EMPLOYMENT OBSERVATORY

Trends 25

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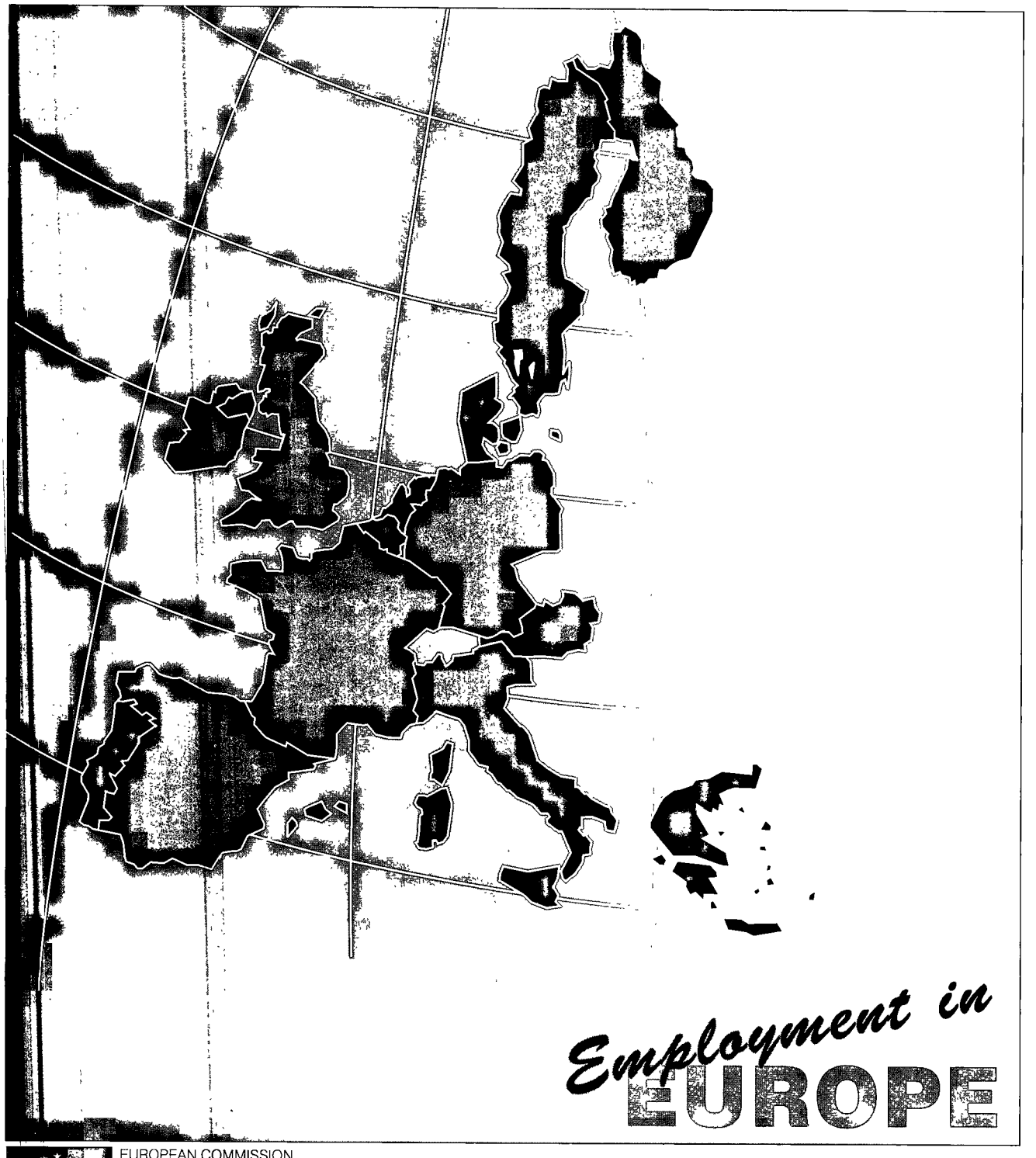

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EMPLOYMENT OBSERVATORY
Trends

The Bulletin of the European System of Documentation on Employment (SYSDEM)

N°. 25, 1996

TRENDS Bulletin is the quarterly publication of the European System of Documentation on Employment. It disseminates information collected by SYSDEM on the evolution of employment at European Union level. SYSDEM is managed on behalf of the Commission of the European Communities (DGV) by ECOTEC Research and Consulting Limited.

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Translation: Marie-Dominique Maison.

TRENDS Bulletin is available in English, French and German.

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The Employment Implications of the Information Society: Experiences from the Member States

Introduction

The 1990s saw an exponential growth in the number of publications on new information and communication technologies (ICT) and the creation of a global information society (IS). This development was accompanied by an increasing interest in the issue among policy-makers, particularly at the European level, who perceived a great potential for increasing competitiveness, innovation, economic growth and employment creation. The question of how to harness the potential of new ICTs was addressed by the Maastricht Treaty, which accords particular attention to the creation of trans-European networks in telecommunications. The White Paper on *Growth, Competitiveness and Employment* devotes a chapter to the discussion of the potential of the information society for improving the performance and competitiveness of European industry and for opening up new service markets.

The European Summit in Brussels in December 1993 commissioned Martin Bangemann, European Commissioner for Energy and Telecommunications, to prepare a report on specific measures to be taken into consideration by the Union for the development of infrastructures in the sphere of information. The report (see p.4) is equally optimistic about the employment creation potential of the 'new industrial revolution' which it argues is currently under way. Recommendations focus mainly on aspects of market liberalisation and on measures to encourage the globalisation of ICT networks.

However, among the general optimism, there is also a recognition that the costs and benefits of technological changes are likely to be distributed unevenly. The debate on the implications for employment of new technologies is by no means new, dating back to the dawn of the industrial revolution. Technological innovations which foreseeably offer a multitude of applications always inspire great optimism about competitive advantages and employment opportunities but widespread fear is also generated that these innovations will undermine the livelihood of many workers whose skills are becoming obsolete. While techology provides a catalyst for these innovations, their shape is by no means predetermined, but is conditioned by the social, economic and political forces prevalent at the time.

This Bulletin seeks to assess the progress of the IS in the 15 Member States and whether the Commission's optimism with regard to the employment creation potential of new ICTs is mirrored at the national level. The SYSDEM correspondents in each country have looked for literature that has focused on the employment impact of the IS*. Their brief covered the overall balance of expected employment creation and loss, the sectoral and geographical distribution of new employment opportunities, as well as the nature of these new jobs. Another significant focus is the impact of the IS on working conditions and rights to employment and social protection, particularly in the case of teleworking.

Technological Development and its Impact on Member State Economies

The level of diffusion of ICT applications and networks varies greatly between countries and regions of the European Union. The distribution of employment directly and indirectly related to ICTs is lowest in Portugal, Greece and Spain where the application of these technologies remains limited to a small number of sectors (ie banking, commerce and services). In all three countries, there are fears that this technology gap will lead to a further marginalisation of their economies and to rising unemployment. Technology policy is seen to play an important role in rectifying this situation, but there continues to be a lack of public and private sector investment in R&D.

Although Italy is further advanced in terms of ICT diffusion, concerns remain over job losses, as the country's economy continues to rely primarily on traditional manufacturing industries. Italy also suffers from a substantial internal technology discrepancy between north and south.

Even in those Member States with high levels of ICT diffusion, regional discrepancies remain (ie the UK, Sweden). However, the regional dimension can sometimes be attributed to the geographical distribution of those sectors where the application of ICTs is most prevalent (ie banking, insurance and services), or to the cost of extending telecommunications networks into the remoter areas of Europe.

Among the countries with the highest levels of ICT diffusion in Europe are Sweden, Finland, Germany, the UK, France and the Netherlands. Even in these countries, the outlook on the employment impact of the information society is not entirely optimistic and it is argued that much investment and an increase in the competitiveness of European ICT companies is required if jobs in the industry are not to be endangered in the medium and long-term.

The Employment Impact of the Information Society

Over the last 5-10 years, European labour markets have experienced a substantial degree of change against a backgroud of persistently high unemployment. These changes include a sectoral and regional redistribution of employment, a greater variety and flexibility of employment relationships, and considerable institutional developments including the decentralisation of collective bargaining. The IS should be seen as amplifying these changes (rather than directly contributing to them).

There have been attempts to determine the overall (quantitative) employment effect of the introduction of new technologies in the European Union up to the year 2005 (*Gerstenberger, Golinelli and Vogler-Ludwig, 1991;* see p.30). Findings of this modelling exercise showed a potential for job creation of 3.3 million in the ICT production sector (disregarding substitution effects) subject, however, to the achievement of improvements in Europe's competitive position. It is clear that the IS will lead to substantial sectoral redistributions. Jobs are being lost, in particular, in the traditional manufacturing industries and therefore certain regions are being disproportionately affected. The material from the southern European Member States shows a fear of a widening of the gap between the core and peripheral regions of Europe. It can also be argued that the declining cost and the improvement of ICT networks Euro-wide could lead to greater cohesion if it is accompanied by appropriate education and training measures. Sectoral restructuring also has important implications for education and training systems if the movement of job opportunities between sectors is not to lead to the exclusion from the labour market of a large number of individuals.

Teleworking

The Commission considers teleworking to be one of the prime means by which new ICTs can be harnessed to transform and generate employment. An attempt was therefore made by a number of studies to quantify the extent to which this potential is currently realised and to identify any obstacles.

The exact defintion of teleworking used is important in attempts to measure the extent to which this form of working is

being used in the different Member States. No standard definition is currently applied in all Member States and there is a lack of statistical data on the application of this form of working in the Member States. Available material indicates that even if one were to apply the most common defintion of teleworking (distance working using ICTs), and incorporate all of the different forms of activity that this could take (electronic home working, telecottages, neighbourhood centres, mobile or nomadic working, group or team teleworking and drop-in centres and remote offices), its application remains very limited, even in those countries characterised by high levels of ICT diffusion.

The slow growth of teleworking opportunities is attributed to organisational problems with managers who are apprehensive about losing control of workers in remote work sites. Some countries have actively encouraged teleworking; in France, for example, an initiative in 1992 aimed to encourage companies, administrative bodies and local authorities to develop such forms of working. More than 150 projects were funded under this initiative, aimed mainly at promoting job creation in rural areas. The Finnish government has also instituted a number of initiatives fostering teleworking, as national research has shown a lowering of stress levels and an improvement in the content of work among teleworkers. Other Member State governments remain ambivalent towards teleworking, due to the unresolved legal situation in which teleworkers find themselves.

A futher problem associated with teleworking is the breakdown between private life and the sphere of work which can cause stress, although some studies from Scandinavia indicate that stress can actually be reduced by the introduction of teleworking. Much therefore depends on the manner of implementation of this form of working and the Commission document, *Follow-up to the White Paper: Teleworking and the Informal Sector*, provides a variety of interesting case studies from different Member States.

Social Inclusion and Exclusion

The detrimental impact of the spread of information technologies on those societies and individuals who are unable to master or access them is exemplified in the case of Portugal. Indeed, the Portuguese *National Literacy Study* (p.35) shows how the debate on the IS pales into insignificance in the context of concern about the lack of even the most basic reading and writing skills amongst almost 50% of the population.

While the IS has the potential to generate job opportunities for groups previously excluded from employment (for example certain types of disabled people and women), through remote working and tele(home)working, a lack of training provision could serve to amplify their exclusion. Older workers in particular are likely to face difficulties reintegrating into the labour market if no provision is made for lifelong training and retraining. A lack of ICT diffusion and access to training opportunities can therefore not only lead to the further marginalisation of disadvantaged geographical areas, but also of already vulnerable groups.

Education and Training

The IS poses serious challenges for education and training systems in the Member States. In order to prevent the exclusion from the labour market of those who are unfamiliar with new technologies, a concerted effort is required to update curricula and to invest in lifelong training. Training is especially important for managerial staff, particularly those in charge of supervising remote workers. The problems of managing remote workers are key factors hindering the advance of this form of working.

There are substantial divergences in the availability and quality of training provision between different Member States and regions of Europe. The efficiency and quality of the Scandinavian system of IT training is high. In Finland such training has been available at all levels of the education and training system since 1985, and is coupled with a programme of related training for teachers. However, as systems are becoming more and more user friendly, there is also the possibility of a growing gap between those who are able to master the basic applications of IT technology and those with an in-depth understanding of its functions.

