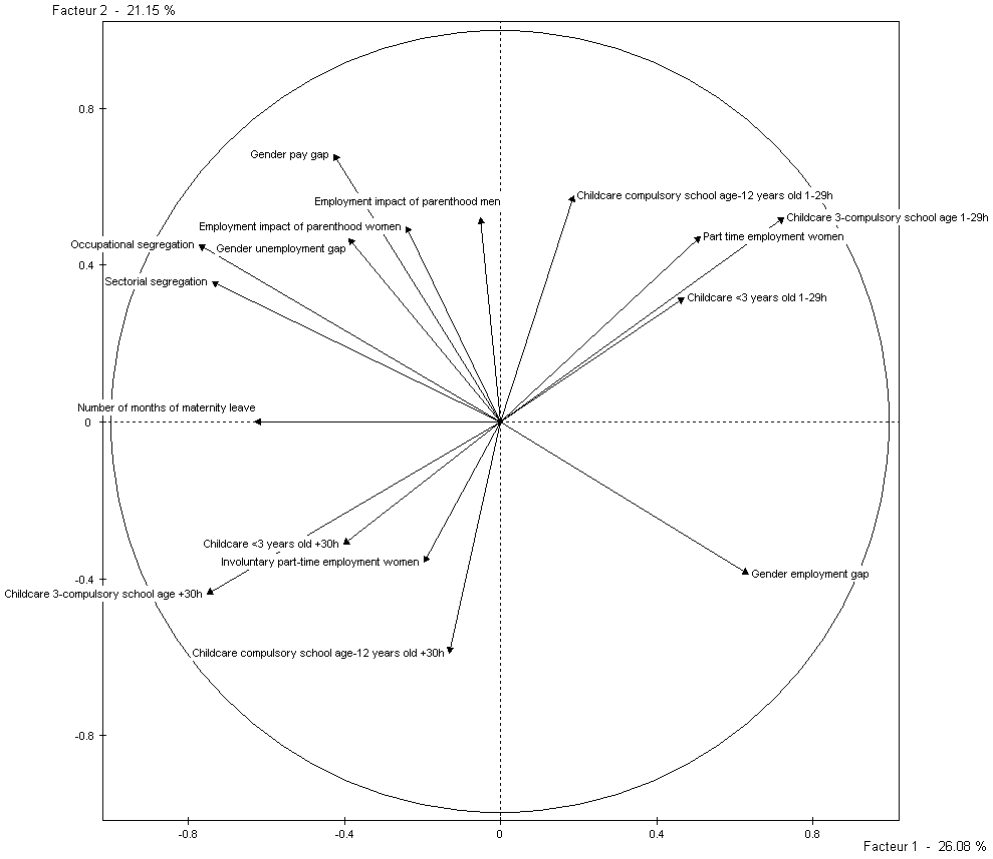
- **Gender balance and work and family life reconciliation**

The analysis made in this section is based on gender balance and work and family reconciliation indicators[26].

Figure 3.6 displays the results of the PCA analysis for the gender component of job quality[27].

[26] Appendix A: Description of the databases, 4-gender balance and work and family life reconciliation.
[27] Appendix A: Description of the databases, 3-education and training.

Figure 3.6- Job quality in the EU 27 (2005-2006): gender balance and work and family life reconciliation



This PCA displays two main results. Firstly, a trade off between women's employment and occupational or sectoral segregation appears on the first axis: a high women's employment rate is associated to high segregation. The second axis shows an opposition between gender employment gap and gender pay gap: when the participation of women is low, the wage gap appears also lower, which can be explained by the fact that the low educated women tend to remain inactive. Secondly, when childcare structures are open less than 30 hours a week, more women work part-time.

Globally these results suggest that there are only limited redundancies inside the Laeken indicators: that's why they should all be integrated in an analysis of job quality.

These analyses make clear the necessity of integrating supplementary indicators of job quality, which was already suggested by the theoretical approach developed in paper 1.Moreover, the disaggregated approach also leads to countries clusters that differ from those

obtained using Laeken indicators (see table B1 in appendix B[28]), suggesting the sensitivity of taxonomy to the introduction of new variables.

2.2 A second taxonomy of job quality

The set of Laeken indicators may be improved to get a better definition of job quality and to allow relevant comparisons between European Member States. The aim of this part is to propose an alternative set of job quality indicators, and to compare the new taxonomy with Laeken results (detailed in section 1).

The definition of this set of indicators relies on the following principles. First Laeken indicators are sometimes redundant (for instance total employment rates and employment rates by age groups): this new analysis does not decompose variables as far as in the Laeken definition. Second, the weight given to each dimension is a crucial question that has to be raised for any analysis of job quality. In this regard, the Laeken portfolio is not satisfactory: for example, there are many indicators measuring participation in training and education, but only one for working conditions. This new analysis aims at giving equal importance to each of the four dimensions of job quality mentioned above. Third, some important dimensions of job quality are not included in the definition of Laeken and should be integrated to the set of indicators. We have introduced some complementary indicators, such as wage level, work intensity, and characteristics of training, following the results obtained in 2.1[29].

In this new PCA, the first axis accounts for 26.4% of the total variance in the data. This axis is defined on its left-hand side by relatively bad performance of the labour market (long-term unemployment rate, involuntary part-time employment, youth unemployment ratio), but also by bad working conditions (health at risk because of work, long working days, painful or tiring positions) and by a high in-work risk of poverty. On the right-hand side, countries are mainly characterised by high mean wage, job satisfaction, training and use of computers, and high employment rates, but also by the proportion of part-time workers and high productivity.

Two of the four main dimensions of job quality are represented on the first axis: socio-economic security and working conditions. It seems that bad working conditions are

[28] The corresponding figures are also presented in appendix B.

[29] As the transition rates are not available for the New Member States, we use a subjective indicator from the Dublin Foundation Survey ("my jobs offer good mobility prospects").

correlated to economic insecurity (in-work risk of poverty and long term unemployment). The issue of work intensity is more accurate in countries with high wages and relatively good socio-economic security. These results confirm the synergy between quantitative and qualitative performance, as bad working conditions and high in-work risk of poverty are correlated to the indicators that represent the more quantitative aspect of job quality, namely employment and unemployment rates.

The second axis that accounts for 16.5% of the variance in the data is defined on its positive part by large gender employment gap and low educational attainment but also by the cost of CVT courses per participant. The negative part of the axis is characterised by high proportions of people who have achieved at least upper secondary education, increases in growth productivity, and high segregation between men and women on the labour market coupled with large gender pay gap and long maternity leave. The two main aspects of job quality that are represented on this axis are gender and initial education (whereas vocational training is rather represented on the first axis).

The third axis is mainly about gender issues and working conditions, with variables that do not appear in the two first axes (childcare, working at night, repetitive tasks).

The clustering analysis is very similar to the one based on Laeken indicators: all countries belong to the same clusters apart from the Cyprus that join the Continental cluster and the Netherlands that joins the Nordic cluster. Furthermore, Poland and Slovakia are included in the group of New Member States. The comments will be focused on the impact of the new variables that are introduced to complement the Laeken set of indicators.

This new PCA reinforces the opposition between Northern countries and most of new member states in terms of working conditions and socio-economic security. Northern countries are characterised by high wages and good working conditions but intensity at work is particularly high compared to the rest of Europe. Higher intensity at work is usually associated with bad working conditions. Indeed, intensification of work appears in recent studies as a factor of deterioration of working conditions. New forms of work organisation play an important role in the evolution of work intensity (Green, 2006).

On the contrary, New Member States experience low socio-economic security (low wages and long term unemployment rate) and rather bad working conditions (long working days, health at risk because of work) but the intensity of work is much lower.

The introduction of a new variable on social dialogue seems to confirm that Southern countries are characterised by a lack of discussion between employers and workers about

work organisation. This is along the lines of Crouch's historical analysis on the conflicting social relations in Mediterranean countries.

This new set of job quality indicators allows qualifying more precisely and completely the specificities of the clusters regarding job quality. Some further changes in job quality indicators can be considered, like suppressing all quantitative labour market indicators, but they deviate far from the Laeken definition[30]. In general, these empirical results are quite surprising with regard to usual typologies, as far as the liberal model is concerned. Indeed the introduction of new variables on working conditions and socio-economic security does not change the position of the United Kingdom compared to Northern countries. This suggests that there are two pathways to a high job quality, which is consistent with some other recent analyses of labour market performances, based on more quantitative indicators (OECD, 2006). Besides, in order to display a distinct liberal model, comparative analysis of European labour markets requires institutional variables, especially job protection legislation (European Commission, 2007).

[30] We propose an example of such a change in definition in appendix B (PCA : an extended analysis of job quality (2)).
The positions of countries are relatively stable. The United Kingdom still belongs to the Northern cluster. However, the New Member States cluster is now split into two groups and Greece share some common characteristics with Poland and Romania.

Figure 3.7: A second taxonomy of job quality

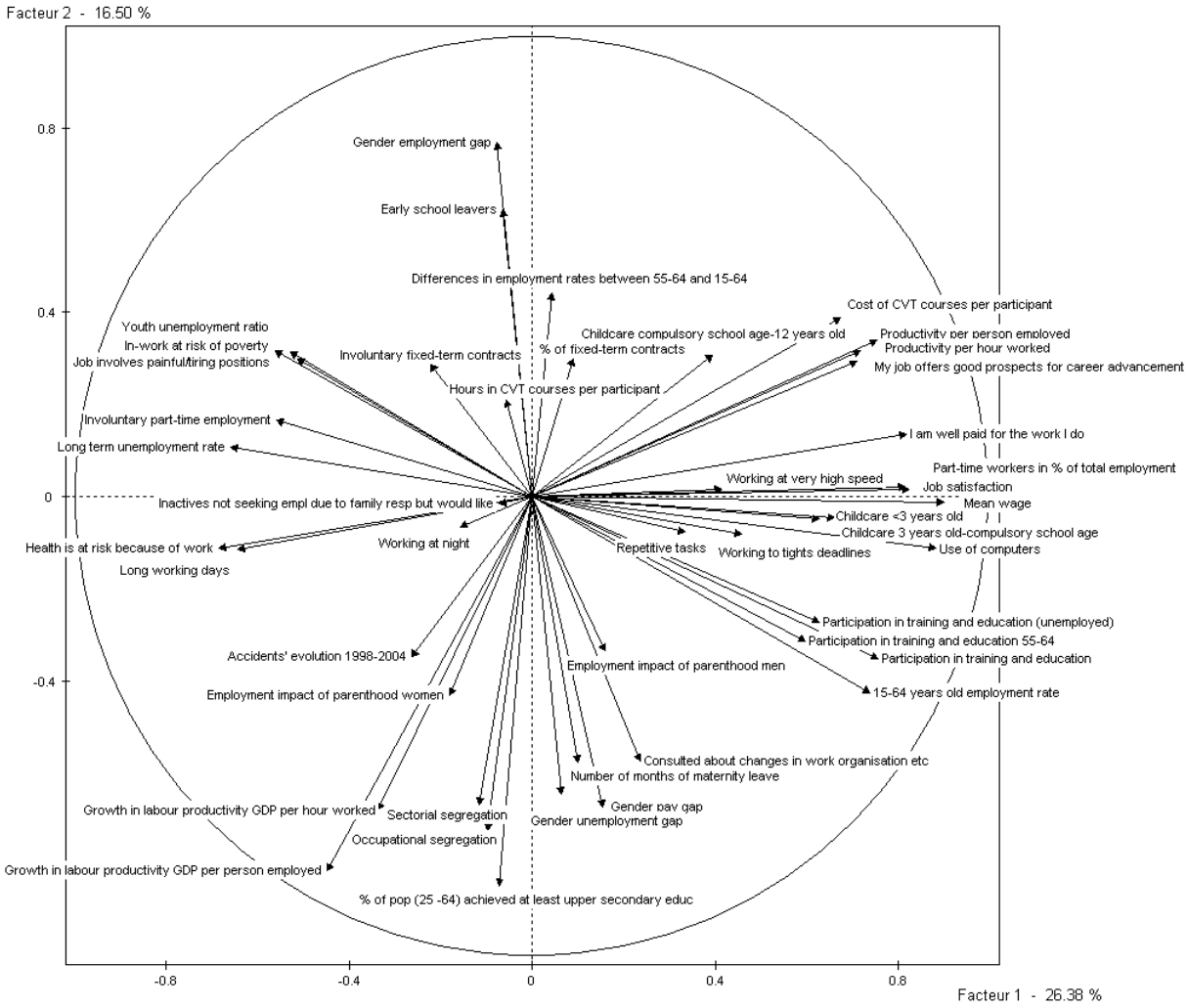
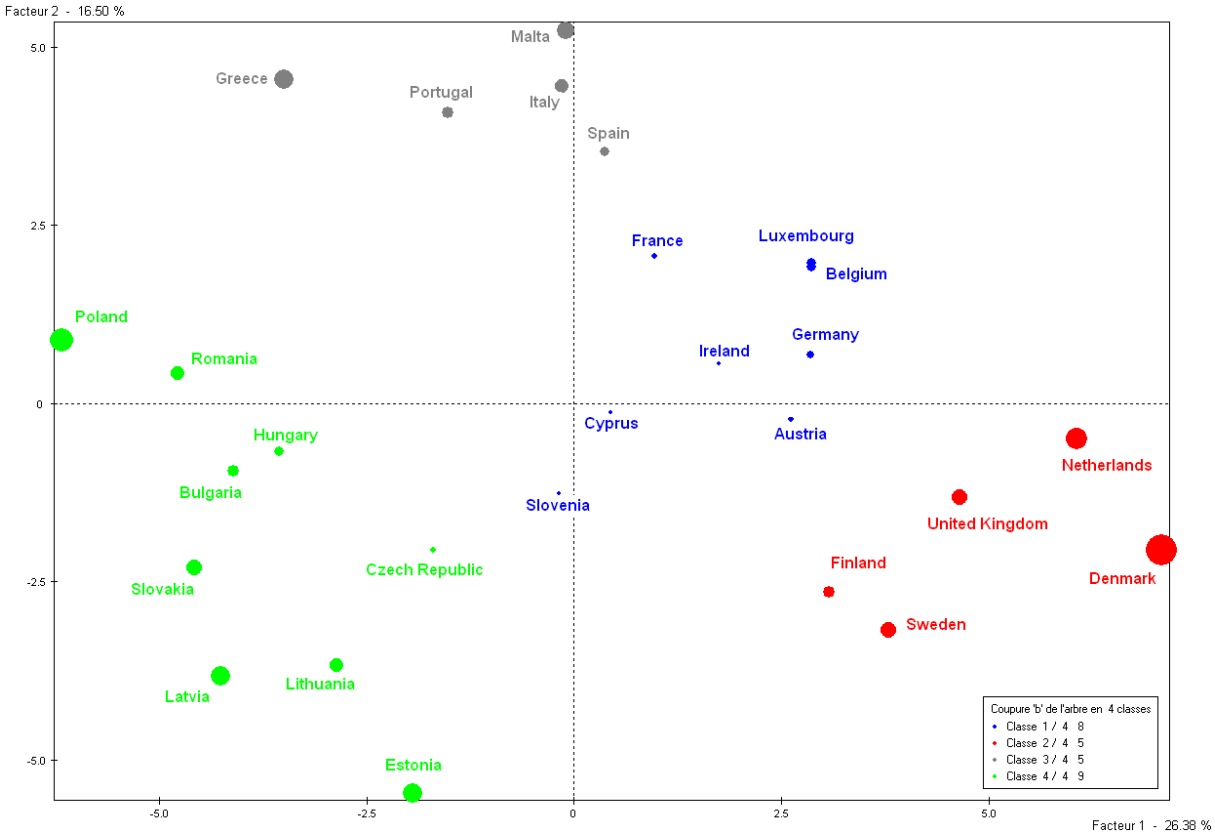


Figure 3.8: A second taxonomy of job quality



Section 3- A dynamic perspective

3.1 Methodology and data

This section uses two methodologies in order to study the time-series trajectories of job quality in EU countries. The first one is based on Kohonen maps. The second one builds some synthetic indicators.

- Kohonen maps

Kohonen maps (or self-organising maps) are a kind of multivariate data analysis technique first developed by Teuvo Kohonen (Kohonen, 1995; Akarçay-Gürbüz and Perraudin, 2002). Similar to PCA, Kohonen maps aim at grouping close observations/individuals, but on the grounds of a non linear (stochastic) algorithm. Given a random initial distribution of

observations on the map (that is usually either a grid or a string), the algorithm will regroup the closest observations in the same square. Each square in the grid represents a class, which is characterised by a code vector. Kohonen maps preserve the topological properties of the input space. In a Kohonen map, the neighbourhood of each square in the grid contains similar observations, while dissimilar observations are mapped in distant squares in the grid. Kohonen maps allow the visualisation of high-dimensional data in a low-dimensional grid, such as a two-dimensional topology (i.e. a grid) or a one-dimensional topology (i.e. a string). The number of units of the grid can be set arbitrarily. But after the mapping process, it is possible to reduce the number of classes by using a hierarchical classification algorithm, and obtain "super-classes" (that are represented by colours in the figure 3.9).

In order to deal with the time series dimension, we use a more specific technique, which was developed by researchers in the SAMOS-Centre d'Economie de la Sorbonne research centre (Aaron, Perraudin and Rynkiewicz, 2003), that can be defined as a constrained Kohonen map. Indeed, the input of each year is summarized in a one-dimensional map (a string), which has a fixed number of units (10 in figure 3.9), and the strings are placed side by side, in chronological order (from 1995 to 2004 in figure 3.9). But, since the initialization is a random selection, the comparison would be difficult from one year to another without constraint. That's why the algorithm developed by the SAMOS adds a temporal constraint, which brings similar observations in a close position over the years. Thus, it allows showing continuity in each string as well as in the temporal dimension, but the constraint is weaker in the temporal dimension. Besides, in a second step, the number of classes can be reduced by using a hierarchical classification on all the cells (regardless of the year). Thus, the constrained Kohonen maps are a useful tool to visualize the similarities over time and space.

-Synthetic indexes

Synthetic indexes are a complementary tool on the direction and magnitude of changes in job quality indicators over the last 10 to 20 years. They are calculated as the non-weighted arithmetic mean of standardised variables[31]. A minus or a plus sign are given to variables which decrease or increase job quality, respectively. Variables that have an ambiguous sign on job quality are not included. Variables are non-weighted to secure simplicity and transparency of the synthetic indexes[32].

[31] The variables are standardised over the all sample.
[32] Variables could be weighted, for example, according to their contribution to principal components.

Synthetic indexes are useful because they allow for an overview of job quality both on a cross-section and a time-series perspectives[33]. In addition, they are easy to build and flexible regarding the number of variables to include, the sign of their contribution, the weighting scheme, etc.

Synthetic indexes are calculated on overall job quality and on some of its dimensions, namely gender issues, flexibility of employment, and investment in education[34].

- **Databases**

According to previous analyses (section 2), the Laeken indicators are supplemented by indicators on wages, quality of training, and working conditions. Unfortunately, this extension is limited because many variables are not available during the whole period covered by the analysis. Concerning the database, we predominantly use the European Labour Force Survey (LFS), which allows calculating many Laeken indicators and some supplementary ones (for example, non standard hours). Furthermore, in order to facilitate the analysis and the interpretation of results, a limited sample is used to calculate an indicator of non-standard working hours (see annex for details).

The LFS users' database provided by Eurostat does not contain long series for Germany and the United Kingdom. Data for Bulgaria, Lithuania, Malta and Romania are also missing in the users' database. As regards other countries, data are available since their accession to the EU: Spain and Portugal (1986), and Austria, Sweden and Finland (1995). For the twelve Member States that joined after 2004, data are available since 1997 or 1998 for most of them (see table in appendix A). Some problems (breaks in the series, unavailable data) have led us to remove Ireland and Luxembourg from the sample for some analyses. Furthermore, some variables have been available since the beginning of the 1990's (e.g. non-standard hours and occupation breakdown). As Kohonen maps do not allow adding variables which are not available since the beginning[35], we run analysis for two periods: on a limited number of variables since 1983, and for more variables since 1995.

[33] Indexes of decent work have been also constructed by the ILO (Peek, 2006; ILO, 2006).

[34] Due to the absence of long time series for working conditions data, it was not possible to propose a specific index for this dimension. The existing variables (atypical hours of work) are nevertheless integrated in the global job quality index.

3.2 Job quality over time

The following presents the results of the dynamic analysis of job quality:

- Aggregate indicators, using Kohonen maps and a synthetic index.
- Disaggregated indexes, focusing on employment flexibility, and training.
- Finally, the evolution of some key job quality variables is described in detail.

- A global approach of job quality

The first map (see figure 3.9) shows the evolution of job quality across the EU since 1995. The main and persistent contrast appears to be between Northern countries, which are situated at the top, and Southern countries, at the bottom. Continental countries (France, Belgium) as well as Austria and the Netherlands stand most of the time in an intermediary position. New Member States display different situations. Although most of them are grouped in the middle of the map between 2002 and 2004, Poland stands at the bottom with Greece and Italy over the last two years.

The fact that a new super class appears from 2000 onwards indicates that heterogeneity in terms of job quality is growing in Europe, which is largely expected given the accession of twelve new Member States. This confirms the results obtained in the PCA and hierarchical clustering analyses carried out in the previous section, which show that the EU27 can be divided in four or five classes on the basis of job quality indicators, while the EU15 can best be divided only in three groups. This does not mean that new Member States systematically belong to the same group: Cyprus is closer to Spain and Portugal, and Poland belongs to the same super class of Greece and Italy.

Given the absence of the UK, it is difficult to conclude for the existence of a liberal model. Ireland, when included in the sample[36], goes from an intermediary position at the beginning of the period to a very favourable situation between 2002 and 2004, where it joins the Nordic model (in blue).

Austria has also experienced such a positive trajectory, as well as France at the very end of the period. This suggests that job quality in Austria and France is in a process of catching up with that in Denmark, Finland and Sweden.

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[35] Nevertheless, it enables to introduce new observations (i.e. new countries) that become available over time. That's why some countries appear after 1995 on map 3.9.

[36] It was not possible to include it between 1998 and 2001, given missing values.

Opposite dynamics characterise some new Member States. Estonia has moved from the top of the grid to an intermediary position, close to Slovakia; while Poland has moved down and joined Greece and Italy at the bottom of the map.

Figure 3.9: A Kohonen map of job quality 1994-2004

ficelle	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1 1 1 1		Sweden	Finland Sweden	Estonia Finland	Estonia Finland Sweden	Finland Sweden	Denmark Finland Sweden	Austria Denmark Finland Sweden	Austria Denmark Ireland Sweden	Austria Denmark Ireland Sweden	Austria Denmark Ireland
2 2 2	Denmark								Finland	Finland France	Finland France Sweden
3 3		Finland	Austria Denmark	Sweden	Austria Denmark	Austria Estonia	Austria Estonia	Estonia	Latvia	Latvia	Latvia
4 4	Belgium France	Denmark		Denmark	Netherlands	Denmark	Hungary	Slovakia	Estonia Poland	Estonia Slovakia	Estonia Slovakia
5 5		Austria	Netherlands	Austria Netherlands	France	Netherlands	Belgium	Hungary Poland	Slovakia		Czech Republ
6 6	Ireland	Belgium	France		Belgium Hungary	Belgium France	Cyprus France	Belgium	Hungary Czech Republ	Hungary Czech Republ	Belgium Hungary
7 7		France	Belgium	Belgium France		Hungary		France	Belgium	Belgium	Cyprus
8 8 8	Greece Italy	Ireland Portugal	Ireland	Ireland	Spain Portugal	Italy	Spain Portugal	Cyprus Portugal	Cyprus France Portugal	Cyprus Spain Portugal	Spain Portugal
9 9			Spain	Spain Portugal		Greece		Spain	Spain		
10 10 10	Spain Portugal	Spain Greece Italy	Greece Italy Portugal	Greece Italy	Greece Italy	Spain Portugal	Greece Italy	Greece Italy	Greece Italy	Greece Italy Poland	Greece Italy Poland

The synthetic index of quality indicators (figure 3.10) gives similar results.

