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FUNCTIONAL FLEXIBILITY STRATEGIES:

EVIDENCE FROM COMPANIES

IN FIVE SMALL EUROPEAN ECONOMIES

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ABSTRACT: This study is one of several so-called theme reports produced within the framework of the EU funded research project FLEXIBILITY AND COMPETITIVENESS: LABOUR MARKET FLEXIBILITY, INNOVATION AND ORGANISATIONAL PERFORMANCE (FlexCom). It attempts to make an empirical contribution to the functional flexibility field based on company case studies undertaken for the five small open European economies – Greece, Finland, Ireland, the Netherlands and Switzerland – covered by the project. In particular, the study reviews briefly how functional flexibility has generally been defined and measured in the existing literature; provides details on the questionnaire used for collecting the needed company survey data, as well as on major characteristics of the 30 organisations actually covered in the study; presents cross-country empirical evidence on functional flexibility strategies, and, finally, tries to identify links between functional flexibility and economic performance.

KEY WORD: functional flexibility, economic performance, companies

JEL: D21, M54

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TIIVISTELMÄ: Tämä tutkimus on yksi nk. teemaraporteista, jotka on tuotettu EU:n rahoittaman tutkimusprojektin JOUSTAVUUS JA KILPAILUKYKY: TYÖMARKKINOIDEN JOUSTAVUUS, INNOVOINTI JA ORGANISAATIOIDEN MENESTYS (FlexCom) puitteissa. Tutkimuksessa pyritään empiirisesti tarkastelemaan toimintojoustavuuden kenttää tapaustutkimusten avulla, jotka on tehty viidessä pienessä Euroopan maassa – Alankomaissa, Kreikassa, Irlannissa, Suomessa ja Sveitsissä. Erityisesti tutkimuksessa tehdään lyhyt katsaus siihen, miten toimintojoustavuus on alan kirjallisuudessa määritelty ja miten sitä on mitattu; esitellään sekä yksityiskohtaisia tietoja aineiston keräämiseen käytetystä kyselylomakkeesta että merkittäviä ominaisuuksia 30 tutkitusta organisaatiosta; tarkastellaan maiden rajat ylittäviä todisteita toimintojoustostrategioista; ja lopuksi pyritään löytämään yhteyksiä toimintojoustavuuden ja taloudellisen menestyksen välillä.

AVAINSANAT: taloudellinen menestys, toimintojoustavuus, yrityksiä

JEL: D21, M54

CONTENT

ENGLISH SUMMARY

In public and political debates, flexibility has been associated with both positive and negative changes in the economy in general and in the labour market in particular. Positive attitudes towards flexibility stress the opportunities of making working life and, thus, the economy more prone to rapidly changing conditions and environments. These positive attitudes have inevitably been fuelled by the flexibility-related ideas put forth in academic discourse. Among these ideas are the contention that the achievement of a competitive advantage through innovative activities increasingly requires organisations to be flexible in term of both work organisation and learning, and the notion that the most successful companies are those who achieve flexibility through human resource development strategies.

Flexibility is generally seen as the counterpart to legal restrictions and rigidities occurring in, for instance, wage-setting mechanisms, overtime use and occupational and hierarchical structures. The negative attitudes expressed about flexibility commonly depart from these same restrictions and rigidities being structures necessary for protecting the rights of employees, while simultaneously forcing the employers towards more use of functionally flexible strategies. However, with the refining and broader understanding of the meaning of working life flexibility, a better consensus among social partners seems to have emerged. This tendency has evidently been fuelled by extending flexibility to also include aspects such as increased decentralisation of responsibilities concerning the organisation of working tasks.

The present study attempts to make an empirical contribution to the functional flexibility field based on company case studies undertaken for five small open European economies – Greece, Finland, Ireland, the Netherlands and Switzerland. The survey data on company personnel policies utilised in the study cover a total of 30 organisations from these five countries. The research partners of the *FlexCom* project designed the questionnaire and also carried out the surveys and interviews with the selected companies, with each partner covering his or her own country.

The questionnaire included a broad set of both quantitative and qualitative questions covering various aspects of the companies' personnel policies with the focus being on the incidence and extent of flexibility strategies. The overarching objective of the questionnaire was to shed light on the need for flexibility in different types of company, and to identify differences and similarities in the flexibility measures actually implemented in companies operating in the five small European countries under study. The companies surveyed were selected according to a classification of companies originally introduced by Pavitt (1984) to enable comparisons of companies following different types of business strategies. Specifically, the Pavitt classification distinguishes between five categories of companies: science-based, supplier-dominated, scale-intensive, specialised sub-contractor and IT-intensive.

Needless to say, the companies surveyed in the five partner countries are by no means representative. Instead they were typically selected based on their successful implementation of functionally flexible strategies. Hence, no generalisations concerning individual countries are to be made based on these mostly "best-practice" or "leading-edge" company case studies. Rather the company cases can show that companies may, or may not, develop similarly across national borders despite even considerable country-specific differences. In particular, a conspicuous similarity in development trends concerning functional flexibility

is discernible among the science-based companies and, especially, among the IT-intensive companies. This might be taken as an indication of a strong sector-specific impact that induces companies engaged within these fields to behave in a similar way across the European borders. The other three sectors, in contrast, seem to be shaped more by national institutional settings possibly due – at least in part – to production lines playing a more crucial role in the activities of these companies.

Apart from separate analyses of major functional flexibility indicators, attempts were also made to examine to what extent the companies surveyed combine different practices. Such an exercise indicates that about two-thirds of the companies use three or all four of the following practices: group work, job rotation, internal moves to new functions, internal moves to new departments. When further noting that all of them implement human resource management strategies and use compensation systems based on results or quality, it is without doubt fair to conclude that the companies surveyed for this study do stand out as "front-runners" in the field of functional flexibility practices.

Finally, the study focused on uncovering potential links between the companies' functional flexibility practices and their economic performance. This was done by calculating simple correlation coefficients between the various functional flexibility and economic performance indicators and also by examining the companies' responses to explicit questions on these matters included in the questionnaire. Some, if not all, of the calculated correlation coefficients turned out to be statistically significant in relation to financial, business environment, as well as employment measures. This implies that both human resource management and workplace organisation practices do seem to have a positive impact on the company's economic performance in its various dimensions, or are used with the explicit aim of achieving such effects. Thus, an increasing share of higher educated employees, provision of more training, and increased learning of skills on the job, all influence the economic performance of the company. This also holds for the various modes of workplace re-organisation, especially for group work and job rotation. These findings are also well in line with the assessments provided by the companies in response to the questions asking about the perceived impact of group work, job rotation and/or increased decentralisation of decision-making on their economic performance.

YHTEENVETO

Julkisessa ja poliittisessa keskustelussa joustavuus on yhdistetty sekä positiivisiin että negatiivisiin muutoksiin yleisemmin taloudessa ja erityisesti työmarkkinoilla. Positiivisessa suhtautumistavassa joustavuus nähdään mahdollisuudeksi tehdä työelämä, ja siten myös koko talous muutoskykyiseksi nopeasti muuttuvien olosuhteiden edessä. Nämä positiiviset näkökulmat ovat epäilemättä saaneet vaikutteita akateemisen tutkimuksen esiintuomista ajatuksista joustavuudesta. Näihin kuuluu mm. käsitys siitä, että kilpailukyvyn saavuttaminen innovaatiotoiminnan avulla edellyttää yhä enemmän organisaatioiden joustavuutta niin työn organisoinnin kuin oppimisen kannalta, kuin siitä, että menestyneimpiä ovat ne yritykset, jotka aikaansaavat joustavuutta henkilöstöresurssien kehittämisstrategioiden kautta.

Joustavuus nähdään usein vastakohtana lakisääteisille rajoituksille ja jäykkyyksille, joita esiintyy mm. palkanmuodostusjärjestelmissä, ylityön käytössä ja ammatillisissa ja hierarkkisissa rakenteissa. Siten negatiiviset näkökulmat joustavuudesta ovat usein lähtöisin niistä rajoituksista ja jäykkyyksistä, jotka on rakennettu työntekijöiden oikeuksien suojaamiseksi ja jotka samanaikaisesti pakottavat työnantajia käyttämään enemmän toiminnallisia joustavuusstrategioita. Laajempi ja syvempi käsitys työelämän joustoista on kuitenkin tuonut mukanaan paremman yhteisymmärryksen sosiaalisten osapuolten kesken. Tätä suuntausta on epäilemättä vauhdittanut se, että joustavuus on laajentunut koskemaan myös sellaisia puolia kuten vastuunjakaminen työtehtävien organisoinnissa.

Tämä tutkimus pyrkii empiirisesti selvittämään toimintojoustavuuden kenttää tapaustutkimusten avulla, jotka on tehty viidessä pienessä Euroopan maassa – Alankomaissa, Kreikassa, Irlannissa, Suomessa ja Sveitsissä. Tutkimusaineistona toimiva kyselyaineisto yritysten henkilöstöpolitiikoista kattaa yhteensä 30 organisaatiota näistä viidestä maasta. *FlexCom*-projektin tutkimusosapuolet suunnittelivat kyselylomakkeen ja myös toteuttivat kyselyt ja haastattelut valikoitujen yritysten kanssa, ja kukin osapuoli kokosi oman maansa aineiston.

Kyselylomake sisälsi laajan joukon sekä kvantitatiivisia että kvalitatiivisia kysymyksiä yritysten henkilöstöpolitiikoiden eri puolista, keskittyen kuitenkin joustavuusstrategioiden esiintymiseen ja laajuuteen. Kyselylomakkeen tärkein päämäärä oli valottaa erityyppisten yritysten tarvetta joustavuuteen, sekä tunnistaa eroja ja yhtäläisyyksiä tutkituissa viidessä Euroopan maassa toimivien yritysten käyttämissä joustavuusmekanismeissa. Aineiston yritykset valittiin alun perin Pavittin (1984) esittämän yritysluokittelun perusteella, jonka avulla on mahdollista vertailla erityyppisiä liiketoimintastrategioita noudattavia yrityksiä. Pavitt-luokittelu sisältää viisi yritysluokkaa: tiedepohjainen, toimittajan hallitsema, skaalaintensiivinen, erikoistunut alihankkija ja IT-intensiivinen.

Tutkitut yritykset eivät missään nimessä tietenkään muodosta edustavaa joukkoa. Sen sijaan yritykset valittiin lähinnä siksi, että ne olivat onnistuneesti ottaneet käyttöön toiminnallisesti joustavia henkilöstöstrategioita. Siten näiden nk. “best-practice” eli esimerkkiyritystapausten perusteella ei ole tehtävissä yleistyksiä yksittäisten maiden suhteen. Sen sijaan yritystapaukset voivat antaa viitteitä siitä, että yritykset joko kehittyvät tai eivät kehity samaan suuntaan maiden rajojen yli huolimatta jopa suurista maakohtaisista eroista. Tiettyjä silmäänpistäviä yhteneväisiä kehitystrendejä onkin havaittavissa tiedepohjaisten yritysten joukossa ja erityisesti IT-intensiivisten yritysten joukossa. Tämä voidaan tulkita indikaatioksi vahvasta sektorispesifisestä vaikutuksesta, mikä saa näillä aloilla toimivat yritykset käyttäytymään samalla tavalla huolimatta maiden välisistä rajoista. Sitä vastoin jäljelle

jääneet kolme muuta liiketoimintasektoria näyttävät olevan enemmän kansallisten institutionaalisten tekijöiden muokkaamia, mahdollisesti ainakin osin sen takia, että näiden yritysten toiminta perustuu paljon suuremmassa määrin tuotantolinjoihin.

Eri toimintojoustavuusindikaattoreita käsittelevien analyysien lisäksi tutkimuksessa tarkasteltiin sitä, miten yritykset yhdistävät eri joustavuusmekanismeja. Tulosten mukaan kaksi kolmasosaa tutkituista yrityksistä käyttää joko kolmea tai kaikkia neljää seuraavista työkäytänteistä: ryhmätyö, tehtäväkierto, sisäiset siirrot tehtävien välillä ja/tai osastojen välillä. Kun vielä kaikki nämä yritykset käyttävät henkilöstöresurssien johtamisstrategioita ja tulokseen tai laatuun perustuvia palkitsemisjärjestelmiä, ei ole epäilystä siitä, etteivätkö nämä yritykset ole "edelläkävijöitä" toiminnallisesti joustavien työtapojen suhteen.

Lopuksi tutkimuksessa pyrittiin löytämään mahdollisia yhteyksiä yritysten toimintojoustostrategioiden ja yritysten taloudellisen menestyksen välille. Tämä toteutettiin laskemalla yksinkertaisia korrelaatiokertoimia eri toimintojousto- ja tulosindikaattorien välillä sekä myös tarkastelemalla yritysten eksplisiittisiä vastauksia näitä asioita käsitteleviin kyselylomakkeen kysymyksiin. Jotkut, tosin eivät kaikki, näistä korrelaatiokertoimista osoittautuivat tilastollisesti merkitseviksi suhteessa taloudellisiin mittareihin tai työympäristöä ja työllisyyttä käsitteleviin mittareihin. Tämä viittaa siihen, että sekä henkilöstöresurssien johtamistavat että työpaikan organisointitavat voivat positiivisesti vaikuttaa yrityksen taloudelliseen menestymiseen monessa suhteessa, tai että niitä käytetään nimenomaan näiden tavoitteiden saavuttamiseen. Siten korkeasti koulutettujen työntekijöiden suurempi osuus, lisääntynyt koulutuksen tarjonta tai uusien taitojen oppiminen kaikki vaikuttavat yrityksen menestymiseen. Tämä pätee myös erilaisiin työn uudelleenorganisointitapoihin, erityisesti ryhmätyöhön ja tehtäväkiertoon. Nämä tulokset sopivat myös yritysten itsensä arvioihin ryhmätyön, tehtäväkierron ja/tai lisääntyneen vastuunjaon havaitusta vaikutuksesta niiden taloudelliseen menestykseen.

1. THE FLEXIBLE FIRM

The "flexible firm" can be seen as a concept summarising the various modes of organisational arrangements that enable employers to achieve the flexibility they need in their employment systems. Broadly speaking, this organisational flexibility can be obtained by means of three distinct strategies of flexible labour utilisation. Adopting the terms introduced by Atkinson (1984), organisational flexibility may be enhanced through functional flexibility, numerical flexibility, or a combination of functional and numerical flexibility.[1] Research on organisational flexibility has proceeded along much the same lines.[2] More precisely, the majority of studies have focused on either functional flexibility or numerical flexibility, while only a limited number of studies have tried to explore the interplay between these two forms of flexibility. Consequently, the current state of knowledge on the relative benefits and costs of companies pursuing one as opposed to the other form of flexibility, or a combination of the two, is still both scarce and ambiguous.

The rapidly changing external business environment, in terms of both technological progress and increased competitive pressures, has increasingly shifted the attention to work organisation mechanisms and human resource management practices that are expected to enhance the company's functional flexibility and responsiveness so as to improve its innovative abilities and economic performance. Such mechanisms and practices are referred to variously in the functional flexibility literature. Some authors have called them high-commitment management (Walton 1985), high-involvement systems (Lawler 1988; Wood 1999), employee involvement systems (Cotton 1993) or transformed work organisations (Osterman 1994). Other authors have called them flexible production systems (MacDuffie 1995), progressive human management practices (Delaney and Huselid 1996), new work organisations (OECD 1996) or flexible (alternative) workplace practices (Gittleman *et al.* 1998). Recent suggestions are high-performance work organisations[3] (Appelbaum *et al.* 2000; Osterman 2000), holistic organisations (Lindbeck and Snower 2000) and proactive[4] workplace practices (Antila and Ylöstalo 2002). A common feature of all these labels is that work organisations based on employee participation and responsibility have replaced the hierarchical systems of control that characterise the traditional Taylorist or Fordist forms of production. Multiple skills enable the employees to move relatively quickly from one job or task to another, while participation in decision-making strengthens their commitment to the company.

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1 The division functional versus numerical flexibility was also adopted by, for example, Hunter *et al.* (1993) and Smith (1997). Before Atkinson (1984), Ouchi (1980) made a distinction between the two strategies by referring to clan versus market. Other denotations used in the literature are dynamic versus static flexibility (Colclough and Tolbert 1992; Deyo 1997), organisation-focused versus job-focused employment relations (Tsui *et al.* 1995), and internal versus external flexibility (OECD 1996; Cappelli and Neumark 2001).

2 It may in this context be noted that wage (or pay or financial) flexibility is a much less studied phenomenon at the micro level. One major reason for this is probably because it has proved to be a less useful flexibility strategy within organisations compared to functional and numerical flexibility.

3 This term has increasing come to replace the terms high-commitment, high-involvement and innovative work practices, used primarily in the US literature (Wood 1999). One possible explanation for the strong breakthrough by such terms in the USA is the effort made to empirically test the influence of such practices on the economic performance of companies. In Europe, the studies of functionally flexible work practices have, until recently, been mainly descriptive.