Equal Opportunities

Women are generally considered to be among the main beneficiaries of the increasing flexibility of the labour market and of the increasing opportunities for carrying out work away from employers' premises. Flexibility enables women to combine childcare with employment but a number of objections can be raised against this approach; flexibility could diminish attempts to achieve a more equal distribution of work inside and outside the family and a more adequate provision of childcare facilities. The Austrian material in particular draws attention to the fact that the quality of jobs created is of paramount importance. There is a general consensus that while some of the new jobs created will require highly skilled staff, many of the jobs indirectly related to ICTs will be low skilled and low paid. Particularly in the service sector the latter jobs are likely to be taken up by disadvantaged women and other vulnerable groups which will do nothing to improve their positions in the labour market.

Collective Organisation and Bargaining

There is a widespread fear that traditional forms of collective organisation and bargaining will be further undermined by moves towards more decentralised forms of working. This is another example of technology amplifying trends that have been underway for a number of years which favour the decentralisation and in some cases even the individualisation of bargaining. Some Member States have been moving in this direction for some time, the UK being the prime example, but even countries previously characterised by high levels of centralisation are experiencing change. This is particularly problematic against the background of increasing employer reluctance to conclude standard employment contracts which is highlighted by the Irish contribution and is in evidence in a large number of Member States. There are fears among trade unions that teleworking will be used to enhance this trend.

Impact on Employment and Social Protection Rights/ Working Conditions

A matter of particular concern in a number of Member States (ie Austria, Germany) is the lack of specific provision for teleworkers in current employment and social protection legislation: teleworkers may not fit into the defintion of the standard employment relationship which would afford them a certain degree of protection. The proliferation of new forms of self-employment is seen by representatives of workers' interests as a cause for alarm in a number of Member States (ie Germany, Ireland). In order to prevent the abuse of teleworking for the purposes of distorting competition and evading employment protection legislation, it is argued that a comprehensive standard of social regulation should be developed (Mlinek, 1995, see p.9).

Another grey area in current legislation is the maintainance of recognised health and safety standards in remote workplaces and there are also issues relating to the design of work areas and access to the relevant authorities to maintain standards.

* Despite an extensive search for documentation, we were unable to find any documents which dealt specifically with the employment implications of the Information Society in Luxembourg. However, documents in the International Sources section of this Bulletin do include information on Luxembourg.

Building a European Information Society

A review of international sources on the development of the Information Society and the proliferation of teleworking

Europe and the Global Information Society - Recommendations to the European Council (Bangemann Report)

CEC (1994)

The question of how to harness the potential of a rapidly developing Information Society was considered by the Maastricht Treaty, devoting particular attention to trans-European networks in transport, telecommunications and energy sectors. The idea of introducing trans-European telecommunications networks was discussed at the Brussels summit in December 1993. This summit commissioned Martin Bangemann, European Commissioner for Energy and Telecommunications, to produce a report aimed at increasing the awareness among Member States of the need to develop such networks, by describing the opportunities that could be generated for European society by so-called *information superhighways*.

Bangemann's conclusions are that a new industrial revolution (based on information and telecommunications technology) is under way and that this revolution will create jobs. Apart from their positive impact on employment, the opportunities offered by information networks should make it possible to create a more humane society. Information networks have the potential to provide a better quality of life; offer new ways for creative people to express themselves; minimise the disadvantages of remoteness and isolation where certain regions are concerned; improve the efficiency of public services and increase economic activity, chiefly by increasing the supply of services and the hardware associated with them.

The report acknowledges that the management of changes in the working environment will require close co-operation between the social partners, but fails to identify possible structural dislocations and considers it outside its scope to comment further on the social challenges arising from the Information Society. The report's recommendations focus mainly on aspects of market liberalisation and other measures to encourage the globalisation of networks. It stresses that the European Union should put its faith in market mechanisms for the creation of an 'Information Society' for all instead of relying on public subsidy and finance.

The Bangemann Report was presented to the European Summit in Corfu, where a plan of action was laid down. The Council of Telecommunications Ministers decided to accept the general principle that the provision of telecommunications infrastructures should be liberalised on 1 January 1998. In addition, it was agreed that a regulatory framework would be set in place before 1 January 1998 to ensure: the provision and financing of a service available to all; rules for interconnection; the definition of the terms of licences and the procedures for awarding them; equivalent and effective access to markets, including markets in third countries and fair competition. The Commission were requested to submit proposals relating to this regulatory framework to the Council and the European Parliament before 1 January 1996.

Available from: Commission of the European Communities, Directorate General XIII, 200 rue de la Loi, B-1049 Brussels. All EU languages except FI and SV.

Building the European Information Society for Us All - First Reflections of the High Level Group of Experts

CEC (1995)

This document represents the first interim report of the High Level Group of Experts (HLEG) which was established in May 1995 to look at the social and societal aspects of the Information Society (IS). The report aims to inform discussions between different European Institutions and external experts, in view of the preparation of a final policy report to be presented in May 1996.

The HLEG tried to rise above the discussion on the diffusion of ICTs by distinguishing between the notion of information and the need for knowledge. Instead of merely looking at the transmission of information, it focuses on ways in which information can be converted into useful 'knowledge', to enable the 'information economy' to become a 'knowledge based economy'. At the core of its approach lies a rejection of simplistic approaches which perceive technology either as all good or all bad. While HLEG welcomes the potential for employment creation and the improvement of the quality of life brought about by technological advances it stresses that *nothing is predetermined*; indeed there is now, more than ever, a demand for policy to intervene, to ensure this potential is harnessed to the benefit of all society. Crucially, the HLEG acknowledges that, as with most innovation, both costs and benefits are unevenly distributed.

The authors argue that there could, in future, be different models of Information Societies, just as there are, today, different models of industrialised society. The yardstick for measurement is the degree to which IS innovation avoids social exclusion and creates new opportunities for disadvantaged people. The report stresses that as the White Paper on *Growth, Competitiveness and Employment* (1994) underlined the importance of the social dimension, a strong ethos of solidarity should also prevail in the European Model of the Information Society. The authors acknowledge that this will not be easy to achieve since the traditional structures of the welfare state will have to undergo substantial change.

The HLEG highlights the significance of learning and acquiring knowledge as a life-long process, and advocates a dynamic concept of a 'learning' rather than an 'information' society. Continuing education and training are seen as imperative to enable individuals, and particularly those starting from very low levels of skill (including those born prior to the IT revolution) to remain integrated in the labour market and all other areas of social life.

Industrial, sectoral and regional policies will equally attain increasing impor-

tance as the balance of social costs and advantages shifts, bringing job destruction as well as job creation. The report perceives great challenges in the process of adjusting to the IS at sectoral level, at firm level, at the level of individual skills and occupations, and within both the public and private sectors. Changes are also likely in work organisation, as the need for flexibility increases. As the IS coincides with wholesale changes in European economies and labour markets, opportunities for the exploitation of the potential of IS crucially depend on the congruence between the technological, economic and social dimensions. The authors stress that societal structures which are being built now will be in place for a long time, and social policy therefore merits equal if not more weight than economic policy in determining the approach to the IS.

While the IS has the potential to create a large number of highly qualified, knowledge-intensive jobs, new technologies also present a threat to employment. The burden of adjustment will be difficult to bear for a substantial section of unskilled workers, who could become further marginalised as a result. ICTs may also affect service employment, which has been a traditional employment 'reservoir' in most industrialised countries and today represents over two thirds of total employment in the EU.

The IS may also reinforce the trend towards the decentralisation of work which can undermine traditional structures of training and quality control. Technological innovation leads to a more rapid rate of obsolescence of skills and therefore, almost inevitably, to more involuntary early retirements. Work could in future become more casual (ie temporary and fixed-term contracts), with inevitable effects on employment and social protection. Traditional structures of worker representation are also being undermined by the increasing spatial separation between employment and employer.

On a more personal level, the destructuring of work, family and leisure space, and particularly the blurring of the boundaries between work and non-work can cause stress and confusion. While the decentralisation of work offers new opportunities for social integration at the local community level, the increasing replacement of human contact with telepresence and electronic communication (in work and consumption) can lead to more social isolation.

Regional policy intervention will be required to prevent the peripheral regions, which currently have a far less developed telecommunications infrastructure, from losing out any further. The authors advocate a targeted approach to infrastructural support with the assistance of the Structural Funds and other policy instruments. The provision of technical education and training in these areas is equally important and here, as everywhere else, the full potential of the new media needs to be harnessed.

The report also includes informative and thought-provoking sections on the impact of the IS on health, culture and media and democracy, and concludes with a presentation of the HLEG's vision of the future of the Information Society.

Interim report of the High Level Group of Experts on the Social and Societal Aspects of the Information Society. Available from: CEC, DGV/B/5, Secretariat of the High Level Group of Experts, Rue de la Loi 200, B-1049 Brussels. This report can also be accessed via the Internet at the following address: http://www.ispo.cec.be/hleg/hleg.html. EN, FR, DE.

Social Europe: Follow-up to the White Paper - (A) Teleworking, (B) The Informal Sector

CEC (1995)

This document, published as a supplement to the CEC's *Social Europe* series, looks at teleworking and the informal sector. Both sectors were identified in the Commission's White Paper, *Growth, Competitiveness and Employment* (1994) as areas where specific policies could be developed in order to increase the employment intensity of growth. These two reports were commissioned, as part of the CEC's follow-up to the White Paper, to investigate recent developments, examine social aspects and provide policy recommendations. Part A of the publication was compiled by a leading UK expert on teleworking (Huws).

The CEC hopes that this contribution will raise awareness of the wider implications of teleworking for employment policy, particularly in the context of the recently adopted *Medium-Term Social Action Programme (1995-1997)* (see Bulletin 23, p.2). This Programme envisages the presentation of a communication on the social and health and safety implications of telework. Of equal relevance is the pending Community action on flexibility in working time and security for workers which was initiated in 1995 under the Maastricht agreement on social policy as a successor to the draft atypical work Directives.

Echoing the recommendations of the Bangemann Report (see p.4), teleworking is rated as one of the prime means by which innovations in ICTs can be harnessed to transform and generate employment. The author lists a number of ways in which teleworking can fulfil this role. Firstly, the technologies involved in teleworking themselves can form the basis of new industries and services. Secondly, the introduction of teleworking can improve the productivity of existing enterprises thus rendering them more competitive. New forms of collaboration between SMEs, are also possible, allowing SMEs to pool information in a more cost-effective way. Thirdly, teleworking can help bring about a spatial redistribution of work within Europe, facilitating the relocation of work to economically deprived regions, assisting in the diversification of local economies and halting the further decline of rural areas. Fourthly, teleworking can facilitate the restructuring of working hours, thus making it easier to introduce part-time working, job-sharing and other flexible forms of work. It is seen as presenting employment opportunities for many disadvantaged groups including certain groups of women and disabled people who were previously unable to gain access to jobs due to time, mobility and other constraints. Lastly, it is argued that new technologies can bring about improvements in the quality of life through the introduction of new services and environmental improvements.

However, the widespread introduction of teleworking in the general context of increasing the flexibility of labour markets can be a mixed blessing since it is likely to incur high social and economic costs, unless appropriate measures are taken to mitigate them. Teleworking can also lead to the disintegration of collective worker organisation and the exclusion of an ever increasing proportion of the population from the social dialogue, thus further undermining traditional forms of collective bargaining. In addition, the

uncertain position of teleworking in national and transnational systems of employment protection and social security legislation, and the precariousness of many of the jobs based on teleworking could lead to economic insecurity and attendant social problems. The increasing division of the labour force into a core of relatively secure and well-rewarded workers and a 'periphery' of insecure and low-paid workers could lead to the exploitation of vulnerable groups in the labour market, and a reversal of the progress towards equal opportunities. A transfer of such low-skilled, low-paid employment to areas on the periphery of Europe would only serve to exacerbate regional inequalities. There are also possible negative effects arising from the social isolation resulting from home-based working and the physical interference of work in family life. Health and safety and training issues also become more difficult to monitor and manage in the remote workplace.

Definitions of teleworking vary which then influences any assessment of teleworking in the EU. The report argues that there are five different variables: the location of the remote work-site, the contractual relationship between the employer and the remote worker, the proportion of working time involved in teleworking, the exclusivity of the relationship with the employer and the use of information technology.