Figure 3.10: The synthetic index of job quality since 1995-2004

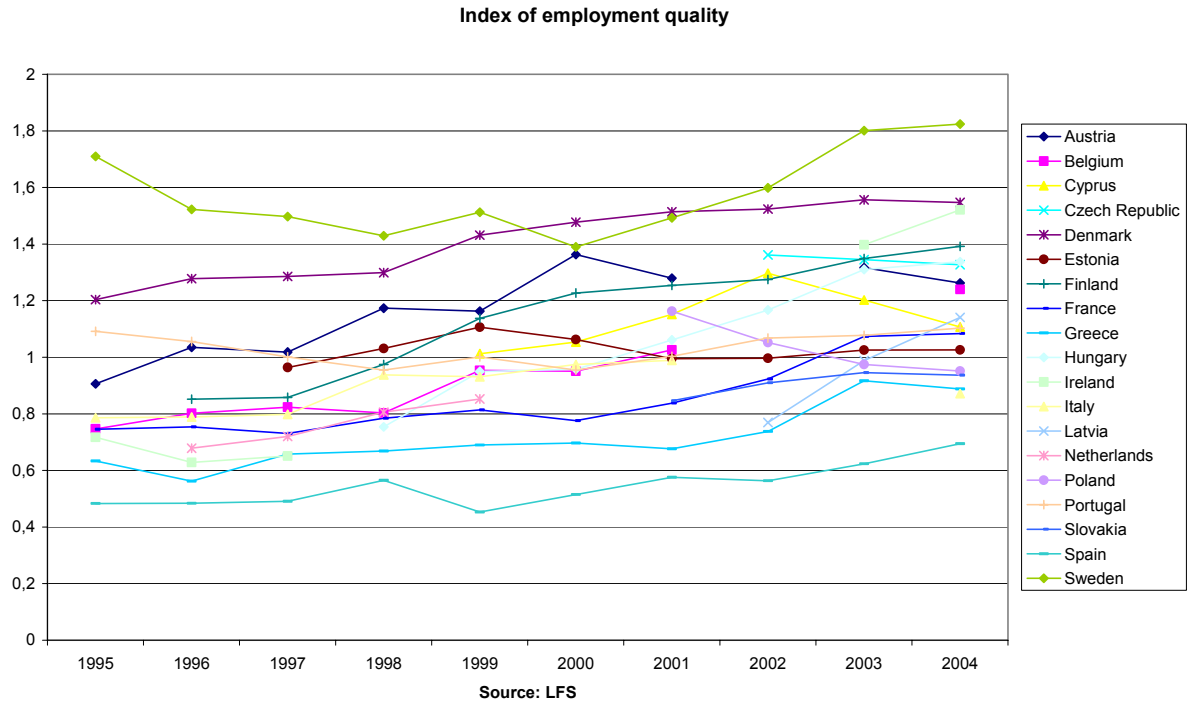


Figure 3.10 shows the contrast between Northern countries (especially Sweden and Denmark) with a high level of job quality over the last 10 years, and Southern countries that exhibit a low level (particularly Spain and Greece). New Member States are situated in intermediary positions, as well as Continental countries.

The trends of the synthetic index are consistent with the results from Kohonen maps, with most countries showing an improvement over time, except Poland, Estonia, and Cyprus. The positive trajectories for Austria, Ireland, and France resulting from Kohonen maps are confirmed using synthetic indexes.

Long term results for the period 1983-2004 (see appendix C) cover the EU15 and use fewer variables. Looking first to Kohonen maps, there is again a contrast between the top side, corresponding to high levels of employment quality, and the bottom side which corresponds to low levels. On this map, Denmark is at the top and Sweden and Finland joined it after the mid 1990s. This result suggests the homogeneity of the Nordic countries and their good overall performances in job quality. At the bottom of the map, Southern countries are grouped in the same unit or in neighbouring units. The intermediary position of Continental countries is also confirmed. Austria is frequently near the Nordic countries, as well as France. The classification reveals the existence of three super-classes: a Nordic cluster (in blue), a Southern cluster (in yellow) and an intermediary cluster (in purple). However, it should be

noted that Denmark and Italy are sometimes in the middle class. Moreover, all the Southern countries have joined the intermediary cluster since 1998. This result gives some empirical support to the idea of convergence between Member States and suggests that Southern countries are catching up.

On the whole these results show that the heterogeneity of job quality has increased across Europe since the 2004 enlargement. Some global convergence may be suggested on the basis of the EU 15, and in a long run perspective, but the results are not stable. However, some positive trajectories may be underlined, especially Austria, and Ireland.

Besides, our results show a positive trend in job quality, except for a few countries. They contrast with Green's (Green, 2006) conclusions on the deterioration of job quality, which is due in his approach to the intensification of work. Nevertheless, our framework does not include the same variables, and besides recent data on working conditions seems to display a stabilisation in work intensity over the last years in some countries (DARES, 2007).

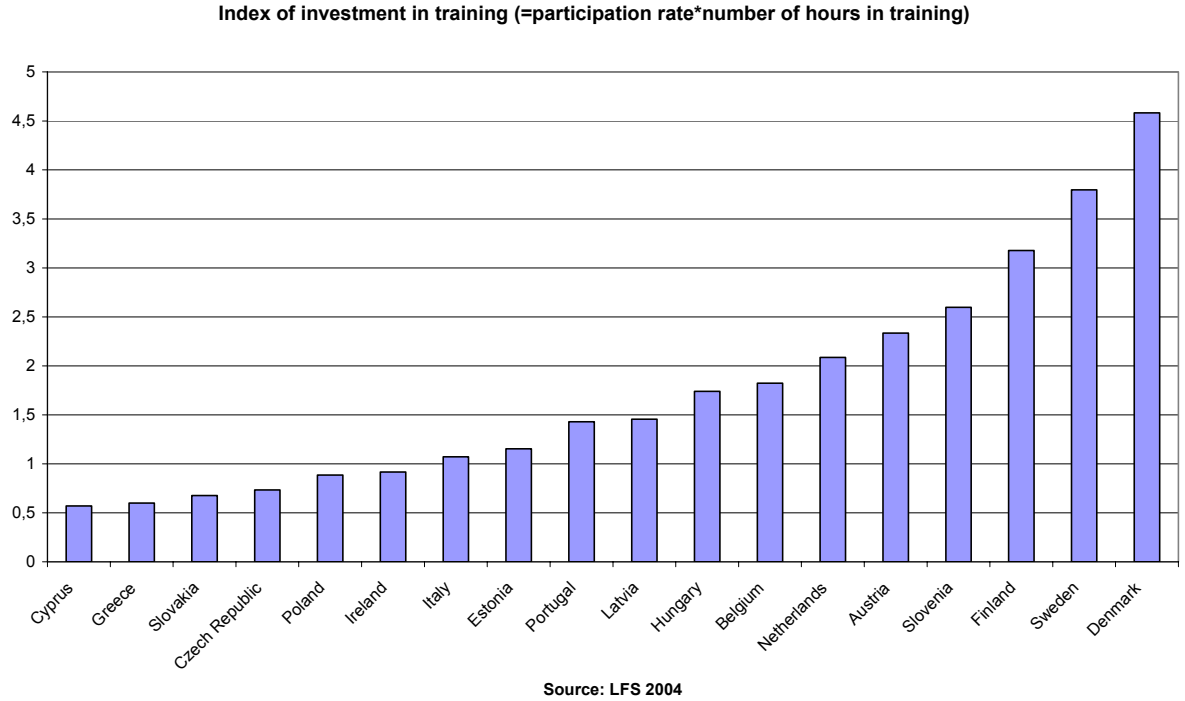
-Partial indexes

Partial indexes, focusing on a single dimension of job quality, are also very useful to monitor its evolution and the relative performances across countries.

As regards training, the previous results have shown the importance to consider both the participation in training and its intensity. The latter can be measured through the number of hours spent in training. However, the number of hours spent on training is only available for recent years (figure 3.11). The training index multiplies the participation rate by the number of hours in training.

The results show good outcomes for the Nordic countries (Denmark, Sweden, and Finland), but also for Slovenia. Other new Member States stand in an intermediate (Latvia, Hungary) or unfavourable positions (Cyprus, Slovakia, Czech Republic, Poland). Greece scores also poorly according to this index.

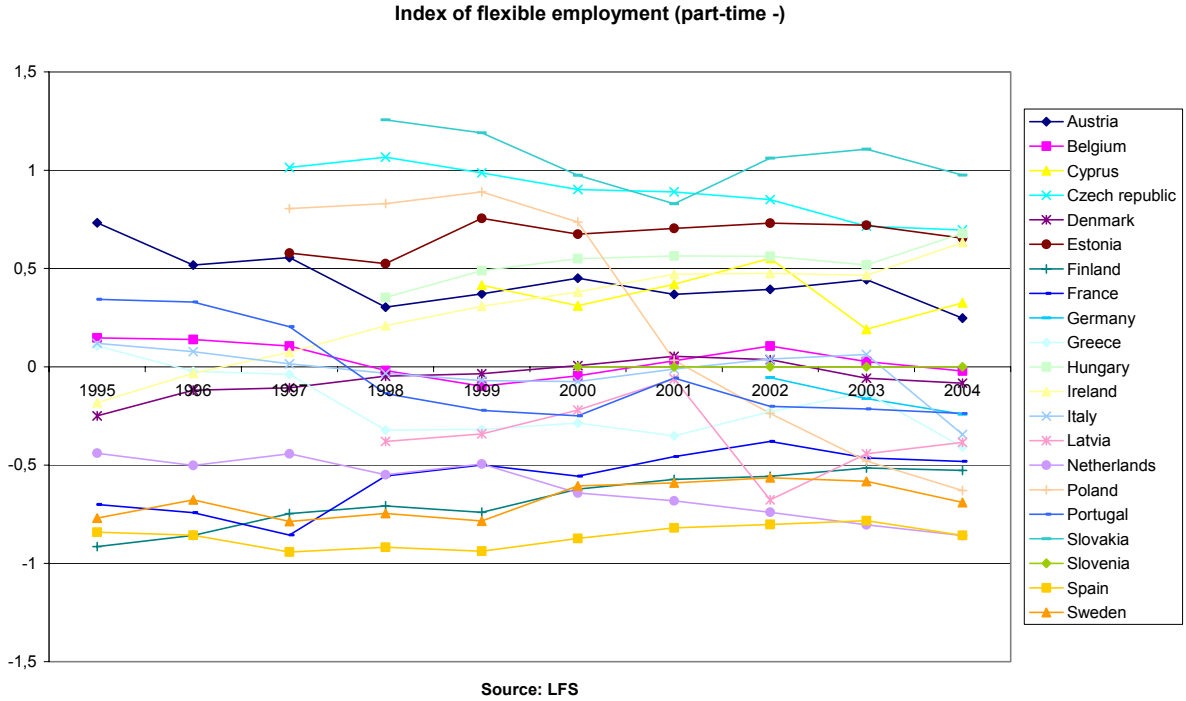
Figure 3.11: An index of investment in training for 2004



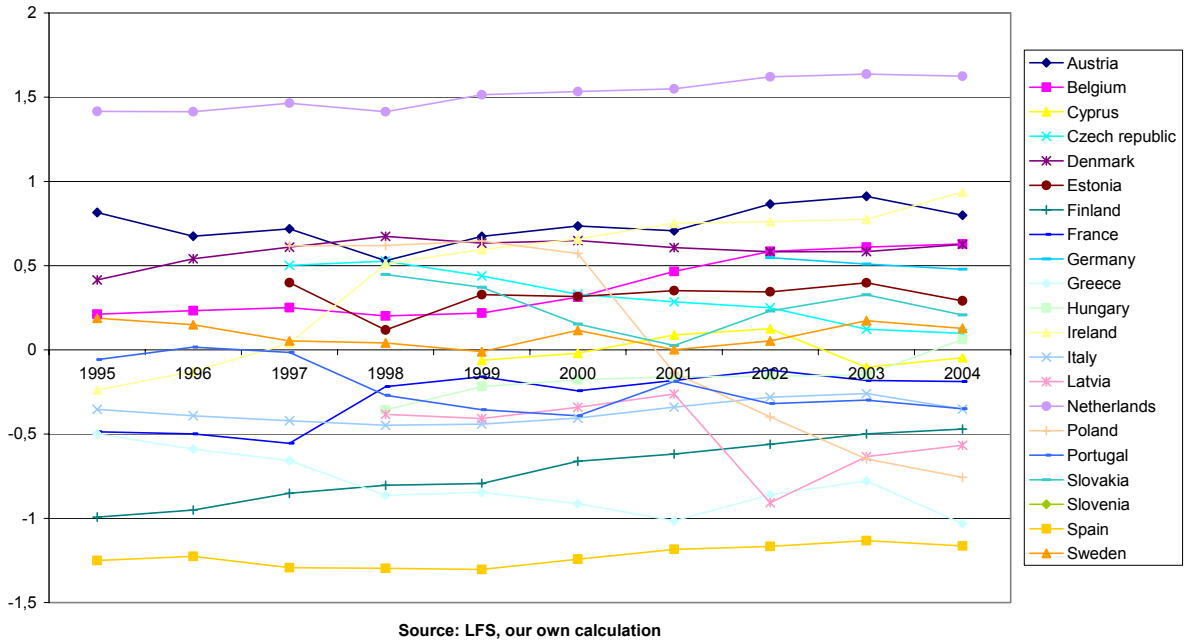
Finally, the indicator for flexible employment typically raises the question of how to attribute a sign to the variables used (see figure 3.12). Indeed, it summarises three flexicurity indicators: the rate of part time employment, the rate of temporary employment, and the rate of involuntary part time employment. It is clear that this last variable contributes negatively to job quality, but the sign of the contributions of temporary employment and of part time is ambiguous. As most surveys indicate that temporary employment reduces job satisfaction (Davoine, 2007), it seems quite logical to consider that it affects negatively job quality. The issue of part time employment is more complicated. Indeed, workers' opinion about part time varies across countries: it is considered as a tool that helps to a good reconciliation between work and family life in countries such as the Netherlands and Sweden, while it is poorly considered in France. That is why two indexes are calculated, one where part time has a negative sign, and an alternative definition where part time gets a positive sign.

The results are of course very different, although even in some countries where temporary employment has a high incidence (such as, Spain, Finland, and Greece) remain in a bad position using both definitions. Most of the new Member States exhibit a rather low level of employment flexibility, with the exception of Latvia and Poland in the latest years. In the two definitions, the index for Poland has been deteriorating, which is related to a rapid growth of temporary employment.

Figure 3.12: An index of flexible employment



Source: LFS



Source: LFS, our own calculation

- A disaggregated approach: partial convergences and peculiar trajectories

Complementary descriptive figures allow to interpret these trajectories, and to understand the specificities of each cluster and to qualify them. These figures are presented in appendix D.

Figures representing non-standard employment put forward the particular trajectories of two countries. In the Netherlands, part-time employment concerns 36% of the population in 1995 and 45% in 2004 (figure D2). The model of "one and half breadwinner" has been developed progressively since the 1980s. In Spain, the proportion of fixed-term contracts is very high and stable (figure D1). Indeed, it has increased sharply at the end of the 1980s: 11% of workers had a fixed-term contract in 1983 and 27% in 2004. In many countries (for example, France and Poland) an upward trend in the use of fixed-term contracts and part-time employment has developed in recent years. Furthermore, the share of involuntary part-time employment has increased in some countries (Greece, the Czech Republic and Portugal) (figure D3). These trends could endanger socio-economic security. However, other trends may have a positive effect on socio-economic security. For example, the share of involuntary part-time has decreased in many countries (the Netherlands, Sweden, Belgium, Ireland, Cyprus and Hungary). Moreover, the employment rate of older workers has increased across the EU (figure D4). The long-term unemployment rate has decreased in many countries (Spain, Sweden, Belgium, and Ireland) (figure D5). But this is not the case in some new Member States, such as Slovakia, Poland, and Estonia. Adding up, the dynamics in socio-economic security are contrasted, with some improvements, but also worrying trends.

At the end of the nineties emerged a divergence trend regarding participation in training. Participation in education and training (see figure D6) was already high in Denmark, Sweden, Finland and the Netherlands in 1995, but the gap widened during the following decade: the proportion of workers participating in education and training increased in these countries while it stabilised in the other EU countries. Since 2002, the rate has been increased in many countries and in particular in Finland and in Austria. It can be explained by some efforts, but also by a change in the Labour Force Survey, which became continuous (it used to be carried out in the spring before), involving a break in some series. The trend in initial education level is less disputable: the decade has seen a slow but permanent improvement in the initial level, measured by the percentage of the population achieving secondary level (see figure D7).

The in-work accident rates, which is the major indicator of working conditions in the Laeken portfolio is unfortunately not available during a long period for the new Member States. There is a downward trend in most countries of the EU15 (except in Spain) (see figure D8). The rate

of accidents at work is also pro-cyclical: in some countries, it decreases around 1993 and increases at the turn of the century. This pro-cyclical pattern could be explained by the stress and the exhaustion at the beginning of a boom, when jobs hours are extended, before hiring new employees. But an alternative explanation is now put forward in the literature: if unemployment is high, workers will be more reluctant to report the accident because they fear that the employer can hold this against them (Boone and van Ours, 2006). To support their ideas, these authors look at the rate of fatal accidents, which is not pro-cyclical, because it is not biased by underreporting.

The hours of work are one of the rare indicators of working conditions available in the LFS. A majority of workers have to face non-standard hours (e.g. working at night, in Saturdays, in Sundays) in Greece, Spain, Italy, but also in Finland and Denmark, Slovenia and Latvia, but the proportion has decreased since 1995 in these countries (see figure D9). In France, Belgium, Sweden, Hungary and Czech Republic, this kind of atypical work is not so common, but the proportion has increased sharply in France and the Czech Republic since 2002. The global picture is thus mixed: deterioration in some countries and an improvement in other countries that were bad performers.

Concerning the dimension of gender equality, the gender employment gap narrowed in many countries (by 1 or 2 percentage points) and in particular in countries where the gap was high at the beginning of the period (e.g. Southern countries, Belgium and the Netherlands). The gender employment gap is stable or even declining in Nordic countries as well as in new Member States where the gap was quite low in the 1990s (Finland, Sweden, Estonia, Slovenia, Slovakia, Poland, and Latvia). Figure D10 suggests a convergence pattern in this area. In addition, figures D11 and D12 show the dynamics of gender segregation by sectors and occupations. These indices are stable in most countries (see figures D11 and D12). However, sectoral segregation has increased in Greece, Italy, Slovenia and Cyprus. Occupational segregation is also increasing in Portugal and Spain, where it has decreased in Sweden. These results confirm the idea of a trade-off between women employment rate and segregation by gender. Countries having an increase in the female employment rate tend to have a rise in segregation by gender. Lastly, the dynamics of gender pay differences is rather chaotic, partly because of breakdowns in the series (between ECHP and EU-SILC) (see figure D13).

This disaggregated analysis allows understanding the evolution summed up in the Kohonen maps and in the synthetic index. For example, the proximities, at the end of the period between France and Nordic countries, can be explained by an increase in participation in

training, part-time employment, and the narrowing in the gender employment gap, and in the gap between older workers and the whole working age population. The improvement of the situation in Southern countries is partly explained by the narrowing gender employment gap. The intermediary position of the Eastern and Central European countries relies on their good results in gender equality and initial education. However, in this latter group of countries, the dynamics of job quality is more chaotic because of diverging trends: a stable situation for women, an improvement in older workers employment, but also an increase of temporary contracts and in atypical work.

Conclusions

A comparative analysis of work quality in Europe reveals the heterogeneity of national situations with regard to European Employment Strategy indicators, but also to supplementary variables that were introduced to reflect four fundamental dimensions of job quality, wages, skills, education and training, working conditions and gender equality. Moreover, the clusters of countries are stable over time. In addition, some countries have improved job quality during the last two decades.

In a policy perspective, the theoretical and empirical analysis shows that Laeken indicators suffer from important limitations. Indeed, they miss crucial components of job quality, especially the level and dispersion of wages, together with the role of working conditions and work intensification. These limitations call for considering some supplementary indicators. Our empirical investigations show that the introduction of new indicators in the Laeken framework allows qualifying more precisely and completely the specificities of countries clusters regarding job quality. Despite the political decline of the concept of job quality in the framework of the EES, which might be temporary, these results also call for additional research: for instance, the relationship between job quality and labour market outcomes, and between job quality and labour market institutions and work organisation practices needs to be further investigated.

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Appendix A: Description of the data bases

I –Comparative data base

1- PCA on Laeken indicators [file compbase.xls]

- *Key indicators*

- Participation in education and training. 2006. Source: LFS (Compendium).
- Difference between men's and women's average gross hourly earning as percentage of average men's hourly earning (for paid employees at work). 2001. Source: National sources and ECHP, Eurostat (Compendium).
- The evolution of incidence rate defined as the number of serious accidents at work per 100 000 persons in employment. Between 1999 and 2004. Source: ESAW (Compendium)
- Part-time employment as a percentage of total employment. 2006 (Eurostat website)
- Fixed-term contract as a percentage of total employment. 2006 (Eurostat website).
- Growth in labour productivity (GDP per hour worked). 2004. Source: Eurostat (Compendium)
- Growth in labour productivity (GDP per person worked). 2004. Source: Eurostat (Compendium).

- *Context indicators*

- Job satisfaction: % of workers who declare that they are satisfied or very satisfied with their working conditions. 2006. Source: the Fourth European Working Conditions Survey, (Eurofound website).
- Women participation in education and training. 2006. Source: LFS (Compendium).
- Men participation in education and training. 2006. Source: LFS (Compendium).
- Participation in education and training (25-34 years old). 2006. Source: LFS (Compendium).
- Participation in education and training (35-44 years old). 2006. Source: LFS (Compendium).
- Participation in education and training (45-54 years old). 2006. Source: LFS (Compendium).
- Participation in education and training (55-64 years old). 2006. Source: LFS (Compendium).
- Participation in education and training (low educational attainment). 2006. Source: LFS (Compendium).
- Participation in education and training (medium educational attainment). 2006. Source: LFS (Compendium).
- Participation in education and training (high educational attainment). 2006. Source: LFS (Compendium).
- Participation in education and training (employed). 2006. Source: LFS (Compendium).
- Participation in education and training (unemployed). 2006. Source: LFS (Compendium).
- Participation in education and training (inactive). 2006. Source: LFS (Compendium).