4 Proactivity refers to the need of companies to be "reflexive" and able to anticipate future events so as to be fully flexible in a functional sense.

The other major strand of research into organisational flexibility concentrates on the employers' search for numerical flexibility through externalisation and reduced costs. Moreover, this field of research is characterised by various labels for similar forms of variable staff arrangements: flexible staffing arrangements (Christensen 1989; Houseman 2001), contingent work (Polivka and Nardone 1989; Blank 1998; Barker and Christensen 1998), market-mediated work arrangements (Abraham 1990; Abraham and Taylor 1996) and, most recently, non-standard work arrangements (Kalleberg *et al.* 1997; Felstead and Jewson 1999; Cousins 1999; Yeandle 1999). Not surprisingly, a common feature of the studies is their focus on different non-standard employment relationships such as short-term temporary employees, temporary employment agency or contract employees or part-time employees, even though part-timers often belong rather to the relatively permanent staff.

Studies of functionally flexible staffing arrangements have typically ignored the impact of the non-standard forms of employment that the employer eventually utilises concomitant to its high-performance work organisation strategies. Likewise, studies of numerically flexible staffing arrangements have mostly overlooked potential links to the company's functionally flexible employment strategies concerning the more stable part of its workforce. Studies focusing on functional flexibility arrangements assume a 'win–win' scenario, that is, a situation where both the employer and the employee gain from the adopted work organisational arrangements, but say little, if anything, about whether these advantages also extend to the variable part of the company's workforce. Or whether, instead, flexible staffing is a precondition for securing the benefits of functionally flexible employment strategies. Studies of numerical flexibility, in turn, provide minor, if any, explicit evidence on whether non-standard forms of employment support or harm the company's attempt to improve the skills and increase the commitment and motivation of its permanent employees.

These shortcomings of the two traditional lines of research on organisational flexibility have resulted in a growing literature that tries to explicitly explore the links between functional and numerical flexibility, in order to identify ways in which companies could successfully combine these seemingly contradictory forms of flexibility. Most of this research is influenced by Atkinson's 'core–periphery' or 'micro dual labour market' model.[5] This framework has also been used by, for example, Osterman (1988), Harrison (1994) and Drago (1998). Alternative labels, referring to companies' combinations of functional and numerical flexibility, include the 'attachment–detachment' model (Mangum *et al*. 1985), 'core/ring' configuration (Olmsted and Smith 1989), 'shamrock' organisation (Handy 1990) and two-tier organisation (Christensen 1991).

An appealing feature of the core–periphery model is that it is rather simple while, nevertheless, offering managers and policy-makers an instrument for identifying the major practices that should enable them to combine efficiently numerical flexibility with functional flexibility. The main strategy suggested by this model framework is that long-term employment relationships are established with the core of the workforce, at the same time as the periphery of the workforce is externalised by means of temporary contracts, outsourcing, etc. Needless to say, the core consists of highly trained, skilled and motivated permanent employees. Put differently, the basic idea is segmenting the company's workforce into

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[5] See Atkinson (1984, 1987) and also Atkinson and Meager (1986). Also see Boyer (1988) who discusses extensively the possibility of controversial – both micro- and macroeconomic – effects of strategies aimed at increasing flexibility.

a fixed and a variable component, and applying different labour utilisation strategies to the two components: functional flexibility to the core and numerical flexibility to the periphery.

Several studies have attempted to test this hypothesis empirically, mostly for the UK and the USA. The available evidence is highly mixed, with most of the studies reporting a negative or non-existent relationship between functional and numerical flexibility rather than the positive interplay indicated by the core–periphery model. A mixed outcome also characterises another key assumption of the model, *viz.* that the employer's use of a combination of the two flexibility modes is, if not always strategic, then at least deliberate.[6] Apart from the failure of empirical research to provide unambiguous support for the basic assumptions of the core–periphery model, the model in itself has also been criticised over the years at the same time as various improvements and extensions of it have been suggested. In particular, the core–periphery model is considered too simplistic to offer a reasonable framework for understanding the current complex interrelations between functionally and numerically flexible labour utilisation strategies, since in reality companies tend to increasingly use a mix of functional and numerical flexibility practices both in their internal and external work organisation.[7]

Of the three main streams of research briefly reviewed above, the present study attempts to make an empirical contribution to the functional flexibility field based on company case studies undertaken for five small open European economies – Greece, Finland, Ireland, the Netherlands and Switzerland.[8] The use of the term functional flexibility instead of one of the many alternatives referred to above may be justified not least by its "neutrality". Following Gittleman *et al*. (1998), the term "high performance" signals that the implemented work practices are considered to be superior to all other alternatives, while the term "innovative" indicates that the practices are new, when in reality many of them have a long history (e.g. job rotation).[9]

The study is structured as follows. The following chapter focuses on how functional flexibility has generally been defined and measured in the existing literature. Chapter 3 provides details on the questionnaire used for collecting the needed company survey data, as well as on major characteristics of the companies actually covered in the study. Cross-country empirical evidence on functional flexibility strategies is presented in Chapter 4, while Chapter 5 focuses on trying to identify links between functional flexibility and economic performance. Chapter 6 concludes.

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6 For a recent review of the evidence, see e.g. Kalleberg (2001).

7 See e.g. Kalleberg (2001) and the references therein.

8 Corresponding evidence on numerical flexibility strategies, partly in relation to functional flexibility, is reported in a study by Arvanitis *et al*. (2003).

9 This is not to say that these terms are identical in each and every respect; the meaning of the various labels in use for organisational work practices is, in effect, far from clear and settled. While high-performance work practices depart from employee involvement, functionally flexible practices depart from the structure of organisations (see e.g. Huselid 1995). Accordingly, also the theoretical implications for firm performance of the different work organisation systems might differ even substantially. This is shown by Cappelli and Neumark (2001) in relation to labour turnover.

2. FLEXIBILITY – AN EXCURSION INTO THE TERMINOLOGY

In public and political debates, flexibility has been associated with both positive and negative changes in the economy in general and in the labour market in particular. Positive attitudes towards flexibility stress the opportunities of making working life and, thus, the economy more prone to rapidly changing conditions and environments. These positive attitudes have inevitably been fuelled by the flexibility-related ideas put forth in academic discourse. Among these ideas are the contention that the achievement of a competitive advantage through innovative activities increasingly requires organisations to be flexible in term of both work organisation and learning, and the notion that the most successful companies are those who achieve flexibility through human resource development strategies.[10]

Flexibility is generally seen as the counterpart to legal restrictions and rigidities occurring in, for instance, wage-setting mechanisms, overtime use and occupational and hierarchical structures. The negative attitudes expressed about flexibility commonly depart from these same restrictions and rigidities being structures necessary for protecting the rights of employees, while simultaneously forcing the employers towards more use of functionally flexible strategies. However, with the refining and broader understanding of the meaning of working life flexibility, a better consensus among social partners seems to have emerged. This tendency has evidently been fuelled by extending flexibility to also include aspects such as increased decentralisation of responsibilities concerning the organisation of working tasks.

2.1 Flexibility

According to dictionaries, the term "flexibility" refers to something that is susceptible of modification or adaptation. Into labour economics, flexibility was introduced in the mid-80s to illustrate the gradual adoption of – as it seemed – fundamentally new ways of organising not only production, but also companies, with the ultimate goal of improving the capability to respond to changing technology, competition and conditions of demand. The term has come to evolve along two parallel but intimately interrelated lines: one emphasising new types of production and leadership models, and another focussing on the broad set of measures undertaken in order to reorganise the company, the work and, especially, the use and remuneration of the workforce. As these microeconomic modes of flexibility are, to a varying degree, mediated at the macroeconomic level, a third line of flexibility reasoning has developed at the whole-economy level. The two major microeconomic interpretations of flexibility are briefly outlined below[11], while the macroeconomic perspective is touched upon in the concluding chapter (Chapter 6).

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[10] For the first mentioned idea, see Johnson and Lundvall (1994), and for the second, e.g. Kanter (1983), Peters and Waterman (1982) and Storey (1995).

[11] A useful reference, although written in Norwegian, is Gulbrandsen (1998).

Flexibility in production and leadership

Piore and Sabel (1984) reported on signs of expanding use of so-called *flexible specialisation* in at least some sectors of the economy in an attempt by companies to respond to stiffer international competition and shorter product life cycles. Flexible specialisation was seen as an alternative to traditional Taylorist mass production, and referred, accordingly, to consumer demand adjusted specialisation in products and markets. A precondition for continuously meeting such specialised customer demands is, of course, information technologies that allow continuous and flexible adjustment of the production system. Flexible production systems, in turn, request flexible organisation of the work, which usually means small production units and active involvement of a flexible workforce to guarantee rapid solutions to production problems and continuous improvements of the technology and the working methods used.

Abandoning the mass production lines in favour of a more decentralised IT-based organisation of the production system occurred in a slightly different form in Japan, and was subsequently named *toyotism* (OECD 1992). Apart from heavy reliance on IT, another key characteristic of this flexible mode of production was just-in-time management of the stocks of input factors, as well as of components delivered by sub-contractors.

A common feature of the new technology-based production models that were increasingly adopted and implemented in the business sectors of the industrialised world, thus, was a concomitant profound re-organisation of work. This included the introduction of independent (self-managed) teams, delegation of responsibilities and decision-making, and an overall flattening of the prevailing hierarchical leadership models. For personnel policy strategies, this implied greater emphasis on measures aimed at strengthening the co-operation between management and employees, and also at improving the competencies of the workforce through further education and training. Additional flexible modes of work organisation were introduced via the Japanese model, such as high mobility of employees between different working tasks. This increasing demand for multi-skilled employees necessarily lowered or even eliminated the barriers between occupations and jobs.

Flexibility in the workforce

Based on his experience of British companies, Atkinson in 1984 diversified the concept of flexibility regarding the workforce by distinguishing between *numerical*, *financial* and *functional* flexibility. Numerical flexibility described the companies' attempts to improve the possibility of rapidly increasing or decreasing the size of their workforce in response to their changing demands for labour. Financial flexibility referred to the companies' attempts to make the pay of employees more dependent on both prevailing labour market supply and demand conditions and individual effort. Functional flexibility, finally, was used to illustrate the companies' attempts to increasingly move employees from one task to another and to re-train them for new jobs and careers.

As such, this striving towards increased flexibility represented nothing radically new in the behaviour of companies. What Atkinson (1984) drew attention to was, instead, the growing trend of companies to combine all three types of flexibility, and the new way of reorganising the workforce to which this had given rise. An outstanding feature of this new organisational model was that companies were able to differentiate their personnel policies, that is, to pursue a different policy towards different employee categories. Following Atkinson (1984), a major distinction governing these policies related to whether the job re-

quired company-specific or merely general competencies. For the performance of key, company-specific working tasks, companies try to maintain a numerically stable core of competent employees characterised by a high degree of functional flexibility. As compensation for accepting functional flexibility, these core group employees are offered employment security and good career opportunities. The rest of the jobs are occupied by periphery labour subjected to continuous demand-driven numerical flexibility. This numerical flexibility may be achieved through high turnover due to weak job security and bad career opportunities, and/or different types of atypical job contracts or working-time arrangements, such as overtime and shift work. If the numerical flexibility of this peripheral group needs to be supplemented with functional flexibility, then this can, according to Atkinson, be handled by specific contracts of employment such as part-time working, job sharing, short-term contracts and public subsidy trainees. Or the company might utilise the opportunities to combine numerical and functional flexibility offered by self-employment, sub-contracting, outsourcing, networking, teleworking and temporary work agencies. These thoughts also show that functional flexibility occurs in interactions both inside and outside the organisation and thus overlaps with both internal and external flexibility.[12]

2.2 Functional flexibility

A common notion in studies of flexibility is that there exists no established definition of a flexible organisation. Accordingly, the literature contains a multitude of approaches developed for analysing flexibility empirically. An illustrative example is the construction of some kind of "index" based on a number of explicitly stated, often complementary, conditions to be fulfilled by an organisation to be classified as "flexible", with most of these preconditions generally referring to functional flexibility. This sub-section provides a brief review of the key modes of flexibility characterising a flexible organisation, that is, functional flexibility. The emphasis is on the meaning and measurement of functional flexibility as expressed in the literature in this field. The overview is far from being comprehensive. Rather it scratches the surface of the vast number of contributions made over the past decades to the challenging issue of characterising and measuring functionally flexible strategies adopted and implemented by workplaces.[13]

What is meant by functional flexibility?

The concept of functional flexibility is commonly related to the organisation's ability to continuously adapt to its changing business environment. This widespread perspective on the meaning of functional flexibility is expressed more or less differently in different studies, reflecting variably which functionally flexible strategies are considered to be the most crucial and for what particular reason (technological change, competitive pressures, etc.). A few examples may illustrate this:

- The ability of companies to adapt to new needs by ensuring a work force which is well trained and able to perform different and new functions within the organisation. (Piore and Sabel 1984)

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[12] See further the discussion in e.g. Kalleberg (2001).

[13] For a recent comprehensive review of the flexibility literature, see Gavroglou (2003).

- The capability of companies to redeploy employees quickly and smoothly between activities and tasks. (Atkinson 1984)
- Organisational mechanisms and work flow innovations that "build in" employee involvement. (Wood 1989)
- Usually involves high skills and a collaborative approach to work (high-skill and high-trust organisations), and uses high-quality labour, involving broadening job design and job boundaries, mobility across tasks, extension of the range and depth of individual skills, and extensive training and retraining. (OECD; Vickery and Wurzburg 1996)
- The ability of companies to reallocate employees between different tasks and to prepare them for new tasks, with part of the basis built upon a workforce trained to cover several work areas and to work in independent teams, as well as independently. (The Norwegian flexibility study; Olsen and Torp 1998, Schøne 1999)
- An employer is considered to exhibit flexibility in the organisation of work when there is a movement away from a traditional, hierarchical structure in which employees have rigid, narrowly defined roles. (Gittleman *et al*. 1998)
- The ability of companies to reorganise jobs so that the jobholder can deploy his or her skills across a broader range of tasks and be well prepared for new tasks. (NUTEK 1999)
- The ability of the company to create a competitive advantage in a turbulent market place by new products and processes created within an integrative organisation based on a learning-oriented corporate culture. … reflected in cross-functional integration and human resource management which enable the employees to become active, learning players in the planning, exertion and development of innovative value-adding. (The Danish DISKO project; Gjerding 1999)
- A process through which companies adjust to changes in the demand for their output by an internal re-organisation of workplaces based on multi-skilling, multi-tasking, teamworking and the involvement of employees in job design, innovation, technology and the organisation of work. (Arvanitis *et al.* 2003)

Functional flexibility is not the outcome of one single, unique strategy. On the contrary, it can be obtained by means of highly different strategies. These strategies are not observable as such, however, only the organisational solutions arising from the adopted strategies. Simultaneously, this means that the organisational solutions may even vary considerably between functionally flexible organisations. As a consequence, the efficiency achieved in different organisations may also reveal conspicuous variation depending on the organisational solution actually implemented. Decisive aspects are not only the combination and extent of use of different functionally flexible measures, but also the potential prevalence of complementariness among the simultaneously implemented practices.[14]

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[14] The importance of simultaneous implementation of and complementarities among functionally flexible practices has been illustrated empirically in several studies, e.g. Osterman (1994), King (1995), Lee and Reeves (1995) and Ichniowski *et al*. (1996, 1997). Also see e.g. Wood (1999) for a discussion of similar findings in relation to human resource management practices. In this context it should be noted, though, that these results of positive complementarities have been obtained in studies of manufacturing branches. Corresponding studies of the services sector have provided no support for the hypothesis of work organisation practices complementing one another (e.g. Hunter and Hitt 2000). Theoretical rationale for the advantage of bundling organisational work practices has been provided by e.g. Milgrom and Roberts (1990, 1995), Kandel and Lazear (1992), Holmstrom and Milgrom (1994), Athey and Stern (1998), and Lindbeck and Snower (2000).

The success or failure of the undertaken adjustment of the work organisation, however, depends not only on the functionally flexible measures *per se*. A broad set of other factors also affects the final outcome of an organisation's attempts to become more functionally flexible, as they influence both the way and the extent to which various functionally flexible measures can be implemented at a workplace. These factors might be entirely external to the company, or they have more the character of being economic, managerial, information related or human resource related (cf. OECD 1996). More specifically, some of these factors relate to the organisation itself, such as its size, juridical status (independent or part of a larger conglomerate) and overall transformation capacity. Other factors originate in the business environment of the organisation, such as its industry (including technology), market (local/domestic/global) and the degree of competitiveness it encounters on this market. Still other factors are determined by the institutional settings, such as labour market legislation and wage bargaining systems, as well as by the public policies pursued, especially with respect to education (the supply of a skilled workforce), technology and financial support.[15] Such restricting and promoting background preconditions – moats and bridges according to the NUTEK report (1999) – are dealt with in the present study very selectively, as will become evident in the subsequent empirical chapters.

How can functional flexibility be measured?