A review of current practice groups teleworking into home-based teleworking, mobile teleworking, teleworking on remote sites controlled by the employer, teleworking from telecottages and telecentres, and the development of telematic links between organisations. Under each of these headings, the report provides examples of current practice and outlines the advantages and disadvantages of particular forms of teleworking, which very much reflect the issues outlined above. Teleworking can be shown to have an impact on, and therefore require responses from a number of areas of policy making. These issues are outlined in the final part of the report, which also provides suggestions for action. Again, the extent and nature of intervention required depends on the form of teleworking employed.

According to the author, the introduction of a number of measures is necessary to ensure that teleworking contributes positively to regional development. To ensure success and prevent a de-skilling of labour, education and training need to be very much at the top of policy-makers agendas' which must include specific training for the managers of teleworkers. In order to increase rather than diminish progress towards equal opportunities, targeted measures are required. Policies to combat social isolation are closely linked to the provision of support for collective organisation and bargaining for a geographically dispersed workforce. An amendment of the regulatory framework covering employment and social protection is required to ensure that teleworkers are covered by the same rights as on-site workers. The legislator is also called upon to ensure high standards of health and safety, as well as equitable rates of pay for teleworkers.

The telecottage movement which originated in Scandinavia is received positively. This movement is beginning to show positive, albeit small, effects on many rural economies since it avoids many of the problems inherent in other forms of teleworking. A number of telecottages, and other teleworking initiatives receive support from the Structural Funds and other Community initiatives. The author calls for a further exploration of these options as well as the establishment of research into good practice to foster an inter-European learning process.

Available from: Office for Official Publications of the European Communities, L-2985 Luxembourg. EN, FR, DE.

Review of publications from the European Foundation for the Improvement of Living and Working Conditions

The European Foundation for the Improvement of Living and Working Conditions has been conducting research on the employment and societal impact of the information society for more than ten years and has produced a large number of reports and practical guides. The Foundation commissioned its first study on teleworking in 1982/83. *Telework: Impact on Living and Working Conditions* looks at case studies of teleworking from France, the UK, the USA and Italy. Today, this report is mainly of historical significance, as the technology involved has evolved very rapidly.

A report on *Women and Environments* published in 1985 looks at the difference in attitudes towards tele(home)working between men and women and the practical and psychological implications of this form of working, using the experiences of 62 teleworkers in five countries. The case of IBM in Germany is often heralded as good practice. In 1991 IBM's Works Council concluded an agreement which gave all permanent employees the option of working from home. In 1995 the Foundation published a report charting the experiences at IBM entitled *Telehomework Case Study: Empirical Study on the Conditions and Effects of Telehomework.* The report highlights the positive and negative aspects of teleworking. The positive response of most employees to this innovation is attributed to the meticulous preparations which preceded the introduction of the teleworking option and which involved employee representatives at all stages.

The Views and Standpoints of the Social Partners and the Workforce and the Potential for Decentralised Electronic Working in the European Office influence the success of such arrangements and were assessed in a paper published under this title in 1985.

The collection of expertise in the analysis of teleworking case studies led to the production of *Telework: A Practical Guide* in 1994. The guide provides a checklist of the issues, benefits and practical steps which need to be considered when introducing teleworking. The Guide is directed at managers, employees and employee representatives.

The work of the Foundation has also covered other aspects of the Information Society such as Telemedicine, the Electronic Home, and the impact of the Information Society on urban and regional development. Other reports provide more theoretical and philosophical assessments of the 'invasion' of ICTs into every sphere of our lives.

Relevant documentation is available from: The European Foundation for the Improvement of Living and Working Conditions, Loughlinstown House, Shankhill, Co. Dublin, Ireland:

- Telework: Impact on Living and Working Conditions. EN.
- Telework: Women and Environments. EN.

- Telework: The Views and Standpoints of the Social Partners and the Workforce and the Potential for Decentralised Electronic Working in the European Office. DE, EN.
- The Electronic Home: Social Impact of Telemedicine at Home. EN.
- The Electronic Home - Interactive Telecommunications for the Future. EN.
- Telematics in Medicine: Reconnecting Health. EN.
- L'impact de la Domotique sur les Fonctions Urbaines *(The Impact of Domestic Automation on the Function of Urban Centres)*. FR.
- Telelifestyles and the Flexicity. EN.
- Telework: A Practical Guide. EN.
- Flexispace/Mobility of Work. DE, EN.
- Telehomework Case Study: Empirical Study on the Conditions and Effects of Telehomework. DE, EN.

Other relevant documentation is available from CEC, DGXIII, 200 rue de la Loi, B-1049 Brussels:

- White Paper on Growth, Competitiveness, Employment. The challenges and ways into the 21st Century, Chapter 5 (Brussels, 5 December 1993)
- Europe's Way to the Information Society - An Action Plan (Brussels, 17 July 1994)
- Committee of the Regions: Opinion on "Europe's Way to the Information Society: and Action Plan" (Brussels, 1-2 February 1995)
- G7 Information Society Conference (Brussels, May 1995): Chair's Conclusions
- Theme Paper on Universal Service Issues (Brussels, 24 November 1995)

Forthcoming Events

A two day international conference on future labour market and social policy, **Labour Market 2000 for People with Disabilities,** will take place on 21-22 October 1996 at the Palais des Congrès, Brussels. The objective of this conference is to point out ways of enabling people with disabilities to participate fully in working life and thus in social life over the next millennium. The current labour market situation in Europe and the position of the social partners will be analysed, and employment issues and opportunities will then be presented from the viewpoint of international organisations (the ILO and the UN) and organisations of persons with disabilities. There will also be a poster exhibition showing the achievements of organisations of and for people with disabilities with regard to employment.

For further information please contact: ICSA Conferences, 1 rue Defacqz, B-1000 Brussels, Belgium. Tel: +32 2 537 4608; Fax: +32 2 537 4800.

An international conference, **Exclusion from Work. London - Berlin - Paris - New York** is to take place on 13-15 November 1996, in London. Within each of these four cities there are accumulated experiences of initiatives and policies, undertaken by a wide range of agencies, which attempt to deal with the direct and indirect consequences of unemployment. This conference intends to look at what can be learnt from what has been done so far. It also proposes to discuss what the responsibilities are of the social forces including central and local government, business, trades unions, the voluntary and community sector, and other agencies, and it stipulates the need for a more rigorous analysis of the causes and nature of exclusion from employment which can influence policies and practice.

For further information please contact: Bob Townley, LEPU, South Bank University, London Road, London SE1 0AA, UK. Tel: +44 171 815 7798; Fax: +44 171 815 7799; E-mail: aaronos@sbu.vax.ac.uk

The key to success is through continuous learning and the development of a lifelong learning culture. To celebrate and recognise achievements in the European Year of Lifelong Learning, North Nottinghamshire TEC is organising a conference **Learning for Life,** which will take place in September 1996 in London. It aims to disseminate early project findings through 'witnesses' - individuals and organisations; to offer case studies and a tool kit to support the development of Lifelong Learning strategies for individuals and organisations; and to offer a suggested model which is both visionary and practical.

For further information please contact: Touchstone Exhibitions & Conferences Ltd., 4 Red Lion Street, Richmond-upon-Thames, Surrey TW9 1RW, UK. Tel: +44 181 332 0044; Fax: +44 181 322 0874.

The **Technology Transfer and Innovation Conference** aims to encourage innovation in industry and commerce, particularly small or medium-sized enterprises, and to identify means of successful implementation by: demonstrating good practice in innovation; examining models of effective Continuing Professional Development, including the accreditation of work-based learning, and the relationship between them and the innovation process; and highlighting developments in science and technology and considering how they may be translated into improved processes and products. It will be held at Queen Elizabeth II Conference Centre, London on 1-3 July 1996.

For further information please contact: TTI'96 Conference Secretariat, Hillside House, 79 London Street, Faringdon, Oxon SN7 8AA, UK. Tel: +44 1367 242822; Fax: +44 1367 242831; E-mail: tcd@dial.pipex.com

A new conference and exhibition, **Managing Economic Transition - Skills and Strategies for the New Market Economies,** will take place on 1-3 October 1996 at the Palais des Congrès, Brussels. It is being held under the patronage of the European Training Foundation (an independent agency of the European Union based in Turin, Italy), to promote the successful transformation of the economies of Central and Eastern Europe and Central Asia. Keynote speeches at plenary sessions will be given by leading statesmen and government members. There will be ample (ie Germany, Ireland) opportunity for delegates to participate actively in the debate through a series of focus sessions.

For further information please contact: Touchstone Exhibitions & Conferences Ltd., 4 Red Lion Street, Richmond-upon-Thames, Surrey TW9 1RW, UK. Tel: +44 181 332 0044; Fax: +44 181 322 0874.

The **1996 Annual Conference** of the European Association of Labour Economists (EALE) will be hosted by Greece and will take place at the Mediterranean Agronomic Institute of Chania (MAICH), Crete on 19-22 September 1996. The Conference will be organised by The Centre of Planning and Economic Research (KEPE), Athens.

For further information contact: Dr Nicholas P Glytsos, KEPE, 22 Hippokratous St., 106 80 Athens, Greece. Tel: +30 1 361 4475; Fax: +30 1 361 1136.

Editor's note

The editor would like to receive full details of any forthcoming conferences, seminars and workshops.

Please send information to the SYSDEM Analysis Unit, ECOTEC Research and Consulting Ltd., Priestley House, 28-34 Albert Street, Birmingham, B4 7UD, UK. Tel: + 44 121 616 3600; Fax: + 44 121 616 1099.

The Employment Implications of the Information Society: Abstracts and Comments from the Member States

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(Luxembourg is covered in the documentation included on pages 4-6)

Austria

Telearbeit. Vorschläge zur Gestaltung *(Teleworking. Proposals for its Design)*

KOLM P, KRAL-BAST C, TALLAFUSS W (1995)

Employment Impact

This paper by the Union of Salaried Private Sector Employees (Gewerkschaft der Privatangestellten) presents teleworking as a double-edged sword. On the one hand it is seen to generate enormous possibilities for rationalisation and associated job losses, while on the other hand it could open up avenues for job creation in new service industries. The net result remains unclear. Equally uncertain is the outcome in terms of the nature of the jobs created. The union expects teleworking to be characterised by a high number of low skilled, low paid jobs. The union also sees scope for this decentralised form of working becoming an option for an increasing number of highly qualified and well paid staff, commanding above average overtime remuneration, who need to be available around the clock.

Moves towards the expansion of teleworking are seen to present a potential danger for some already disadvantaged groups such as older workers and those with low levels of qualifications. It does, however, present opportunities for the integration of disabled people and other groups such as prisoners.

Effects on Working Conditions

The widespread view that teleworking is particularly attractive to women because it gives them the opportunity to combine childcaring and household responsibilities and supplement the household income, is seen to pose an inherent threat to the creation of gender equality in the distribution of domestic responsibilities. There are also concerns that demands for more adequate provision of public childcare facilities will be neglected. The union therefore argues that teleworking should be combined with targeted assistance projects for women.

The key problem with teleworking for the purposes of labour law is perceived to be the separation from the standard employment relationship, ie the division of work carried out inside and outside the employer's premises. There is therefore a danger that existing legally binding standards of social and employment protection could be undermined.

The union demands that the decision to telework must be reversible at the employee's request. To ensure that necessary vocational skills are constantly updated the union calls for the granting of one weeks educational leave per year for all employees, as well as the provision of special training measures for teleworkers.

The removal of the spatial barrier between work and leisure time has potentially harmful effects on the private life of teleworkers in relation to sickness, time off for caring responsibilities, holidays and dismissal. It is argued that teleworkers with salaried employee status should have the same rights to social protection in cases of accident, sickness, occupational invalidity and retirement. However, the delimitation between leisure time and accidents at work or on the way to work, poses legal problems.

Also to be resolved are issues such as determining how the home is to be equipped for teleworking, who is to bear the costs of adaptations and to what extent there is a right of access to ensure health and safety regulations are being observed.

The method of accounting for hours worked could also pose problems and there is a danger of overtime not being fully compensated. Liability in the case of damage being caused to equipment is also problematic, since typical teleworkstations are more accessible to third parties than the ordinary office or plant environment.

In addition, the loss of social interaction available to individuals in the standard working environment often causes isolation and stress. An increase in teleworking could also lead to a loss of workplace solidarity, making the effective enforcement of individual/common demands much more problematic.