- Share of the workforce working with computers (PCs, network, mainframe). 2006. Source: the Fourth European Working Conditions Survey, (Eurofound website).
- Employment gap between men and women. 2006. Source: LFS (Eurostat website)
- Gender unemployment gap. 2006. Source : LFS (Eurostat website)
- Occupational segregation. 2006. Source : LFS (Compendium)
- Sectoral segregation. 2006. Source : LFS (Compendium)
- Involuntary part-time as % of part-time employment. 2006. (Eurostat website).
- Involuntary fixed-term contracts as % of fixed-term contracts. 2006. (Eurostat website).
- 15-64 years old employment rate. 2006. Source: LFS (Eurostat website)
- 15-24 years old employment rate. 2006. Source: LFS (Eurostat website)
- 25-54 years old employment rate. 2006. Source: LFS (Eurostat website)
- 55-64 years old employment rate. 2006. Source: LFS (Eurostat website)
- Employment rate of people who have achieved ISCED level 0-2 of education. 2006. Source: LFS (Eurostat)
- Employment rate of people who have achieved ISCED level 3-4 of education. 2006. Source: LFS (Eurostat)
- Employment rate of people who have achieved ISCED level 5-6 of education. 2006. Source: LFS (Eurostat)
- Long-term unemployment rate. 2006. Source: LFS (site Eurostat website)
- Women long-term unemployment rate. 2006. Source: LFS (Eurostat website)
- Men long-term unemployment rate. 2006. Source: LFS (Eurostat website)
- Early school leavers (defined as the percentage of the population aged 18-24 with at most lower secondary education (ISCED level 2) and not in further education or training. 2006. Source: LFS (Compendium).
- Early school leavers (men) (defined as the percentage of the population aged 18-24 with at most lower secondary education (ISCED level 2) and not in further education or training. 2006. Source: LFS (Compendium).
- Early school leavers (women) (defined as the percentage of the population aged 18-24 with at most lower secondary education (ISCED level 2) and not in further education or training. 2006. Source: LFS (Compendium).
- Youth unemployment ratio: total unemployed young people (15-24 years) as a share of total population in the same brackets. 2006. Source: LFS (Compendium)
- Employment impact of parenthood for men: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Employment impact of parenthood for women: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (<3 years old). 2006. Source: national sources (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (from 3 years old to compulsory school age). 2006. Source: national sources (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (from compulsory school age to 12). 2006. Source: national sources (Compendium)

- Inactives not seeking employment but would nevertheless like to have work, but who are not searching due to personal or families responsibilities. 2005. Source : LFS (Compendium)
- Difference in employment rates between 55-64 years old and 15-64 years old. 2006. Source: LFS (Eurostat website).
- Productivity (GDP per hour worked). 2005. Source: Eurostat (Compendium)
- Productivity (GDP per person employed). 2005. Source: Eurostat (Compendium)
- Percentage of the population aged 25 to 64 having completed at least upper secondary education (ISCED3 level). 2006. Source: Eurostat
- Percentage of the male population aged 25 to 64 having completed at least upper secondary education. (ISCED3 level). 2006. Source: Eurostat
- Percentage of the female population aged 25 to 64 having completed at least upper secondary education. (ISCED3 level). 2006. Source: Eurostat

2- Socio-economic security

PCA for EU15 (source: Davoine and Erhel, 2007)

* Laeken indicators (key and context)

- Transition of non-employed people into employment one year later. 2000/2001. Source: ECHP (Compendium) (key indicator)
- Ascending wage mobility (sum of the transitions from the first three deciles to upper deciles). 200/2001. Source: ECHP (Compendium). (key indicator)
- Ascending wage mobility (sum of the transitions from the first decile to upper deciles). 200/2001. Source: ECHP (Compendium).
- Fixed-term contract as a percentage of total employment. 2001 (Eurostat website). (key indicator)
- Transition from fixed-term contract to long-term contract. 2000/2001. Source: ECHP (Compendium) (context indicator)
- Transition from the first three deciles to non employment. 2000/2001. Source: ECHP (Compendium)
- Long-term unemployment rate. 2001. Source: LFS (site Eurostat website)

* Complementary indicators

- Mean wage in PPS. 2001. Source: ECHP (our own calculations)
- Number of working poor in 2001 (Compendium)

3- Education and training [file compbase.xls]

* Laeken indicators

- Participation in education and training. 2006. Source: LFS (Compendium).
- Early school leavers (defined as the percentage of the population aged 18-24 with at most lower secondary education (ISCED level 2) and not in further education or training. 2006. Source: LFS (Compendium).

- Percentage of the population aged 25 to 64 having completed at least upper secondary education (ISCED3 level). 2006. Source: Eurostat
- Share of the workforce working with computers (PCs, network, mainframe). 2006. Source: the Fourth European Working Conditions Survey, (Eurofound website).

* Complementary indicators

- Percentage of employees participating in CVT courses. Source: Continual Vocational Training Survey 2 (CVTS2, 1999)
- Hours of CVT courses per participant. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)
- Cost of CVT courses per participant. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)
- Cost of CVT courses as % of total labour cost. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)
- Cost of CVT courses per training hour in PPS. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)
- Training Labour Market Policies Expenditure as % of GDP. 2005. Source: Eurostat
- Total public expenditure on education as % of GDP. 2003. Source: Eurostat
- Participation in informal education and training. 2005. Source: Education - Life Long Learning Base - LFS (ad hoc module) Eurostat website
- "Has undergone paid-for training or training proposed by the employer over the past 12 months". 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)

4- Gender and conciliation [file compbase.xls]

* Laeken indicators

- Difference between men's and women's average gross hourly earning as percentage of average men's hourly earning (for paid employees at work). 2001. Source: National sources and ECHP, Eurostat (Compendium).
- Employment gap between men and women. 2006. Source: LFS (Eurostat website)
- Gender unemployment gap. 2006. Source : LFS (Eurostat website)
- Occupational segregation. 2006. Source : LFS (Compendium)
- Sectoral segregation. 2006. Source : LFS (Compendium)

- Women part-time as % of women's employment.2006. Source: LFS (Eurostat website)
- Women involuntary part-time as % of women's part-time. 2006. (Eurostat website).
- Employment impact of parenthood for men: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Employment impact of parenthood for women: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Childcare: children cared for (by other formal arrangements than family) from 0 to 29 hours a usual week and up to 30 hours a usual week as a proportion of all children of

the same age group (0-3 years old, 3-compulsory school age, and compulsory school age-12 years old). 2006. Source: National sources (Compendium)

* Complementary indicators
  - Length of maternity leave in months (with benefits replacing at least 2/3 of salary). 2005. Source: Eurostat (Compendium)

5- Working conditions [file compbase.xls]

* Laeken indicators

  - The evolution of incidence rate defined as the number of serious accidents at work per 100 000 persons in employment. Between 1999 and 2004. Source: ESAW (Compendium)

* Complementary indicators

  - Exposure to loud noise.2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Exposure to vibration.2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Exposure to radiation. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Exposure to low temperature. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Exposure to high temperature. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Exposure to dangerous substance. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Job involves moving heavy loads. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Job involves painful/tiring positions. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Job involves repetitive movements of arms and hands. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Monotonous tasks. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - “My health is at risk because of work”. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Working at very high speed. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Working with tight deadlines. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Working on Saturday. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
  - Working on Sunday. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)

- Working at night. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Short repetitive tasks of <10min. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Can take break when wishes. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Breathing in smoke, fumes, powder or dust etc. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Breathing in vapours such as solvents and thinners. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Handling chemical substances. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Handling infectious materials. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Consulted about changes in work organisation etc. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Contacted about work outside normal working hours. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- % usually working five days per week. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- % working long working days. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- % working fixed starting and finishing times. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Work shifts. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- % of workers who has undergone paid-for training in previous 12 months. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)

6- PCA Final 1 [file compbase.xls]

- *Laeken indicators*

- Job satisfaction: % of workers who declare that they are satisfied or very satisfied with their working conditions. 2006. Source: the Fourth European Working Conditions Survey, (Eurofound website).
- Participation in education and training. 2006. Source: LFS (Compendium).
- Participation in education and training (55-64 years old). 2006. Source: LFS (Compendium).
- Participation in education and training (unemployed). 2006. Source: LFS (Compendium).
- Share of the workforce working with computers (PCs, network, mainframe). 2006. Source: the Fourth European Working Conditions Survey, (Eurofound website).
- Difference between men's and women's average gross hourly earning as percentage of average men's hourly earning (for paid employees at work). 2001. Source: National sources and ECHP, Eurostat (Compendium).
- Employment gap between men and women. 2006. Source: LFS (Eurostat website)
- Gender unemployment gap. 2006. Source : LFS (Eurostat website)
- Occupational segregation. 2006. Source : LFS (Compendium)

- Sectoral segregation. 2006. Source : LFS (Compendium)
- The evolution of incidence rate defined as the number of serious accidents at work per 100 000 persons in employment. Between 1999 and 2004. Source: ESAW (Compendium)
- Part-time employment as a percentage of total employment. 2006 (Eurostat website)
- Fixed-term contract as a percentage of total employment. 2006 (Eurostat website).
- Involuntary part-time as % of part-time employment. 2006. (Eurostat website).
- Involuntary fixed-term contracts as % of fixed-term contracts. 2006. (Eurostat website).
- 15-64 years old employment rate. 2006. Source: LFS (Eurostat website)
- Long-term unemployment rate. 2006. Source: LFS (site Eurostat website)
- Early school leavers (defined as the percentage of the population aged 18-24 with at most lower secondary education (ISCED level 2) and not in further education or training. 2006. Source: LFS (Compendium).
- Youth unemployment ratio: total unemployed young people (15-24 years) as a share of total population in the same brackets. 2006. Source: LFS (Compendium)
- Employment impact of parenthood for men: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Employment impact of parenthood for women: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (<3 years old). 2006. Source: national sources (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (from 3 years old to compulsory school age). 2006. Source: national sources (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (from compulsory school age to 12). 2006. Source: national sources (Compendium)
- Inactives not seeking employment but would nevertheless like to have work, but who are not searching due to personal or families responsibilities. 2005. Source : LFS (Compendium)
- Difference in employment rates between 55-64 years old and 15-64 years old. 2006. Source: LFS (Eurostat website).
- Productivity (GDP per hour worked). 2005. Source: Eurostat (Compendium)
- Productivity (GDP per person employed). 2005. Source: Eurostat (Compendium)
- Growth in labour productivity (GDP per hour worked). 2004. Source: Eurostat (Compendium)
- Growth in labour productivity (GDP per person worked). 2004. Source: Eurostat (Compendium).
- Percentage of the population aged 25 to 64 having completed at least upper secondary education (ISCED3 level). 2006. Source: Eurostat

- *Complementary indicators*

- Length of maternity leave in months (with benefits replacing at least 2/3 of salary). 2005. Source: Eurostat (Compendium)
- Short repetitive tasks of <10min. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Job involves painful/tiring positions. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- "My health is at risk because of work". 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Working at very high speed. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Working with tight deadlines. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Consulted about changes in work organisation etc. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Working at night. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- % working long working days. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- "I am well paid for the work I do". 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- "My job offers good prospects for career advancement". 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Mean wage in PPS. 2001. Source: ECHP (our own calculations)
- Number of working poor in 2001 (Compendium)
- Hours of CVT courses per participant. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)
- Cost of CVT courses per participant. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)

7- PCA Final 2 [file compbase.xls]

- *Laeken indicators*

- Job satisfaction: % of workers who declare that they are satisfied or very satisfied with their working conditions. 2006. Source: the Fourth European Working Conditions Survey, (Eurofound website).
- Participation in education and training. 2006. Source: LFS (Compendium).
- Participation in education and training (55-64 years old). 2006. Source: LFS (Compendium).
- Participation in education and training (unemployed). 2006. Source: LFS (Compendium).
- Share of the workforce working with computers (PCs, network, mainframe). 2006. Source: the Fourth European Working Conditions Survey, (Eurofound website).
- Difference between men's and women's average gross hourly earning as percentage of average men's hourly earning (for paid employees at work). 2001. Source: National sources and ECHP, Eurostat (Compendium).

- Employment gap between men and women. 2006. Source: LFS (Eurostat website)
- Gender unemployment gap. 2006. Source : LFS (Eurostat website)
- Occupational segregation. 2006. Source : LFS (Compendium)
- Sectoral segregation. 2006. Source : LFS (Compendium)
- The evolution of incidence rate defined as the number of serious accidents at work per 100 000 persons in employment. Between 1999 and 2004. Source: ESAW (Compendium)
- Part-time employment as a percentage of total employment. 2006 (Eurostat website)
- Fixed-term contract as a percentage of total employment. 2006 (Eurostat website).
- Involuntary part-time as % of part-time employment. 2006. (Eurostat website).
- Involuntary fixed-term contracts as % of fixed-term contracts. 2006. (Eurostat website).
- Long-term unemployment rate. 2006. Source: LFS (site Eurostat website)
- Early school leavers (defined as the percentage of the population aged 18-24 with at most lower secondary education (ISCED level 2) and not in further education or training. 2006. Source: LFS (Compendium).
- Youth unemployment ratio: total unemployed young people (15-24 years) as a share of total population in the same brackets. 2006. Source: LFS (Compendium)
- Employment impact of parenthood for men: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Employment impact of parenthood for women: the difference in percentage points in employment rates without the presence of any children and with the presence of a child aged 0-6. 2006. Source: LFS (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (<3 years old). 2006. Source: national sources (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (from 3 years old to compulsory school age). 2006. Source: national sources (Compendium)
- Childcare: children cared for (by other formal arrangements than family) as a proportion of all children of the same age group (from compulsory school age to 12). 2006. Source: national sources (Compendium)
- Inactives not seeking employment but would nevertheless like to have work, but who are not searching due to personal or families responsibilities. 2005. Source : LFS (Compendium)
- Difference in employment rates between 55-64 years old and 15-64 years old. 2006. Source: LFS (Eurostat website).
- Percentage of the population aged 25 to 64 having completed at least upper secondary education (ISCED3 level). 2006. Source: Eurostat

- *Complementary indicators*

- Length of maternity leave in months (with benefits replacing at least 2/3 of salary). 2005. Source: Eurostat (Compendium)
- Short repetitive tasks of <10min. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Job involves painful/tiring positions. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)

- "My health is at risk because of work". 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Working at very high speed. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Working with tight deadlines. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Consulted about changes in work organisation etc. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Working at night. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- % working long working days. 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- "I am well paid for the work I do". 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- "My job offers good prospects for career advancement". 2006. Source: the Fourth European Working Conditions Survey (Eurofound website)
- Mean wage in PPS. 2001. Source: ECHP (our own calculations)
- Number of working poor in 2001 (Compendium)
- Hours of CVT courses per participant. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)
- Cost of CVT courses per participant. 1999. Source: Continual Vocational Training Survey 2 (CVTS2)

II – Data base for the longitudinal analysis [lfslongdata.xls]

1- Variables available for a longitudinal analysis

Variables coming from the European Labour Force Survey, 1983-2004

Key indicators of the Laeken list

- Transition of non-employed people into employment one year later
- Participation in education and training
- Part-time employment as a percentage of total employment.
- Fixed-term contract as a percentage of total employment
- Transition from unemployment to inactivity.
- Transition from inactivity to employment.
- Transition from unemployment to employment.

Context indicators of the Laeken list

- Women participation in education and training.
- Men participation in education and training.
- Participation in education and training (25-34 years old).
- Participation in education and training (35-44 years old).
- Participation in education and training (45-54 years old).
- Participation in education and training (55-64 years old).
- Employment gap between men and women.

- Gender unemployment gap.
- Occupational segregation (using ISCO1D and ISCO2D). The index of dissimilarity is defined as : $I= \frac{1}{2}\sum_i \left|\frac{M_i}{M} - \frac{F_i}{F}\right|$ where M represents the total number of males in employment, M_i the number of males in occupation *i*, F the total number of females in employment, F_i le number of females in occupation *i* (Emerek et al., 2003)
- Sectoral segregation (same method, using NACE1D).
- Incidence rate defined as the number of serious accidents at work per 100 000 persons in employment
- Women involuntary part-time
- Men involuntary part-time
- 15-64 years old employment rate.
- 15-24 years old employment rate.
- 25-54 years old employment rate.
- 55-64 years old employment rate.
- Long-term unemployment rate.
- Women long-term unemployment rate.
- Men Long-term unemployment rate.
- Youth unemployment ratio: total unemployed young people (15-24 years) as a share of total population in the same brackets
- Difference in employment rates between 55-64 years old and 15-64 years old.
- Population who achieved at least upper secondary education
- Men who achieved at least upper secondary education
- Women who achieved at least upper secondary education

Complementary indicators

- Proportion of people working Saturday
- Proportion of people working Sunday
- Proportion of people working the evening
- Proportion of people working the night
- Proportion of shift work
- Length of training

Variables coming from other data bases issues

Key indicators of the Laeken list

- the gender pay gap, calculated as a ratio of women's hourly earnings index to men's for paid employees at work 15 hours or more (source : Eurostat).

Context indicators of the Laeken list

- Incidence rate defined as the number of serious and fatal accidents at work per 100 000 persons in employment. 2001. Source: ESAW (Eurostat website)
- Incidence rate defined as the number of serious and fatal accidents at work per 100 000 persons in employment. 2001. Source: National statistics sources

2- The choice of a limited sample

Some variables have been excluded from the longitudinal analysis because of break in series or unavailability during some periods. In order to make easier the interpretation, it is necessary to limit the number of variables, or to aggregate some of them. This limited sample contains the following variables:

- Transition of non-employed people into employment one year later (+)
- Long-term unemployment rate (-)
- Part-time employment as a percentage of total employment (-)
- Involuntary part-time employment as a percentage of part-time employment (-)
- Fixed-term contract as a percentage of total employment (-)
- Difference in employment rates between 55-64 years old and 15-64 years old (-).
- Employment gap between men and women (-)
- Pay gap between men and women
- Occupational segregation (-)
- Participation in education and training (+)
- Population who achieved at least upper secondary education (+)
- Non-standard hours: proportion of people working the night, or the Sunday or the Saturday (-)
- In-work accidents rate (-)

These indicators can decrease or increase the employment quality. That's why we added a minus sign for some indicators to calculate the synthetic index. Some signs are questionable (for example part-time employment is a mean to balance family and work life, but can also be involuntary part-time employment).

Table A1 - LFS availability

Countrys	Starting year
Austria	1995
Belgium	1983
Cyprus	1999
Czech Republic	1997
Danemark	1983
Estonia	1997
Finland	1995
France	1983
Germany	2002
Greece	1983
Hungary	1998
Ireland	1983
Italy	1983
Latvia	1998
Netherlands	1985
Poland	1997
Portugal	1986
Slovakia	1998

Slovenia	1997
Spain	1987
Sweden	1995

Appendix B – Complementary results of PCAs

1- PCA based on Laeken indicators

Figure B1

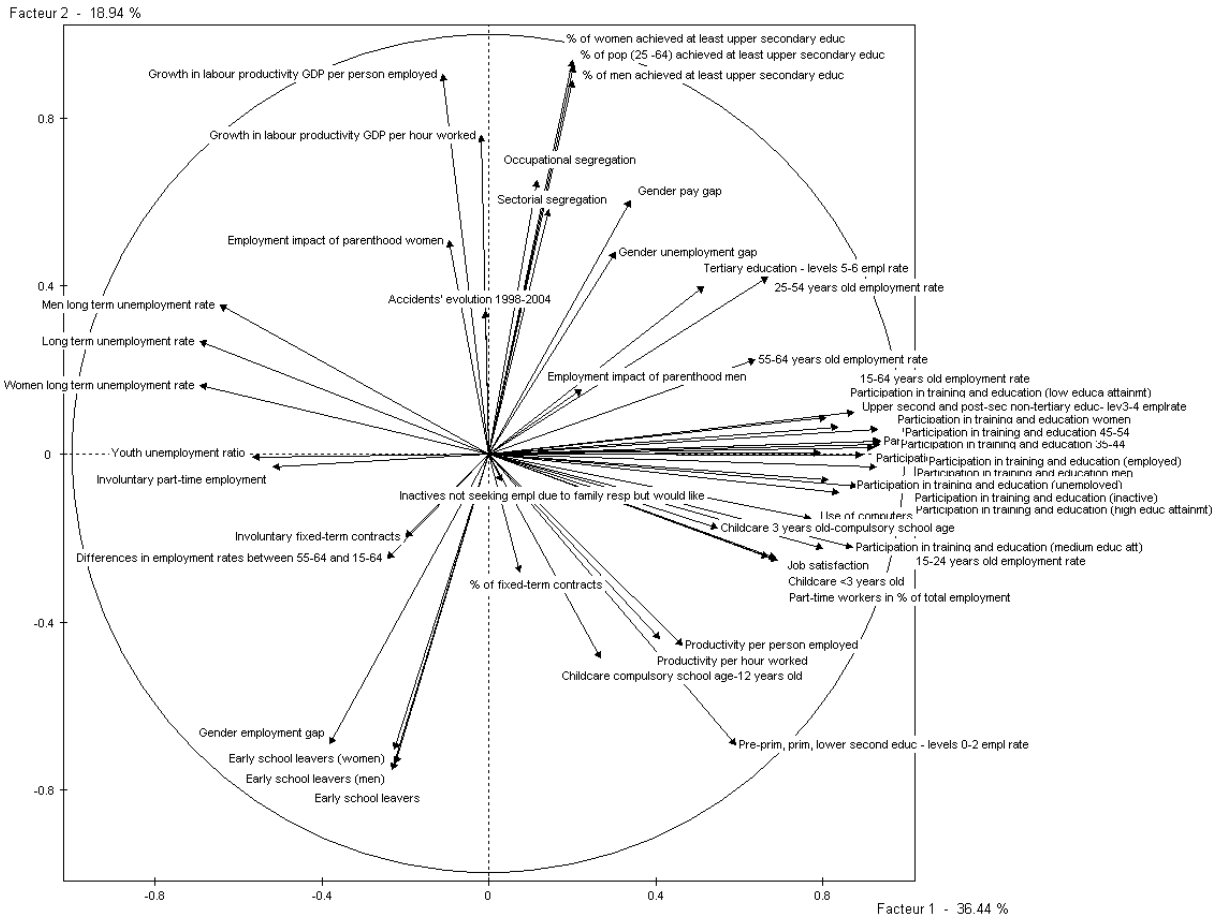
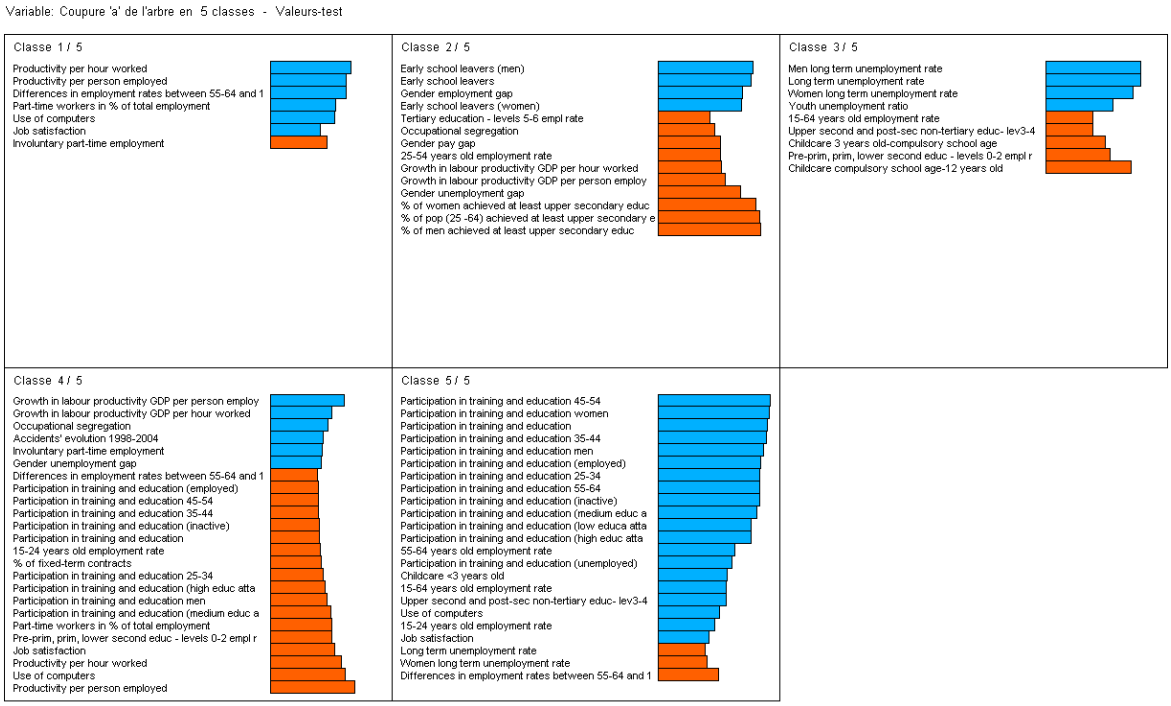
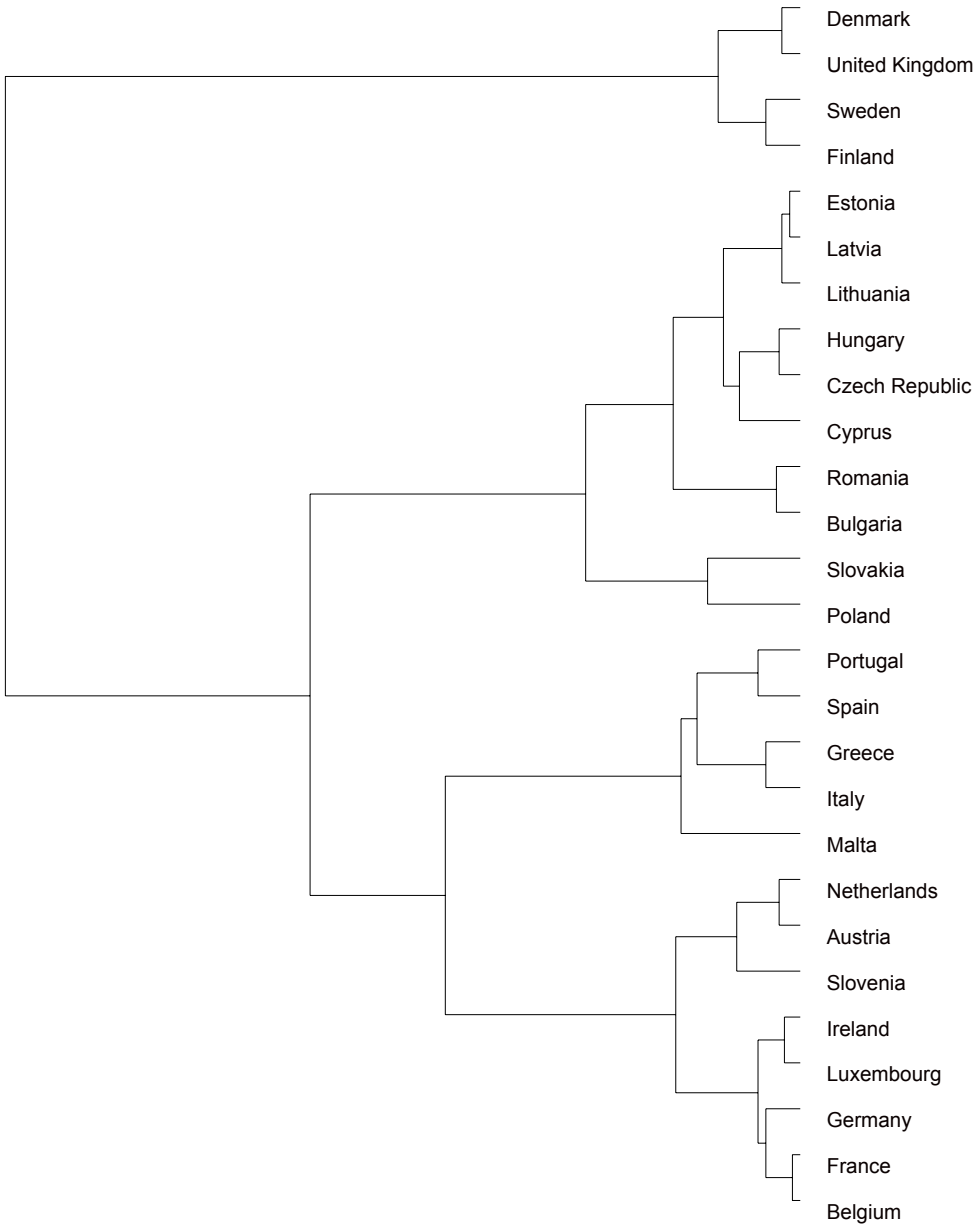