When it comes to the measurement of functional flexibility, a majority of studies concentrate on indicators that are taken to reflect strategies of decentralised responsibility and continuous learning, as these are generally regarded as the most important elements of functional flexibility. The detailed specification of these indicators in the conducted company questionnaires typically differs markedly between studies, making direct comparisons of results rather difficult. Here, therefore, the emphasis is on providing only a general outline of the most commonly used indicators, occasionally illustrated by examples.

The most conspicuous feature of a flexible organisation is undoubtedly *decentralisation* of the responsibility for a large number of working tasks and decisions to individuals or teams working in direct production. The indicators used in order to capture the presence of such decentralisation and autonomy practices vary considerably, ranging from simple indicators merely indicating the presence or not of such practices to detailed questions about the degree of decentralisation with respect to both tasks and decision-makers.[16] Simultaneously, this shortening of the decision-making process results in a flattening of the hierarchical structure of the organisation since fewer management levels are needed. Decision-making is taken closer to the actual problems, which is expected to result in faster and better decisions.

Closely linked to increased decentralisation of the decision-making process are two other practices seen as typical for flexible work organisations, *viz*. *teams* and *job rotation*. A

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[15] For empirical evidence on the role of these various types of influencing factors, see e.g. OECD (1996, 1999) and NUTEK (1999).

[16] In the NUTEK study (1999), for instance, the underlying questionnaires made a distinction between daily planning, quality control, weekly planning, customer relations, maintenance, product/service development, choice of production technology, purchase and follow-up on results. Moreover, for each of these work tasks the respondent was asked to indicate at which level decision-making takes place (individual, work team, management, top management or some other personnel category).

common feature of all three practices is that they are presumed to enhance the involvement and creativity of employees engaged in the production process. Organising the work in independent or self-managed teams responsible for well-defined activities is, in effect, the most commonly used indicator for measuring the use of functional flexibility at the workplace. Teamworking usually involves at least some degree of job rotation in the sense that the team members switch between similar working tasks. Such informal job rotation is, however, mostly kept distinct from organised job rotation, which is the main focus of interest from a functional flexibility point-of-view. This formal type of job rotation presupposes that individuals are equipped with the ability to perform several different tasks, thus reducing both the specialisation of jobs and the organisation's dependency on key individuals. Apart from simply stating the use/non-use of team work and job rotation, the indicators often also provide some indication of the extent of these two practices, such as the proportion of the employees involved in such arrangements.

Increased decentralisation of decision-making processes, in combination with expanding use of team and job rotation systems, inevitably necessitates a multi-skilled workforce, as well as strategic and continuous *investments in human capital*. A flexible organisation is supposed to know how to make best use of its knowledge and know-how, and how to continuously develop it. Various kinds of indicators have been tried out, of which those related to the organisation's provision of training are, without doubt, the most common ones. Moreover, these training indicators frequently go into great detail about the training provided, one obvious reason being that organisations generally have readily available statistics on training expenses, participants and time spent on such activities. A newer, albeit already fairly widespread, phenomenon is so-called skills development plans elaborated for each employee at the workplace. These might possibly be considered to capture the presence of organised human capital development strategies better than indicators related to training.

These typical indicators of functional flexibility are analysed and explored in somewhat more detail in Chapter 4. Before turning to these empirical findings, Chapter 3 provides a general introduction to the data underlying the empirical analysis reported in this study.

3. QUESTIONNAIRE DATA ON FUNCTIONAL FLEXIBILITY

This chapter provides a brief presentation of the design and content of the questionnaire on which the analysis in the subsequent chapters is based. It also reports briefly on the selection of the companies surveyed, and gives a short description of the companies in terms of some general characteristics.

3.1 Questionnaire design

The survey data on company personnel policies utilised in the subsequent chapters cover a total of 30 organisations from Finland, Greece, Ireland, the Netherlands and Switzerland. The research partners of the *FlexCom* project designed the questionnaire and also carried out the surveys and interviews with the selected companies, with each partner covering his or her own country.

The questionnaire included a broad set of both quantitative and qualitative questions covering various aspects of the companies' personnel policies with the focus being on the incidence and extent of flexibility strategies. The overarching objective of the questionnaire was to shed light on the need for flexibility in different types of company, and to identify differences and similarities in the flexibility measures actually implemented in companies operating in the five small European countries under study.

Apart from general information about the company, the questionnaire contained questions on the company's innovative and R&D activities, flexibility of labour, management of human resources, and the impact of labour flexibility on working conditions, industrial relations and company performance. As already indicated in the outline, the present study is confined to the companies' use of functional flexibility strategies.

3.2 Selection of companies

The companies surveyed were selected according to a classification of companies originally introduced by Pavitt (1984) to enable comparisons of companies following different types of business strategies. The Pavitt classification was chosen mainly because it categorises companies according to their technological requirements, as well as sources and directions of technology, all of which are important dimensions when focusing, as in the *FlexCom* project, on the relationship between labour flexibility and technological progress and innovativeness. Thus, the selection of companies was by no means meant to be representative. Instead, the goal was to roughly typify companies.

Specifically, the Pavitt classification distinguishes between five categories of companies: science-based, supplier-dominated, scale-intensive, specialised sub-contractor and IT-intensive. Tidd *et al*. (2001) define the five categories as follows. *Science-based* companies base their business activities on R&D. Thus, in science-based companies technological accumulation is derived from the companies' R&D departments, for which reason they are also substantially dependent on the knowledge, skills and techniques emerging from academic

research. In *supplier-dominated* companies technical change is brought about by suppliers of machinery and other production inputs, while the company itself does not rely on in-house R&D. *Scale-intensive* companies are mass-producers, in which technology emerges as the design, building and operation of complex production systems or products. *Specialised sub-contractor*[17] companies produce inputs into their client companies' systems of production in the form of machinery, components and, increasingly, also software. Technological accumulation takes place through the design, building and operational use of these specialised inputs. The *IT-intensive* companies represent a more recent type of company, which has emerged especially in the services sector. The technology strategy of the IT-intensive company is geared to design and operate complex systems for processing information.

The distribution of the companies surveyed across these five categories is as follows: six science-based companies (two from Finland, one from each of the other four countries), five supplier-dominated companies (one from each country), six scale-intensive companies (two from Finland and the Netherlands, one from Greece, one from Ireland and none from Switzerland), five specialised sub-contractor companies (one from each country), and six IT-intensive companies (two each from Greece and Switzerland, one from Finland, one from Ireland and none from the Netherlands). In addition, a hospital was surveyed in two of the countries (Finland and Greece) to highlight the strategies adopted in organisations that can be characterised as "semi-public".

3.3 Selected general characteristics of the companies surveyed

Most of the companies surveyed are well established in the sense that they have existed in their present form for decades; only three of them were founded in 1997 or later (Table 3.1). Two out of five companies are independent. Four of the seven Finnish companies are part of a conglomerate, with the mother company being domestic. All of the Irish companies are part of a foreign-owned conglomerate. Corresponding information on the dependent companies in the other three countries is mostly missing.

Table 3.1 Year in which the company was founded in its present form*

Finland	1917&1985	1972	1790&1952	1953	1961	1978
Greece	1970	1953 (1928)	1969	1998	1977&1990	1993
Ireland	1969	1990	1932	1946	1990	
Netherlands	1983	1918	1937&1967	1955	-	
Switzerland	1997	1866		1946	1984&2001	
	Science based	**Supplier dominated**	**Scale intensive**	**Sub-contractor**	**IT intensive**	**Hospital**

* Years combined with "&" give the founding year for each of the two companies surveyed representing the same firm category. ** One of the IT-intensive Swiss companies was founded in January 2001 as a merger of two telecommunication companies.

[17] For simplicity, the term "sub-contractor" is used throughout Chapters 4 to 6, although the term might be slightly misleading in cases where the company has more the character of a specialised supplier.

No less than 86 per cent of the companies have undertaken profound structural changes in their organisation over the last three years (1999 – 2001), while only half of them expect there to be important structural changes also in the foreseeable future.[18] Recent structural changes have been undertaken in practically all companies irrespective of firm category and country. The only notable exception is the category of supplier-dominated companies, where only the Dutch and Swiss companies report there to have been structural changes in the organisation over the last few years. When it comes to the near future, all the Irish companies and nearly all the Dutch companies expect important structural changes to be undertaken, while almost all the Greek companies expect no fundamental changes in the near future in their organisation. For Finland and Switzerland, the situation varies from company to company, which adds to the lack of any systematic differences between the different firm categories.

Most of the companies surveyed are medium-sized or large (Table 3.2). This is partly explained by the adopted strategy of selecting, preferably, companies employing more than 50 persons. Three out of five companies report their personnel to have increased somewhat or even substantially over the last three years (1999 – 2001). This holds for all Greek and nearly all of the Finnish companies. Two out of five companies have had no marked change in the size of the personnel or have experienced a slight or even notable decrease in the number of employees. This concerns some of the Irish companies, and most of the Dutch and Swiss companies. Accordingly, the pattern for the different firm categories is scattered also in this respect. The expectations concerning the foreseeable future are more pessimistic with only two out of five companies perceiving a slight or substantial growth in the number of employees. But the cross-country differences remain, nevertheless. In other words, the Greek and Finnish companies are most optimistic, whereas the Dutch, Irish and Swiss companies rather expect the size of their personnel to shrink.

Table 3.2 Size of the personnel 2001
(1 = 20-99; 2 = 100-499; 3 = 500-999; 4 = 1,000 or more employees)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
4	FIN1		FIN1,GR, IE	FIN	GR1&2, IE,CH1	GR
3	FIN2		IE	GR,IE	FIN,CH2	FIN
2	IE,NL,CH	FIN,GR,IE, NL,CH	FIN2, NL1&2	CH		
1	GR			NL		

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

The size differences between the companies surveyed show up strongly in total sales (Table 3.3). While the five countries are represented by companies distributed over the whole scale, there are at least some similarities discernible when looking at the different firm categories. In particular, the IT-intensive companies are mostly very big when measured by total sales, whereas the supplier-dominated companies represent the opposite extreme.

[18] With one exception only, half of the companies expecting important structural changes in the foreseeable future had experienced major structural changes in their organisation also in the near-history.

Table 3.3 Total sales 2001(in Euros, exclusive of VAT)
(1 = <20; 2 = 20-50; 3 = 50-100; 4 = 100-500; 5 = 500-1,000; 6 = 1,000 and over; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
6			NL2		FIN,IE	
5			GR		GR1&2	
4	FIN1		FIN1	FIN	CH2	
3	FIN2,NL			IE		
2		GR,NL,CH	FIN2,NL1	GR		
1	GR	FIN		NL,CH	CH1	
N/A	IE,CH	IE	IE			FIN,GR

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

Apart from the selected general information on the companies surveyed mentioned above, the companies were also asked about their recent history and trends in sales and profits in the near future, sensitivity to business cycle and seasonal fluctuations and business environment. These aspects are not dealt with here, but will be accounted for in Chapter 5 in an attempt to link the companies' functional flexibility strategies, as displayed in Chapter 4, to their economic performance.

4. CROSS-COUNTRY EVIDENCE ON FUNCTIONAL FLEXIBILITY STRATEGIES

The discussion in Chapter 2 of functionally flexible organisation strategies from a conceptual point-of-view identified teamwork and job rotation, training and decentralisation of responsibility and decision-making as the main and also the most commonly used indicators in studies attempting to quantify organisations' use of functional flexibility practices. This Chapter, therefore, first presents some key results based on such indicators for the five-country company cases. It then turns to analysing some additional information, both quantitative and qualitative, closely linked to functional flexibility strategies, gathered by means of the questionnaire undertaken within the framework of the *FlexCom* project.

4.1 Teamworking and job rotation

The companies were asked to report whether or not they use teamworking and, if they do, to also characterise the extent to which their employees perform teamwork on a scale from 1 (very weak) to 5 (very strong). The question in the questionnaire was formulated as follows:

Does your firm use permanent work teams in which employees jointly perform some tasks or discuss problems (self-organised group work, project groups, quality circles, etc.)?

Approximately four out of five companies indicated that they have some form of permanent work teams in use. Teamwork was reported to be prevalent in all Finnish and Irish companies under study, as well as in most of the companies covered in the other three countries. Moreover, teamwork turns out to be a common feature for the science-based and IT-intensive companies irrespective of their geographical location.[19] Teamwork is slightly less frequent in the other firm categories, but there is no systematic pattern across the five countries in that respect.

Comparison of the intensity of use of teamwork (Table 4.1) reveals a high cross-country average intensity level in the science-based and IT-intensive companies, as well as in the companies belonging to the categories of scale-intensive and sub-contracting companies, if ignoring the non-use cases. Least teamworking appears in the supplier-dominated companies, except for the Finnish case. There are occasionally even notable country differences in the intensity of use of teamwork, and no clear-cut ranking of the five countries across the different firm categories, either.

The reported change in the use of group work over the last three years (1999 – 2001) also produces mixed patterns across both countries and firm categories (Table 4.2), albeit more than half of the companies indicate a slight or even substantial increase in teamworking. A cautious generalisation would be that group work has typically remained fairly unchanged in Ireland and Switzerland, but has increased in the other three countries. The trend of an increasing use of group work has been strongest in the scale-intensive companies.

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[19] The only exception to this rule is the Dutch science-based company. In this context it should also be stressed that there is no Dutch IT-intensive firm included in the study.

Table 4.1 Use of teamworking
(0 = no use; 1 = weak use; 5 = very extensive use; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
5	IE	FIN		NL	GR2,IE	FIN
4	FIN2,GR, CH		FIN1, NL1&2	IE		
3			FIN2,GR, IE	FIN	FIN,GR1, CH1	
2		CH				
1	FIN1	IE				
0	NL	GR,NL		GR,CH		GR
N/A					CH2	

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

Table 4.2 Change in the use of teamworking over the last three years (1999 – 2001)
(scale from "increased substantially" (5) to "decreased substantially" (1))

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
5			GR,NL2	NL		
4	FIN2,GR	CH	FIN1&2, IE,NL1	FIN	FIN,GR1	
3	IE,CH	FIN,IE		IE	GR2,IE, CH1	FIN
2	FIN1					
1						

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

Frequently mentioned reasons for the increased use of teamwork relate to organisational change and more project-based working, on the one hand, and increased delegation of competencies, aimed at bringing forth tacit knowledge and better learning from each other, on the other. The overarching goal is to improve results and efficiency.

Likewise, the companies were asked to report whether or not they use organised job rotation and, if they do, to also indicate its extent, again according to a scale from 1 (very weak) to 5 (very strong). The question was formulated as follows:

Does your firm use programmes of rotation of jobs and tasks (i.e. sequential work in different functions)?

The use of job rotation programmes is, at least formally, considerably less frequent than the use of teamwork; only about half of the companies surveyed report the use of job or task rotation programmes.[20] Also the average intensity of the use of job rotation programmes remains below that of teamwork (Table 4.3). Nevertheless, the overall pattern when it comes to both the occurrence and the intensity of job rotation programmes is very similar to that for teamwork. In particular, job rotation is most prevalent in Finland and Ireland, and its intensity of use is notably high in the IT-intensive and sub-contracting companies, but clearly lowest among the supplier-dominated companies, again overlooking the non-use companies. The use of job rotation programmes seems to differ from the use of teamwork mainly in two respects. First, job rotation is rather infrequent in the science-based companies, except in Ireland. Second, the ranking of countries varies less randomly across the different firm categories. Thus, all the Irish companies using job rotation report a high intensity of the use of such programmes. At the other extreme are the Greek and Swiss companies, most of which report no use of job and task rotation programmes.

In all the responding companies, the use of job rotation programmes has either increased somewhat or remained fairly constant over the last three years (1999 – 2001) (Table 4.4). A comparison across the five countries indicates that the use of job rotation programmes has typically remained more or less unchanged in the Finnish and Irish companies, while the trend indicates increasing use in those Dutch and Greek companies that are actually implementing such programmes. The clearest increase in the use of job rotation programmes is discernible in the IT-intensive companies.[21] Improved multi-skilling and the need to find efficient employee-job matches are mentioned among the reasons for increased use of organised job rotation.

Table 4.3 Use of job and task rotation programmes
(0 = no use; 1 = weak use; 5 = very extensive use)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
5	IE					
4			IE,NL2	FIN,IE	IE,GR2	
3		FIN	FIN1&2, GR			
2		NL			FIN,CH2	FIN
1			NL1			
0	FIN1&2, GR, NL,CH	GR,IE,CH		GR,NL, CH	GR1,CH1	GR

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

[20] A study of the Nordic countries (NUTEK 1999) also found that job rotation was not as widespread as the use of teams.

[21] The rank correlation between the intensity of use of job rotation programmes and the direction of change in these practices over the past three years is as high as 0.88***, compared with a correlation of 0.56*** between the corresponding indicators for teamwork.