Available from: Gewerkschaft der Privatangestellten, Deutschmeisterplatz 2, A-1013 Wien. DE.

Telearbeit. Die soziale Dimension *(Teleworking. The Social Dimension)*

MLINEK B (1995)

This report was drawn up by researchers at the Workers' Chamber, (Arbeiterkammer) Vienna within the framework of a Community-wide research project commissioned by the CEC and the European Foundation for the Improvement of Living and Working Conditions. The author argues that the effectiveness of teleworking as a means to create employment is open to question, as in the short-term, the increasing introduction of teleworking will lead to job losses in certain sectors. Only in the long-term can positive employment effects be expected. Since telecottages and other telematics projects create only a few jobs, no reliable estimate can be made of their impact on job creation.

There are currently no reliable data on the scale of teleworking in Austria, but it can be assumed that it remains concentrated in sectors where the application of information and communication technologies (ICT) is already far advanced, ie in Universities and other research institutions, banking and insurance and the IT sector. Among employees of hardware and software companies, demand for teleworking is high, but the ambiguous legal situation of teleworkers has prevented employee representatives from demanding a push towards the development of such forms of work organisation.

So far, there have been no official consultations between the social partners on the issue of teleworking. Employers and trade unions are still in the process of framing their positions. A special committee at the Ministry of Social Affairs, on which the social partners are represented, is currently looking at proposals to make atypical employment relationships subject to statutory social insurance.

There is currently no legal regulation of teleworking in Austrian labour and social legislation. It therefore remains within the remit of individual contracts of employment to lay down rights of access, employer obligations to part-finance the necessary adaptation of the home to create a suitable workspace, and arrangements for the reimbursement of accommodation, energy, telephone and travel costs. One of the few positive rights in this area is the right of works councillors to be consulted on the introduction of new technologies.

The author outlines the three possible forms that an "employment relationship" based on teleworking can take. The legal status of salaried teleworking employees and self-employed teleworkers is in many ways the most clear-cut. The former command the same rights, for the purposes of labour law and statutory social insurance, as other salaried employees working on the employer's premises; the latter are neither personally nor economically dependent on one employer and are therefore subject only to contract and business law. Less clear is the position of workers falling into neither of these categories.

Mlinek argues that in order to prevent the abuse of teleworking for the purposes of distorting competition and evading employment protection legislation, it is important to develop certain standards of protection which are also applicable to certain groups of self-employed individuals.

A comprehensive standard of protection set at international level is also seen to be desirable.

Available from: Kammer für Arbeiter und Angestellte für Wien, Prinz-Eugen-Str. 20-22, A-1040 Wien. DE.

Bruck an der Leitung. Studie zur Telematikinitiative des Länder Niederösterreich. Pilotprojekt Telearbeitszentrum in Bruck an der Leitha *(Bruck on-line. Report on the Teleworking Initiative of the Land Niederösterreich. Pilot Project in Bruck an der Leitha)*

G.I.V.E-ZENTRUM FÜR SOZIALE INNOVATION, IBM CONSULTING GROUP, FORSCHUNGSSTELLE FÜR SOZIALÖKONOMIE AN DER ÖSTERREICHISCHEN AKADEMIE DER WISSENSCHAFTEN (UNPUBLISHED)

This study found that only a fraction of the activities currently carried out in telecottages can be described as telework. Training provision, seminar organisation, the use of workstations for accounting purposes, the renting out of office space and so on are characterised by elements of our traditional understanding of work. However, it is exactly these activities which currently ensure the survival of telecottages, since so far, there has been little interest among private and public

Comment

The scope and utilisation rate of information and communication technologies (ICTs) in public and private sector institutions in Austria is limited. Its current use is limited to pilot projects in larger companies and other initiatives seeking to assess the viability of teleworking in the less developed rural areas of eastern Austria. Such projects seek to establish the opportunities, limitations and conditions for success of these technologies.

Due to the experimental nature of developments in this area, there is a paucity of reliable data on the current and future impact of ICT on employment. Most commentators agree that the net result of job creation and/or loss resulting from the proliferation of ICTs will depend heavily on the organisational and legislative framework applied.

Regions which are currently very dependent on one or only a few economic sectors could benefit if work was shifted away from urban conurbations, or if employment were to be generated as a result of the extension of communication networks. However, such moves also create inroads for competitors from other regions, with negative repercussions for local industries and services.

An expansion of teleworking is also seen to have a potentially negative impact on working conditions. It is feared that this expansion will lead to an increasing proliferation of non-standard employment relationships offering limited employment and social protection rights. Unions and the Workers' Chamber (Arbeiterkammer) are particularly concerned to avoid negative repercussions in these areas.

sector employers to decentralise jobs in this manner.

Telecottages are set up to counteract the decline of rural areas and, with the use of ICTs, connect them to urban conurbations. However, experiences from pilot projects are so far too limited to allow a meaningful assessment of their economic impact on structurally weak areas.

Therefore, telematics initiatives have to be judged on their impact on the social fabric of the regions. The widely varying nature of Austrian telecottages highlights the influence of local political, economic, and socio-cultural factors on the way their potential is being harnessed. The main services currently offered by telecottages are education and training provision, marketing, information and other miscellaneous services.

Contrary to popular belief, the study argues that the increasing use of technology poses a threat of rural areas becoming urbanised, rather than leading to the creation of a "global village". While this process enables smaller enterprises to increase their sales activities outside their own region, it obviously allows competitors to do the same. The introduction of information technologies can therefore lead not only to the creation, but also to the loss of jobs. So far there is no evidence that telecottages have had a substantial impact on the creation or decentralisation of employment.

Regional economic analysis of the telecottage Bruck

The study looked at the potential impact of the telecottage at Bruck in Niederösterreich, which is aiming to provide the residents of a new residential area with an entirely new structure of employment and communication.

The telecottage is designed to provide employment opportunities outside the family setting but at the same time close to home. To achieve this it offers not only the necessary technical equipment but also other associated services. The payment of a fee allows individuals access to a workstation.

The telecottage offers employment opportunities to individuals working in a variety of different fields, regardless of their employer. This is intended to prevent social isolation and seeks to provide an environment for mutual encouragement and support.

The new development is situated on the outskirts of the town. However, in order to achieve maximum accessibility, and increased visibility a more central location would have been desirable. A survey of employers and employees showed that 5-8% of jobs are seen to lend themselves to teleworking. Employee demand for such working arrangements outstripped this potential supply, standing at 15-25%. In the long-term there is the potential for the creation of 70 jobs.

The availability of the telecottage boosts the quality of one location, but at the same time the lack of such provision in other areas makes existing regional disparities even more marked. To provide more peripheral regions with such facilities, economies of scale demand a co-ordinated effort on the level of regional policy making. This also helps to create incentives for private investors. It is more likely that telecottages will be concentrated in larger rural settlements because the limited public resources will not allow for a comprehensive provision of such facilities in all rural areas.

The study concludes that telecottages are unlikely to have a significant impact on local economies and labour markets. Local tax revenue is forecast to increase by a mere 0.1% in Bruck as a result of having a telecottage. An additional 50 jobs will be created in the regional labour market and the decentralisation of jobs from Vienna or St Pölten add up to a saving of 320,000 km of travel per person per year.

Other positive effects are forecast. The telecottage has its own nursery and therefore allows more women with children to work full-time. It is argued that the use of modern ICT equipment will lead to improved levels of qualifications among the workforce. It also makes such new technology available to a wider public and therefore fosters innovation in the areas of technology, work organisation and also social life.

The telecottage in Bruck can be seen as a pilot project for future telematics initiatives. Assuming another 21 telecottages of a similar size can be located all over the Land Niederösterreich, the annual volume of traffic would be reduced by 0.1%.

Available from: G.I.V.E, Jedlerseerstr.75, A-1210 Wien. DE.

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Millard J, Jensen-Butler C, Ducatel K, Miles I, Aichholzer G, Cas J (1995) **AD-EMPLOY. Employment Trends Related to the Use of Advanced Communications. Synopsis Report** ITA - Institute of Technology Assessment, Postgasse 7/4/3, A-1010 Wien. EN.

Hochgerner J, Leeb C (1995) **Telematikanwendungen in kleinen und mittleren Unternehmen *(Teleworking Applications in SMEs)*** Zentrum für soziale Innovation (ZSI), Hr. Josef Hochgerner, Plößgasse 2, A-1040 Wien. DE.

Perneder M (1995) **Technologiepolitische Herausforderungen in der Telekommunikation *(Challenges for Technology Policy arising from Telecommunications)*** *WIFO Monatsberichte 6/95.* Österreichisches Institut für Wirtschaftsforschung, Arsenal, Objekt 20, A-1030 Wien. DE.

Denmark

Får danske virksomheder noget ud af EF-projekter? *(Do Danish Firms Benefit from their Participation in EC-Projects?)*

VENDELØ M T, CHRISTIANSEN J K (1991)

This paper presents an evaluation of the participation of Danish companies in the ESPRIT programme and assesses the possible benefits drawn from this participation. Whereas other evaluations have concentrated on macro-effects, this study deals with micro-effects, ie effects at the firm level. The evaluation looked at the experiences of six different companies. In-depth interviews were carried out with those actively involved in the programme.

The most important positive effects of participation in the ESPRIT programme appear to have been the establishement of networks and contacts, which are subsequently used for participation in new programmes, exchanges of information and so on. However, it also emerges that, compared with other objectives, the creation of networks was not among the main priorities of companies. The authors stress that these networks are essential for international co-operation and for the establishment of development and innovation processes within the firm. It is therefore argued that despite the limited immediate commercial results, participation in transnational research and information based programmes carries major benefits for the individual firm.

Available from: Copenhagen School of Economics and Business Administration, Howitzvej 60, 2000 Frederiksberg. DA.

Industriel innovation i Danmark *(Industrial Innovation in Denmark)*

KRISTENSEN A (1991)

This report includes the findings of a study, (initiated by the Ministry of Education and the Directorate for Industry and Trade) which looked at the capacity for innovation and the use of innovatory technology and practices in the achievement of technological change in Danish industry. It has three main sections, the first of which describes the theoretical background for the analysis, highlighting different theories of innovation. The second deals with different aspects of the innovation process, and the third focuses on the research basis for innovatory activities in Danish industry.

The study is based on a sample of approximately 190 firms, surveyed by postal questionnaire. Four main industrial sectors were identified whose approaches to innovation and related policies vary widely. The first sector is described as 'scale intensive' and includes companies engaged in food, stone, clay and metal processing. These firms were found to rely heavily on their own research and development (R&D) activities as sources of innovation. The second sector is based on traditional manufacturing such as textiles. It is supplier dominated and technological innovation is often generated through technology import. Companies in this sector tend to have good contacts in the public research environment. The third sector is made up of companies that rely heavily on R&D for much of their output, such as the chemical industry and computer and electronics companies. These are research intensive both internally and through import and tend to have close contacts with other companies and research institutions. The fourth sector consists of suppliers of specialised equipment. Companies in this sector tend to spend most on marketing and implementing innovations.

The report paints a complex picture of the capacity for innovation and the use of new technologies in Danish industry. What emerges is an intricate network of links between the four sectors and very different needs and demands for policy initiatives on the promotion and use of information and technology.

Available from: Aalborg Universitetsforlag, Postbox 159, 9100 Aalborg. DA.

Comment

Much of the Danish literature focuses on the issue of the development of an appropriate policy response to the proliferation of information and communication technologies (ICTs). It is argued that in order to enable companies to harness the full potential of these innovations, it is important to have a clearly targeted information policy to foster inter-company and inter-sectoral learning and technology transfer.

The studies by Kristensen, and Vendelø and Christiansen look at pathways for the diffusion of technological innovations. Although the study by Kristensen is slightly dated, it offers interesting insights into existing networks of exchange between companies in the four sectors defined. Concern is raised over the fact that only one sector currently seems to be able to exploit fully such networks, and information on research from other firms and institutions. There is therefore seen to be a need for policies to provide support for the establishment of research and information networks.

The study by Vendelø and Christiansen also focuses on the importance of such networks to achieve innovation in the long-term. It is relevant because of its research methodology and because it highlights the importance of participation in CEC sponsored initiatives aimed at fostering networks of information exchange. The technical capacity of the individual participant is stressed as a crucial factor for success or failure of this kind of co-operation. However, the researcher's enthusiasm must not conceal the fact that they were much more positive about the outcomes of Danish companies' participation in these schemes than the companies themselves. This was primarily due to the lack of economic results in the short-term, ie through the creation of new products.