Figure B2

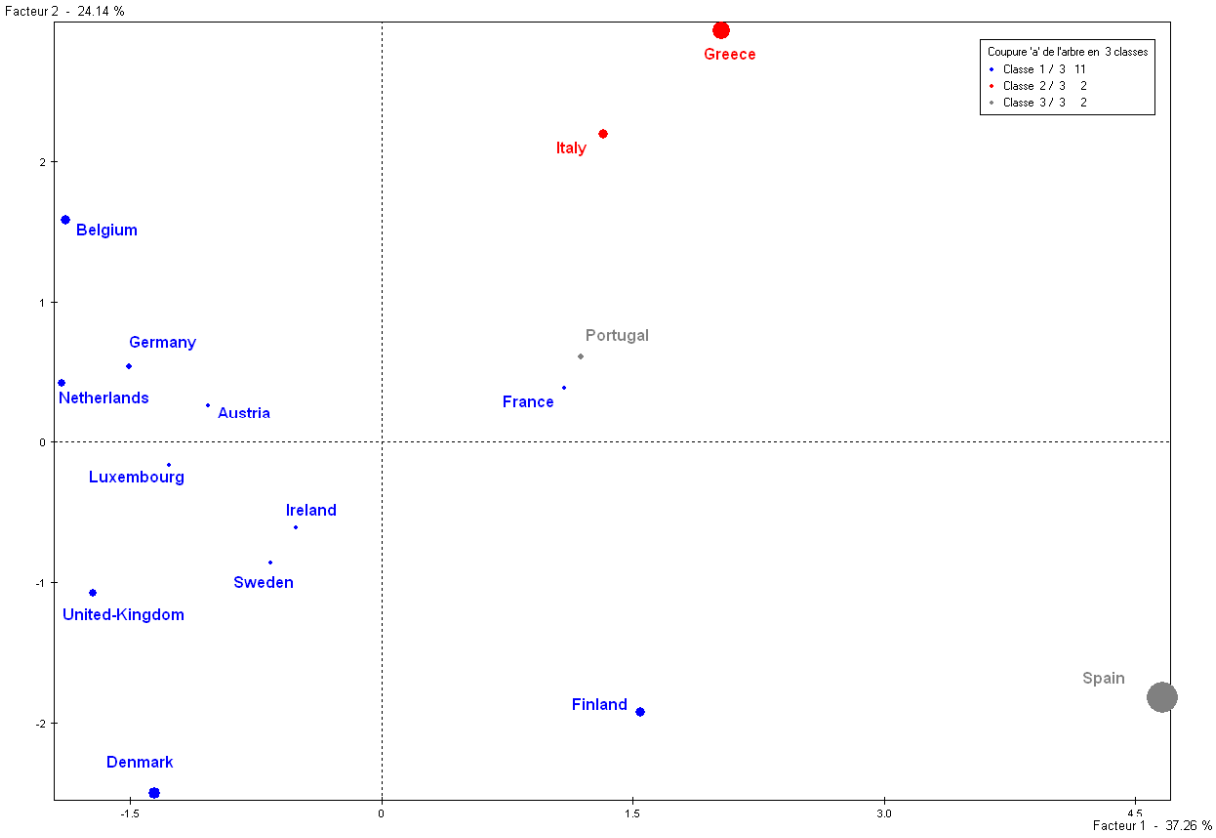


Classe 1: *Continental* cluster
Classe 2: *Southern* cluster
Classe 3: NMS2, Poland and Slovakia
Classe 4: NMS 1, Estonia, Latvia, Lithuania, Cyprus, Czech Republic, Hungary, Bulgaria, and Romania
Classe 5: Northern cluster

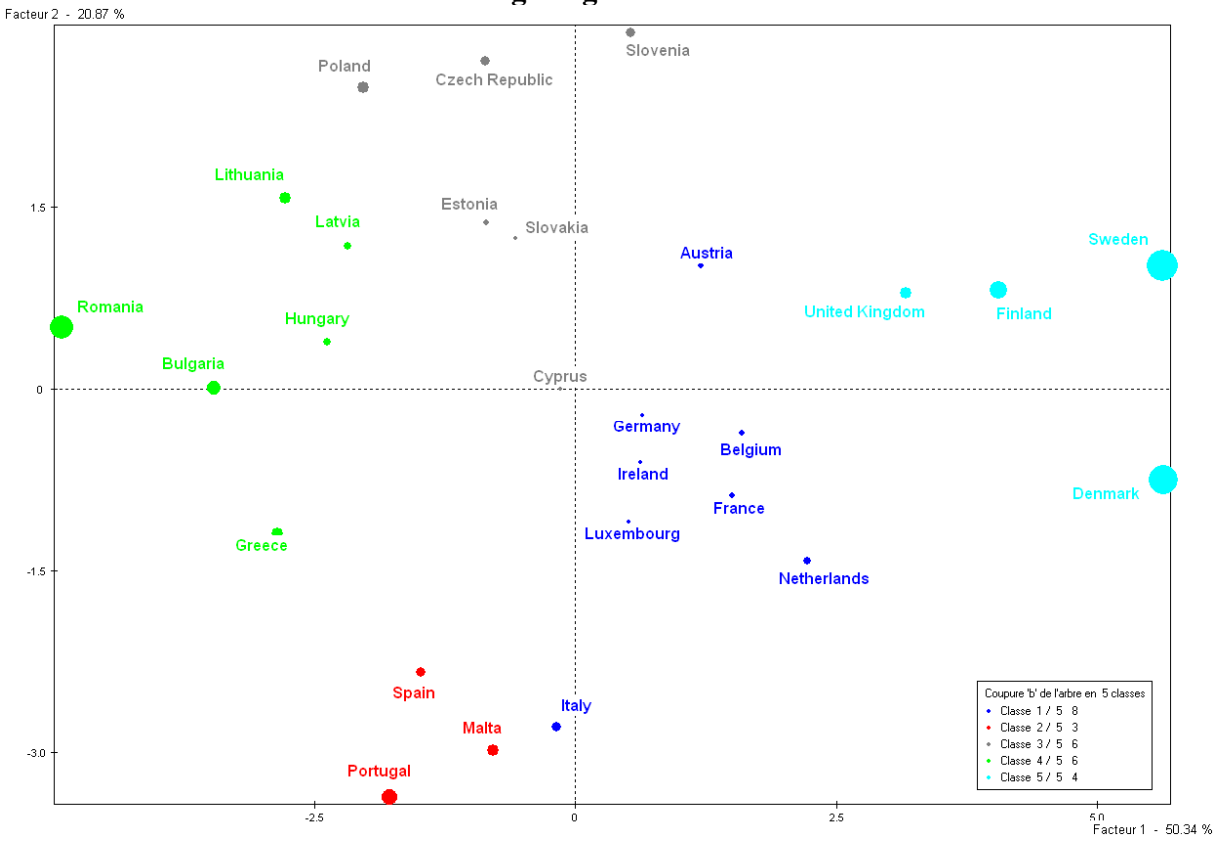
Figure B3


Denmark
United Kingdom
Sweden
Finland
Estonia
Latvia
Lithuania
Hungary
Czech Republic
Cyprus
Romania
Bulgaria
Slovakia
Poland
Portugal
Spain
Greece
Italy
Malta
Netherlands
Austria
Slovenia
Ireland
Luxembourg
Germany
France
Belgium

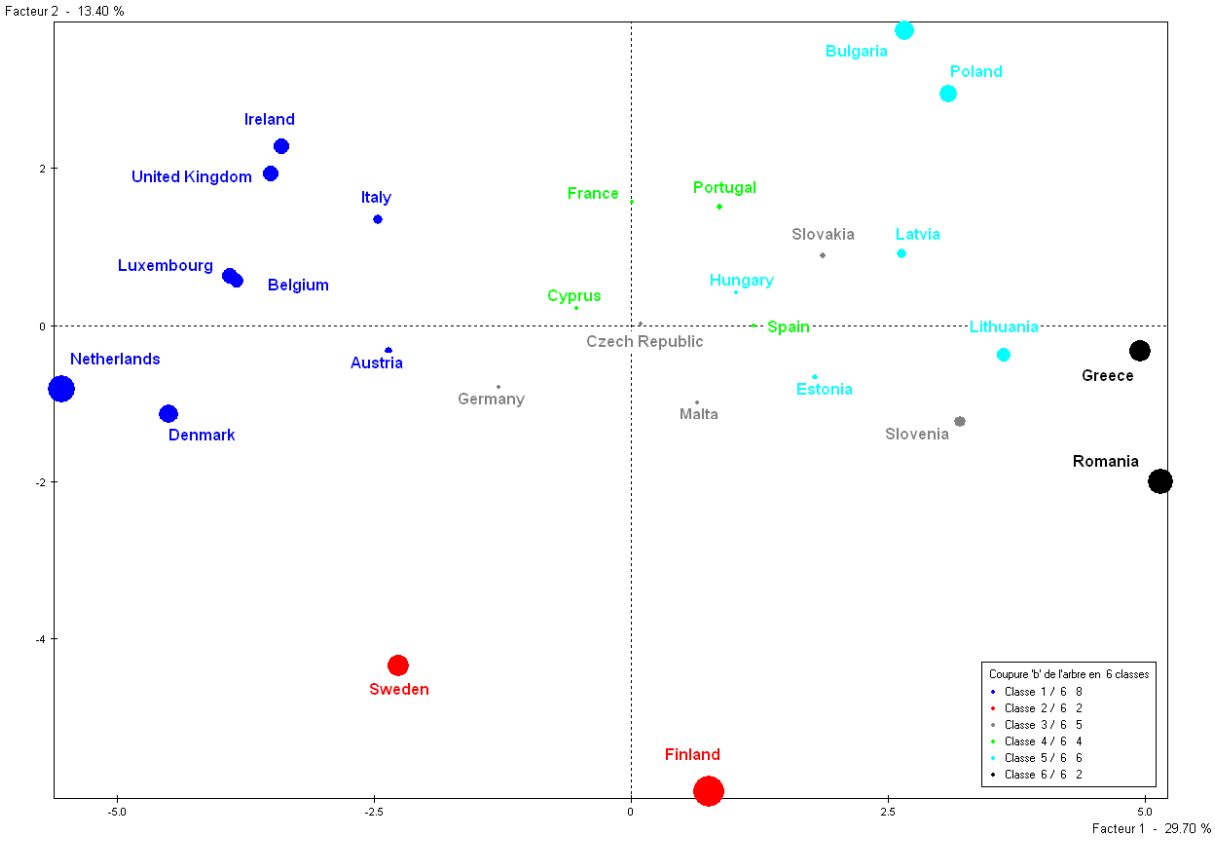
2- PCA on socio-economic security : Figure B4



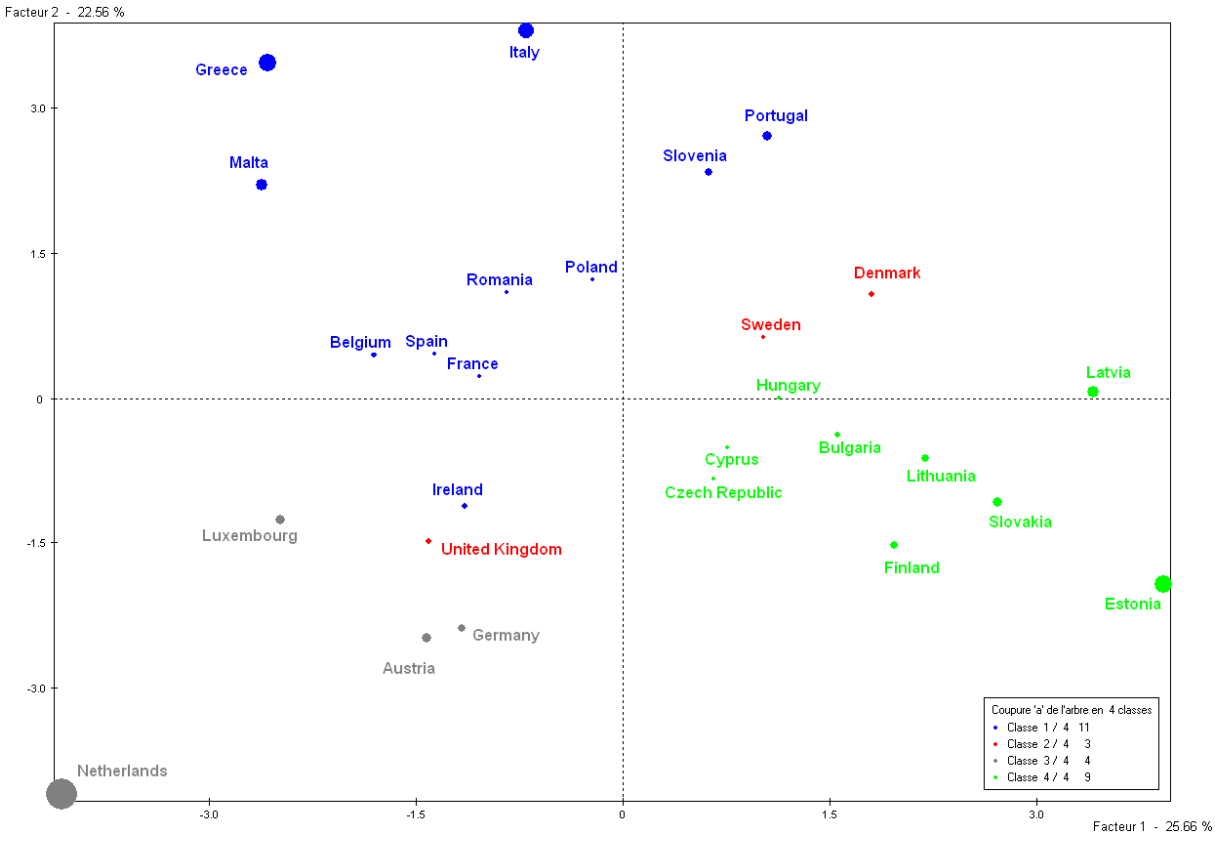
3- PCA on education and training : Figure B5



4- PCA on working conditions: Figure B6



5- PCA on gender : Figure B7



6- PCA: an extended analysis of job quality (1)

Figure B8

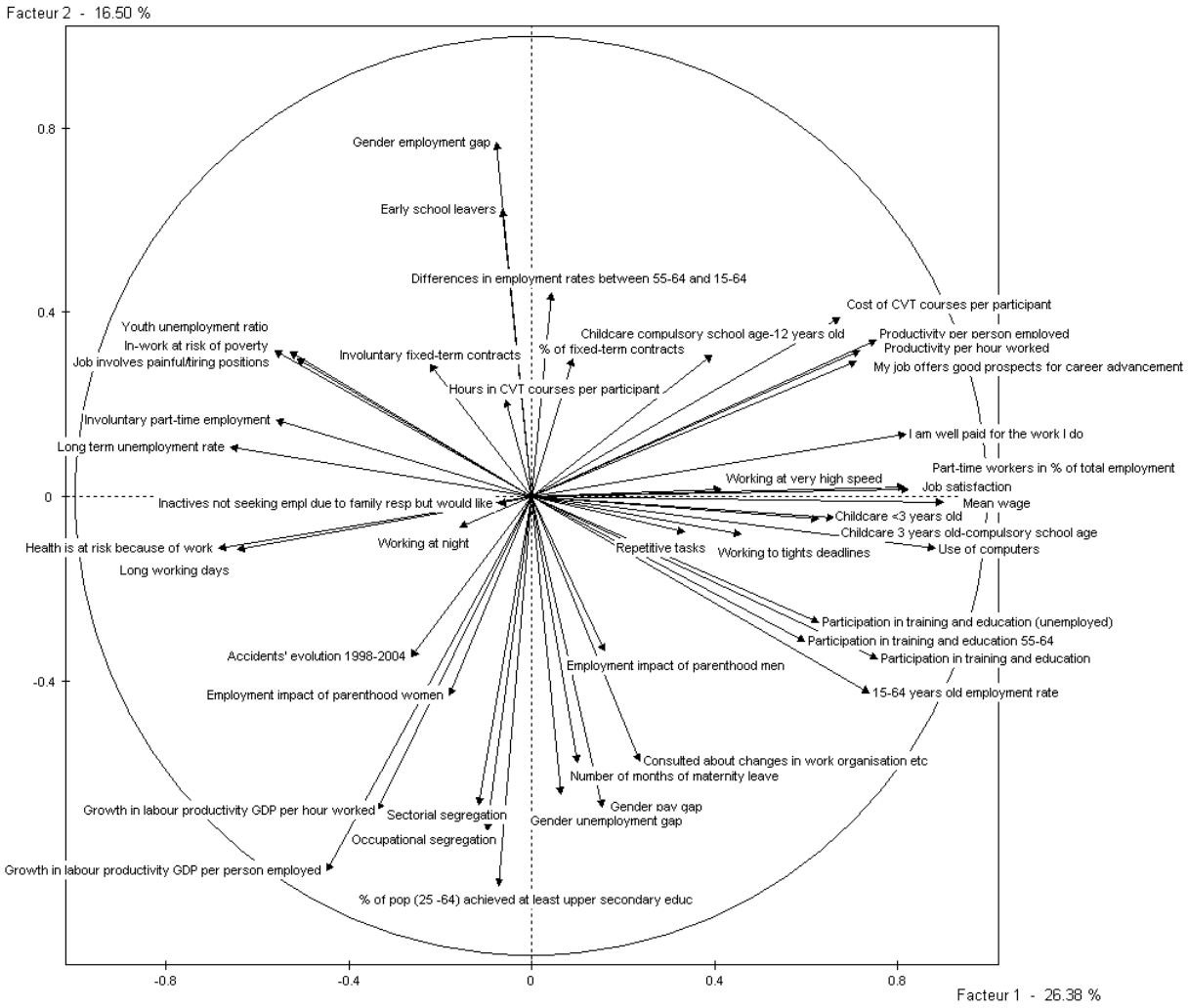
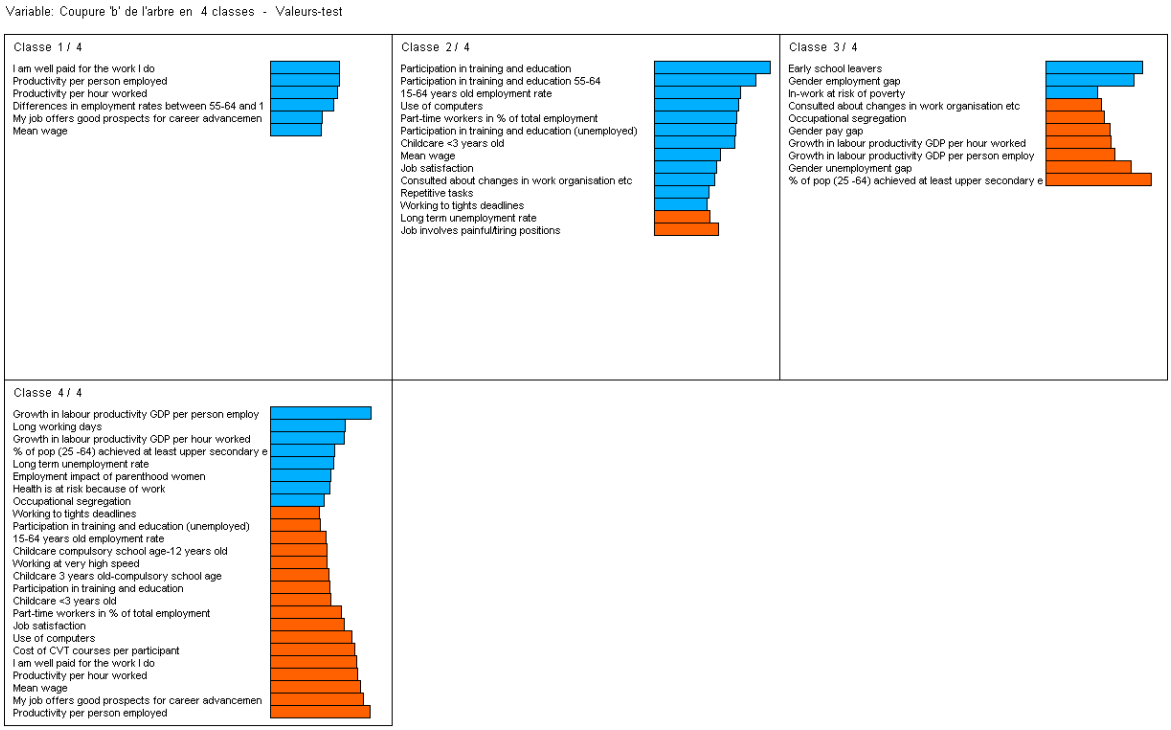
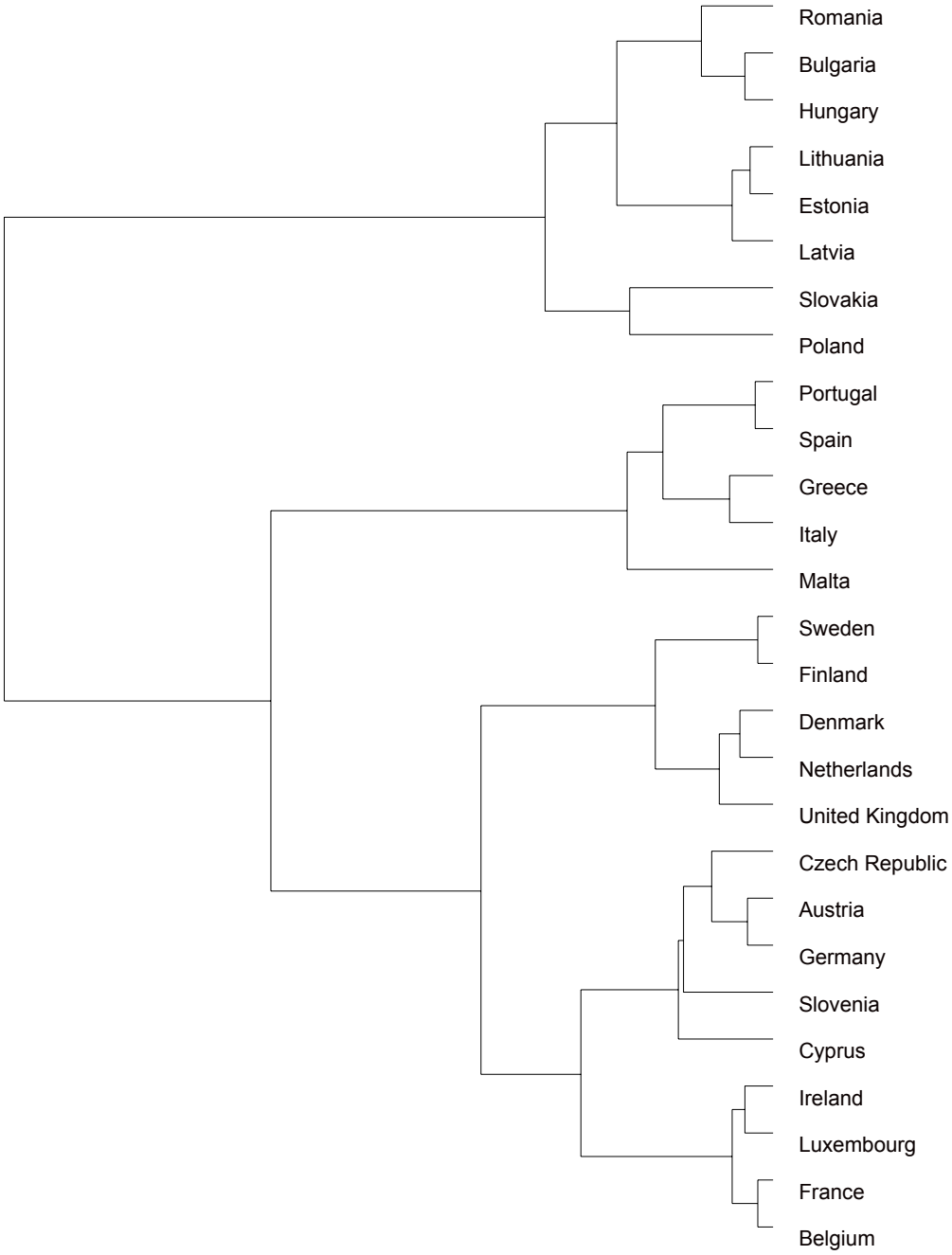