Table 4.4 Change in the use of job rotation programmes over the last three years (1999 – 2001) (scale from "increased substantially" (5) to "decreased substantially" (1))

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
5						
4		NL	FIN1&2, GR,NL1&2	FIN	GR2,IE	
3	IE	FIN	IE	IE	FIN,CH2	FIN
2						
1						

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

From the above it is obvious that some kind of links between the use of teamwork and the use of job rotation programmes do exist. About half of all the companies surveyed use both teamwork and job rotation (mostly introduced about the same year); one-third either one; less than one-fourth neither one. The rank correlation between the intensity of teamwork use and the extent of job rotation programmes is a statistically significant 0.49**[22]. There is, in contrast, no direct correlation between the change in the intensity of use of teamwork and organised job rotation over the last three years.

All in all, teamwork turns out to be a widely used functional flexibility strategy in the five small European economies under study, with Finland and Ireland ranking highest. And if a company uses teamwork, then this is predominantly done on a broad-based scale, with the recent trend, moreover, indicating increasing rather than declining use of permanent work teams. This holds true irrespective of the company's location and categorisation. These findings concerning teamwork are well in line with the fact that teams are considered to be one of the most (or even the most) difficult work innovations to implement (e.g. Osterman 2000).

Furthermore, teamwork is often, but not always, supplemented with a certain use of permanent job or task rotation programmes. This is particularly true for the sub-contracting and IT-intensive companies, but not for the science-based companies, which might be explained by an exceptionally high degree of specialisation in science-based jobs and tasks. Notable exceptions from this pattern are the Irish companies, which turn out to commonly combine intensive use of teamwork with extensive use of job and task rotation programmes. A potential explanation for this outcome is a stronger US influence on work organisation practices in Ireland, especially in foreign-owned branches, than in the other countries under study. Only in supplier-dominated activities does Ireland behave in a more European manner.

Finally, it may be noted that the questionnaire does not ask explicitly about the involvement of temporary employees in teamwork and job rotation programmes. Accordingly it is

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[22] Asterisks are used throughout the text to indicate the statistical significance level (* = 10%, ** = 5%, *** = 1%) of the correlation between the two variables in question, that is, at what level the null hypothesis of no association between the two variables can be rejected.

impossible to draw conclusions about eventual differences between the regular permanent staff and the temporary staff in these respects. The interviews made with representatives of the Finnish companies, however, indicated that the employees are treated on a more or less equal basis irrespective of their employment relationship.

4.2 Decentralisation of responsibility and decision-making

Apart from teamwork and organised job rotation, decentralisation of responsibility and decision-making to either individuals or groups is another crucial indicator of the companies' strategies for achieving functional flexibility. The companies surveyed were, therefore, asked to indicate to what extent the autonomy and decision-making of their employees had changed over the last three years (1999 – 2001) and what were the main reasons. The question was to be answered separately with respect to individual and group autonomy and decision-making.

Individual autonomy and decision-making has remained fairly constant or has increased somewhat in the great majority of the companies surveyed (Table 4.5). Only one company (the Greek scale-intensive company) reported substantially increased individual autonomy and decision-making over the period 1999 to 2001. Switzerland stands out as another extreme in the sense that only one case company indicated a slight increase in individual autonomy and decision-making, while the other reported unchanged or even somewhat decreasing individual autonomy and decision-making. From a firm-category point-of-view, the scale-intensive and the IT-intensive companies seem to have experienced the clearest increase in individual autonomy and decision-making, whereas the direction of change has been rather the opposite in the science-based companies. It may also be noted that Table 4.5 does not provide support for the hypothesis of sub-contractors having less scope to decentralise their production processes owing to their special structure.[23]

Table 4.5 Change in individual autonomy and decision-making of employees over the last three years (1999 – 2001)
(scale from "increased substantially" (5) to "decreased substantially" (1))

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
5			GR			
4	NL	FIN,CH	FIN1&2, IE,NL2	FIN,NL	GR1&2, IE	FIN
3	FIN1&2, GR	GR,IE,NL	NL1	GR,IE	FIN, CH1&2	GR
2	IE,CH			CH		
1						

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

[23] This hypothesis did not receive support in the NUTEK study (1999) of Nordic companies, either.

Comparing the reported changes in individual autonomy and decision-making to those in group autonomy and decision-making reveals several interesting trends in general and also with respect to individual countries and firm categories. First, an equal share of the companies surveyed reported a slight or even substantial increase in individual or group autonomy and decision-making. The relative share of companies with no change in these practices over the past few years was higher for group than for individual autonomy and decision-making simply because, in contrast to individual autonomy and decision-making, no company reported a decline in group autonomy and decision-making (cf. Tables 4.5 and 4.6).

Second, the changes that have occurred in individual and group autonomy and decision-making seem to be country-specific, at least to some extent. A majority of the Finnish companies have extended the use of both individual and group autonomy and decision-making or of at least either one of them; the only exceptions are one of the two science-based companies and the IT-intensive company, both of which report no change. Of the Greek companies, in contrast, a majority reports no change in either dimension, with the two IT-intensive companies and the scale-intensive company being the only "increasers". The Irish companies represent a mix in the sense that some companies have made no change in individual and group autonomy and decision-making while others have expanded both of them. A conspicuous exception is the Irish science-based company that seems to have increased group autonomy and decision-making at the expense of individual autonomy and decision-making. Unfortunately, it is impossible to conclude whether the same strategy was repeated in the Swiss science-based company, as information is missing on the company's trend in group autonomy and decision-making. This is, in fact, the situation also for the other Swiss company having reported a slight decrease in individual autonomy and decision-making. Otherwise, a notable feature of the Swiss companies is that only one of them (the supplier-dominated company) has reported an increase in autonomy and decision-making and it is said to have concerned both individual and group autonomy and decision-making. Finally, the Dutch companies also paint a mixed picture, although the results seem to indicate a stronger tendency of increasing individual rather than group autonomy and decision-making.

Table 4.6 Change in group autonomy and decision-making of employees over the last three years (1999 – 2001)
(scale from "increased substantially" (5) to "decreased substantially" (1))

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
5	IE			NL		
4	FIN2	CH	FIN1&2, IE,NL2	FIN	GR1&2, IE	FIN
3	FIN1,GR, NL	FIN,GR, IE, NL	GR,NL1	GR,IE	FIN, CH1&2	GR
2						
1						
N/A	CH			CH		

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

Finally, a closer look at the different firm categories reveals that most IT-intensive companies have reported an increase in both individual and group autonomy and decision-making over the last three years. Cautious conclusions regarding the other firm categories would be that those supplier-dominated and scale-intensive companies that have increased their use of autonomy and decision-making seem to have put more emphasis on individual rather than on group autonomy and decision-making. The reverse situation seems to apply to the science-based and sub-contracting companies.

The main reasons for the reported changes in individual and group autonomy and decision-making were only occasionally indicated by the companies surveyed. A repeatedly mentioned reason is, nevertheless, discernible, *viz*. the use of teamwork. Another reason worth mentioning is changes in the management structure.

Calculations of the correlation between changes in the use of individual and group autonomy and decision-making, group work and organised job rotation produced statistically insignificant coefficients in all these dimensions, for which reason these results are not reported here. In other words, there is no clear-cut relation between the change in the use of individual autonomy and decision-making, group autonomy and decision-making, group work and organised job rotation over the last three years (1999 – 2001) in the companies surveyed.

4.3 Staff competencies, training and learning

A flexible organisation with extensive use of group work, job rotation programmes and/or decentralised responsibility for decision-making inevitably becomes more dependent on strategic human resource management practices involving the recruitment of higher educated people, as well as continuous investment in human capital. Accordingly, the companies surveyed were asked about their staff's formal education, training opportunities and learning of new skills on the job. These human resource management aspects were further covered by questions about recent and future strategies.

Higher education at the tertiary level

The inquiry about formal education concerned the percentage share of the company's total personnel having completed a higher educational degree (at the tertiary level). The reported shares are displayed in Figure 4.1. The overall impression mediated by the Figure is that there are no clear-cut patterns discernible across countries or firm categories. A few remarks deserve to be made, nevertheless. The spread in the higher educated personnel share across the different firm categories is relatively small in Finland (10 to 30 per cent, if the hospital's share of only 1.5 per cent is ignored), the Netherlands (5 to 40 per cent) and Switzerland (below 5 up to 35 per cent)[24], but extremely large in Ireland (10 to 70 per cent) and, especially, in Greece (5.5 to 80 per cent)[25].

When instead looking at the distinct firm categories, the science-based and IT-intensive companies stand out also in this context. But unlike in the case of teamwork, these two

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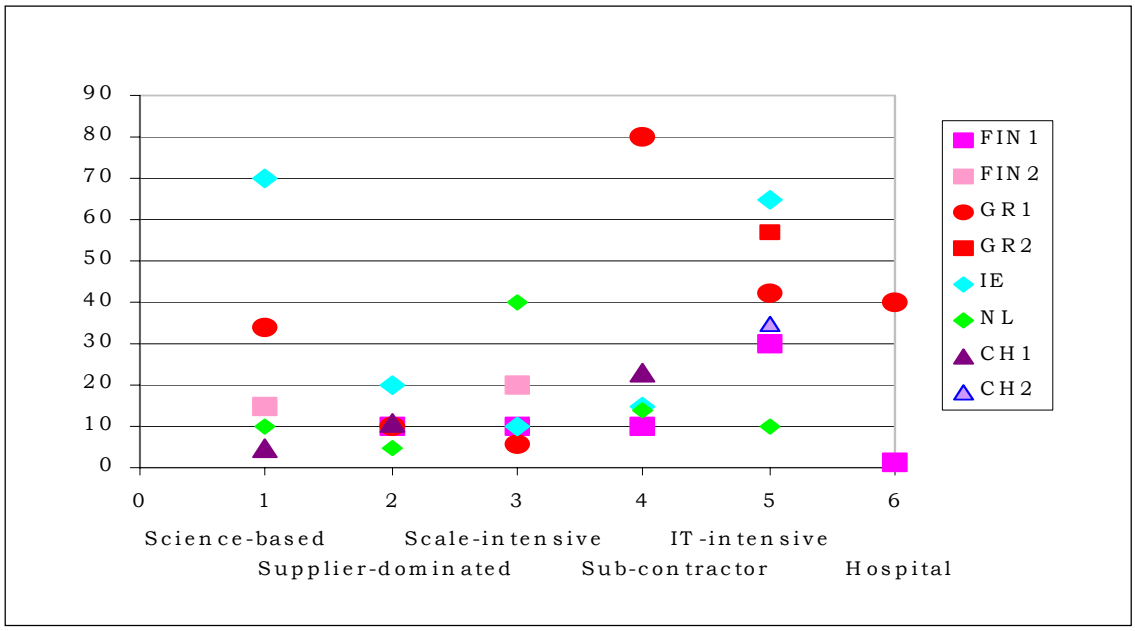
[24] Note, though, that the education share for one of the Swiss IT-intensive companies is missing.

[25] The Greek companies were strongly selected based on their innovativeness, etc., which inevitably implies relatively high shares of well-educated employees as well.

firm categories now reveal a notable cross-country dispersion with Ireland occupying the lead position in both categories. In the other firm categories, the five countries are clustered around relatively low shares of higher educated employees, if the exceptionally large share reported for the Greek sub-contracting company is not taken into account.[26]

Figure 4.1 Percentage share of the total personnel with a higher educational degree (at the tertiary level)



The companies surveyed were also asked to indicate how the share of the personnel with higher educational degrees (at the tertiary level) had developed over the last three years (1999 – 2001) and how it was expected to develop in the foreseeable future and for which major reasons. The answers to these questions regarding the recent history and near future are rather similar. In particular, most of the companies – irrespective of country and firm category – report that the share of higher educated employees has increased slightly over the past few years and is also expected to increase somewhat in the foreseeable future.[27] Only a few noted the share to have increased substantially or to have remained fairly constant. None of them indicated that the share had been decreasing. Likewise, only a few expected the share to increase substantially or to remain fairly constant. However, two companies – both reporting a low share of the higher educated personnel – did perceive a somewhat declining share over the next few years.[28]

The realised, as well as expected, increases in the share of the higher educated personnel seem to be driven by both supply and demand aspects. More specifically, several companies – especially the Greek ones – mention the increased supply of educated workers as a major reason for the changing educational structure of the personnel. Not surprisingly, the

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[26] The Greek sub-contracting firm is a specialised-supplier consulting company employing mainly college-educated consultants.

[27] Indeed, three out of four companies gave the same answer to both questions, with the simple correlation between the two series being 0.57***.

[28] These two companies were the Irish supplier-dominated company and one of the Dutch scale-intensive companies.

demand-side explanations refer to increased knowledge intensity and competence requirements due to new technology, and more complex R&D and production activities.

Training

In answering the question on the average annual length of training per employee, the companies were asked to make a distinction between on-the-job and off-the-job training and also between three categories of employees: tenured employees, employees on flexible employment contracts and employees with a higher education degree. The reference period was specified to cover the last three years, that is, 1999 – 2001. More exactly, the question was formulated as follows:

Approximately how much time was spent during the last three years on on-the-job or off-the-job training per individual employee?

Tables 4.7 and 4.8 display the average number of training days per employee and year for, respectively, on-the-job and off-the-job training of the tenured personnel. The two tables point to the following general conclusions. First, on-the-job training of the permanent staff is common and frequent in all five countries. No clear-cut patterns are discernible for the different firm categories. The high variability in employer-provided training is further underscored by the spread in training intensity also between the same-country same-category companies. A notable but hardly surprising similarity is the limited extent of on-the-job training in hospitals. Second, the companies generally offer their tenured employees less off-the-job than on-the-job training, or a more or less balanced amount of the two types of training. Only exceptionally is the extent of off-the-job training reported to exceed that of on-the-job training, and these cases add, of course, to the many "top-rankings" of the Greek companies in the off-the-job training table.[29] Finally, off-the-job training of a very short-term nature seems to be an altogether abandoned alternative; the cells in Table 4.8 indicating an average of less than one day of off-the-job training per employee and year are empty throughout.

Table 4.7 On-the-job training of the tenured personnel
(1 = less than one day; 2 = 1 – 5 days; 3 = 5 – 20 days; 4 = over 20 days; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
4	IE	NL	GR	GR	GR2,IE	
3	FIN2,GR, NL	FIN,IE	FIN2,NL2	FIN,NL	FIN	
2	FIN1	GR	IE,NL1	IE		FIN
1		CH	FIN1		GR1	GR
N/A	CH			CH	CH1&2	

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

[29] The comparison between on-the-job and off-the-job training of the tenured personnel is hampered by more answers missing in relation to off-the-job training. A further shortcoming is the fact that only one of the Swiss companies responded to the training questions. The other Swiss companies do provide training but were unable to declare the exact number of training days.

Table 4.8 Off-the-job training of the tenured personnel
(1 = less than one day; 2 = 1 – 5 days; 3 = 5 – 20 days; 4 = over 20 days; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
4	IE	GR,NL			IE	GR
3			GR	GR	GR1	
2	GR,NL	FIN,IE,CH	FIN2,IE, NL1&2	FIN,IE,NL	FIN,GR2	
1						
N/A	FIN1&2, CH		FIN1	CH	IE,CH1&2	FIN

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

Compared to the average situation of the tenured personnel, those hired on a temporary basis would be expected to receive considerably less training, especially off-the-job.[30] In view of the widely recognised positive relationship between the length of schooling and training, those with a higher education degree could, in contrast, be assumed to get notably more training.[31] The questionnaire results for the temporary employees, on the one hand, and the higher educated employees, on the other, are given in Tables 4.9 to 4.12.

Table 4.9 On-the-job training of the temporary personnel
(1 = less than one day; 2 = 1 – 5 days; 3 = 5 – 20 days; 4 = over 20 days; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
4					GR2	
3	NL	IE,NL	FIN2,NL2		GR1	
2	FIN1&2		NL1	FIN,IE	FIN	
1		FIN,GR, CH	GR	GR		FIN,GR
N/A	GR,IE,CH		FIN1,IE	NL,CH	IE,CH1&2	

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

Despite a non-negligible amount of missing information, the company responses do seem to indicate that also temporarily hired people participate regularly in training both on and off the job. Indeed, a comparison of the reported numbers of training days suggests that the

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[30] OECD comparisons reveal clearly lower training rates for temporary workers, as well as for part-time workers (OECD 1999). For a recent analysis of the relation between training and the length of the work contract, see Anderhub *et al*. (2003) and the references therein.

[31] OECD studies (1991, 1999) have provided overwhelming international evidence on education being a ticket to company provided training.

Table 4.10 Off-the-job training of the temporary personnel
(1 = less than one day; 2 = 1 – 5 days; 3 = 5 – 20 days; 4 = over 20 days; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
4					GR1	
3		IE				GR
2	NL	CH	NL1&2	FIN,IE	GR2	
1		GR,NL	FIN1,GR	GR		
N/A	FIN1&2, GR,IE,CH	FIN	FIN2,IE	NL,CH	FIN, CH1&2	FIN

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

temporary staff is, on average, trained as much as or only slightly less than the permanent personnel, a finding that contradicts the hypothesis of temporary employees receiving little or no training.[32] Indeed, only the Greek companies seem to behave in a manner that is in accordance with what theory expects from them; the Greek companies train their temporary employees notably less than their permanent employees. There is one noteworthy exception, though: in one of the IT-intensive Greek companies, the temporary employees typically receive more both on-the-job and off-the-job training than the permanent employees.