With regard to the employment impact the increasing use of ICTs, the study by Bjørn-Andersen and Nielsen found an exchange of quantity with quality. Information departments in companies are employing fewer staff, but the remaining staff have higher level qualifications. The directors of these departments increasingly find themselves having to master both technological and strategic management in large companies. In terms of education and training strategies, a combination of qualifications is required for staff involved in planning and systems development. In the area of production and technological development, more traditional qualifications continue to be required. A clear assessment of skill requirements is therefore paramount.

Informatikchefers behov, problemer og udviklingsvisoner 1994 *(Directors of Information Systems' Needs, Problems and Visions for the Future)*

BJØRN-ANDERSEN N, NIELSEN C L (1994)

Information technology is constantly evolving through innovations affecting the ease with which data is being distributed, as well as the introduction of improved applications and new tools. Increasing demands for business orientation and a drive to economise on resources are also leading to innovations in ICT hardware and software. This report presents the main conclusions of a study on information departments in a broadly based sample of major Danish companies. The study also includes a number of public corporations. The study highlights that staffing levels in information departments are declining, due partly to the fact that their function is gradually being spread over different departments within larger companies rather than being concentrated in one section. The financial sector continues to be by far the largest consumer of ICT equipment and related staff and demands for better financial and human resource management, as well as high quality leadership are increasing. The study shows that information directors are usually recruited externally and tend to have a commercial background. Only about one third have a technological background even though information technology has become an integral part of management. This is also reflected in the fact that most information directors take part in board meetings and have direct access to the managing director. There is also an expressed need in the companies surveyed to raise the professional qualifications of IT staff to MA or PhD level.

Available from: Copenhagen School of Economics and Business Administration, Howitzvej 60, 2000 Frederiksberg. DA.

United Kingdom

Computer Based Information Systems and Managers' Work

KIMBLE C AND MCLOUGHLIN K (1995)

The basic premise of this article is that the impact of IT systems is not stable but evolving, changing over time through adaptation to the internal needs and pressures within the organisation. Theoretical developments show how the impact of IT has significantly changed from a largely reactive scenario to one where managers in firms have a much more influential role in the development and use of IT in the workplace.

Two main models of behaviour are identified, namely the technology model and the social model. The key difference between the two is the amount of control that managers have in shaping the use of IT to maximise organisational effectiveness; there is relatively little control under the technology model in comparison with the social model. The usefulness of these models is tested in eight case-studies using firms that had introduced computer-based information systems and which had, for the most part, affected virtually all aspects of the business. The case-studies involved interviews with managers from different parts of the organisations.

One clear effect of the new information systems was the ability to monitor and control most areas of activity within the firm. In some cases this led to a change in the relative importance of some jobs, thereby altering the cultural balance that had hitherto prevailed.

One interesting finding was the generally low direct use of IT by senior managers many of whom relied on their middle managers to supply them with information rather than access the IT systems themselves. Middle managers were less recticent about using the new systems. Senior managers justified their own reticence as an affirmation of their higher status, although age also appeared to be a common factor. There was, however, no evidence that older managers were less able to use the technology more that they were *reluctant* to do so.

According to the article, information and ready access to IT systems has certainly been a catalyst for change in organisations. It seems that over time, firms and IT systems adapt and evolve together in a form of compromise between external and internal pressures.

New Technology, Work and Employment Vol 10, No 1, pp56-67. Available from: Basil Blackwell Ltd, 108 Cowley Road, Oxford OX4 1JF. EN.

Teleworking in Britain

HUWS U (1993)

Teleworking has emerged as a symbol of the new working practices of the 1990s. However, as this report shows, the reality in Britain is that of a quiet revolution with just 6% of firms surveyed using teleworkers (although 11% were using home-based workers in a broader sense). Nevertheless, the proportions had been increasing and in the survey a further 8.5% of firms were expecting to introduce some form of teleworking in the future.

The incidence of teleworking is widespread. It can be found in virtually all sectors and in all parts of the country, although it is more popular in the finance and business services sectors as well as the public sector. It was found to be particularly popular in the South East of

England but this merely reflects the concentration of the above sectors in that region, coupled with the transportation difficulties that are an important motivational factor in teleworking.

Employers moved cautiously into this relatively new form of working, fearing problems concerning communication with, and the management of, their teleworkers. Nevertheless, those firms that did adopt the practice found teleworking to be a flexible form of working which managers viewed with a high degree of success.

The report highlights the diversity of teleworking schemes, especially in their origins. Many schemes were devised to tackle a particular problem such as the need to accommodate a valued employee, but the success of the precedents encouraged the development of more formal schemes. In many organisations surveyed, the staff who participated ranged across the occupational scale from management to basic clerical grades, although certain occupations (such as consultancy, administration, etc) were more suited to teleworking than others.

The report contains full details of the survey findings in tabular form and includes the technical details. The study suggests that teleworking should be seen as just another flexible way of working and one that will increase and decrease in popularity with employers in response to business needs.

Available from: Department for Education & Employment, Research Management Branch, Room 441, Moorfoot, Sheffield, S1 4PQ. EN.

Review of Telework in Britain: Implications for Public Policy

GILLESPIE A, RICHARDSON R & CORNFORD J (1995)

This special report was prepared for the Parliamentary Office of Science and Technology as a statement on the situation regarding teleworking in the UK and stems from the impetus generated by the Bangemann Report (acknowledged in the text). The report maps in detail the development of the various forms of teleworking in the UK, USA and Europe and investigates the reasons behind this growth. A useful definition of teleworking (distance working using information and communication technologies) breaks down the activities into five distinct categories: electronic home working; telecottages/neighbourhood centres; mobile or nomadic working; group or team teleworking; and call centres and remote offices.

Whilst teleworking as a concept has been in existence for some considerable time, it is only now growing in stature because of the political backing emanating from national governments and from the EU. The interest in teleworking stemmed initially from a belief that it could help lower environmental pollution by reducing, for example, traffic congestion and fuel consumption, due to people's changing commuting patterns. More recently the subject has been included in employment debates because of the potential within the environmental sector to influence the scale and nature of work.

The report does not contain a large quantity of statistics (partly because of the lack of useful data available) but there are sufficient figures to provide a realistic appraisal of the extent of teleworking. The data show that only around 2.5% of the UK workforce is involved in home-based teleworking, although this still puts the UK at the head of the EU league table (with France second). Most teleworkers are involved in handling, processing or retrieving information albeit across a wide range of occupational groups. One particularly interesting finding shows that numerically the highest incidence of such teleworking is found in urban rather than rural areas. Yet home-based teleworkers as a proportion of all those working tend to be highest in the more rural districts of the UK. Rural areas also account for the bulk of the telecottages in the UK.

At the opposite end of the teleworking spectrum, the growth in call centres and remote offices has been marked in the UK. Fostered by the financial services sector (where growth has been most

Comment

Discussion of the information society and the potential employment effects has concentrated in the UK on the development of teleworking. The idea of teleworking is not new and in the 1980s the then National Economic Development Office (NEDO) was actively examining its potential costs and benefits. NEDO's 1989 report 'Working by Wire: Teleworking and the Frontline Initiative' explored the options and concluded that the UK was in a particularly favourable position to develop this form of work, not least because of its position in the EU and because English is the international business language. Since then there has been a steady stream of research reports on teleworking, although the benchmark review by Huws (1993) is the most thorough.

The impression given by Huws is of widespread activity beginning to permeate most parts of industry. In reality the development of teleworking has been slower than expected and Gillespie et al (1995), whilst putting the UK as the EU leader, concede that much of the work is found in financial services, tourism and other sectors where the processing of large quantities of data is a main requirement. This underlines the principle use for the development of information systems.

One of the myths concerning the growth in teleworking is that it benefits rural more than urban areas. This is challenged in Gillespie et al (1995) with figures showing that numerically it is the urban areas that are principally benefiting from the development of teleworking in all its forms. The better IT infrastructures normally found in urban areas obviously contribute. These issues were raised in the recent Rural White Paper 'Rural England - A Nation Committed to Being in Touch with the Countryside' (HMSO Cm3016, 1995). The White Paper recognised the important role of IT in keeping the countryside in touch with the rest of the nation and it stressed the crucial role of telecommunications and IT in bringing about diversification and economic prosperity. This role has also been supported by initiatives such as the Technology Foresight programme, and the development of telecottages (of which there are now over 120 in the UK).

The general feeling is that the development of communications and IT has only begun to alter the way in which firms operate and people work. Not everyone gains in this revolution. Few would argue however with the need for the UK to keep pace with developments in order to remain competitive in a world rapidly becoming more open and accessible through technology.

pronounced) the UK is thought to have a natural advantage in developing this type of operation internationally because of the domination of the English language in international business. Most of these centres employ large numbers of people and tend to be located in urban areas or on the periphery of urban areas in greenfield locations (and mostly outside of the South East of England).

In terms of policy, the report emphasises the urgent need for better data on which to base policy instruments, for example, in trying to assess the benefits (environmental and commercial) of increased levels of teleworking. However, the authors are cautious in their predictions for the future and suggest that there is not a strong case for the government to stimulate home-based working in particular. Nevertheless, the authors call for improved appraisal of the potential of such working and the encouragement of other aspects of teleworking such as call centres.

Available from: Centre for Urban and Regional Development Studies, University of Newcastle, Newcastle-upon-Tyne, NE1 7RU. EN.

A Manager's Guide to Teleworking

HUWS U (1995)

Based on previous research into teleworking which was sponsored by the Employment Department (now the Department for Education and Employment), this guide specifically aims to help firms to examine the option of teleworking and to ensure an effective operation. Also sponsored by the Employment Department, the guide illustrates the significance attached to the development of such working arrangements at the policy level.

The guide attempts to list the advantages of teleworking and includes: greater flexibility; reduced costs; increased convenience; and freedom from travel-to-work problems. Such potential benefits are likely to apply to employer and employee alike and the guide provides examples of how such benefits can be realised. Other benefits accrue from the more contented workers who will tend to be more productive, reliable and loyal to the organisation despite being remote from it.

The guide then goes on to consider what steps employers need to take in order to introduce teleworking. One interesting problem emerging from this relates to the likelihood that teleworking may not be acceptable to all staff. Typically this might mean that a manager used to dealing face-to-face with colleagues may be reluctant to substitute this with electronic means of communication. One way around this problem could be to use self-employed workers and here the report points out that almost one-in-three teleworkers fall into this category.

Clearly, only certain jobs are suitable for teleworking and only certain types of people can adjust to the change in working environment. These factors combined will inevitably act as a brake on the growth of teleworking but given the perceived benefits there is still plenty of growth potential to realise. Much of this growth will depend on firms coming to terms with the cultural changes that teleworking brings to the organisation.

Available from: Cambertown Ltd, Unit 8, Goldthorpe Industrial Estate, Goldthorpe, Rotherham, South Yorkshire S63 9BL. EN.

Belgium

Autoroutes de l'information, emploi et travail *(Information Superhighways, Employment and Work)*

DELHAYE R, LOBET-MARIS C, VAN BASTELEAR B (1995)

This document assesses the impact of the Information Society on employment, and the problems raised by this development. The authors begin by placing the development of information superhighways in the present context of under-employment. In so doing they distinguish clearly between conjunctural, structural and technological unemployment.

They begin their assessment by looking at the potential rise or fall in employment following the creation of information superhighways. The proposals and recommendations emanating from the European Union (the *Delors* and *Bangemann Reports*) present information superhighways as one of the solutions to the problem of unemployment in Europe. This optimism is based mainly on the fact that these are said to represent 'radical innovation' and the example of Minitel in France is given.

The authors argue, however, that information superhighways cannot be regarded as a 'radical innovation', but primarily as an 'expensive substitutive innovation' which has only a marginal effect on the labour market since the jobs created are partly offset by displacement effects. In addition, they argue that the development that we are currently witnessing merely represents an application of information and communication technologies (ICTs), rather than an innovation in technological clusters which, according to the authors, is one of the preconditions for radical innovation. Moreover, the document seriously questions the potential similarities to the development of videotex in France. It stresses the lack of innovation generated by the private sector in an over-competitive field which has seen profit-margins squeezed; and where a sense of insecurity for long-term investment and high risks of rapid imitation prevail.