Figure B9



Classe 1: Continental cluster
Classe 2: Northern cluster
Classe 3: Southern cluster
Classe 4: New Member States

Figure B10


Romania
Bulgaria
Hungary
Lithuania
Estonia
Latvia
Slovakia
Poland
Portugal
Spain
Greece
Italy
Malta
Sweden
Finland
Denmark
Netherlands
United Kingdom
Czech Republic
Austria
Germany
Slovenia
Cyprus
Ireland
Luxembourg
France
Belgium

7- PCA: an extended analysis of job quality (2)

Figure B11

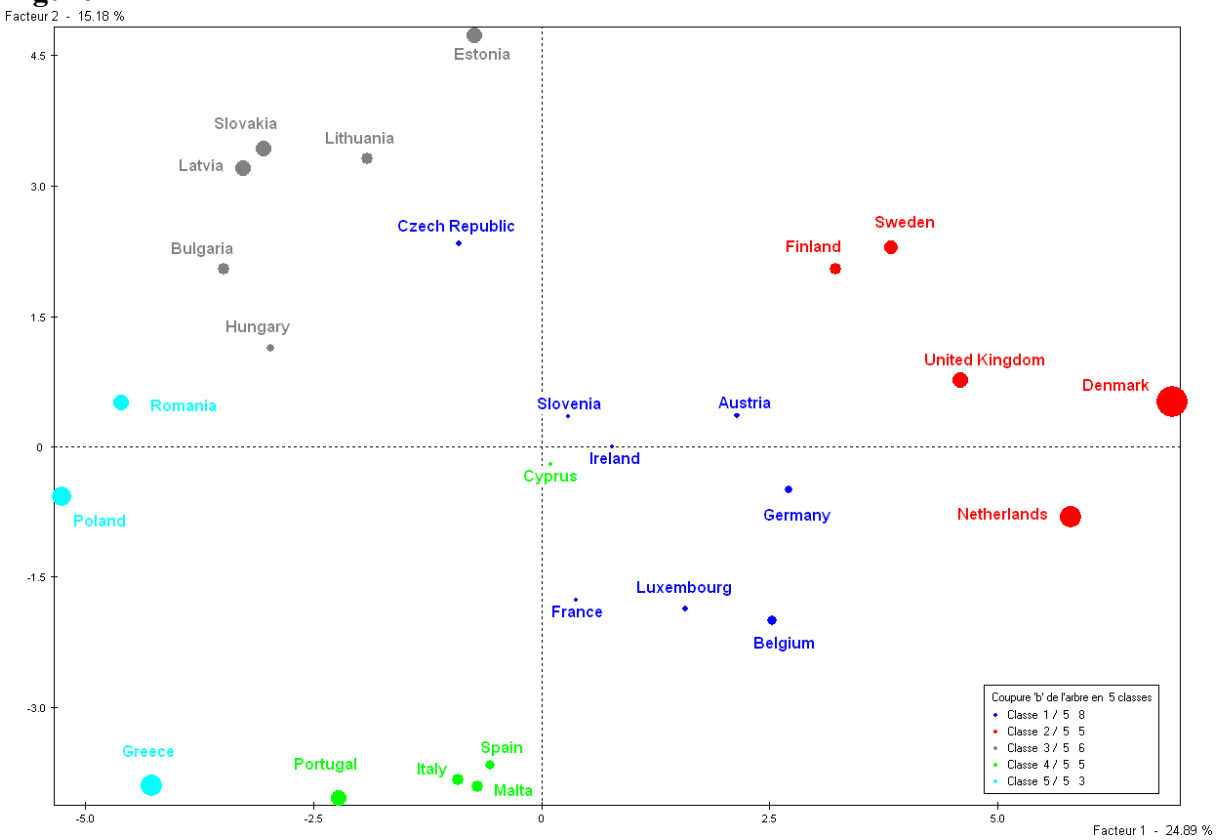


Figure B12

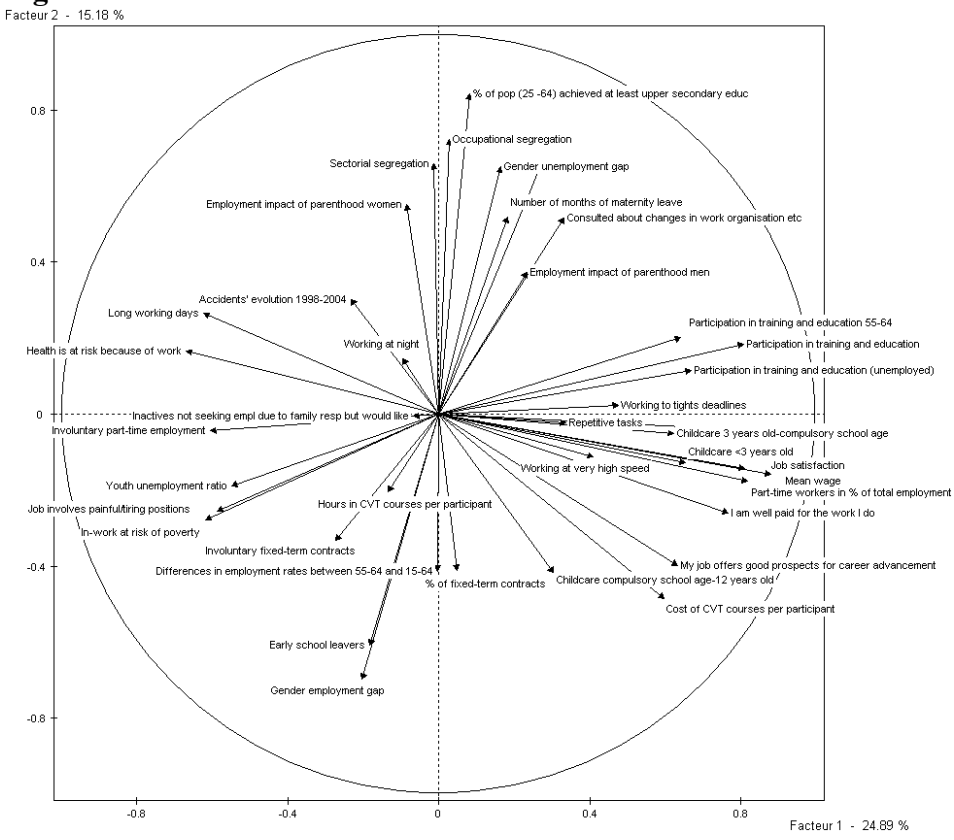
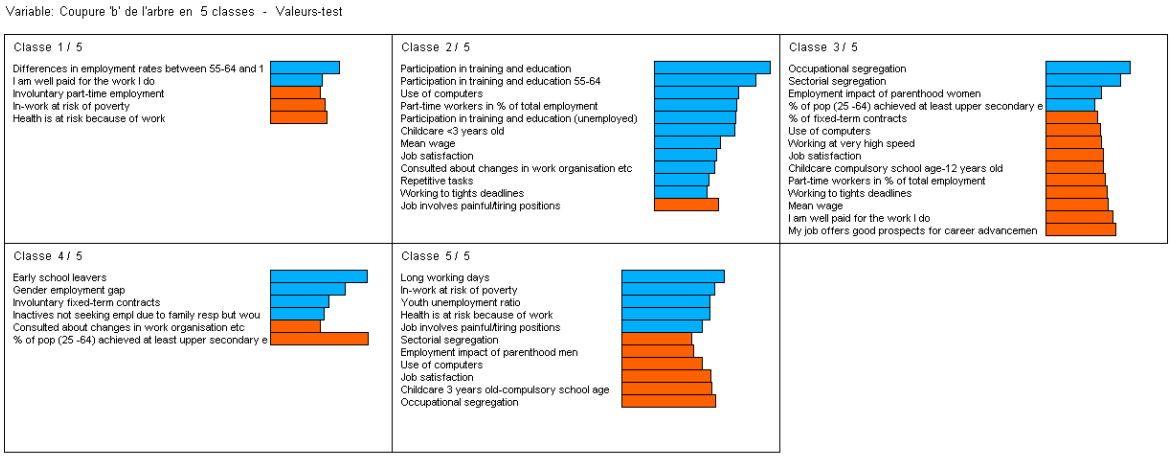


Figure B13



Classe 1: Continental cluster
Classe 2: Northern cluster
Classe 3: New Member States
Classe 4: Southern cluster
Classe 5: Poland, Romania, Greece

Figure B14

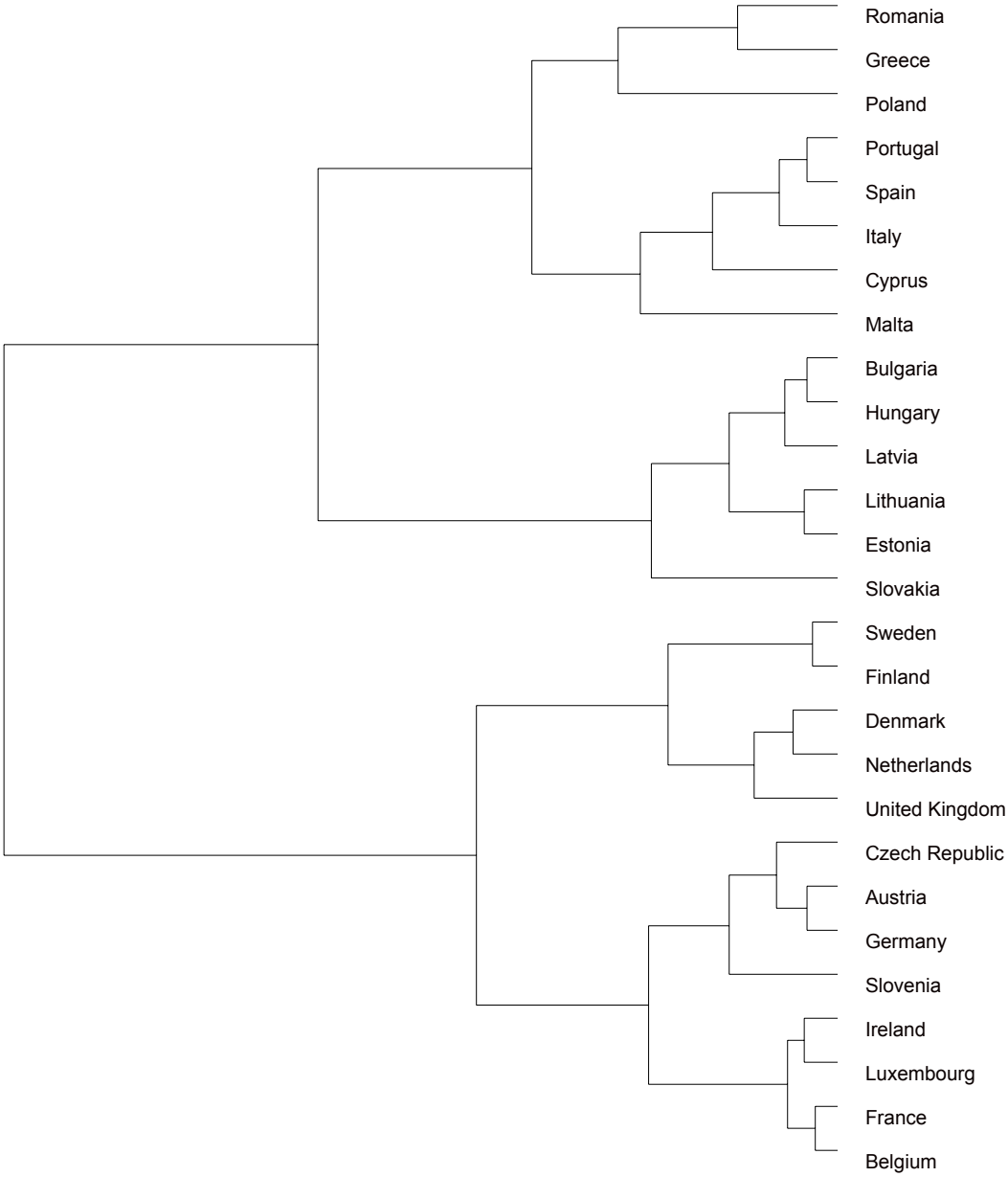

Romania
Greece
Poland
Portugal
Spain
Italy
Cyprus
Malta
Bulgaria
Hungary
Latvia
Lithuania
Estonia
Slovakia
Sweden
Finland
Denmark
Netherlands
United Kingdom
Czech Republic
Austria
Germany
Slovenia
Ireland
Luxembourg
France
Belgium

Table B1: A summary of comparative results

Dimensions of job quality	Principal component/Axis	Clusters
Laeken indicators	1) Long-term unemployment VS participation in education and training 2) Early school leavers and gender employment gap VS % of people who achieved at least ISCED3, growth productivity and segregation	- Sweden, Denmark, Finland, United Kingdom - Spain, Italy, Portugal, Greece, Malta - Germany, France, Belgium, Luxembourg, Austria, Netherlands, Ireland, Slovenia - Estonia, Latvia, Lithuania, Cyprus, Czech Republic, Hungary, Bulgaria, Romania - Slovakia, Poland
Skills, education and training	1) Vocational training 2) Initial education	- Sweden, Denmark, Finland, United Kingdom - Spain, Portugal, Malta - Germany, France, Belgium, Austria, Netherlands, Ireland, Luxembourg, Italy - Cyprus, Slovenia, Estonia, Poland, Czech Republic, Slovakia - Hungary, Latvia, Lithuania, Romania, Bulgaria, Greece
Working conditions	1) Difficult working environment VS job satisfaction 2) Work intensity and non-standard hours	- Austria, Ireland, UK, Netherlands, Belgium, Luxembourg, Denmark, Italy - France, Portugal, Spain, Cyprus - Finland, Sweden - Germany, Malta, Czech Republic, Slovenia, Slovakia - Estonia, Latvia, Lithuania, Hungary, Poland, Bulgaria - Romania, Greece
Gender balance and work and family life reconciliation	1) Women's employment/segregation and part-time/childcare services (from 3 to compulsory school age) 2) Gender pay gap and childcare services (from 3 to 12)	- Sweden, Denmark - UK, Germany, Netherlands, Austria, Ireland, Belgium, France, Luxembourg, Spain - Estonia, Finland, Slovakia, Latvia, Lithuania, Bulgaria, Hungary, Czech Republic, Cyprus - Italy, Greece, Malta, Portugal, Romania, Poland, Slovenia
An extended approach	1) Socio-economic security and working conditions 2) Gender and initial education	- Sweden, Denmark, Finland, United Kingdom, Netherlands - Spain, Italy, Portugal, Greece, Malta - Germany, France, Belgium, Luxembourg, Austria, Ireland, Slovenia, Cyprus - Estonia, Latvia, Lithuania, Czech Republic, Hungary, Bulgaria, Romania, Slovakia, Poland

Appendix C: Results for the EU 15 (Davoine and Erhel, 2007)

1- Comparative results

Figure C1

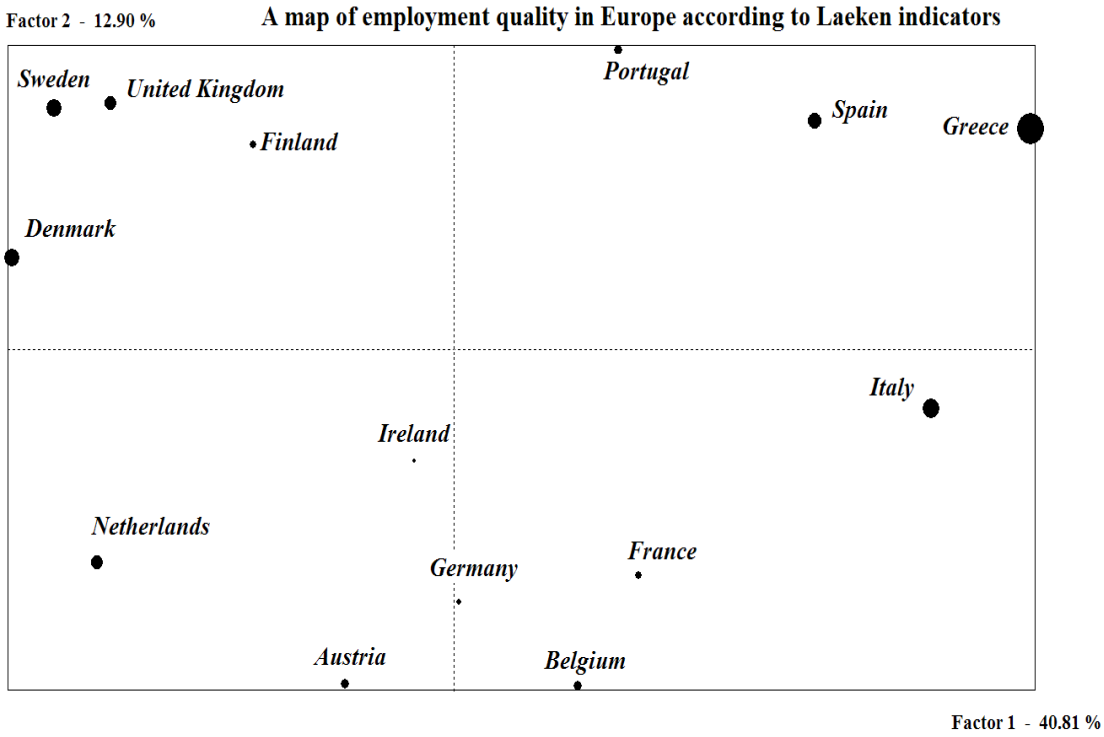
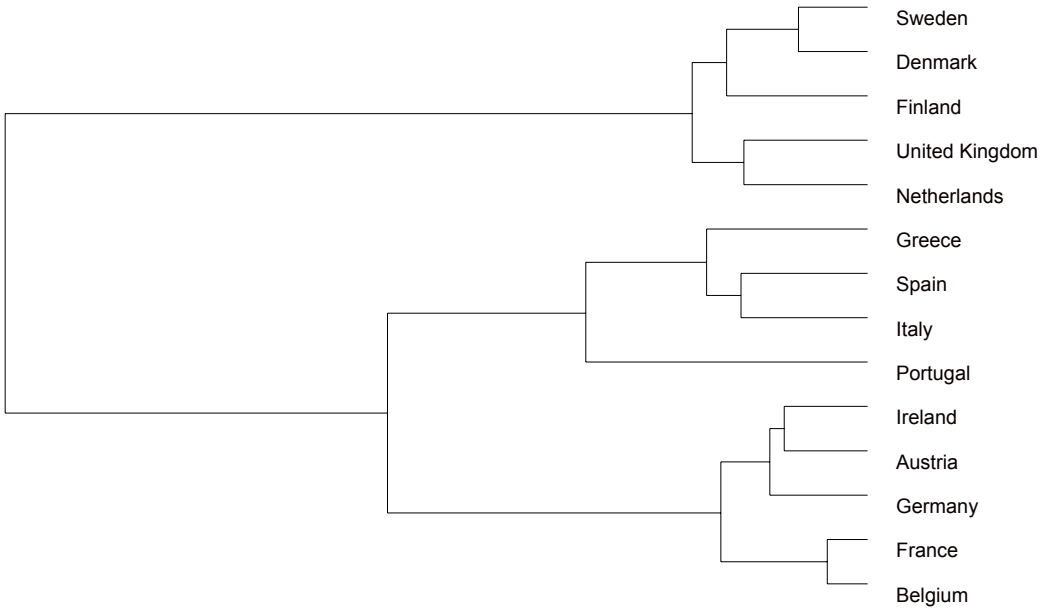