Table 4.11 On-the-job training of the higher educated personnel
(1 = less than one day; 2 = 1 – 5 days; 3 = 5 – 20 days; 4 = over 20 days; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
4	IE		GR,NL2	GR	GR2,IE	
3	FIN1&2,GR	FIN,IE,NL	FIN2	FIN	FIN	
2	NL	GR	FIN1,NL1	IE		
1					GR1	GR
N/A	CH	CH	IE	NL,CH	CH1&2	FIN

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

The hypothesis of the higher educated receiving most training does not get clear-cut support, either. In most cases, the companies report no difference in the average length of training between the higher educated employees and the permanent staff as a whole. In a few cases, the higher educated are reported to receive, on average, even less both on-the-job and off-the-job training than the permanent staff (the supplier-dominated Dutch and Greek companies, the science-based Dutch company).

[32] Possibly this, on average, extensive training of also temporary employees can be interpreted as an indication of the temporary employment relationship being often part of a recruitment strategy, that is, a probation period leading potentially to a permanent employment relationship (cf. Olsen and Torp 1998).

Table 4.12 Off-the-job training of the higher educated personnel
(1 = less than one day; 2 = 1 – 5 days; 3 = 5 – 20 days; 4 = over 20 days; N/A = not available)

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
4	IE				IE	GR
3		GR,IE	GR,NL2	FIN,GR		
2	GR	FIN,NL	FIN1,NL1	IE,NL	GR1&2	
1	NL					
N/A	FIN1&2, CH	CH	FIN2,IE	CH	FIN, CH1&2	FIN

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

In conclusion, in all five countries under study, (the surveyed) companies tend to provide their whole personnel with training opportunities both on and off the job. Broadly speaking, the temporary staff does not seem to be in a clearly less advantageous position compared to the permanent personnel. Nor do the higher educated seem to be in a markedly more favourable position compared with the rest of the company's personnel.

Apart from the average length of training, the companies were also asked to indicate the importance of a given set of alternative reasons for the provision of training for their personnel. The following alternatives were given: new technology; organisational change; new products or activities; to avoid new hires; some other reason. Taken together, four out of five companies indicated new technology to be one of the major reasons for training of the staff. About half of them also added organisational change and new products or activities as important explanations.[33] Some other reason was ticked by about one-third of the companies, while only one out of ten indicated that attempts to avoid new hires were a major reason underlying their training strategies.

Table 4.13 provides further evidence of the dominance of new technology, often in combination with organisational change and/or new products or activities, as the driving force behind the provision of training irrespective of the categorisation and location of the company. Only among the sub-contracting companies is the ranking of the three key reasons slightly reversed with organisational change being the most frequent.

Finally, the companies were asked about how they expect the training of their personnel to develop in the foreseeable future. Most them ticked the alternative "remain more or less unchanged". An increase in training needs was expected mainly in the Dutch and Finnish companies. Another noteworthy pattern is that all sub-contracting companies anticipated a further increase in the training of their personnel.[34]

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[33] It might be of interest to note that in five cases, the only reason given was new technology. In most cases new technology appeared together with some other explanation, mostly in combination with organisational change and/or new products or activities. Only one company stated organisational change to be the only reason for training (the Dutch sub-contracting company).

[34] The Swiss sub-contracting company left the question unanswered.

Table 4.13 Major reasons for the provision of training

New technology	FIN2,GR, IE,NL	FIN,GR,IE, NL,CH	FIN2,GR,IE, NL1&2	FIN,IE	FIN,GR1&2, IE,CH1&2	FIN,GR
Organisational change	IE	IE,CH	FIN1,GR, NL1&2	FIN,IE,NL	GR1,CH1	FIN
New products or activities	FIN2,GR, IE,NL	FIN,IE	FIN1,GR, NL2	FIN,IE	GR1&2, CH1	FIN
To avoid new hires		CH	NL1		FIN,GR	
Some other reason	FIN1&2,IE	CH	FIN2, NL1&2	GR,CH	CH1&2	
N/A	CH					
	Science based	**Supplier dominated**	**Scale intensive**	**Sub-contractor**	**IT intensive**	**Hospital**

Learning of new skills

As a third dimension of human resource management, the companies were asked how the learning of new skills on the job has changed over the last three years (1999 – 2001). The variation in answers is minor, with most companies indicating that the learning of new skills has increased somewhat or even substantially. A closer look at the individual countries reveals that a majority of the Greek companies have experienced a substantial increase in the learning of new skills on the job, while a majority of the companies surveyed in the other countries see their learning of new skills to have increased somewhat. The least pattern is found for the Irish companies, which are evenly distributed over the scale "remained fairly constant / increased somewhat / increased substantially".

In view of this similarity in company responses across the five countries, it is hardly surprising that the differences between firm categories are also small. The supplier-dominated, scale-intensive and IT-intensive companies mostly indicate their learning of new skills on the job to have increased somewhat over the past few years, with mainly the Greek counterparts indicating a substantial increase. For the science-based and sub-contracting companies the spread in answers is larger due not least to the Irish companies noting their learning of new skills to have remained fairly unchanged.[35]

In addition, the companies were asked how widespread the learning of new skills on the job is. Three out of four companies noted the learning of new skills to concern very many of the jobs. One out of five companies argued that the learning of new skills extends to all jobs in the company.[36] Only one of all the companies surveyed indicated that the learning of new skills is restricted to a few of the jobs (the Swiss sub-contracting or, actually, specialised supplier company).

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[35] This answer is also provided by the Greek sub-contracting company, which gives it the status of a notable "outlier" among the surveyed Greek companies.

[36] Such answers were given by Finnish (3), Greek (1) and Irish (2) companies, but by none of the Dutch or Swiss companies (the Swiss science-based firm did not answer the question).

Finally, the companies were asked to mention the main reasons for changes in the learning of new skills on the job. As is to be expected, most companies mention new technology and its various dimensions, such as automation, computerisation and more complex products. A few companies, mainly the Greek ones, also emphasise explicitly the expansion of the company's activities and products.

Is there a linkage between human resource management and teamworking/job rotation/ increased decentralisation of decision-making practices?

A skilled and well-trained workforce is crucial for the successful implementation of functionally flexible strategies. A widely recognised precondition is a relatively high average educational level of the personnel of the company. Another is company-provided training, which is considered to be an important element in facilitating the implementation and utilisation of functionally flexible systems irrespective of the educational level of the personnel. Additionally, it has frequently been argued that flexible work organisation practices are a precondition for efficient utilisation of increased investment in the human capital of the employees.[37] In view of all this, one would expect a high positive correlation between the indicators of group work, job rotation and decentralisation of decision-making, on the one hand, and those approximating the education, training and learning of the personnel, on the other. The relevant correlation coefficients calculated from the questionnaire data are summarised in Tables 4.14 and 4.15, separately for the level and the change indicators.

The correlation coefficients for the indicators measured in levels display a statistically significant relationship between human resource management and workplace organisation practices in one single case only: the intensity of on-the-job training of the higher educated employees is clearly related to the intensity of the use of organised job rotation. The positive links revealed between the education level and the amount of training are only to be expected, that is, strongly positive.

Table 4.14 Correlations between functionally flexible practices and skills; levels

	Share with a higher education degree	On-the-job training of tenured employees	On-the-job training of temporary employees	On-the-job training of higher educated employees
Extent of group work	0.03	0.06	0.27	0.29
Extent of job rotation	0.05	0.28	0.31	**0.45****
On-the-job training of tenured employees	**0.44****	-	-	-
On-the-job training of temporary employees	0.21	0.21	-	-
On-the-job training of higher educated employees	**0.38***	**0.83*****	0.07	-

***, ** and * indicate that the correlation is statistically significant at, respectively, the 1%, 5% and 10% level.

[37] See e.g. Bassi (1995), Huselid (1995) and Vickery and Wurzburg (1996).

Table 4.15 Correlations between functionally flexible practices and skills; changes

	Change in the past three years in the share with a higher education degree	Change in the foreseeable future in the share with a higher education degree	Change in the foreseeable future in the training of the personnel	Change in the past three years in the learning of new skills on the job
Change in past three years in group work	**0.46****	0.23	0.10	0.07
Change in past three years in job rotation	-0.03	-0.06	-0.19	0.18
Change in past three years in individual autonomy and decision-making	**0.40****	0.16	0.28	**0.51****
Change in past three years in group autonomy and decision-making	0.25	0.05	**0.39***	0.13
Change in the foreseeable future in the share with a higher education degree	**0.57*****	-	-	-
Change in the foreseeable future in the training of the personnel	0.27	0.25	-	-
Change in past three years in the learning of new skills on the job	**0.44****	0.17	0.24	-

***, ** and * indicate that the correlation is statistically significant at, respectively, the 1%, 5% and 10% level.

The main picture mediated by the correlation coefficients for the indicators measured in terms of realised and perceived changes is that higher educational levels clearly facilitate the implementation of functionally flexible workplace organisation models.[38] Moreover, increased decentralisation of decision-making to individuals is clearly related with their learning of new skills on the job. The question of the direction of this causality remains open, though. Increased decentralisation of decision-making to groups, in turn, seems to require increased training efforts, sooner or later.

4.4 Recruitment difficulties and internal mobility

In view of the critical role of human resource management strategies, logical follow-up questions are whether the companies surveyed have encountered recruitment difficulties, especially of core personnel, and to what extent they utilise the possibilities offered by internal moves. These factors, which affect an organisation's capacity to implement functionally flexible work practices, are examined next starting from a more general explora-

[38] Similar findings are reported in the Nordic study conducted by NUTEK (1999).

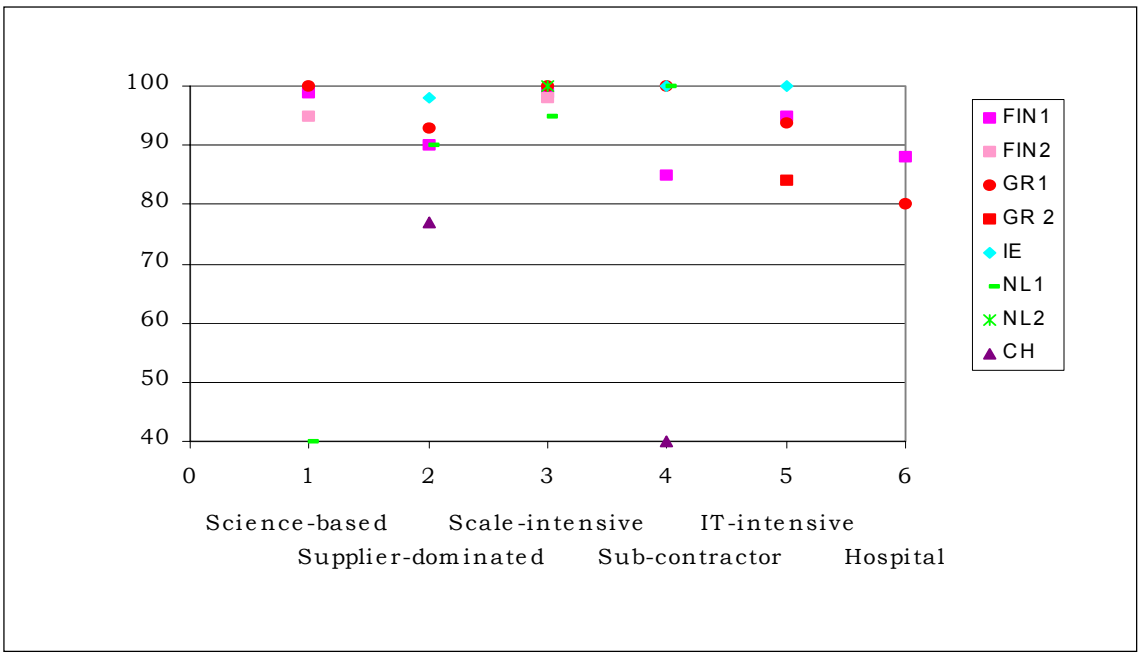
tion of the "core" of the surveyed companies' workforce and the main work and role of these core employees.

Occupational skills

While information on the employees' completed degrees of education can tell about the formal competencies of the company's personnel, identifying the most important occupational groups in the company can provide a better understanding of the core knowledge and know-how on which the company's activities heavily rely. When the companies surveyed were asked to list the most important occupational groups in their organisation, a common but rather general picture emerges. Frequently mentioned occupational groups are management, sales and marketing personnel, financial specialists, and engineers and technicians, as well as other key specialists engaged in production. While some companies mention only managers or engineers, other list practically all their personnel categories. Few companies, however, specify the occupational groups further by stating, for instance, what type of engineers.

In addition to merely listing the most important occupational groups, the companies were also asked to indicate the average percentage share of employees in these core occupational groups with a tenured position. As can be seen from Figure 4.2, the average share of tenured employees is typically very high in the most important occupational groups of the companies surveyed. Over 70 per cent of the 25 out of 30 companies that answered this question reported a percentage share of 90 or more. More than half of the companies stated the percentage share to be 95, at least. High or extremely high percentage shares of tenured employees in the core occupations is a feature common to all of the five countries, except for Switzerland, where the two companies that did answer this question report relatively

Figure 4.2 Average percentage share of tenured employees in the company's most important occupational groups



low shares.[39] Likewise, all firm categories are characterised by high or extremely high percentage shares of tenured employees in the core occupations, but typically with the company of one particular country diverging clearly from this common pattern, most notably in the science-based and IT-intensive categories.

Attempts were also made to unravel the work and role of the tenured employees in these most important occupational groups. The companies were, therefore, asked to state whether or not they agree with a number of pair-wise opposite assessments.[40] These assessments and the corresponding results are presented separately for the different firm categories in Tables 4.16 to 4.21.

Table 4.16 reveals a fairly systematic clustering of the science-based companies when it comes to the six assessments that the companies surveyed were asked to respond to. Thus, they broadly agree that the work involves multi-tasking, teamworking, high skills and training of recruits. The pace of work is seen to be dependent on technology, except in Finland. And the tenured employees are typically hired for specific tasks, except in Ireland.

Table 4.16 Science-based companies: assessment of the work and role of the tenured employees in the company's core occupational groups*

Assessment	1	2	3	4	5	Assessment
Work involves a broad range of different tasks ('multi-tasking').	FIN1, GR,IE, CH	FIN2, NL				Work involves repetition of quite a limited number of single tasks.
Work is essentially a team activity.	GR,IE, CH	FIN2		NL	FIN1	Work is essentially an individual activity.
A high level of qualification is required.	FIN1&2, NL	GR,IE	CH			Little or no qualification is required.
Recruits have to be trained for the job.	FIN1&2, GR,IE	NL	CH			Recruits are already trained to do the job.
The pace of work is **in**dependent of technology.		FIN1	FIN2, NL	IE,CH	GR	The pace of work is dependent on technology.
Contracts for employees typically allow for shifts between tasks and functions.	IE		GR	FIN2, NL	FIN1, CH	Employees are typically hired for clearly specified tasks.

* 1 = means that the respondent totally agrees with the statement on the left-hand side; 5 = means that the respondent totally agrees with the statement on the right-hand side.

[39] Note, though, that the percentage share is missing for two Irish companies: the science-based and the scale-intensive one.

[40] The same assessments were asked also in relation to the non-tenured (flexible) part of the personnel, but only in case the company reported a large share of temporary employees in its most important occupational groups. Because there were few replies to these questions, no results are reported here.

Table 4.17 Supplier-dominated companies: assessment of the work and role of the tenured employees in the company's core occupational groups*

Assessment	1	2	3	4	5	Assessment
Work involves a broad range of different tasks ('multi-tasking').		FIN		IE,NL, CH	GR	Work involves repetition of quite a limited number of single tasks.
Work is essentially a team activity.			FIN,IE	GR,NL, CH		Work is essentially an individual activity.
A high level of qualification is required.		FIN	GR,IE		NL,CH	Little or no qualification is required.
Recruits have to be trained for the job.	FIN	NL,CH	GR,IE			Recruits are already trained to do the job.
The pace of work is **in**dependent of technology.			FIN,GR	IE,CH	NL	The pace of work is dependent on technology.
Contracts for employees typically allow for shifts between tasks and functions.		FIN	GR,IE	NL,CH		Employees are typically hired for clearly specified tasks.

* 1 = means that the respondent totally agrees with the statement on the left-hand side; 5 = means that the respondent totally agrees with the statement on the right-hand side.