The authors then move on to look at the knock-on effects of information superhighways on other sectors, and argue that the effects on employment vary according to the nature of the sector concerned. They predict that the main areas of job-creation in the next decade will be in the creation of technical architecture (networks, hardware, software) and in supplying tele-services to the general public.

Of equal importance as the creation of jobs, in the context of persistant regional disparities in Europe, is the geographical distribution of new employment opportuntities. Several studies quoted in the document show that the profound divide within Europe between rich and poor regions will be further accentuated by the development of information superhighways. Similarly, the disparities between the regions and cities within Member States will also be intensified.

The authors evaluate the assertion by the *White Paper* and the *Bangemann Report* that information superhighways will encourage the decentralisation of company structures, and will therefore lead to the gradual disappearance of large industries. It is assumed that these will be replaced by an economy made up of small units, constantly making decisions relative to a great range of markets. However, several economists have shown that communication technologies seem, instead, to promote the hierarchical model, with large industries being more likely to

Comment

The report commissioned by IBPT provides an interesting response from the Member State level to the recommendations of the 'Bangemann Report'. It was prepared in a tripartite co-operation between academics, and experts from two leading Belgian research institutes specialising in varies aspects of the diffusion of ICTs. The document by Delhaye, Lobet-Maris and Van Bastelear presents the findings of a study on the employment impact of the Information Society completed by a research centre at the University of Namur. Both reports go some way towards challenging the optimism of the 'Bangemann Report' with regard to the anticipated positive impact of the introduction of information superhighways on European economies and employment.

There is, so far, insufficient evidence to establish who the key actors in these developments wil be, what role the state will play and, in particular, whether the information superhighways will provide a solution to the current problems of unemployment in Europe. The reports stress that, although there is forward thinking and enthusiasm about the information society at European level, the situation is more complex at the Member State level.

The debate in Belgium is stongly conditioned by ideological concerns, since it takes place against the background of a movement towards deregulation and liberalisation. This movement clearly has important consequences for employment. The IBPT report argues that if the scope for state intervention in the telecommunications market is reduced, economic policy measures to promote employment lose their rationale. Deregulation efforts are significantly motivated by considerations such as profit margins and returns on investment. The report therefore echoes the fear that what has been hailed as a 'new technological revolution' will not produce the expected effects in terms of employment.

The report by Delhaye, Lobet-Maris and Van Bastelear outlines the hypothesis underlying the 'Bangemann Report' and the 'White Paper' and provides an assessment of the direct and indirect employment impact of the introduction of information superhighways, its impact on company structures, the geographical distribution of new employment opportunities, and the employment opportunities generated by teleworking. The report, therefore, attempts to cover a great diversity of subjects which raises problems as it means that many of the subjects can only be treated superficially. However, it provides an interesting starting point for further data analysis and a critique of the Bangemann proposals.

foster the establishment of efficient information networks.

Teleworking is one of the priority applications of the *Bangemann Report.* In spite of the euphoria of the 1980s, it is currently a very limited phenomenon. In employment terms, it means the shifting of existing jobs to different localities, rather than the creation of new jobs.

In conclusion, the authors stress that it is not their aim to oppose information superhighways but rather to encourage decision-makers to empower those affected by technology induced changes in their work environment and to allow them to participate in the developments rather than leave everything to the market and the private sector.

Available from: Facultés Universitaires Notre-Dame de la Paix, 21 Rue Grandgagnage, 5000 Namur. FR.

Premier report de synthèse à propos des implications pour la société belge des propositions contenues dans le rapport Bangemann *(First Synthesis Report on the Implications for Belgian Society of the Proposals Contained in the Bangemann Report)*

IPBT (1995)

In 1995, the Belgian Post and Telecommunications Institute (IBPT) commissioned a team of experts to carry out a study to assess the implications of the Bangemann Report *(see International Sources, p.4)* on the telecommunications sector.

The report, produced by a tripartite panel of experts from SMIT (the Centre for Studies on Media, Information and Telecommunication at VUB), LENTIC and ULB, initally provides a review of the questions and doubts raised by the Bangemann Report regarding technical uncertainties, demand issues and the social consequences of the information society. Prime among these concerns is the uncertain nature of the impact of technical advances on employment. While the Bangemann Report suggested that the development of information superhighways should create employment opportunities, findings from recent studies remain unclear as to where and when these jobs will be created. As far as directly related jobs are concerned (among the operators and producers of hardware in this sector) the development of information superhighways has no, or very little, positive effect on employment. Indeed, a 1994 study by IRES placed telecommunications among the sectors where employment should remain stable, and predicted low growth or stabilisation among the companies in this sector.

The impact on indirect employment, ie in services and other sectors using ICT equipment, is more difficult to quantify. The IRES study ranks sectors currently using telecommunications services, as well as potential users of the information superhighway, such as banks, travel agents, transport and distribution services, among those in which overall unemployment is set to fall.

The second part of this report discusses the economic feasibility of the Bangemann proposals for the expansion of the information superhighway across Europe, by assessing the extent to which there is a market for ICT in Belgium. It analyses, on the one hand, the level of investment required and, on the other, the potential markets (business and private individuals) on which those investments could produce a return.

The final part of the report considers the need for a clear regulatory framework to accompany the proliferation of ICTs and the liberalisation of markets in telecommunications. This requires firstly, that the question of co-operation with the communities and the regions be settled; secondly that the definition of the conditions of universal service are applicable (conditions of access to the networks) in this field and that there are the means to apply and enforce these conditions; and finally, that rules are framed and enacted to protect users (data-exchange security, confidentiality, safeguarding of privacy, copyright protection).

Available from: IBPT, Tour Astro, Avenue de l'Astronomie, 1030 Brussels, FR.

Spain

Cambio Tecnológico: Empleo y Mercado de Trabajo *(Technological Change: Employment and the Labour Market)*

VARIOUS AUTHORS (1993)

Technological advances promote changes in the structure of production which have an important impact on employment. They not only lead to a redistribution of jobs between different sectors, but also to the creation of new jobs, and the transformation of existing ones. This can result in a mismatch between the supply and demand for labour, and therefore makes continuing training and retraining of the workforce imperative. These aspects of the Information Society are analysed by several authors in a special issue of the review *Economía y Sociología de Trabajo*. The first contribution by Kaplinsky studies the problem of work organisation as a determinant of competitiveness within a European context.

The following three papers by Díaz Fuentes; Carrasco; and García Sanchez, analyse the relationship between technological change and employment. The first paper examines the issue on the basis of 1980 and 1985 input-output tables for Spain. Carrasco's paper focuses on technological change and labour productivity, with an emphasis on sectoral differentials. García Sanchez tries to establish a quantitative relationship between technological change and unemployment.

Three other articles analyse the impact of technological innovations on education and training. In the first paper, García deals with the role of education in bringing about and responding to technological change, mostly from a theoretical perspective. In the second article, Sáez studies, among other things, the influence of technological chance on human resource management at the firm level. In another paper San Segundo presents an analysis of the impact of technological change on formal education, as well as on the evolution of individual's employment experiences by educational level.

Finally, a paper by Solé deals with the issue of the proliferation of ICTs from a managerial perspective, with special reference to the relationship between innovation and human resource management.

Revista de Economía y Sociología del Trabajo. Nº 19/20. Available from: Centro de Publicaciones, Ministerio de Trabajo, Agustin de Bethencourt 11, 28003 Madrid. ES.

Comment

There are very few studies specifically on the impact of the information society on employment in Spain. Of the four contributions reviewed here, two were published by different journals as special review issues on the impact of technological change on employment. The contributions by Castaño and Castells deal more directly with the impact of the information society. They are both part of a new collection entitled 'Technology, Economy and Society'. The book by Castells, originally published in English in 1989, is more theoretical, and although empirical analysis refers to the United States, it is a significant contribution to the debate on the impact of the Information Society in Europe as well. Castells edits the collection mentioned above and belongs to the CEC's High Level Expert Group on the Information Society.

All contributions highlight the concern surrounding the implications of the Information Society on Employment in terms of the balance between job creation/loss, the sectoral distribution of new employment opportunities, the nature of the jobs created and the attendant training requirements.

Tecnología y Empleo *(Technology and Employment)*

VARIOUS AUTHORS (1995)

Technological change is one of the factors put forward when seeking to explain high levels of unemployment in Spain. The authors of this review use a variety of economic models to establish how recent technological changes have affected employment levels. The papers included in the report can be placed into two different categories: one deals with theoretical arguments regarding the defintion and causes of unemployment, the other deals with empirical analyses of the Spanish situation.

In the first paper, Palacio compares the concept of technical progress in orthodox economic theory within a post-keynesian framework, concluding that the second model is more adequate to explain the Spanish situation. García Serrano, Jimeno and Toharia deal with the nature of technological changes in Spain, distinguishing between changes affecting different sectors of industry and changes affecting occupational structures. The former is considered to be more important in times of recession whereas the latter becomes significant in boom time. Castaño analyses the relationship between the structure of employment in different industries and the technical characteristics of their productive processes. Buesa and Molero argue that one of the main causes of unemployment in Spain has been the inability of the productive system to absorb the potential workforce. This can be attributed mainly to its specific structure and the disadvantaged position of the Spanish economy in the international marketplace.

Información Comercial Española. Revista de Economía. Nº743. Available from: Centro de Publicaciones del Ministerio de Comercio y Turismo, Paseo de la Castellana 162, 28071 Madrid. ES.

Technología, Empleo y Trabajo en España *(Technology, Employment and Work in Spain)*

CASTAÑO C (1994)

This book analyses the impact of technology on the nature and structure of employment from a variety of perspectives. The first part looks at the relationship between technology and employment from an economist's point of view. The neoclassical and Schumpeterian approaches are accorded particular attention. The latter is regarded as complementary to the former, in that it goes beyond the quantitative, macro level of analysis. It insists that the issue of adapting employment to technical change is a qualitative as well as a quantitative one,

since it is not only the level of employment, but also the quality of the jobs created which matters. The theoretical survey leads to a general conclusion which is used as a working hypothesis for the following empirical analysis. It is argued that highly skilled jobs are more likely to be situated in technologically advanced sectors. As such employment becomes more and more important the polarisation between the two ends of the skills ladder is reduced.

The second part of the book seeks to test this hypothesis on an analysis of the composition of employment by sectors between 1980 and 1990. The novelty of the analysis lies in the combination of industries and the level of advanced technology used in these sectors. The data sets used were the Spanish Labour Force Survey and Statistics on Scientific Research and Technological Development Activities, both of which are produced by the National Statistical Institute (INE).

The last part of the book presents the conclusions of specific case studies carried out in two sectors: the automotive industry and banking. Both are significant users of new technologies, particularly information technologies. In the case of the automotive industry, the most recent developments in Spain indicate a strong influence of organisational factors, above and beyond purely technical changes. In the case of banking, the introduction of information technologies is leading to the occurence of phenomena previously restricted to manufacturing, such as increases in capitalisation, standardisation, rationalisation and productivity and product quality, and labour market segmentation.

Available from: Alianza Editorial, S.A., Calle Juan Ignacio Luca de Tena, 15, 28027 Madrid. ES.

La Ciudad Informacional. Tecnologías de la Información, Reestructuración Económica y el Proceso Urbano-regional *(The Information City. Information Technologies, Economic Restructuring and the Urban-regional Process)*

CASTELLS M (1995)

The author analyses the impact of new ICTs on society, acknowledging that this impact will differ depending on a number of economic, political and cultural factors which may influence production and employment.

The main objective of this book is to study the relationship between the increasing use of new technologies and the process of urban and regional development. The author argues that these developments have to be viewed in the context of the emergence of a new model of socio-technical organisation and the restructuring of capitalism.

The first chapter contains the theoretical framework which provides the foundation for empirical analysis, based on the example of the United States. Chapter two studies the relationship between new ICTs and the spatial models. Chapter three investigates the effect of ICTs on employment in the service sector. The next three chapters analyse the impact of the relationship between new information technologies and socio-economic restructuring in relation to three major concurrent developments: the correlation between capital and labour, the transformation of the State and the internationalisation of the economy. A short concluding chapter reiterates the main theoretical tenets regarding the importance of understanding the emergence of the information society within a larger context of restructuring capitalism.

Available from: Alianza Editorial, S.A., Calle Juan Ignacio Luca de Tena, 15, 28027 Madrid. ES.