Figure C2



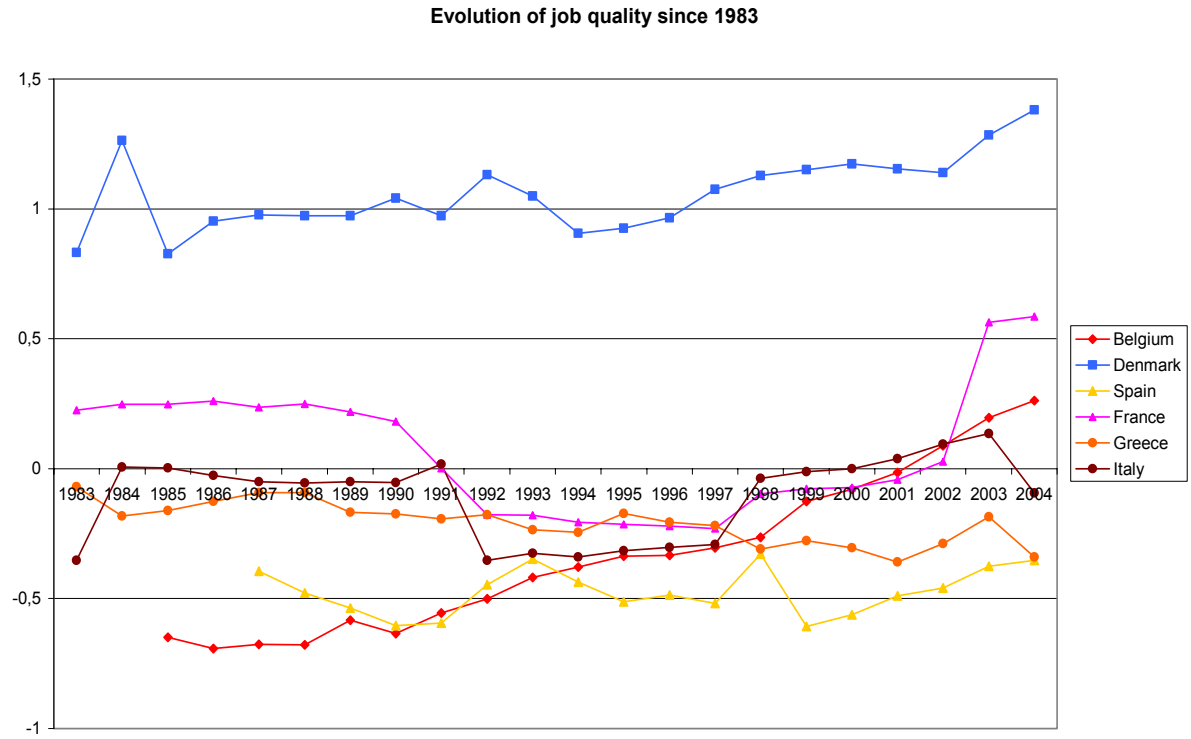
2-Dynamic results since 1983 (EU 15)

Figure C3

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1 1 1	Denmark	Denmark	Denmark	Denmark	Denmark	Denmark	Denmark	Denmark	Denmark	Denmark	Denmark
2 2					France	France	France	France		France	France
3 3	France	France	France	France	Belgium	Belgium	Belgium	Belgium	Belgium	Belgium	Belgium
4 4 4			Belgium	Belgium	Italy	Italy	Italy	Italy	France	Italy	Italy
5	Italy	Italy							Italy	Greece	Greece
6 6 6	Greece	Greece	Greece Italy	Greece Italy	Spain Greece	Spain Greece	Spain Greece	Spain Greece	Spain Greece	Spain	Spain

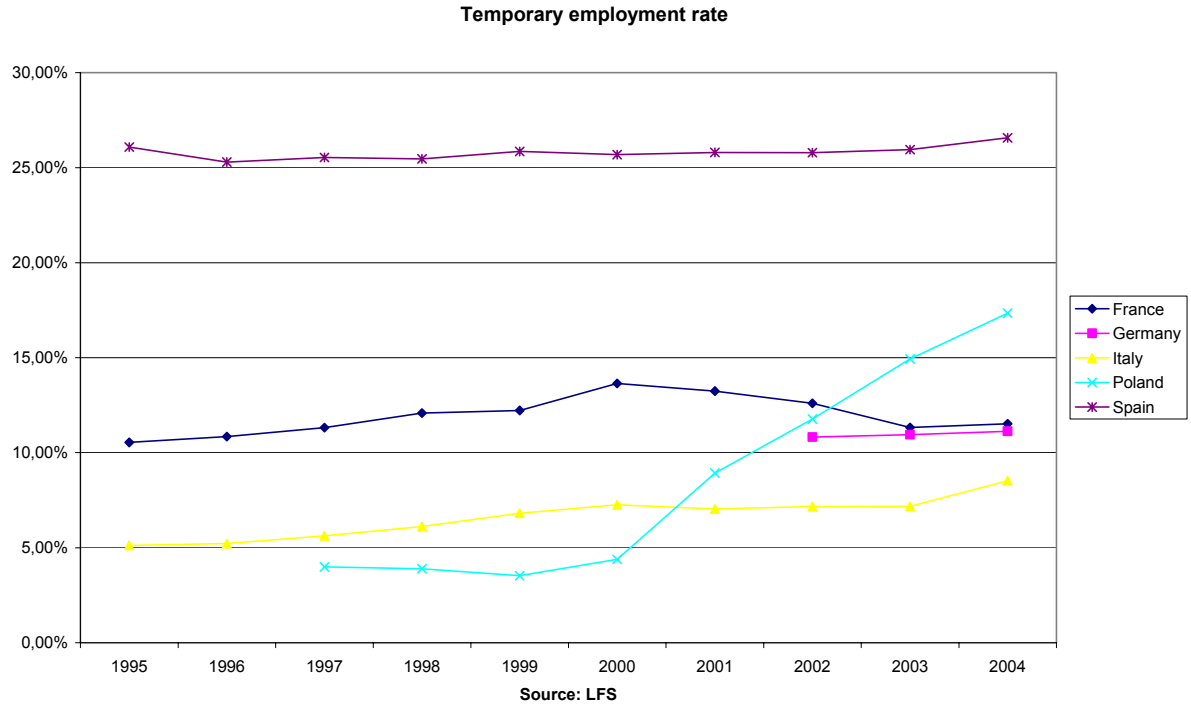
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1 1 1	Denmark	Sweden	Sweden	Denmark Sweden	Denmark Sweden	Denmark Sweden	Denmark Sweden	Denmark Sweden	Denmark Finland Sweden	Denmark Finland Sweden	Denmark Finland Sweden
2 2	France	Denmark	Denmark Finland	Finland			Finland	Finland			
3 3	Belgium	Finland	Austria France	Austria France	Spain Finland	Austria Finland	Austria	Austria	Austria Italy	Germany Belgium	Austria France
4 4 4	Italy	Austria Belgium France	Belgium	Belgium	Austria	Italy	Greece Italy	Belgium Italy	Germany Belgium	Austria France	Germany Belgium
5	Greece	Italy	Italy	Italy	Italy	Greece		France	France	Italy	Italy
6 6 6	Spain	Spain Greece	Spain Greece	Spain Greece	Belgium France Greece	Belgium Spain France	Belgium Spain France	Spain Greece	Spain Greece	Spain Greece	Spain Greece

Figure C4



Appendix D: Descriptive statistics since 1995 (source: LFS, except figure D8 and D13)

Figure D1



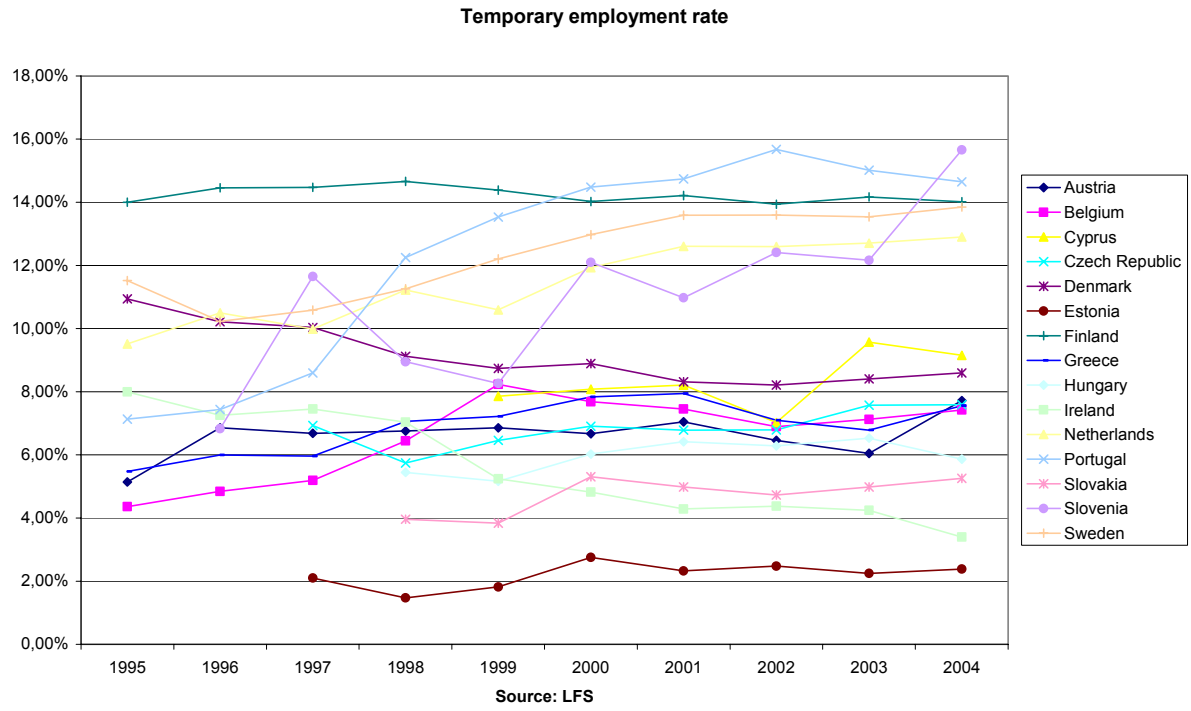
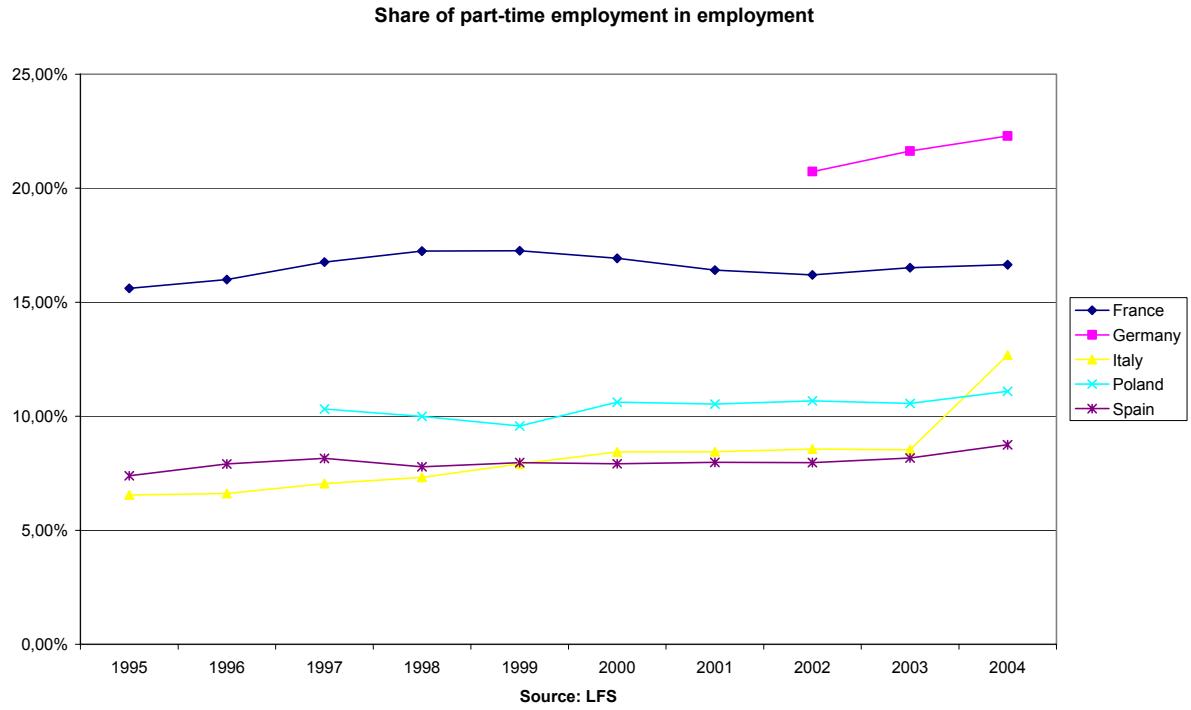


Figure D2


Share of part-time employment in employment
25,00%
20,00%
15,00%
10,00%
5,00%
0,00%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
Source: LFS

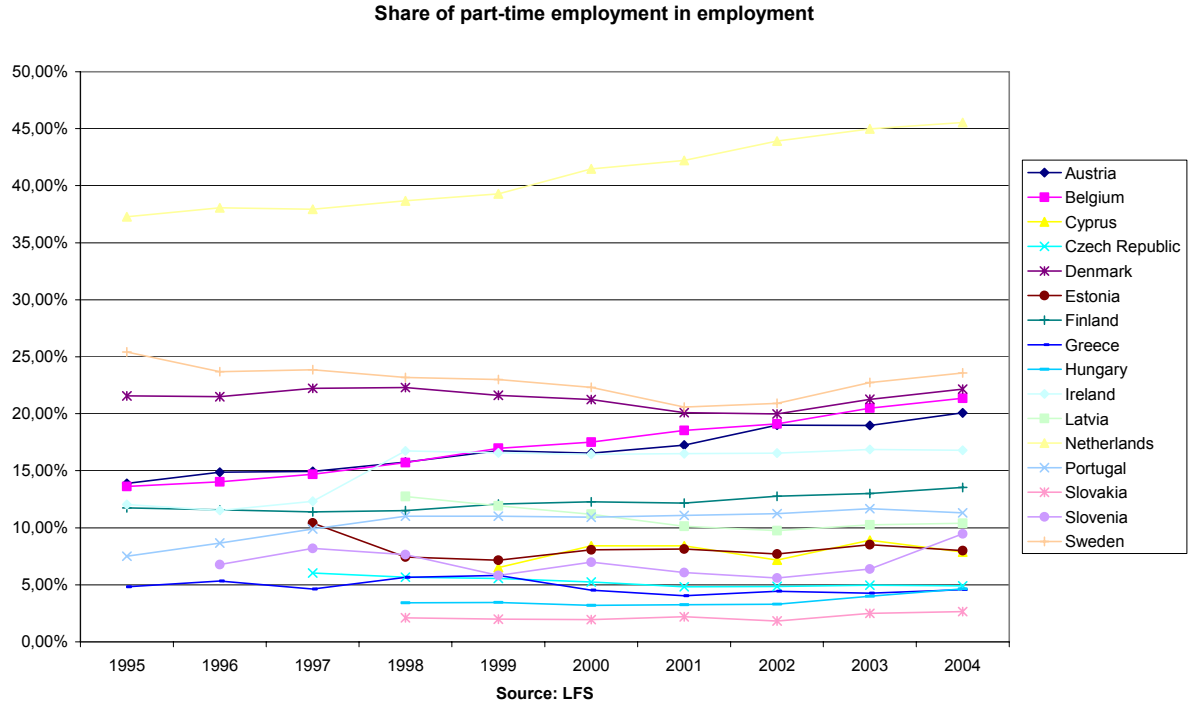
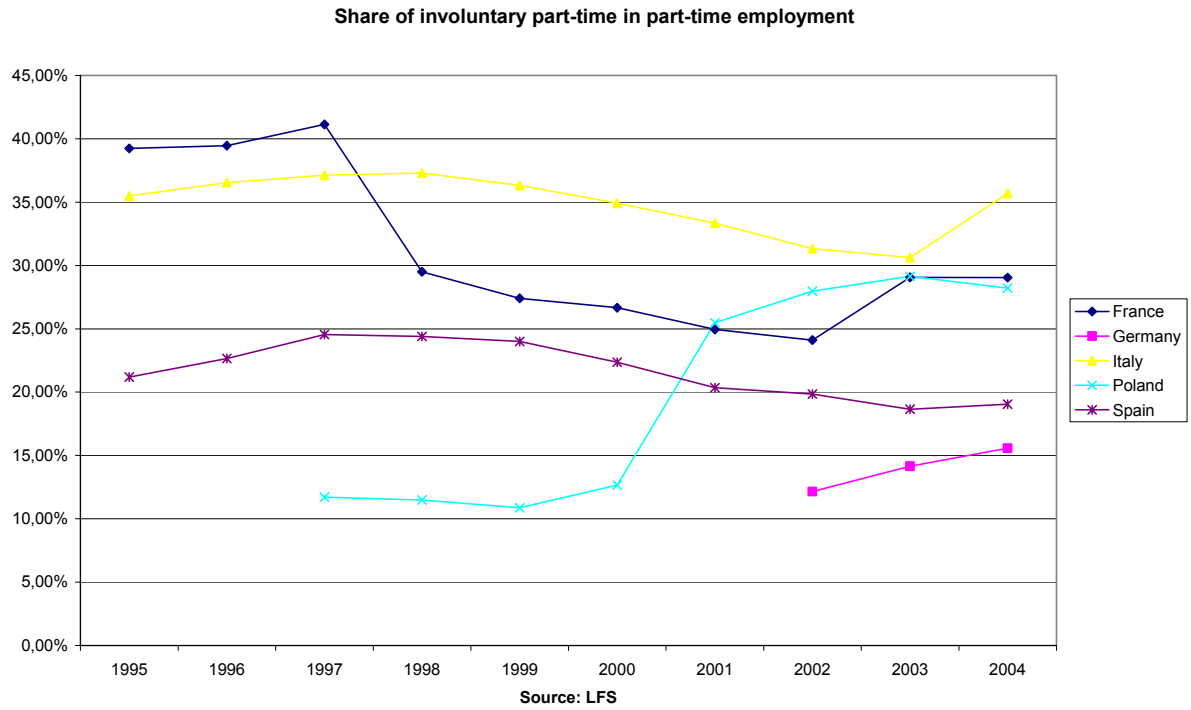

Share of part-time employment in employment
50,00%
45,00%
40,00%
35,00%
30,00%
25,00%
20,00%
15,00%
10,00%
5,00%
0,00%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Austria
Belgium
Cyprus
Czech Republic
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Portugal
Slovakia
Slovenia
Sweden
Source: LFS

Figure D3


Share of involuntary part-time in part-time employment
45,00%
40,00%
35,00%
30,00%
25,00%
20,00%
15,00%
10,00%
5,00%
0,00%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
Source: LFS

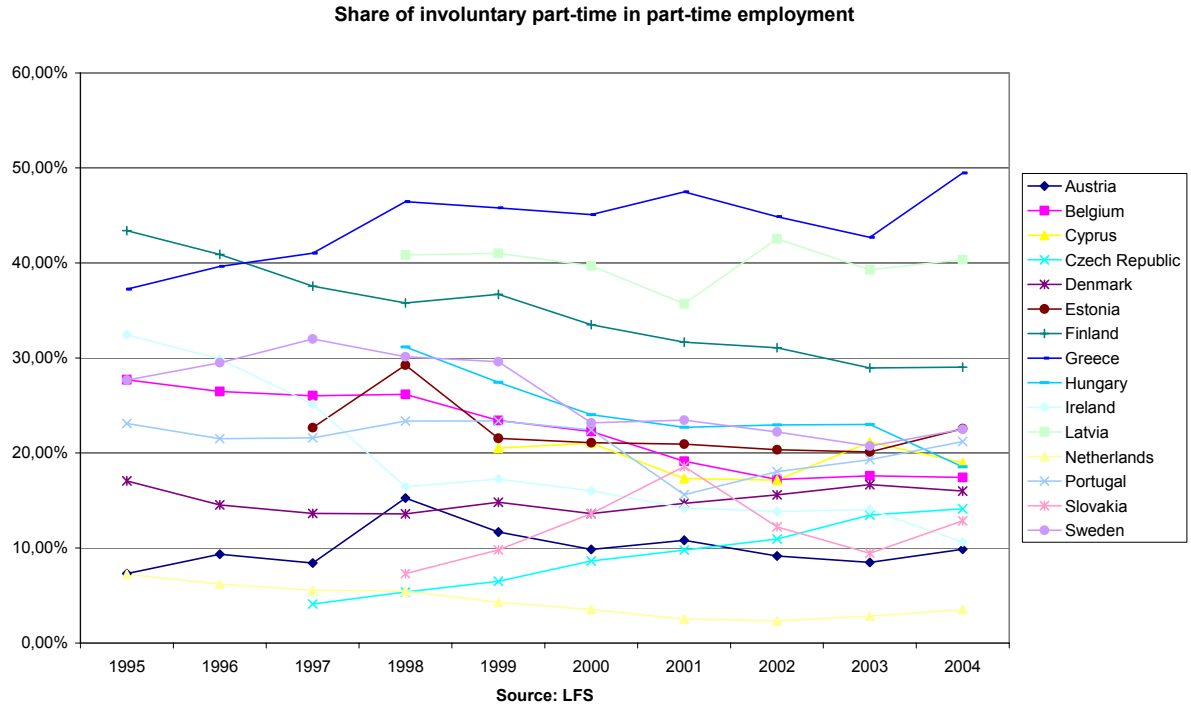
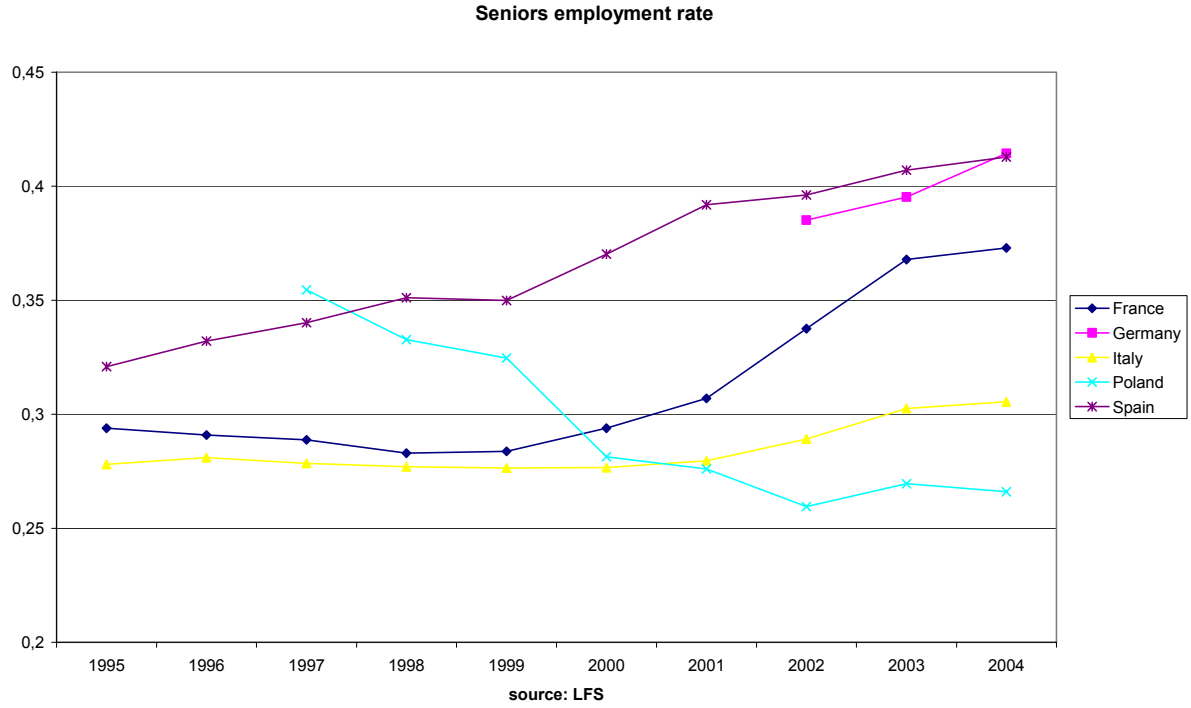