Table 4.18 Scale-intensive companies: assessment of the work and role of the tenured employees in the company's core occupational groups*

Assessment	1	2	3	4	5	Assessment
Work involves a broad range of different tasks ('multi-tasking').	GR	NL1&2	FIN1&2			Work involves repetition of quite a limited number of single tasks.
Work is essentially a team activity.	GR,NL2	FIN2, NL1	FIN1			Work is essentially an individual activity.
A high level of qualification is required.	GR	NL2	FIN1, NL1	FIN2		Little or no qualification is required.
Recruits have to be trained for the job.	FIN1&2, GR	NL1&2				Recruits are already trained to do the job.
The pace of work is **in**dependent of technology.			NL2	FIN1	FIN2, GR,NL1	The pace of work is dependent on technology.
Contracts for employees typically allow for shifts between tasks and functions.	FIN1&2	GR	NL2		NL1	Employees are typically hired for clearly specified tasks.

* 1 = means that the respondent totally agrees with the statement on the left-hand side; 5 = means that the respondent totally agrees with the statement on the right-hand side. The Irish scale-intensive company did not answer these questions.

The outcome is rather mixed for the supplier-dominated companies, with a majority of the responses located in the middle of the scale (3) or very close to it (Table 4.17). A cautious generalisation would be that the Finnish supplier-dominated company "moves" more to the left-hand side of the scale, the Greek and Irish companies in the middle, and the Dutch and Swiss companies more on the right-hand side of the scale.

The chances of drawing even cautious conclusions for the scale-intensive companies are mitigated because the answers are missing from the Irish scale-intensive company (Table 4.18). The only really common assessments seem to be that recruits have to be trained for the job, and that the pace of work is dependent on technology. It may also be noted that the Dutch and, especially, the Greek scale-intensive companies tend to put more emphasis on multi-tasking, teamworking and high qualifications than the scale-intensive Finnish companies.

A clearly stronger similarity in assessments can be found for the sub-contracting companies (Table 4.19). As in the case of the science-based companies they broadly agree across the five countries that typical characteristics are multi-tasking, teamworking, high skills, and training of recruits. But in contrast to the science-based companies, their assessments concerning the role of technology and the specificity of tasks vary a lot across national borders.

Table 4.19 Sub-contracting companies: assessment of the work and role of the tenured employees in the company's core occupational groups*

Assessment	1	2	3	4	5	Assessment
Work involves a broad range of different tasks ('multi-tasking').	GR	FIN,IE, NL	CH			Work involves repetition of quite a limited number of single tasks.
Work is essentially a team activity.		FIN,GR, NL,CH	IE			Work is essentially an individual activity.
A high level of qualification is required.	FIN,GR	IE,NL	CH			Little or no qualification is required.
Recruits have to be trained for the job.	FIN,GR	IE,NL, CH				Recruits are already trained to do the job.
The pace of work is **in**dependent of technology.	GR	IE,NL	FIN	CH		The pace of work is dependent on technology.
Contracts for employees typically allow for shifts between tasks and functions.		FIN	IE,NL	CH	GR	Employees are typically hired for clearly specified tasks.

* 1 = means that the respondent totally agrees with the statement on the left-hand side; 5 = means that the respondent totally agrees with the statement on the right-hand side.

The outcome is roughly the same for the IT-intensive companies, although one might argue that there is a slightly stronger agreement also when it comes to the role of technology and the specificity of tasks (Table 4.20).

Table 4.20 IT-intensive companies: assessment of the work and role of the tenured employees in the company's core occupational groups*

Assessment	1	2	3	4	5	Assessment
Work involves a broad range of different tasks ('multi-tasking').	IE,CH1	FIN, GR1&2				Work involves repetition of quite a limited number of single tasks.
Work is essentially a team activity.	GR2,IE	CH1	FIN	GR1		Work is essentially an individual activity.
A high level of qualification is required.	FIN,GR2, IE,CH1	GR1				Little or no qualification is required.
Recruits have to be trained for the job.	FIN,GR2, IE,CH1				GR1	Recruits are already trained to do the job.
The pace of work is **in**dependent of technology.	IE,CH1		FIN, GR1	GR2		The pace of work is dependent on technology.
Contracts for employees typically allow for shifts between tasks and functions.	GR1,IE	FIN	GR2		CH1	Employees are typically hired for clearly specified tasks.

* 1 = means that the respondent totally agrees with the statement on the left-hand side; 5 = means that the respondent totally agrees with the statement on the right-hand side.

The two hospitals, finally, display strong agreement when it comes to teamworking, high qualifications and specified tasks, whereas the assessments diverge somewhat or even strongly with respect to the other assessments (Table 4.21).

Table 4.21 Hospitals: assessment of the work and role of the tenured employees in the company's core occupational groups*

Assessment	1	2	3	4	5	Assessment
Work involves a broad range of different tasks ('multi-tasking').	FIN				GR	Work involves repetition of quite a limited number of single tasks.
Work is essentially a team activity.	FIN	GR				Work is essentially an individual activity.
A high level of qualification is required.	FIN,GR					Little or no qualification is required.
Recruits have to be trained for the job.			FIN		GR	Recruits are already trained to do the job.
The pace of work is **in**dependent of technology.	FIN		GR			The pace of work is dependent on technology.
Contracts for employees typically allow for shifts between tasks and functions.					FIN,GR	Employees are typically hired for clearly specified tasks.

* 1 = means that the respondent totally agrees with the statement on the left-hand side; 5 = means that the respondent totally agrees with the statement on the right-hand side.

All in all, the similarity in the companies' assessment of the role and work of the tenured part of the most important occupational groups turns out to be most conspicuous in the category of science-based companies, followed by the IT-intensive companies and the sub-contracting companies. The least clear-cut pattern emerges for the supplier-dominated and the scale-intensive companies.

Table 4.22 Correlations between the assessments of the work and role of the tenured employees in the companies' core occupational groups

	Multi-tasking	Team-working	Level of qualifications	Training of recruits	Technology dependency	Task specificity
Multi-tasking	-	**0.45****	**0.56*****	**0.47****	**0.32****	0.02
Teamworking	-	-	0.31	0.20	-0.03	0.07
Level of qualifications	-	-	-	0.14	**0.58*****	-0.05
Training of recruits	-	-	-	-	-0.03	0.22
Technology dependency	-	-	-	-	-	-0.22

***, ** and * indicate that the correlation is statistically significant at, respectively, the 1%, 5% and 10% level.

In view of this it is hardly surprising that the calculation of simple correlations between the various assessments for all the companies surveyed produces few of statistical significance (Table 4.22). Indeed, multi-tasking stands out as the only type of functional flexibility that is strongly related to all the other features accounted for, except for task specificity. Unsurprisingly, there is a strong positive relationship also between the level of qualifications and technology dependency.

In this context it may, finally, be noted that the companies surveyed were also asked to indicate whether or not, during the past three years (1999 – 2001), they had experienced difficulties in trying to recruit people for high-skilled occupations. If they answered positively to this question, the company was asked to specify in what type(s) of high-skilled occupations such difficulties had occurred.

Over 60 per cent of the companies surveyed responded with a "yes" to the question of whether or not they had experienced recruitment difficulties in relation to high-skilled occupations. There are, nonetheless, marked differences in responses across both countries and firm categories. In particular, nearly all the Finnish and Swiss companies answered the question positively, while almost all the Greek companies answered it negatively. A negative reply from the Greek companies is also to be expected in view of their statement of increased supply of educated people being one major reason for improvements in the educational structure of their personnel. The Dutch and Irish companies replied variously "yes" and "no".

The recruitment problems were indicated to be most severe in the IT-intensive companies. Also the two hospitals covered by the questionnaire responded positively to the question. At the other extreme are the scale-intensive companies of which only the Dutch company

had encountered recruitment problems. The occurrence of recruitment problems for high-skilled occupations varied across the five countries within the categories of science-based, supplier-dominated and sub-contracting companies, but with a majority of them having, nevertheless, experienced recruitment problems. An inadequate supply of skilled personnel for the core occupations thus seems to have impeded the implementation of flexible work practices in a majority of the companies surveyed irrespective of geographical location and firm categorisation. This contention receives further support when comparing the companies' listings of core occupations and occupations characterised by recruitment difficulties.

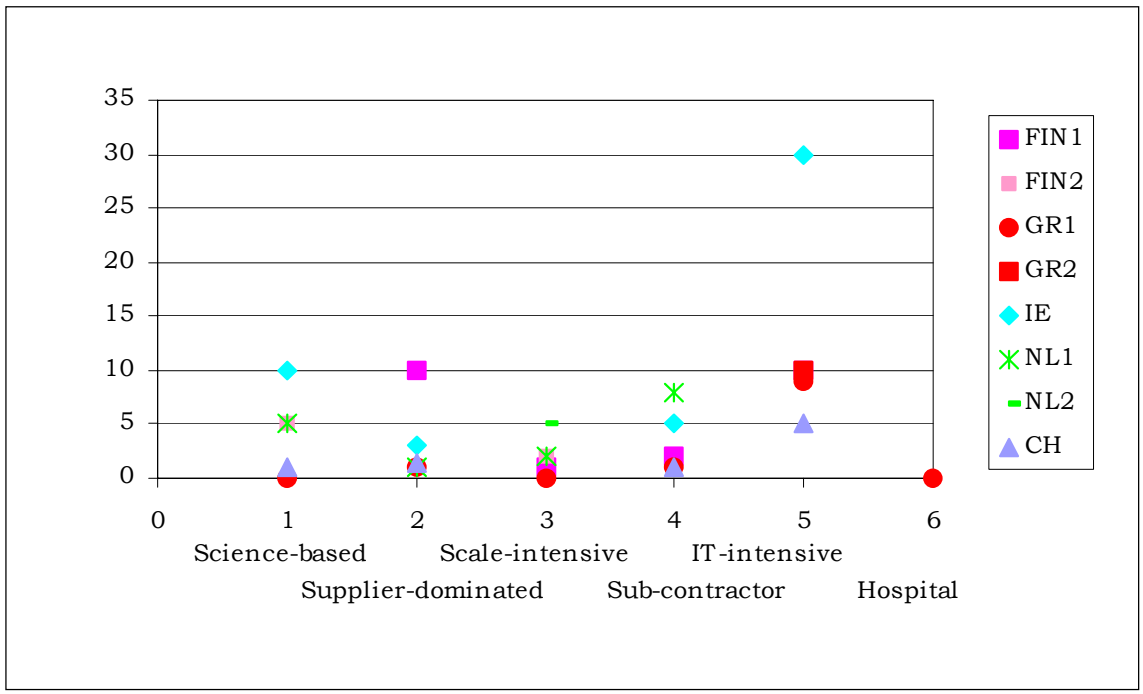
Internal mobility

In order to explore the extent of internal mobility, the companies surveyed were asked to indicate the occurrence of shifts either to new functions or to different departments. More precisely, the question was formulated as

What percentage of your personnel in 2001 moved to a new function or to a different department within your firm?

The percentage shares of the personnel of the companies surveyed who had moved to a new function are displayed in Figure 4.3, while the corresponding percentage shares for moves to a different department are summarised in Figure 4.4. Generally speaking, shifts to a new function stand out as slightly more common than shifts to an entirely different department, albeit both kinds of moves prove to involve a rather limited number of the total personnel. Indeed, of all the companies surveyed which answered these two questions[41],

Figure 4.3 Percentage share of the personnel who moved to a new function in 2001

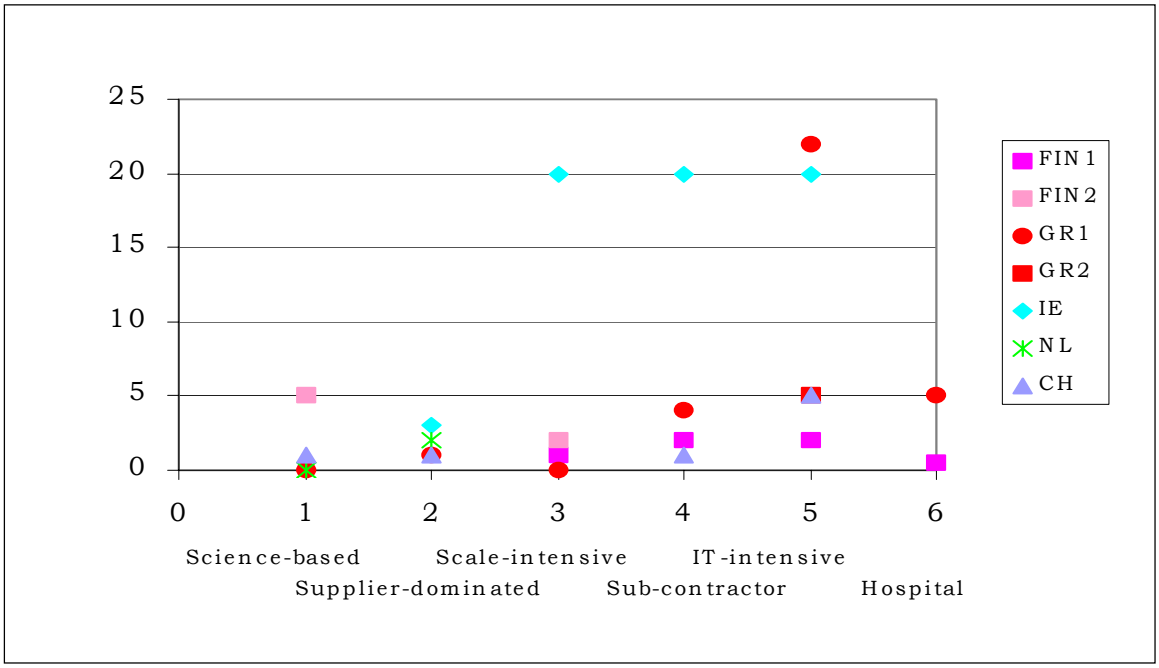


[41] 26 out of 30 companies answered the question concerning shifts to a new function, while 24 out of 30 companies answered the question concerning shifts to a different department.

three out of four indicated that only five per cent or even less of the personnel had moved to a new function in 2001. In as many as four out of five companies the share of the personnel moving to a different department was five per cent, at most.

Exceptions from this general pattern of rather low rates of internal mobility can be found in all of the five countries under study, but mostly these exceptions are more or less randomly spread across the different firm categories. Nevertheless, the following notions can be made. First, in a majority of countries, the proportion of the personnel who moved to a new function is reported to be highest in the IT-intensive companies and lowest in the scale-intensive companies. Second, all the Dutch and Swiss companies report proportions of the personnel who moved to a new function of five per cent or less, except in one case (the Dutch sub-contracting company).[42] Finally, shifts to a different department seem to be mainly an Irish phenomenon with only one of the Greek IT-intensive companies reporting an equally high share of department-shifting personnel.

Figure 4.4 Percentage share of the personnel who moved to a different department in 2001



The companies were also asked to specify whether or not such internal moves are typically based on a clear selection of employees according to their educational level. No less than two-thirds of the 27 out of 30 companies that responded to this question, chose the alternative "there is hardly any difference in education levels between those who are selected to move internally and those who are not selected". The rest answered that they select disproportionately more employees with above-average levels of education for internal moves. The only exception is one of the Dutch scale-intensive companies, which indicated that their selection for internal moves clearly favours employees with below-average levels of education. Also in relation to this question, the similarity in answers across the five coun-

[42] Note, though, that information is missing for one of the Swiss IT-intensive companies.

tries is most outstanding for the IT-intensive companies, with a majority of them reporting no difference in selection with respect to the employees' educational level.

The companies were further asked to indicate the direction of change in such internal moves over the last three years (1999 – 2001), as well as the direction of change that the company expects in the foreseeable future. A majority of the companies surveyed – two out of three – reported no notable change in the occurrence of internal moves over the last three years. The rest had identified a slight increase, and only one company had experienced a substantial increase in internal mobility (the Greek IT-intensive company, which had also reported that a considerable proportion of the personnel had shifted to a different department; cf. Figure 4.4).

A common feature of the Finnish companies is that most of them report a slight increase in internal moves, while most or all of the companies surveyed in the other four countries report the frequency of internal moves to have remained fairly constant. Again the similarity across countries is most outstanding for the IT-intensive companies, now in the sense that a majority of them have experienced an increase in internal mobility, while "no change" is the dominant trend in the other firm categories.

About half of the companies surveyed expect internal mobility to increase somewhat in the foreseeable future, while the other half assumes the frequency of internal moves to remain fairly constant. Only two companies deviate from this pattern: one of the Dutch scale-intensive companies, which perceives a substantial increase in internal mobility, and the Irish scale-intensive company, which anticipates internal moves to decrease somewhat in the near future.

The overall patterns that emerge when examining recent trends in internal mobility are largely repeated when turning the focus to expected future trends.[43] Two distinct trends are worth noting, though. First, the tendency of increasing internal mobility in IT-intensive companies is mostly perceived to intensify further in the foreseeable future. Second, while all Dutch companies reported internal mobility to have remained fairly constant from 1999 to 2001, all of them, except for the science-based company, expect internal mobility to increase somewhat or even substantially over the coming years.