Statistical Supplement N° 25

Economic and Labour Market Indicators

This Statistical Supplement provides an overview of EU Member States using basic economic and labour market indicators. The reference year is 1994 since this represents the latest year for reasonably complete information on all Member States and, where possible, comparisons have been drawn with the situation ten years earlier in 1985.

Figure 1a
GDP 1994
(US$ billion)

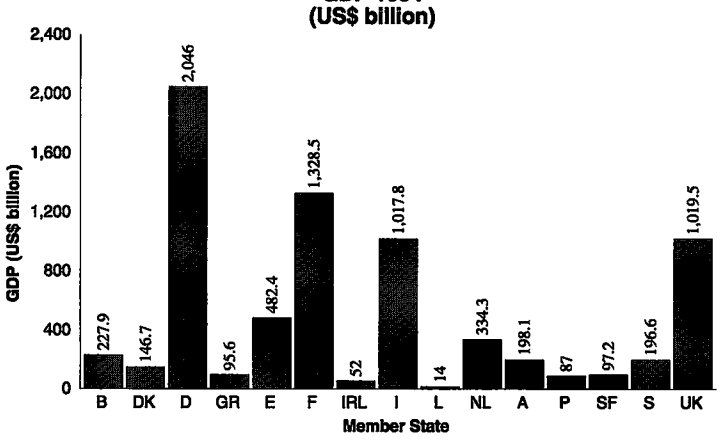


Figure 1b
GDP 1994
(1990=100)

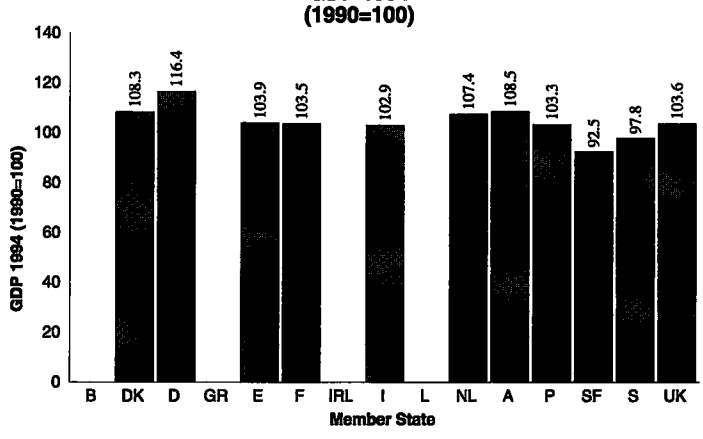


Figure 1c
Industrial Production 1994
(1990=100)

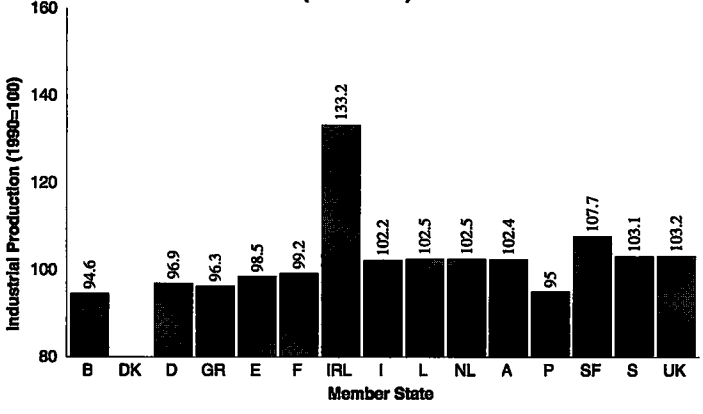


Figure 1d
Net Trade Balance 1994
US$ billion

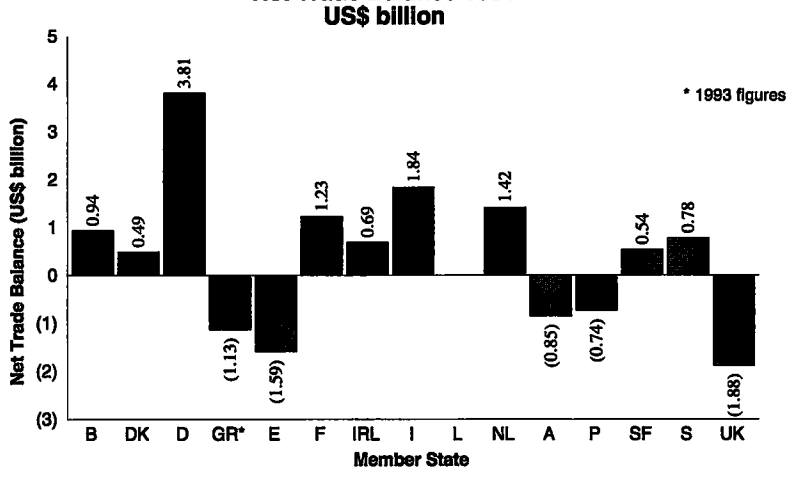


Figure 1e
Change in Consumer Prices 1994
(1990=100)

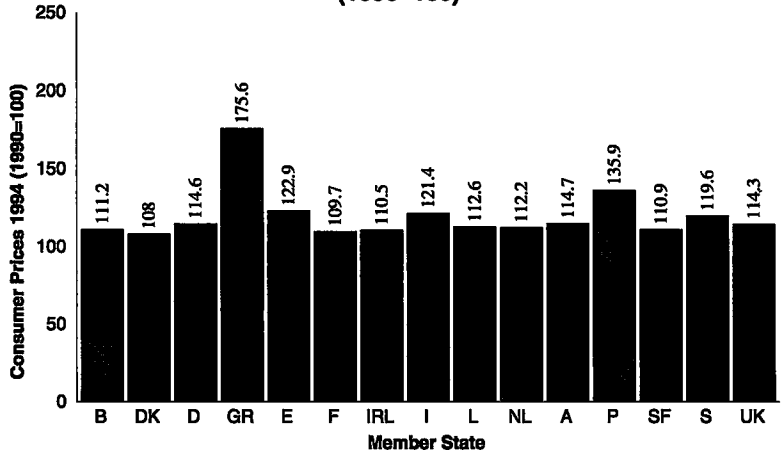


Figure 1f
Change in Hourly Earnings
Manufacturing Only (1990=100)

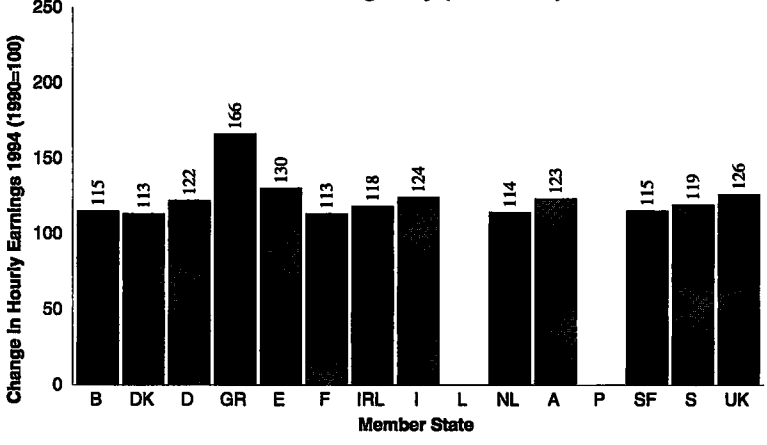


Figure 2a
Working Age Population 1985-94 (% change)
(Total)

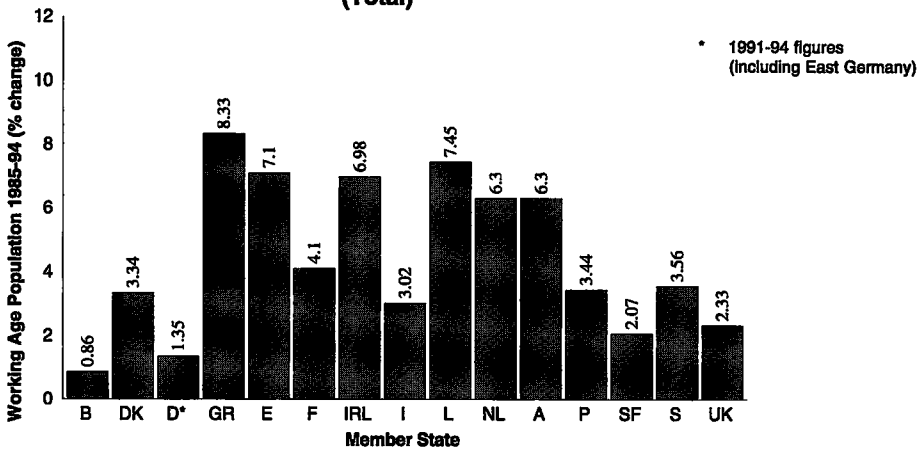


Figure 2b
Working Age Population 1985-94 (% change)
(Males)

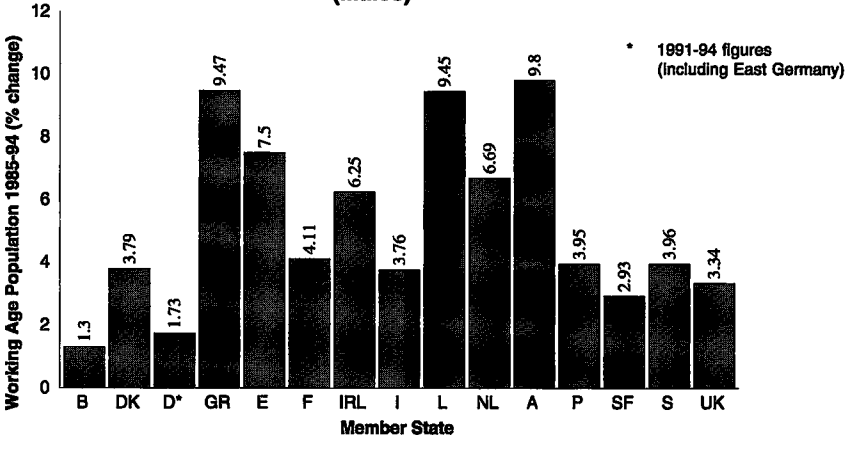


Figure 2c
Working Age Population 1985-94 (% change)
(Females)

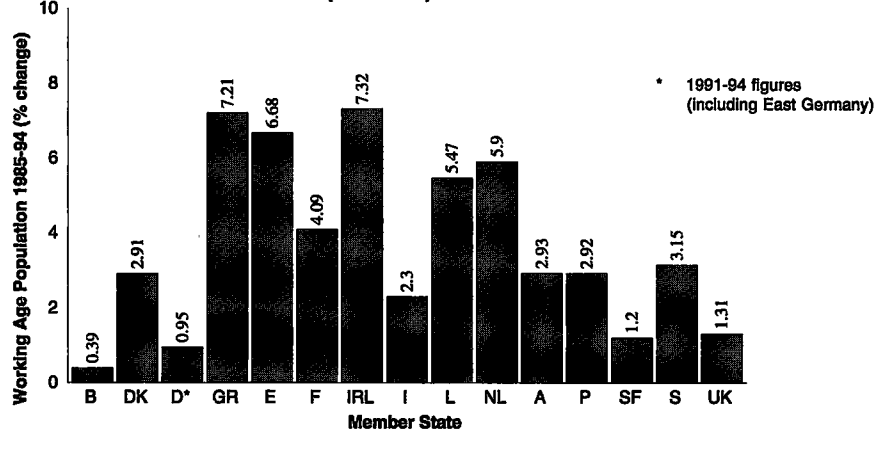
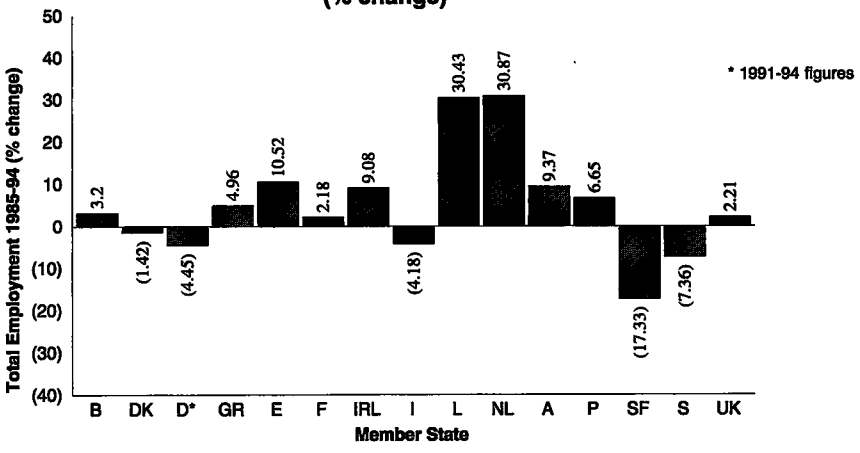
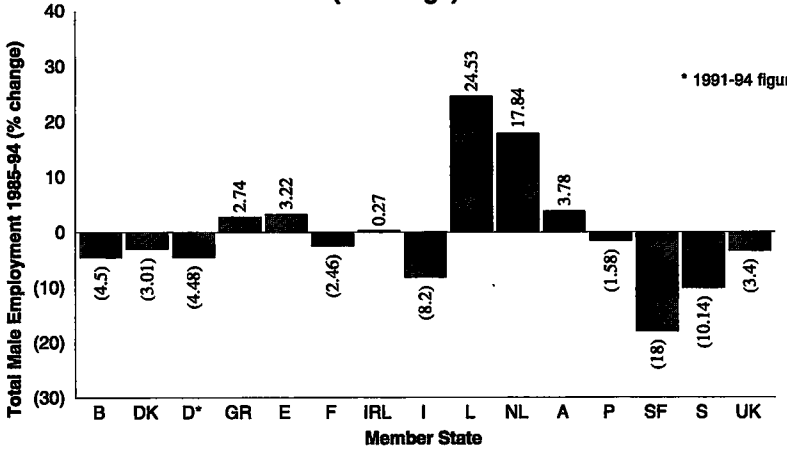