Share of involuntary part-time in part-time employment
60,00%
50,00%
40,00%
30,00%
20,00%
10,00%
0,00%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Austria
Belgium
Cyprus
Czech Republic
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Portugal
Slovakia
Sweden
Source: LFS

Figure D4


Seniors employment rate
0,45
0,4
0,35
0,3
0,25
0,2
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
source: LFS

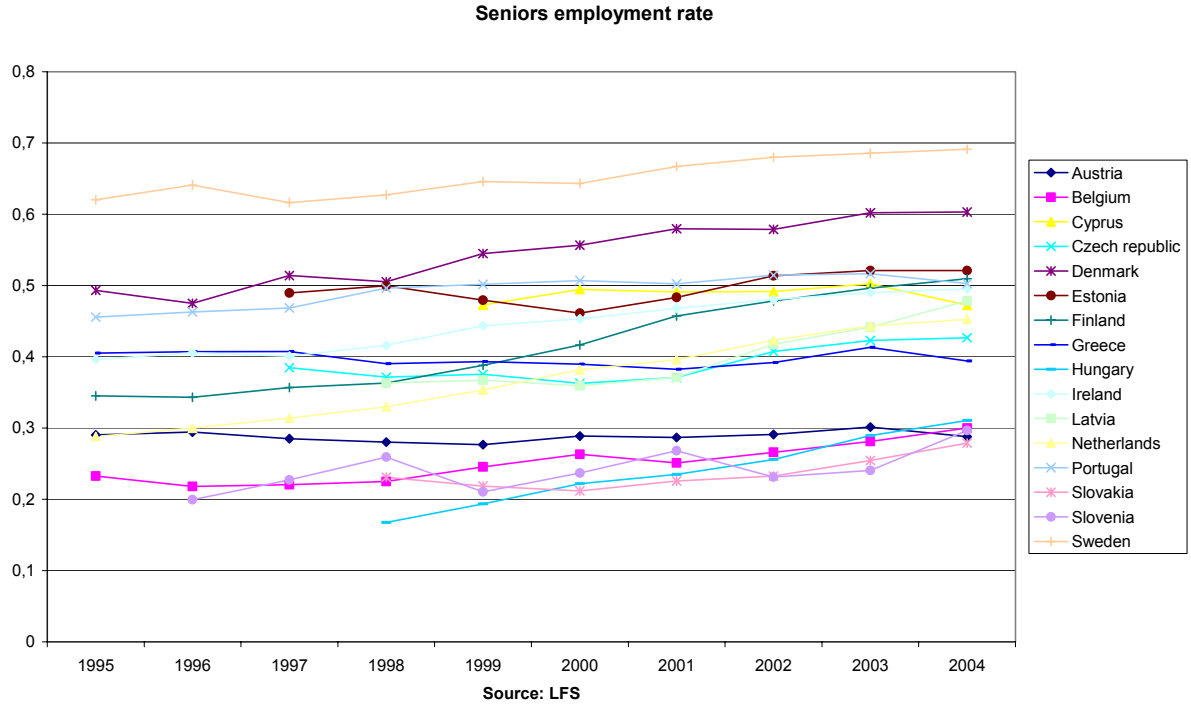
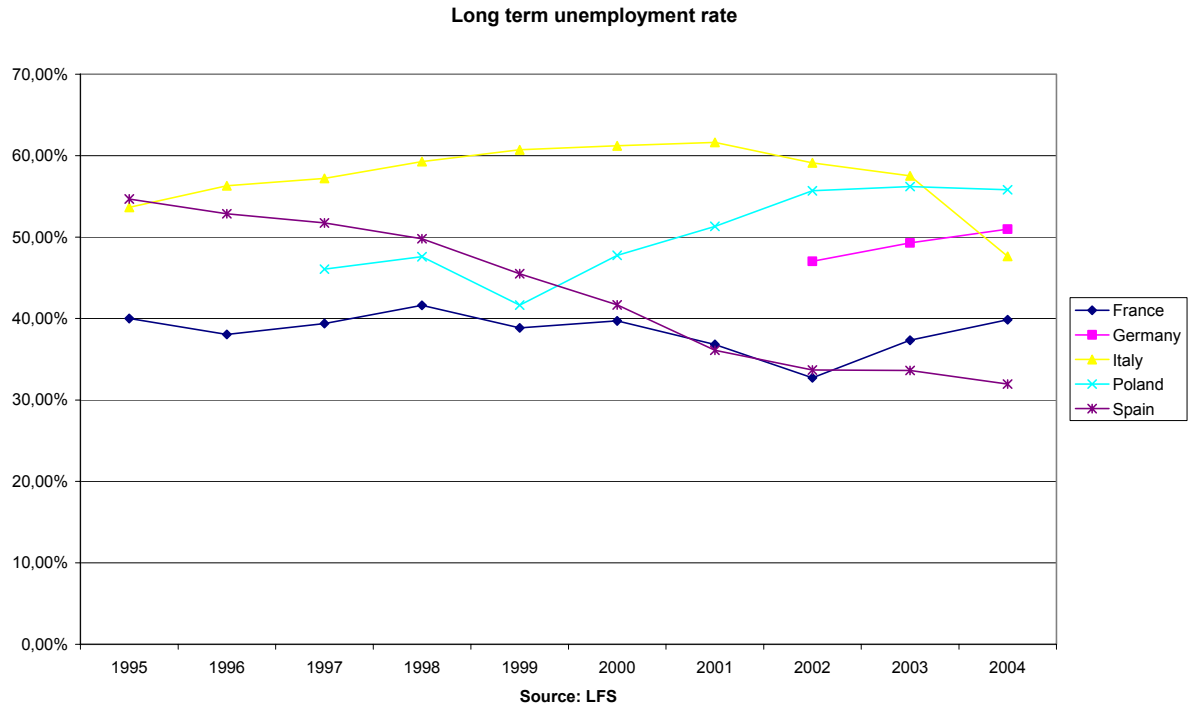

Seniors employment rate
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Austria
Belgium
Cyprus
Czech republic
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Portugal
Slovakia
Slovenia
Sweden
Source: LFS

Figure D5


Long term unemployment rate
70,00%
60,00%
50,00%
40,00%
30,00%
20,00%
10,00%
0,00%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
Source: LFS

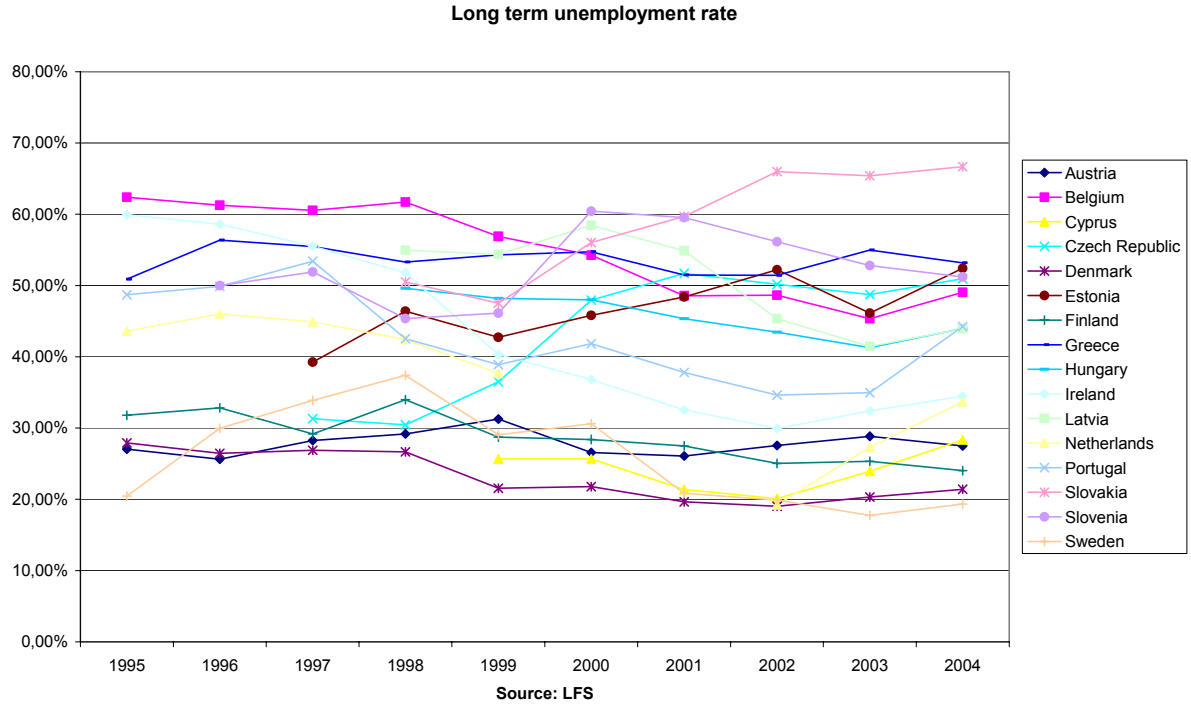
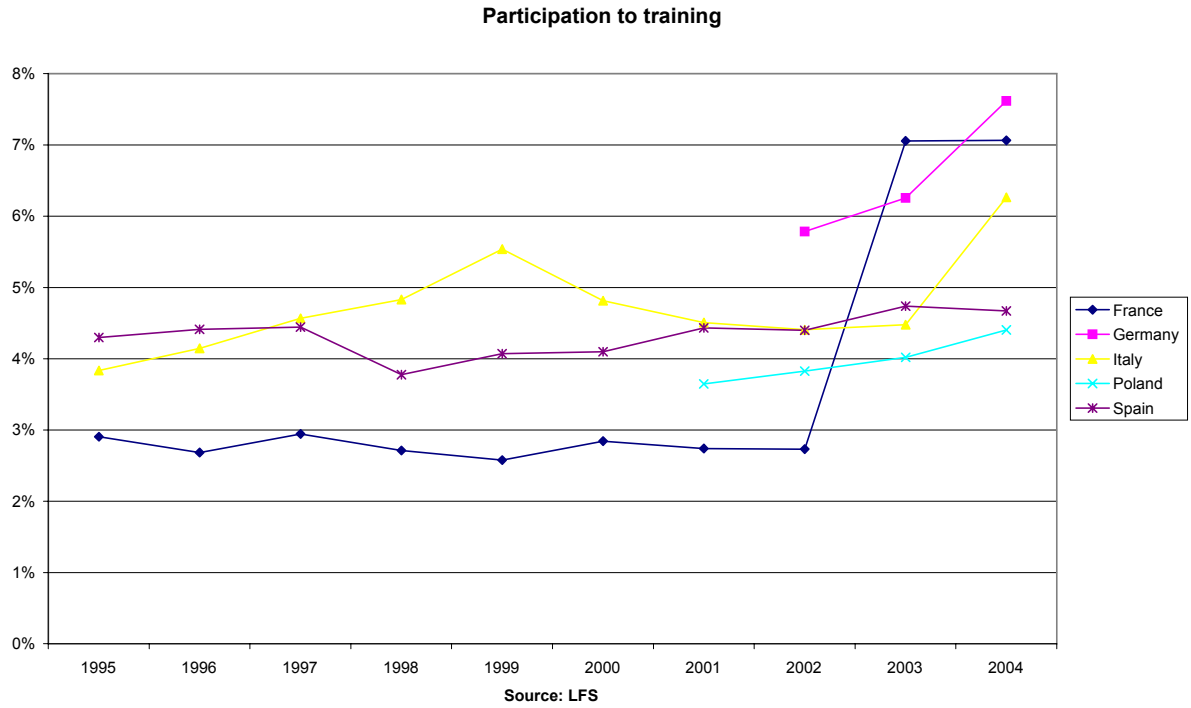

Long term unemployment rate
80,00%
70,00%
60,00%
50,00%
40,00%
30,00%
20,00%
10,00%
0,00%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Austria
Belgium
Cyprus
Czech Republic
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Portugal
Slovakia
Slovenia
Sweden
Source: LFS

Figure D6


Participation to training
8%
7%
6%
5%
4%
3%
2%
1%
0%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
Source: LFS

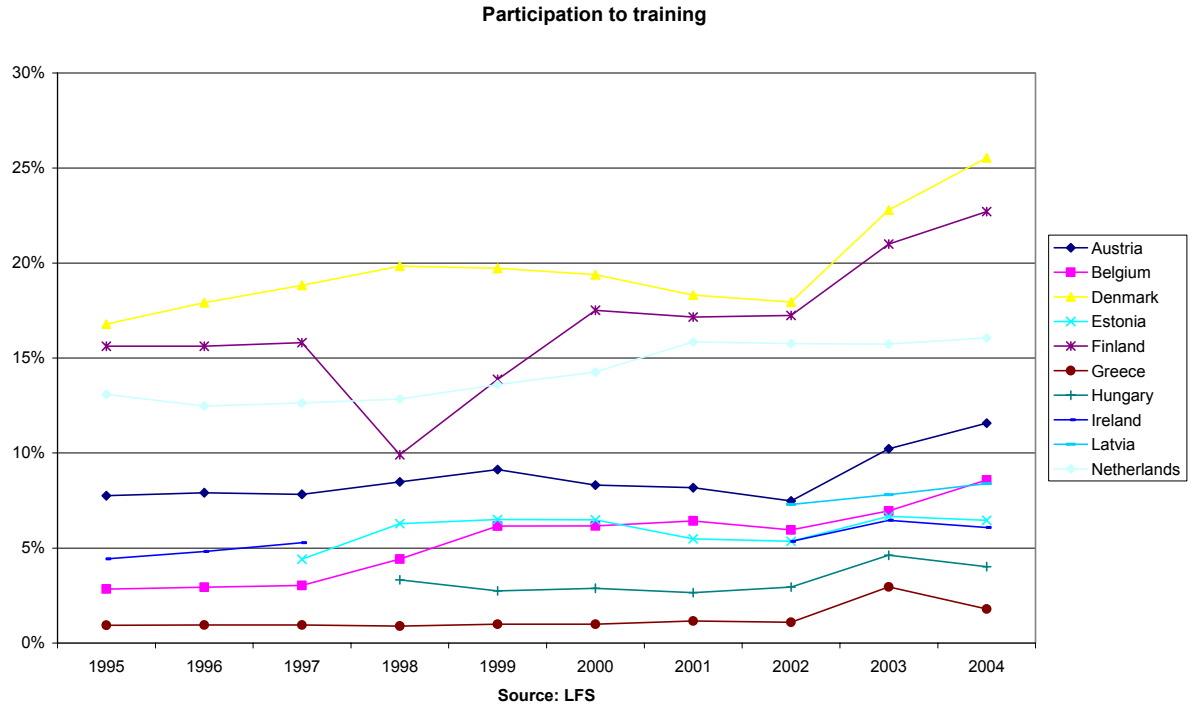
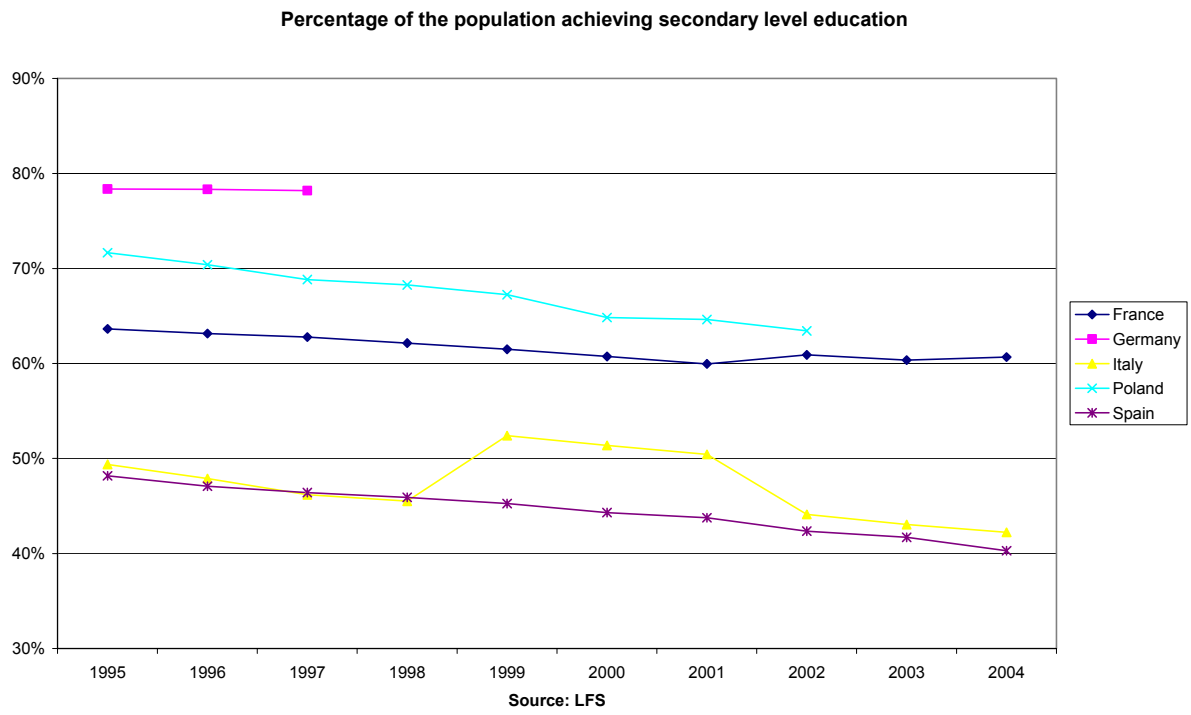

Participation to training
30%
25%
20%
15%
10%
5%
0%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Austria
Belgium
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Source: LFS

Figure D7


Percentage of the population achieving secondary level education
90%
80%
70%
60%
50%
40%
30%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
Source: LFS

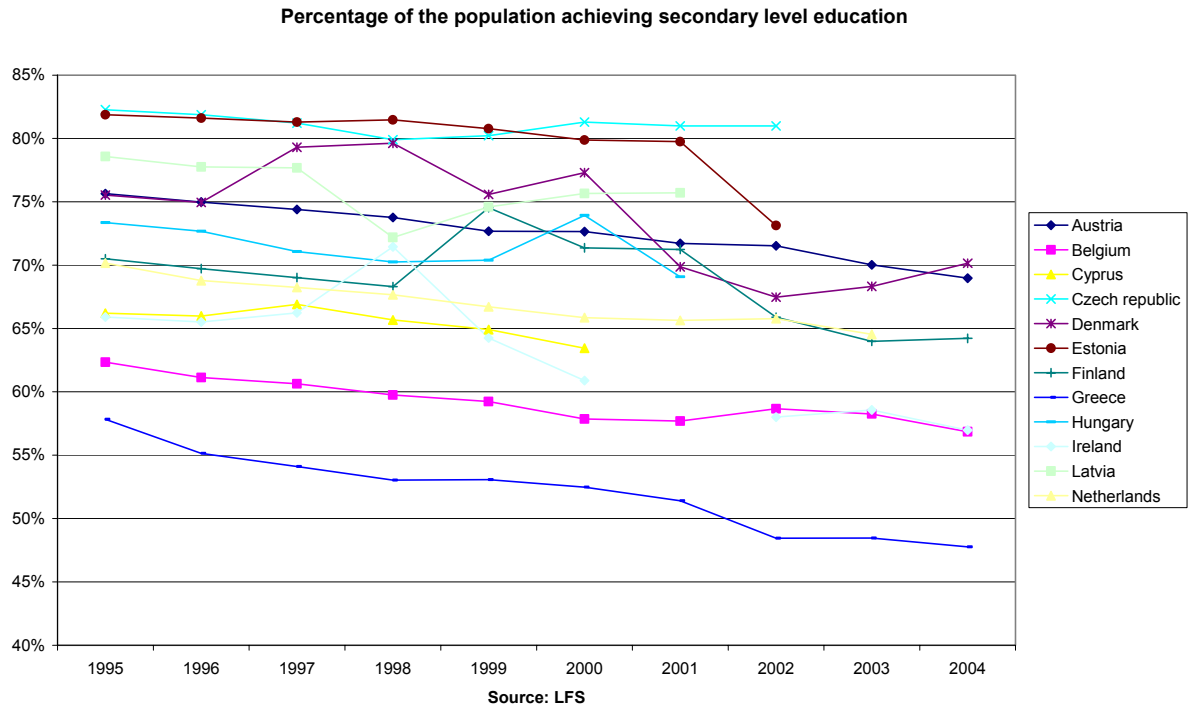
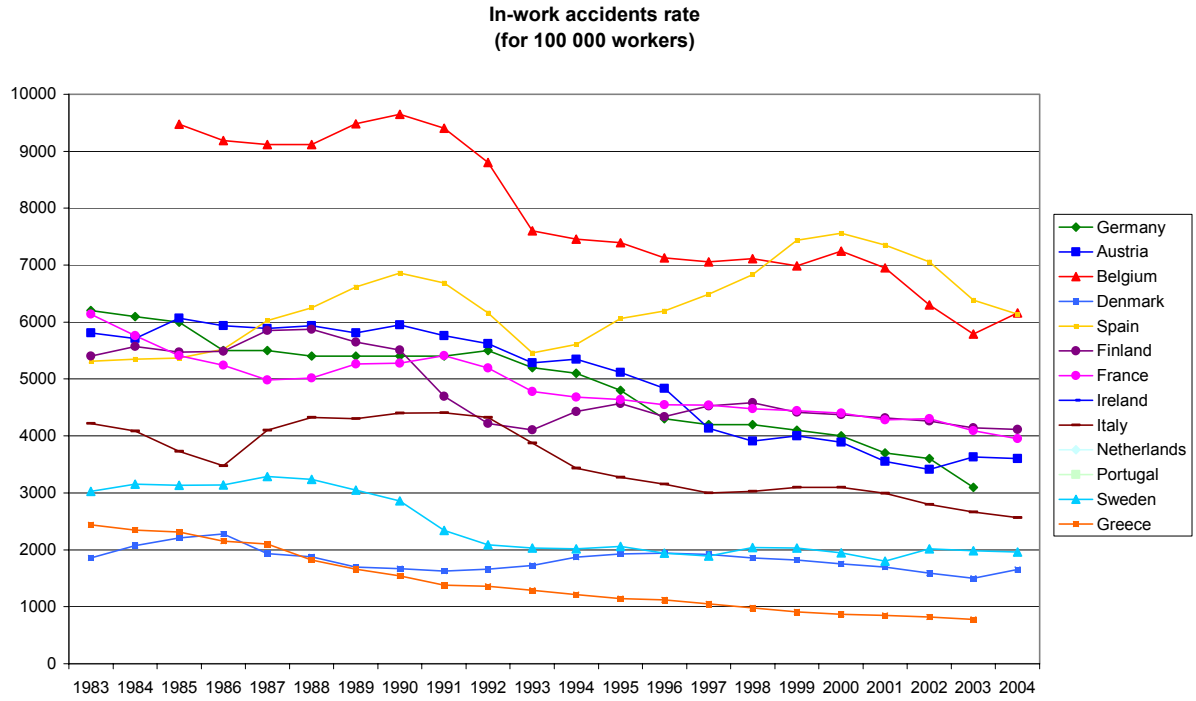

Percentage of the population achieving secondary level education
85%
80%
75%
70%
65%
60%
55%
50%
45%
40%
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Austria
Belgium
Cyprus
Czech republic
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Source: LFS