A brief examination of whether or not the indicators of internal mobility correlate with other measures of human resource management and functional flexibility practices reveals that companies characterised by a relatively high share of internal moves to new functions, are also intense users of group work, job rotation, and a highly-skilled workforce (Table 4.23). Interestingly, the same connections do not seem to be present when it comes to internal moves to entirely new departments.

The correlation coefficients reported in Table 4.24, in turn, suggest that companies having increased their decentralisation of decision-making at the group level, have also undertaken comparatively more shifts of their staff to new functions. These recent trends also seem to affect their plans for recruiting more well-educated people. When it comes to internal mobility in the foreseeable future, more learning of new skills on the job, as well as increased

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[43] Although the overall patterns across countries and firm categories are largely repeated, this does not mean that the individual companies have answered in a similar way to the questions concerning recent internal mobility, as well as that in the near future. Indeed, the simple rank correlation between the companies' response to these two questions is only 0.15 (see Table 4.24).

decentralisation of responsibilities to individuals, tend to speed up the companies' planning of increased use of internal moves.

Table 4.23 Correlations of internal mobility with other functional flexibility strategies; levels

	Share of personnel who moved to a new function	Share of personnel who moved to a different department
Share of personnel who moved to a different department	**0.67*** **	-
Extent of group work	**0.45** **	0.32
Extent of job rotation	**0.37***	0.36
Share with a higher education degree	**0.54*** **	0.30
On-the-job training of tenured employees	0.27	-0.22
On-the-job training of temporary employees	**0.56*** **	0.24
On-the-job training of higher educated employees	0.27	-0.20

***, ** and * indicate that the correlation is statistically significant at, respectively, the 1%, 5% and 10% level.

Table 4.24 Correlations of internal mobility with other functional flexibility strategies; changes

	Change in past three years in internal mobility	Change in foreseeable future in internal mobility
Change in foreseeable future in internal mobility	0.15	-
Change in past three years in group work	-0.30	-0.08
Change in past three years in job rotation	0.01	-0.09
Change in past three years in individual autonomy and decision-making	0.15	**0.43** **
Change in past three years in group autonomy and decision-making	**0.44** **	0.14
Change in past three years in the share with a higher education degree	0.20	0.25
Change in the foreseeable future in the share with a higher education degree	**0.41** **	0.04
Change in foreseeable future in the training of the personnel	0.22	0.19
Change in past three years in the learning of new skills on the job	0.00	**0.33***

***, ** and * indicate that the correlation is statistically significant at, respectively, the 1%, 5% and 10% level.

Finally, the companies were asked to give the main reasons both for the use of internal moves and for changes in the use of internal moves. Frequently stated reasons were filling of vacancies internally, provision of career opportunities and organisational change. A cautious generalisation would be that reasons related to internal recruitment and career development dominate the replies of the Finnish companies, while changes in the organisational structure dominate those of the Dutch companies. For the other three countries, all three reasons are variously mentioned.

To sum up, internal mobility seems to involve a rather small portion of the personnel. Moreover, this pattern emerges stronger in relation to moves between departments compared with moves between functions. The extent of internal mobility has remained fairly constant over the last few years, but is expected to increase in the foreseeable future. This is especially true for the IT-intensive companies, while the companies in the other firm categories display much more country-specific variation in their behaviour. Another conspicuous feature especially of IT-intensive companies is that internal mobility does not typically relate to the educational level of the employees, but involves employees with both lower and higher educational degrees.

4.5 Workplace re-organisation and quality of working life

Implementation of major organisational changes may be interpreted as an indicator reflecting the company's transformation capacity more generally. Moreover, the adoption and utilisation of functionally flexible workplace practices are commonly taken to improve general working conditions. These phenomena are explored to some extent in this sub-section.

Workplace re-organisation

In addition to the specific questions on work organisation (group work and job rotation) discussed in sub-section 4.1 above, the questionnaire also included more general inquiries about re-organisation of the workplace in the companies surveyed. The first question concerned changes already undertaken by the companies, as well as planned changes in its workplace organisation. Specifically, the question was formulated as

During the past few years, has your firm undertaken or planned changes with respect to workplace organisation?

As can be seen from Table 4.25, organisational change is very widespread in the companies surveyed irrespective of the company's geographical location and firm categorisation. More than 60 per cent of the companies have already undertaken changes in their workplace organisation, while the rest of them were undertaking or were planning to undertake such changes at the time of the questionnaire. Sub-contracting companies seem to lead the "race" of workplace organisational reform in the sense that in all five countries, such companies had already undertaken changes in the organisation of their workplace. This indication of a relatively high transformation capacity of sub-contractors and specialist suppliers is not surprising, since they need to constantly adapt and adjust to meet the requirements of other companies.[44] When it comes to the other firm categories, a cautious conclusion might be that relatively

[44] A somewhat higher transformation capacity, as measured by undertaken changes in the work organisation, was also obtained for sub-contractors in the NUTEK (1999) study of Nordic companies.

more of the Dutch and Greek companies are still at the stage of undertaking or planning to undertake workplace re-organisations.

Table 4.25 Undertaken or planned changes in the workplace organisation during the past years

Have been undertaken	FIN2	FIN,IE,CH	FIN1,IE, NL1	FIN,GR,IE, NL,CH	FIN,GR1&2, IE,CH1	
Are currently being undertaken	FIN1,GR, IE,NL	GR	FIN1&2, NL2		IE	FIN
Are planned to be undertaken		NL	FIN1,GR	IE		GR
Have not even been planned						
N/A	CH				CH2	
	Science based	**Supplier dominated**	**Scale intensive**	**Sub-contractor**	**IT intensive**	**Hospital**

The company was further asked to indicate how extensively the most recent changes (undertaken or in progress) in the workplace organisation have affected the personnel. From Table 4.26 it can be concluded that only exceptionally has the organisational change involved just a fraction of the organisation. Moreover, the similarity in behaviour across national borders is conspicuous for the different firm categories. More precisely, workplace organisational changes have typically affected the whole organisation in the science-based companies, a considerable part of the organisation in the supplier-dominated and subcontracting companies, and variably the whole or a considerable part of the organisation in the scale-intensive and IT-intensive companies.

Table 4.26 Personnel coverage of the most recent changes in workplace organisation undertaken or in progress

Whole organisation	FIN1&2, GR,IE	CH	GR,IE,NL2		GR2,IE, CH1	FIN
Considerable part of the organisation	NL	FIN,GR,NL	FIN1&2, NL1	FIN,IE, NL,CH	GR1,CH1	
Only a fraction of the organisation		IE		GR	FIN	GR
N/A	CH				CH2	
	Science based	**Supplier dominated**	**Scale intensive**	**Sub-contractor**	**IT intensive**	**Hospital**

Finally, the companies were asked to tick, from a given set of alternatives, the most important target(s) for undertaking changes in their workplace organisation. The list of targets included the following options: improved competitiveness, improved productivity, improved products and activities, concentration on core competencies, control of labour force costs, improvement of the competencies of the personnel, improved conditions for team

and/or other group work and better response to customers' demands. The outcome from this inquiry is reported in Table 4.27.

If the different targets are first looked at more generally, improved productivity stands out as the overwhelmingly most important one; four out of five companies have stated improved productivity to be one of the most important reasons underlying the changes undertaken in their workplace organisation.[45] More than half have identified the following additional targets: better response to customers' demands, improved competitiveness and improved conditions for team and/or other group work. The other targets have been indicated by one-third, at most, of the companies surveyed.

These same top-ranking targets dominate in the different firm categories, but to a highly variable degree. Of the four targets receiving the highest rankings, the least emphasis is given to improved conditions for team and other group work in the science-based companies, and improved competitiveness in the supplier-dominated companies. At the one extreme are the scale-intensive and IT-intensive companies, which consider practically all listed targets to be important. At the other extreme are the sub-contracting companies, which identify few, if any, of the listed targets as important reasons for undertaking organisational changes. Possibly one explanation for the weak response of the sub-contracting companies is that all of them had already undertaken major changes in their workplace organisation at the time of the questionnaire (cf. Table 4.25 above).

Table 4.27 Assessment of the company's most important targets for undertaking changes in its workplace organisation

Improved competitiveness	FIN1&2, GR,IE	IE	FIN1&2, GR,IE,NL2	FIN,GR,IE	GR1&2, IE	
Improved productivity	FIN1&2, GR,IE,NL	FIN,GR,IE, NL,CH	FIN1&2, IE,NL1&2	FIN,IE	GR1&2, IE,CH1	GR
Improved products and activities	GR,NL		FIN2,NL2	FIN	GR1&2, IE,CH1	
Concentration on core competencies	FIN1,GR	CH	FIN1&2, GR,NL2	IE	IE	
Control of labour force costs	GR	IE	NL1&2		GR1&2	
Improvement of personnel competencies	GR	GR,CH	FIN1,GR, NL2		GR1&2, IE	GR
Improved conditions for team and other group work	GR,IE	FIN,GR,IE, NL,CH	FIN1&2, GR,NL1&2	NL	GR2,IE	
Better response to customers' demands	GR,IE,NL	FIN,GR,IE	FIN2,GR,IE, NL2	FIN	FIN,GR1&2, CH1	FIN,GR
N/A	CH			CH	CH2	
	Science based	**Supplier dominated**	**Scale intensive**	**Sub-contractor**	**IT intensive**	**Hospital**

[45] Again these findings are similar to those obtained in the NUTEK study (1999) of the Nordic countries.

All in all, workplace organisational changes, already undertaken or currently being undertaken, stand out as a feature common to most of the companies surveyed. The only noteworthy difference is the time dimension with countries and/or firm categories being at slightly different stages of this common process. Moreover, the changes involve, as a rule, all or a considerable part of the organisation with the major target being improved productivity, just as hypothesised in the theoretical literature.[46]

Quality of working life: sick leave

The questionnaire also included a few questions that can be used as proxy measures for the quality of working life in the companies surveyed. The most straightforward questions concerned absenteeism. More precisely, the companies were asked to respond to the following question:

What percentage of your total working hours is lost annually due to sick leave?

The company responses to this question are displayed in Table 4.28. The percentage of total working hours lost annually due to sick leave varies between one and five per cent for most of the companies surveyed. Some companies report notably higher percentages, but they are in no way concentrated in some particular country or some particular firm category. Nevertheless, it might possibly be argued that the Irish companies show a higher tendency of absenteeism due to sickness, and that the employees of the supplier-dominated and scale-intensive companies are more prone to be on sick leave, at least in some of the countries under study.[47]

Table 4.28 Percentage of total working hours lost annually due to sick leave*

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
Finland	2 & 4	3	4-6 & 6	3	3.5	..
Greece	1	2	1.83	8	2 & 1.3	2
Ireland	..	8	9	5	2.5	
Netherlands	3	6.4	5 & 2 – 6	5	-	
Switzerland	2.5	4.5		2	.. & 2	

* Numbers combined with "&" give the percentage share for each of the two companies surveyed representing the same firm category.

In case the company had experienced substantial sick leave among its employees, a follow-up question asked for the main reasons for this. Although few companies responded to this question it is, nevertheless, interesting to note the kind of reasons given: family-related

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[46] See e.g. Boyer (1988).

[47] Unfortunately, lack of data renders impossible a comparison with the average situation in the private business sector in each country.

reasons (pregnancies, small children), sickness benefit related reasons (Ireland), and work-related reasons (heavy work load, re-organisations leading to under-qualification for the assigned job).

In addition, the companies were asked to indicate the direction of change in sick leave over the last three years (1999 – 2001). Just over half of the companies reported that the percentage of total working hours lost due to sick leave had remained fairly constant over the past few years, but the spread across countries and firm categories is wide and random (Table 4.29). The reported changes in sick leave do not seem to be clearly related to the absolute percentages displayed in Table 4.28 above, either; sick leave has variably increased, remained roughly unchanged or decreased in high-percentage, as well as low-percentage, companies.

Table 4.29 Change in sick leave over the last three years (1999 – 2001)
(scale from "increased substantially" (5) to "decreased substantially" (1))

	Science based	Supplier dominated	Scale intensive	Sub-contractor	IT intensive	Hospital
5			NL1	IE		FIN
4			GR	FIN	CH1	
3	FIN1&2, GR,NL	GR,IE	FIN1&2	GR,CH	FIN,GR1&2, IE,CH2	GR
2	CH	FIN,CH	IE			
1		NL	NL2	NL		
N/A	IE					

FIN = Finland
GR = Greece
IE = Ireland
NL = Netherlands
CH = Switzerland

Finally, it may be of interest to explore whether or not sick leave is correlated with any of the previously examined functional flexibility indicators. Most of the calculated correlation coefficients turned out to be statistically insignificant. A few, however, seem to be clearly related to the companies' recent trend in the frequency of sick leaves. More specifically, the results suggest that both the learning of new skills on the job and increased decentralisation of decision-making to groups are likely to reduce the employees' absence due to illness.

Quality of working life: working conditions

Companies for which group work, job rotation and/or autonomy and decentralisation of decision-making are of considerable relevance were also asked to assess the impact of these various forms of work organisation on working conditions and industrial relations. Working conditions were measured by the motivation of employees, the satisfaction of employees / work climate and the quality of life (family life, health, etc.).

Nearly all companies that responded to these questions indicated that all three functional flexibility practices have a positive or very positive impact on the motivation of employ-

ees. Teamwork came out with the highest share of companies reporting a very positive impact (almost half of the companies), while the corresponding shares for job rotation, and autonomy and decentralisation of decision-making were lower or, respectively, one-third and two-fifths. The rest of the companies indicated the impact to be positive, with the following three exceptions stating a more or less neutral impact: one of the Swiss IT-intensive companies for group work, the Irish scale-intensive company for job rotation and the Dutch science-based company for autonomy and decentralisation of decision-making.

Most of the companies perceived the three functional flexibility practices to also have a positive or very positive impact on employee satisfaction and/or on the work climate, although to a slightly lesser extent than in the case of employee motivation. Indeed, two more companies had now joined the three aforementioned companies stating a neutral impact regarding both teamwork and job rotation.[48]

Finally, when it comes to the impact of the three functional flexibility practices on the quality of life, roughly half of the companies assess this impact to be negligible. Some of them believed in a positive impact, while few perceived it to be very positive. Indeed, the Dutch science-based company assesses the impact of autonomy and decentralisation of decision-making to rather have a negative impact on the employees' quality of life.

All in all, these findings are well in line with what could be expected. Not surprisingly, increasing the motivation of employees stands out as a major reason for extensive use of group work, job rotation, and autonomy and decentralisation of decision-making. But there seem to be no clear-cut patterns across countries or firm categories, one reason being, of course, the rather small number of companies that responded to these questions.[49]

Quality of working life: industrial relations

Group work, job rotation and autonomy and decentralisation of decision-making are assessed to have an overwhelmingly positive or even very positive impact also on industrial relations. For each functional flexibility indicator, only two or three companies perceived the impact to be more or less neutral. The Dutch science-based company, however, also stands out in this context, now by assessing the impact of industrial relations on quality of life to be very negative. As in the case of working conditions, no clear-cut patterns are discernible across countries or firm categories.

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[48] Group work: the Greek sub-contracting firm and the Swiss science-based firm. Job rotation: the Finnish supplier-dominated firm and the Irish IT-intensive firm.

[49] 19 out of 30 on teamwork; 15 out of 30 on job rotation and autonomy and decentralisation of decision-making.

5. FUNCTIONAL FLEXIBILITY AND COMPANY PERFORMANCE

In this chapter, attempts are made to explore whether there are clear-cut links between the functional flexibility strategies and economic performance, including the business environment, of the companies surveyed.[50] This is done in two ways: first, by calculating simple correlation coefficients for a broad set of combinations of the available company indicators for functional flexibility and company performance, and second, by reviewing the companies' own assessments concerning these matters based on explicit questions included in the questionnaire. This analysis can, of course, produce no more than suggestive implications owing to the small number of companies covered in the study.

5.1 Calculated links

The calculations resulted in rather few correlation coefficients of statistical significance. Nevertheless, only two of the available indicators reflecting the company's economic performance or market environment showed no statistically significant correlation whatsoever with any of the investigated functional flexibility indicators, *viz.* the change in total sales over the past three years, and the kind of markets (local, domestic or global) in which the company mainly operates. All the other economic indicators were statistically significantly correlated with at least one, but at most three of the different functional flexibility indicators. Next, these results are briefly presented and commented on. Due allowance should, thereby, be made for the fact that these results only indicate that the two indicators in question are interrelated, but can say nothing for certain about the direction of causality. It might, though, be assumed that the direction of causality mostly runs from functional flexibility to economic performance, and not vice versa.

While the change in company total sales over the past three years was found to be uncorrelated with all the available measures of functional flexibility, the perceived change in total sales in the foreseeable future turns out to be statistically significantly interrelated with the following functional flexibility indicators: the change in the past three years in the percentage share of employees with a higher education (0.45**), the assessed change in training of the personnel in the foreseeable future (0.43**), and the assessed change in internal moves in the foreseeable future (0.45**). In other words, an improved educational structure of the personnel as well as plans for increased training and job mobility in the near future, all add to the company's expectations of a growth in total sales over the next few years.

The change in gross profits during the past three years reveals a statistically significant relationship with the development over the same time period in the use of internal moves (-0.37*), group work (0.38*) and individual autonomy and decision-making systems

[50] Unfortunately, the complex relationship between technology and work organisation must be overlooked in the present study because of the poor response of the companies surveyed to questions concerning their R&D and innovative activities. This is a notable shortcoming of the data, as both the OECD (1999) and the NUTEK (1999) study identifies technological change as a major – actually even *the* major – source for organisational re-structuring. Accordingly, it is not also possible to test the hypothesis that functionally flexible organisation practices are a precondition for implementing new production technology, as argued by the OECD (1992, 1996).

(0.42**). Intensified use of teamworking and, especially, of decentralisation of decision-making to the individual level thus seems to have a notable positive impact on companies' gross profits, while intensified use of internal mobility affects gross profits negatively, at least in the short run. When it comes to the perceived change in gross profits in the foreseeable future, the only functional flexibility reflecting measure exerting a statistically significant influence is the expected change in the amount of training (0.47**). The company's assessment of its more general performance in the foreseeable future, in turn, seems to be influenced mainly by multi-skilling practices already undertaken or planned.[51]

The sensitivity of the company to fluctuations in demand turns out to be statistically related, significantly and positively, to increased use in the recent history of human resource, as well as work organisation, systems. A similar result is obtained when it comes to increasing competitive pressures. These findings hardly indicate that more use of functionally flexible systems makes the company more sensitive to business cycle and seasonal fluctuations, and competition. The causality rather runs in the opposite direction; that is, companies try to improve their adaptability to a rapidly changing market environment by intensifying their use of a well-educated workforce organised in teams allowing for job rotation and learning of new skills in the job.[52] Further support for this contention is provided by the statistically significant and positive correlation between increased near-history use of flexible workplace organisation systems and the size of the total personnel.[53]

In conclusion, this simple exercise strongly indicates that there exist non-negligible positive links between the company's use of human resource management and workplace organisation practices, on the one hand, and its economic performance, on the other. The favourable economic impact concerns both financial, employment and market outcomes.

5.2 Assessed links

Companies for which group work, job rotation and/or autonomy and decentralisation of decision-making are of considerable relevance were asked to assess the impact of these

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[51] The correlation coefficient between the perceived performance in the foreseeable future and the change in job rotation in the last three years is 0.57***, while the correlation coefficient between the perceived performance in the foreseeable future and the perceived change in the intensity of use of internal moves is 0.34*.

[52] The relevant correlation coefficients are as follows: sensitivity to business cycle fluctuations and the change over the last three years in the percentage of higher educated employees (0.47**); sensitivity to business cycle fluctuations and the change over the last three years in the use of group work (0.52***); sensitivity to seasonal fluctuations and the change over the last three years in the percentage of higher educated employees (0.36*); sensitivity to seasonal fluctuations and the change over the last three years in the use of group work (0.43**); sensitivity to seasonal fluctuations and the change over the last three years in the learning of new skills on the job (0.37*); change in competitive pressures in the companies' market fields and the change over the last three years in the use of job rotation (0.35*); change in competitive pressures in the companies' market fields and the change over the last three years in the learning of new skills on the job (0.46**).

[53] The correlation coefficient between the change in the last three years in the size of the total personnel and in job rotation is 0.35*, and between the change in the last three years in the size of the total personnel and in the learning of new skills on the job 0.46**. In this context it may also be noted that the NUTEK study (1999) finds the competitive environment to have boosted the transformation of Nordic workplaces into more functionally flexible organisations. Concerning Danish evidence, also see e.g. Lundvall and Kristensen (1997).

various forms of work organisation on their economic performance.[54] A distinction was thereby made between performance as measured by the level of employment, the skill requirements for employees, efficiency / productivity, innovative activities, and the competitive position.

About half of the companies that responded to these questions perceived group work, as well as increased decentralisation of decision-making, to have a positive or very positive effect on the company's level of employment. About one-third of the companies considered job rotation to have a positive effect on employment. A negative impact of group work and job rotation was indicated only by a few of the Finnish companies. The rest of the companies surveyed assessed the influence of these functional flexibility strategies on the level of employment to be more or less negligible.

Nearly all the companies stated group work, job rotation and increased decentralisation of decision-making to have a positive or very positive impact on the skills of the employees. Only exceptionally was the effect judged to be non-existent. None of the companies assessed the impact to be negative.

Most of the companies perceived job rotation and increased decentralisation of decision-making to attribute considerably to efficiency and productivity. Their perceptions with respect to group work were more diverging, although two out of three considered the impact of group work to be positive or very positive. But unlike in the case of job rotation and increased decentralisation of decision-making, some companies did consider group work to harm rather than improve the efficiency and productivity of their activities.

Practically all companies assessed group work to have a positive or very positive influence on their innovative activities. A similar assessment was given in relation to job rotation, but with the emphasis on "positive" rather than "very positive". When it comes to increased decentralisation of decision-making, about half of the companies judged the impact on their innovative activities to be positive or very positive, while the other half considered this mode of functional flexibility to leave their innovative activities more or less unaffected.

Group work, as well as increased decentralisation of decision-making, was perceived by about two-thirds of the companies to influence the competitive position positively or very positively. The other companies judged the effect to be negligible, while one (Finnish) company even assessed the impact of group work to be negative. For job rotation the most frequent assessment was a "positive" influence on the competitive position, with only one (Greek) company considering the effect to be very positive.

All in all, the responding companies typically considered group work, job rotation and increased decentralisation of decision-making to be important or even crucial for their economic performance and adaptability to a changing business environment. The frequency of "no-impact", "positive" and "very positive" assessments varied, though, quite remarkably depending on the functional flexibility and/or economic indicator in question. Only exceptionally were these functional flexibility strategies considered to influence the company's performance negatively.

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[54] This means that the reported results reflect the perceptions mainly of the science-based and IT-intensive companies, and to some extent also of the scale-intensive companies.

6. DISCUSSION AND CONCLUSIONS

Vickery and Wurzburg (1996) made a rough classification of countries based on the main approach of the business sector to adaptability and flexibility in response to domestic and international competitive pressures. One approach they called the "market-driven approach", typically adopted by companies in Australia, New Zealand, Canada, the USA and the UK. Since the behaviour of companies is largely driven by short-term financial performance, numerical and external flexibility strategies are dominating elements in this approach. A second approach can be found in Japan. This strongly "relations-based" company-centred approach puts relatively more emphasis on functional flexibility and internal development. A third approach, finally, is also based heavily on the tradition of decision-making by consensus but among a wider range of stakeholders than the single company as in Japan. Also this approach, implemented in varying degrees especially in continental Europe and the Nordic countries, involves relatively more of the elements of functional flexibility and internal development.

Simultaneously, however, Vickery and Wurzburg (1996) note that these three basic approaches are gradually changing due to intensified global competition. In particular, companies seem to increasingly use several adjustment strategies in parallel. Those having relied heavily on numerical and external flexibility are paying more attention to human resource and organisational strategies and vice versa.

Increasing diversity is discernible also in Europe, with notable variation across the European countries in the emphasis on different flexibility strategies and on functional flexibility in particular. This contention receives further support from the five national reports produced within the framework of the *FlexCom* project. The Dutch economy has, over the past few decades, been characterised by considerable attempts towards numerical labour market flexibilisation in combination with wage moderation policies. This has resulted in extraordinarily rapid job growth but, as it seems, much at the expense of technology-driven productivity growth.[55]

The Finnish and Swiss economies, in turn, share several distinct features.[56] In particular, both countries have experienced a tremendous increase in the use of information and communication technologies (ICT), which has forced the business sector to increasingly build its strategy on a high-skilled workforce and flexible workplace organisation. At the national level, this increased utilisation of functional flexibility strategies is commonly viewed as identical to more investment in education and training, as well as expanding use of flexible systems of work and structure organisation. An additional feature specific for Finland is the rapidly growing emphasis on the quality of working life. Interestingly, in both countries the social partner representatives interviewed for the national report paid little attention to functional flexibility issues and the perceived positive impact of such measures on output and competitiveness. Obviously a major explanation for this is the difficulty of quantifying functional flexibility both as a phenomenon and in terms of its economic impact. Another aspect, that evidently contributes to the minor attention paid to functional flexibility, is that in both countries, the social partners show a broad consensus in these matters. With respect to the other modes of flexibility, both countries have a long tradition of numerical flexibility that has changed only marginally over the past few dec-

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[55] For more details, see the Dutch national report by Kleinknecht and Naastepad (2002).
[56] See the national reports of the two countries (Asplund 2003; Arvanitis *et al*. 2002).

ades; the adjustment has rather been a clarification of the rules through legislative measures. Switzerland is also characterised by a long tradition of wage flexibility and wage moderation policies. In Finland, wage moderation and pay flexibility systems have emerged only later, mainly due to the deep recession in the early 90s, which forced companies to restructure towards a more flexible working life, to a profound renewal of labour legislation and to decentralisation of the collective bargaining system.

The Greek economy represents in many respects the other extreme in the sense that it is still a low-wage low-productivity country with a large informal sector, struggling on its way towards a knowledge-based society. In a European comparison, investments in human capital are low, as are indicators of technological progress. In view of this it is not surprising that functional flexibility is seen as a major problem in the Greek labour market. The traditional work organisation model still dominates, since companies continue to be hesitant to modernise their production methods and organisational structures. Initiatives aimed at speeding up workplace re-organisation and increasing the funding for training and life-long learning have had little, if any, impact on functional flexibility. The high priority of numerical flexibility in state policies, leaving functional flexibility to the market forces and business strategies, is seen as a major reason for this failure.[57] When it comes to numerical flexibility the Greek economy shows considerably more similarity with the other four countries under study: an increase in numerically flexible labour market arrangements traded off against improved employment security for the temporary workforce.

The Irish economy, finally, seems to have actively borrowed parts from different systems, for which reason it has features in common with all the other four project-partner countries.[58] The increasing but still rather limited use of functionally flexible production and management systems can be seen as a result of an Americanisation process that has gradually spread from the Irish private sector all the way up to the macroeconomic level and the Irish state's industrial policy. Simultaneously, attempts have been made to increasingly regulate this process by so-called social partnership agreements between the government, employers' associations and trade unions. This social partnership reminds strongly of the "competitive corporatism" adopted in, for instance, Finland and the Netherlands. Simultaneously, this way of regulating and boosting functionally flexible strategies has often proven to suffer from its voluntary nature. Indeed, in the Irish national report it is noted: "In this sense, the Irish experience begins to look similar to the Greek: there are often good policies to do the right things, but they are sometimes not implemented or implemented in form only." (Boucher and Wickham 2002, p. 6) One problem in this context – variably pointed to also in the other national reports – is the question of who should pay for in-company training, as well as other forms of life-long learning.

When it comes to the other forms of labour market flexibility, the Irish economy has followed much the same strategy as the Dutch economy; that is, notably increased numerical flexibility accompanied by enhanced employment security for the temporary workforce. Improved security for the temporary workforce has also characterised the development in the other countries, but generally in combination with much more moderate changes in numerically flexible systems. Apart from numerical flexibility, the Irish economy also relies heavily on wage and migratory flexibility, a feature that it shares to a varying extent with the Dutch, Greek and Swiss economies.

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[57] See the Greek national report by Tsipouri *et al.* (2002).
[58] See further the Irish national report by Boucher and Wickham (2002).

A common feature of the national reports is that functional flexibility receives much less attention than wage flexibility and, especially, numerical flexibility. Functional flexibility is identified with human resource management and workplace organisation systems, but quantitative information at the national level is scarce and often confined to investment in education and in-company training. Empirical evidence on the impact of functionally flexible strategies on whole-economy productivity, output and employment growth is practically non-existent. Even subjective assessments of such effects are scarce. Turning the focus to the company or plant level is, therefore, a tempting complementary approach that was also chosen for the *FlexCom* project.

When summarising the main findings from the multitude of aspects covered in Chapters 4 and 5, the following may be concluded concerning functionally flexible measures and their economic impact at the enterprise level. However, before turning to these main findings, it should be emphasised, once again, that the companies surveyed in the five partner countries are by no means representative. Instead they were typically selected based on their successful implementation of functionally flexible strategies. For instance, all the Irish companies are foreign-owned, representing companies that have contributed strongly to the aforementioned Americanisation process in the Irish business sector.[59] Likewise, inspection of the key characteristics of the surveyed Greek companies reveals few commonalties with the Greek economy as outlined above. Hence, no generalisations concerning individual countries are to be made based on these mostly "best-practice" or "leading-edge" company case studies. Rather the company cases can show that companies may, or may not, develop similarly across national borders despite even considerable country-specific differences. In particular, a conspicuous similarity in development trends is discernible among the science-based companies and, especially, among the IT-intensive companies. This might be taken as an indication of a strong sector-specific impact that induces companies engaged within these fields to behave in a similar way across the European borders. The other three sectors, in contrast, seem to be shaped more by national institutional settings possibly due – at least in part – to production lines playing a more crucial role in the activities of these companies.

Teamwork turns out to be a widely used functional flexibility strategy in the five small European economies under study, with Finland and Ireland ranking highest. And if a company uses teamwork, then this is mostly done on a broad-based scale, irrespective of the company's location and categorisation. Furthermore, teamwork is often, but not always, supplemented with a certain use of organised job rotation. This is particularly true for the sub-contracting/specialised supplier and IT-intensive companies, but not for the science-based companies, which might be explained by an exceptionally high degree of specialisation in science-based jobs and tasks. Notable exceptions to this pattern are the Irish companies, which turn out to commonly combine intensive use of teamwork with extensive use of job and task rotation programmes. A potential explanation for this outcome is a stronger US influence on work organisation practices in Ireland, especially in foreign-owned branches, than in the other countries under study. Only in supplier-dominated activities does Ireland behave in a more European manner.

Most of the companies surveyed reported their use of individual or group autonomy and decision-making to have increased or remained roughly unchanged during the past few years. Drawing together the evidence, however, reveals conspicuous both country-specific and firm-category-specific patterns. Broadly speaking, the experienced trend ranges from

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[59] Furthermore, e.g. Görg and Strobl (forthcoming) show that these foreign companies tend to use more efficient production, management and marketing techniques than Irish companies.

increased use of both or either one of them (notably Finland and Ireland) to no marked change in the use of anyone of them (Greece).

Another noteworthy feature is that most of the companies surveyed had already undertaken or were currently undertaken workplace re-organisations at the time of the questionnaire. The only outstanding difference is the time dimension with countries and/or firm categories being at slightly different stages of this common process. Moreover, the changes involve, as a rule, the whole or a considerable part of the organisation with the major target being improved productivity.

Furthermore, in all five countries the companies surveyed tend to provide their whole personnel with training opportunities both on and off the job. Broadly speaking, the temporary staff does not seem to be in a clearly less advantageous position compared to the permanent personnel. Nor do the higher educated employees seem to be in a markedly more favourable position compared with the rest of the company's personnel. Four out of five companies indicated new technology to be one of the major reasons for the provision of training for their staff. More importantly, higher educational levels are found to clearly facilitate the implementation of functionally flexible workplace organisation models.

The analyses of the companies surveyed further suggest that shifts to a new function stand out as slightly more common than shifts to an entirely different department, albeit both kinds of internal moves prove to involve a rather limited portion of the total personnel. Moreover, in most of the companies this internal mobility is typically not based on a clear selection of employees according to their educational level.

Apart from these separate analyses of major functional flexibility indicators reported in Chapter 4, it may also be of interest to briefly examine to what extent the companies surveyed combine different practices. Such an exercise indicates that about two-thirds of the companies use three or all four of the following practices: group work, job rotation, internal moves to new functions, internal moves to new departments. Obviously the share would have been even larger, had all the companies responded to these questions. When further noting that all of them implement human resource management strategies and use compensation systems based on results or quality, it is without doubt fair to conclude that the companies surveyed for this study do stand out as "front-runners" in the field of functional flexibility practices.

Finally, attempts were made to explore potential links between the companies' functional flexibility practices and their economic performance. This was done by calculating simple correlation coefficients between the various functional flexibility and economic performance indicators and also by examining the companies' responses to explicit questions on these matters included in the questionnaire. Some, if not all, of the calculated correlation coefficients turned out to be statistically significant in relation to financial, business environment, as well as employment measures. This implies that both human resource management and workplace organisation practices do seem to have a positive impact on the company's economic performance in its various dimensions, or are used with the explicit aim of achieving such effects. Thus, an increasing share of higher educated employees, provision of more training, and increased learning of skills on the job, all influence the economic performance of the company. This also holds for the various modes of workplace re-organisation, especially for group work and job rotation. These findings are also well in line with the assessments provided by the companies in response to the questions asking about the perceived impact of group work, job rotation and/or increased decentralisation of decision-making on their economic performance.

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