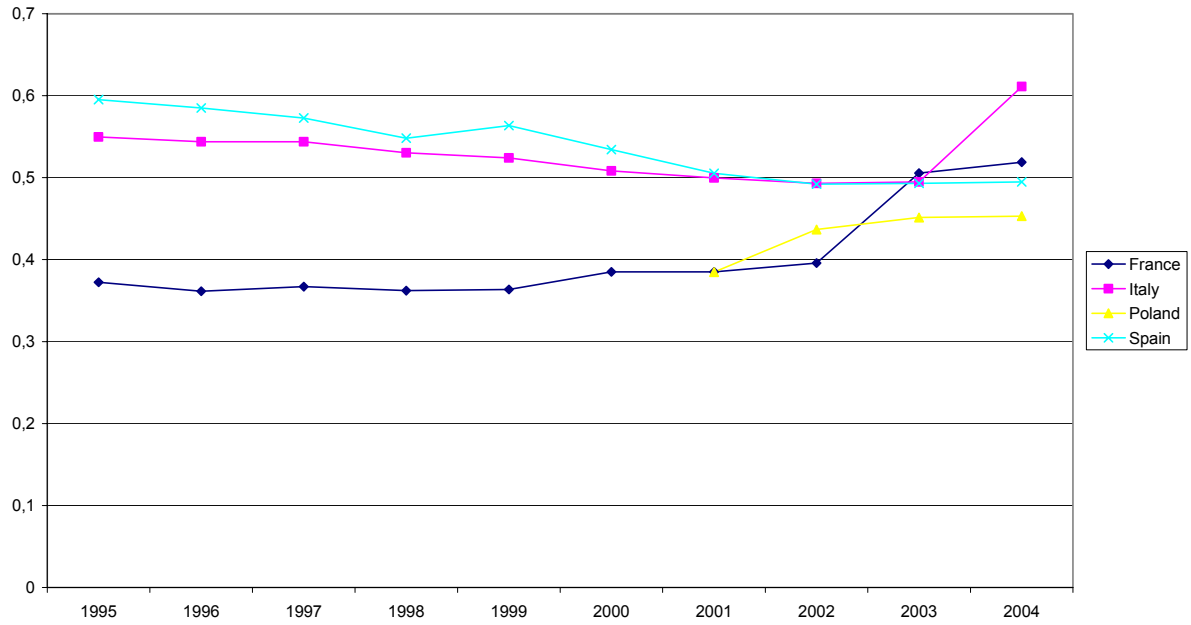
Figure D8



Source: national data provided by national institutes

Figure D9

Share of the working population working with atypical hours and schedules (proportion of night work + proportion of Sunday and Saturday work)



Share of the working population working with atypical hours and schedules (proportion of night work + proportion of Sunday and Saturday work)

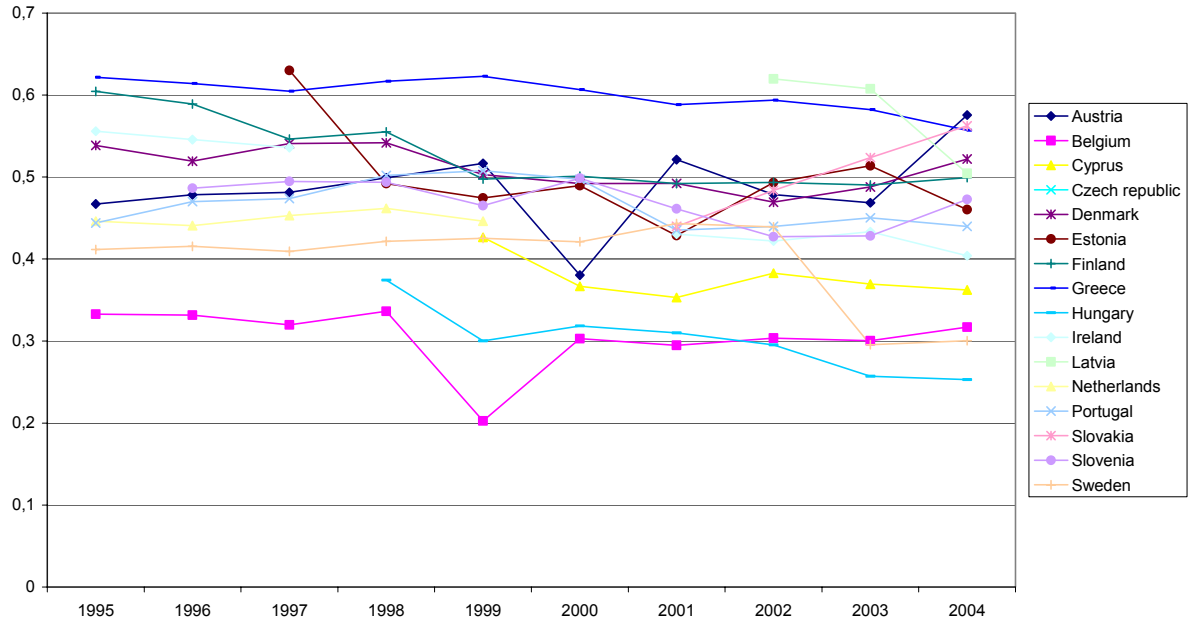
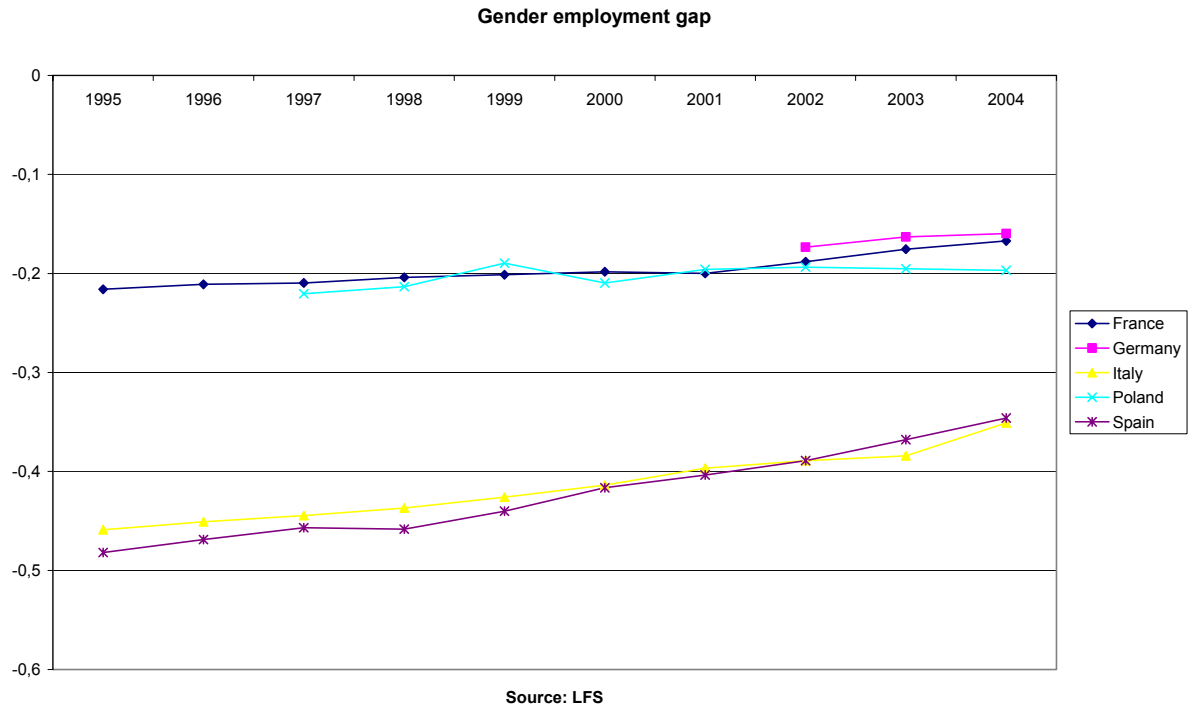
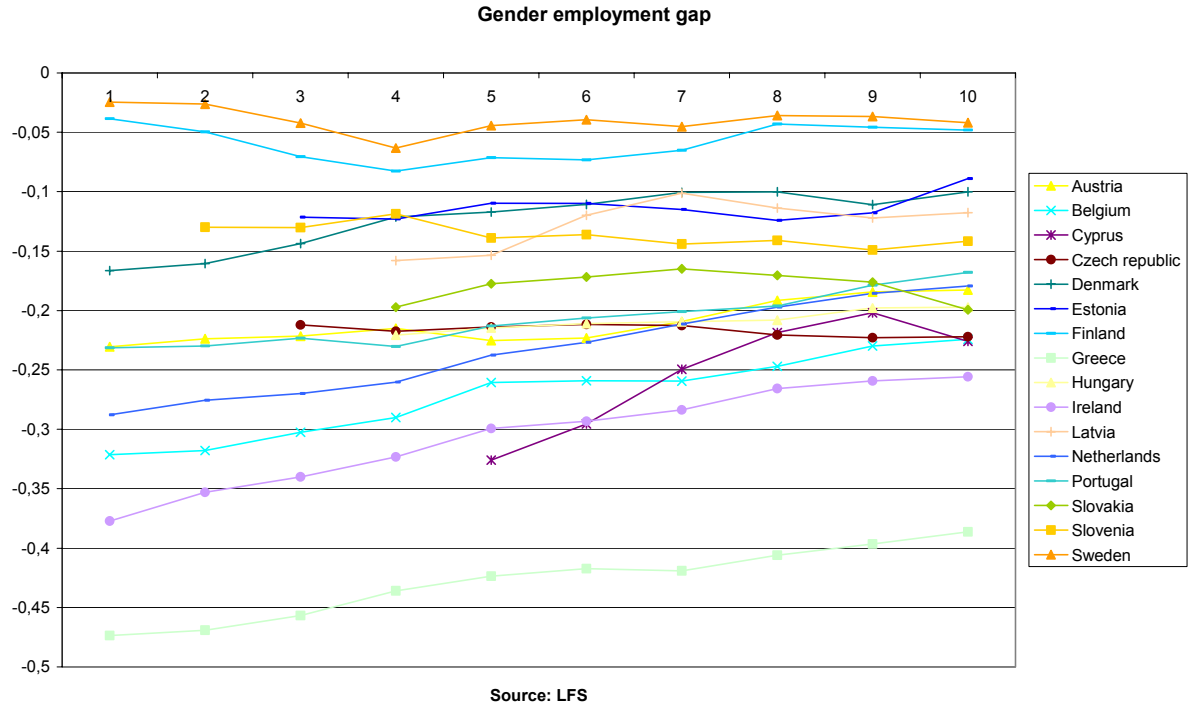


Figure D10



Source: LFS



Source: LFS

Figure D11


Index of gender segregation in sectors
0,38
0,36
0,34
0,32
0,3
0,28
0,26
0,24
0,22
0,2
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
Source: LFS

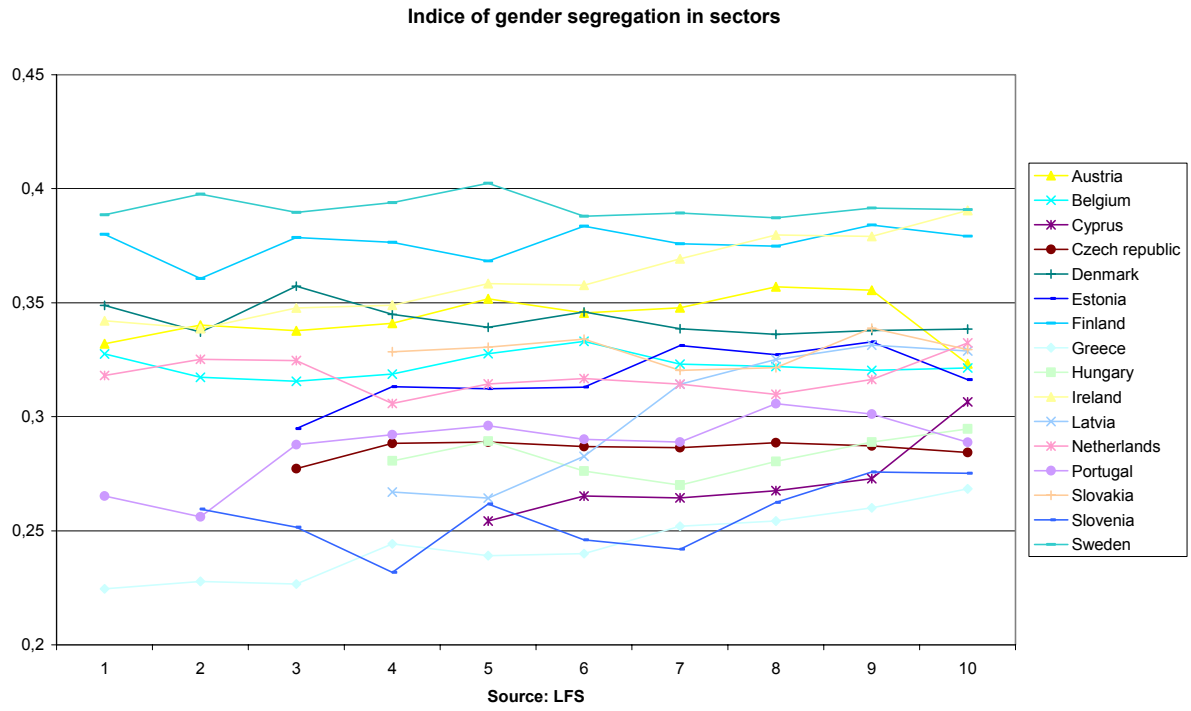
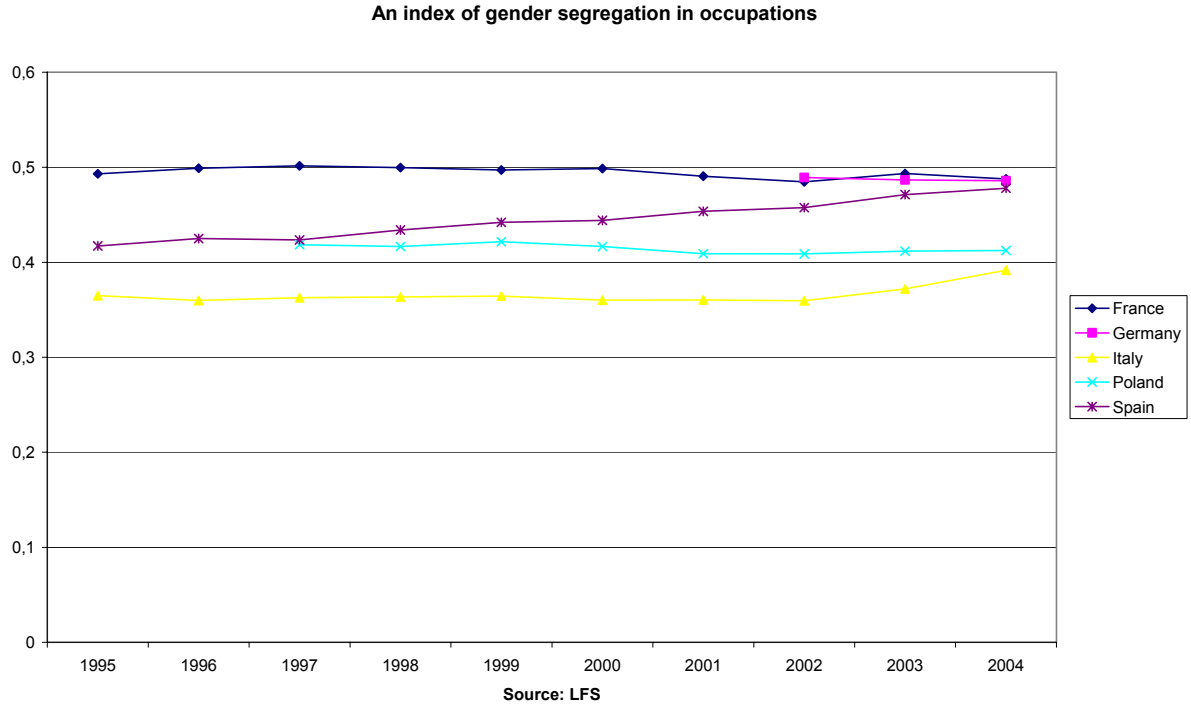

Indice of gender segregation in sectors
0,45
0,4
0,35
0,3
0,25
0,2
1
2
3
4
5
6
7
8
9
10
Austria
Belgium
Cyprus
Czech republic
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Portugal
Slovakia
Slovenia
Sweden
Source: LFS

Figure D12


An index of gender segregation in occupations
0,6
0,5
0,4
0,3
0,2
0,1
0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
France
Germany
Italy
Poland
Spain
Source: LFS

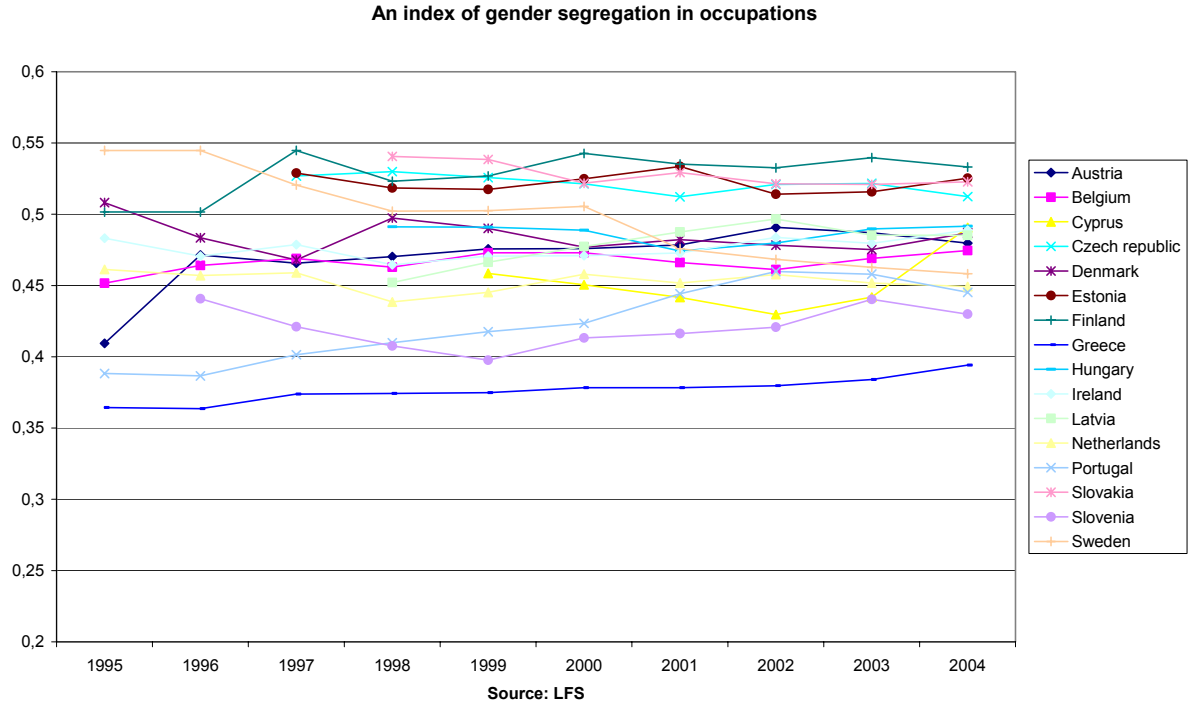
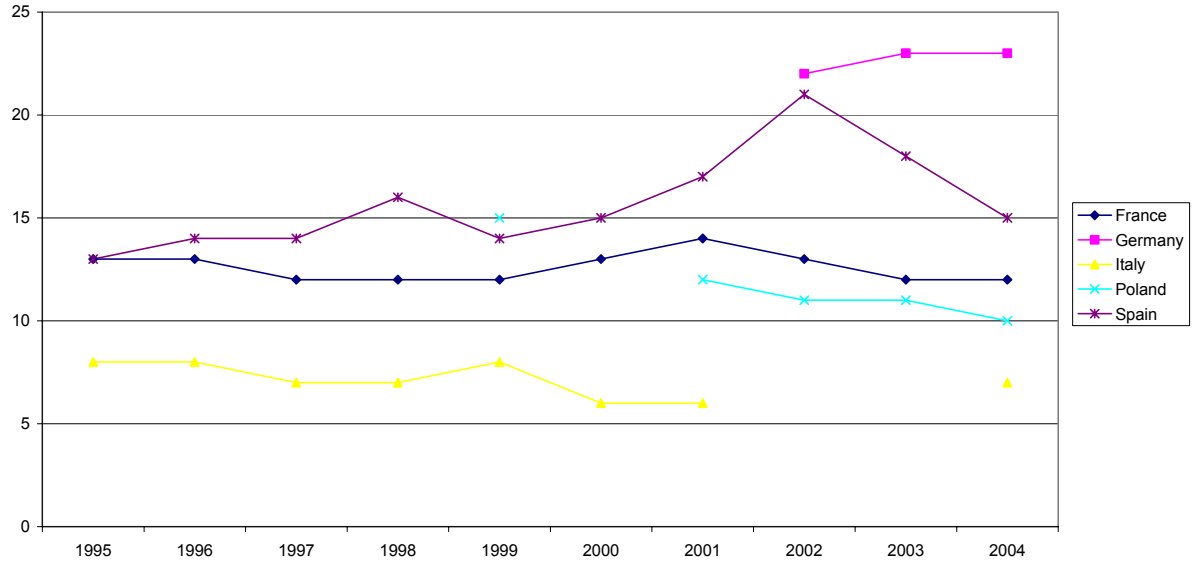

An index of gender segregation in occupations
0,6
0,55
0,5
0,45
0,4
0,35
0,3
0,25
0,2
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Austria
Belgium
Cyprus
Czech republic
Denmark
Estonia
Finland
Greece
Hungary
Ireland
Latvia
Netherlands
Portugal
Slovakia
Slovenia
Sweden
Source: LFS

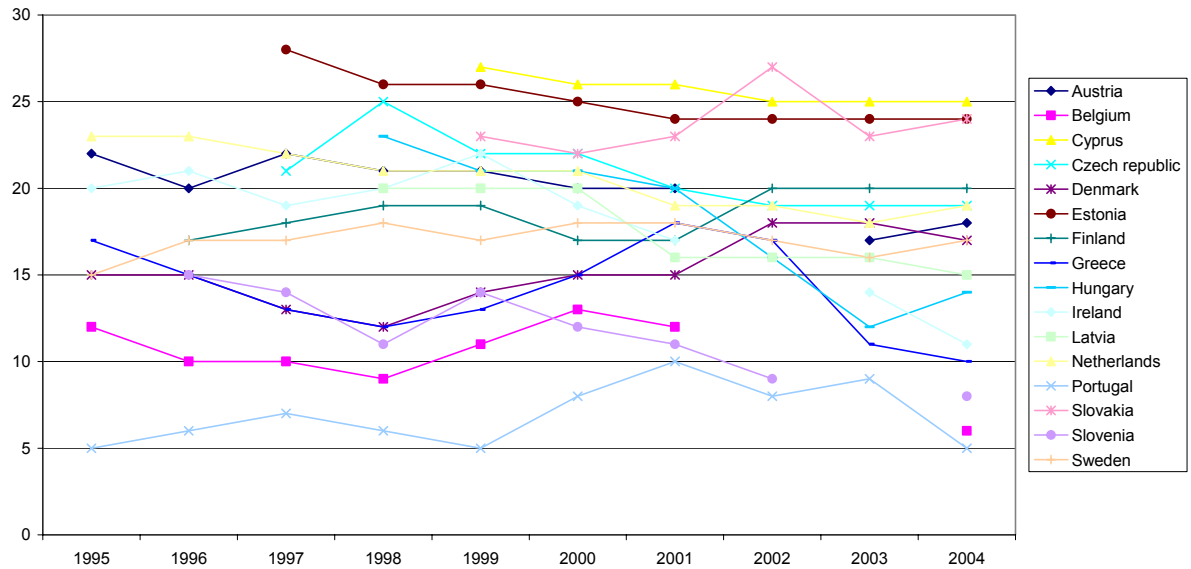
Figure D13

Gender pay gap
(Difference between men's and women's average gross hourly earnings as percentage of men's average gross hourly earnings (for paid employees)



Source: ECHP, EU-SILC, Compendium, European Commission

Gender pay gap
(Difference between men's and women's average gross hourly earnings as percentage of men's average gross hourly earnings (for paid employees)



Source: ECHP, EU-SILC, Compendium, European Commission