Figure 3a
Total Employment 1985-94
(% change)



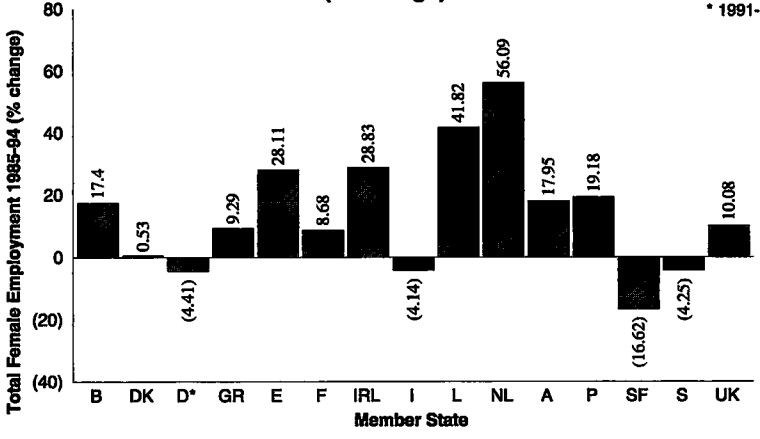
* 1991-94 figures

Figure 3b
Total Male Employment 1985-94
(% change)



* 1991-94 figures

Figure 3c
Total Female Employment 1985-94
(% change)



* 1991-94 figures

Figure 4a
Employment by Broad Sector 1985
(Total Males and Females)

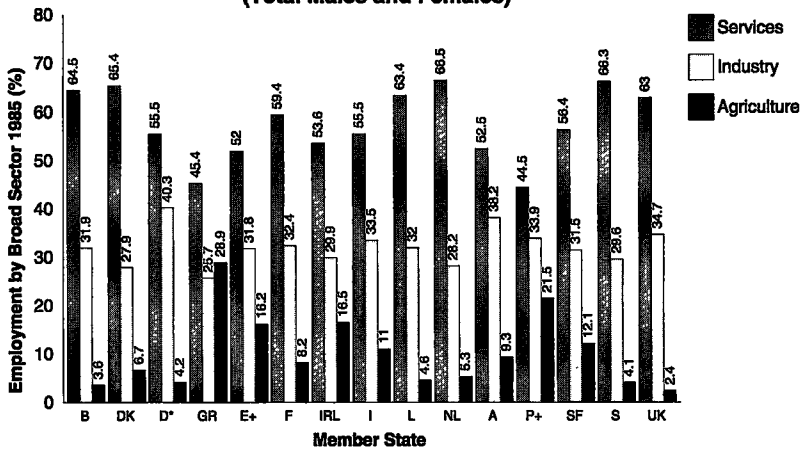


Figure 4b
Employment by Broad Sector 1994
(Total Males and Females)

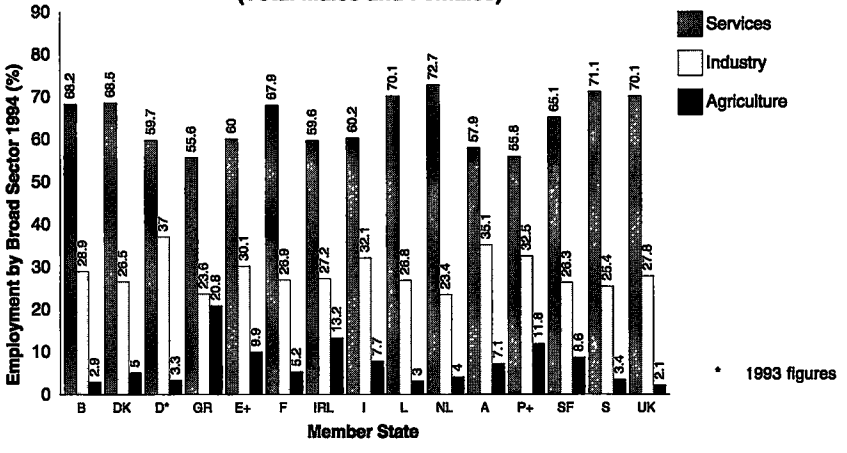


Figure 5a
Total Unemployment Rate
1985 and 1994 (%)

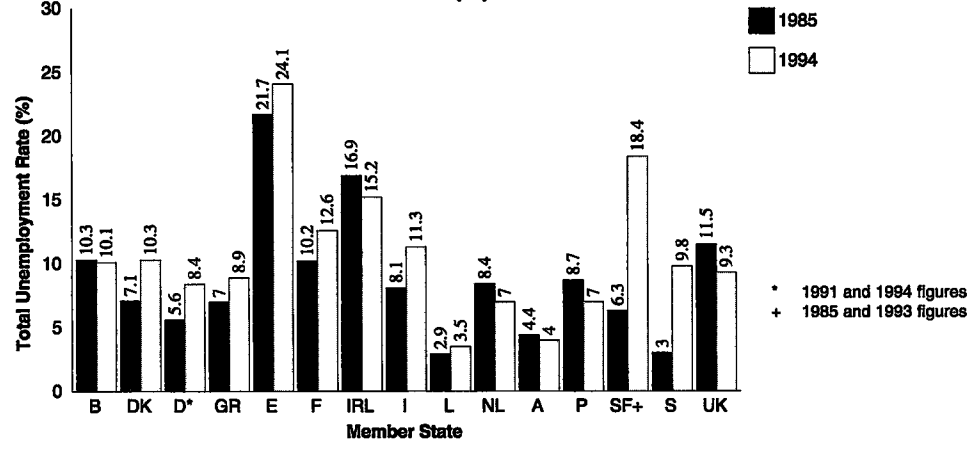


Figure 5b
Male Unemployment Rate
1985 and 1994 (%)

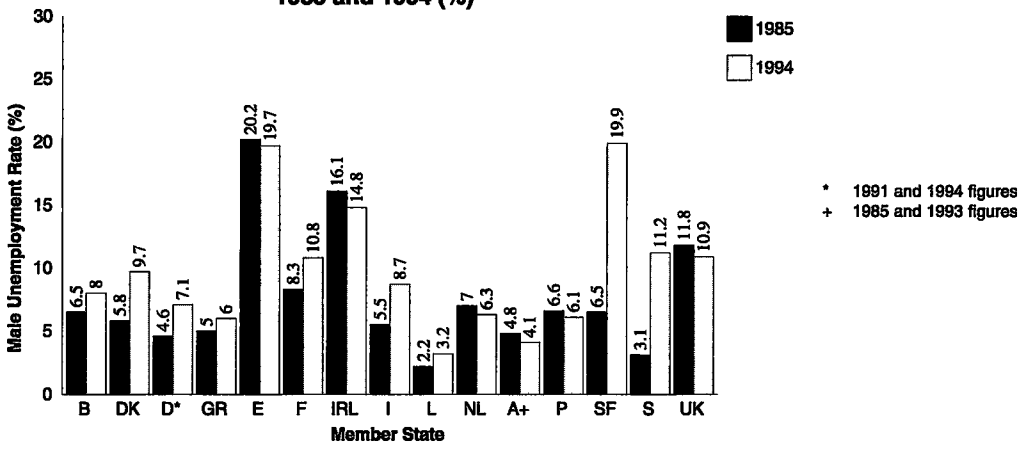


Figure 5c
Female Unemployment Rate
1985 and 1994 (%)

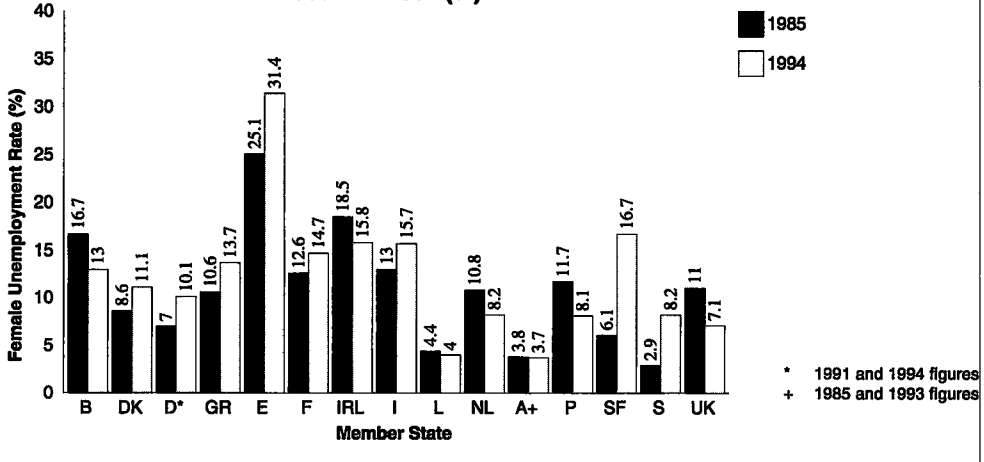


Figure 6a
Total Long-term Unemployment (LTU)
as % of Total Unemployment (1985 and 1994)

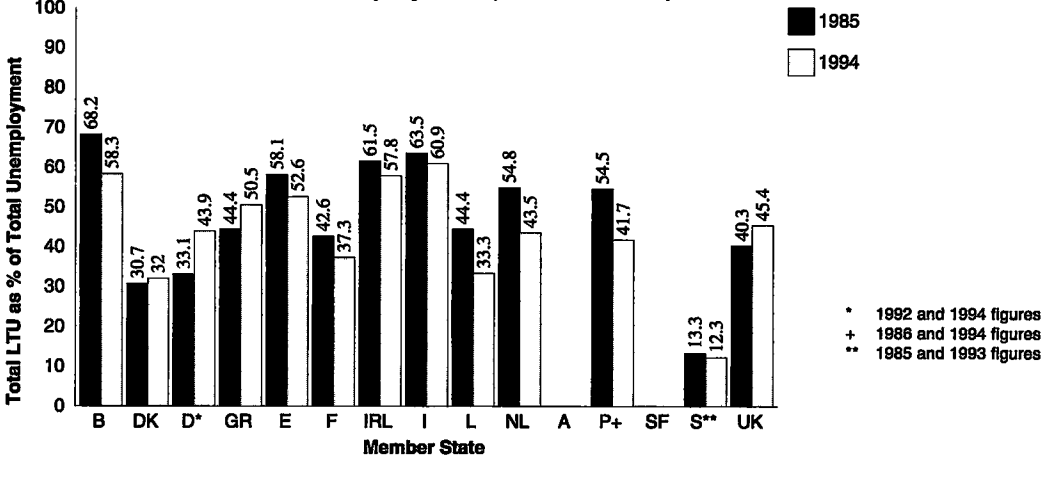


Figure 6b
Male Long-term Unemployment (LTU)
as % of Total Unemployment (1985 and 1994)

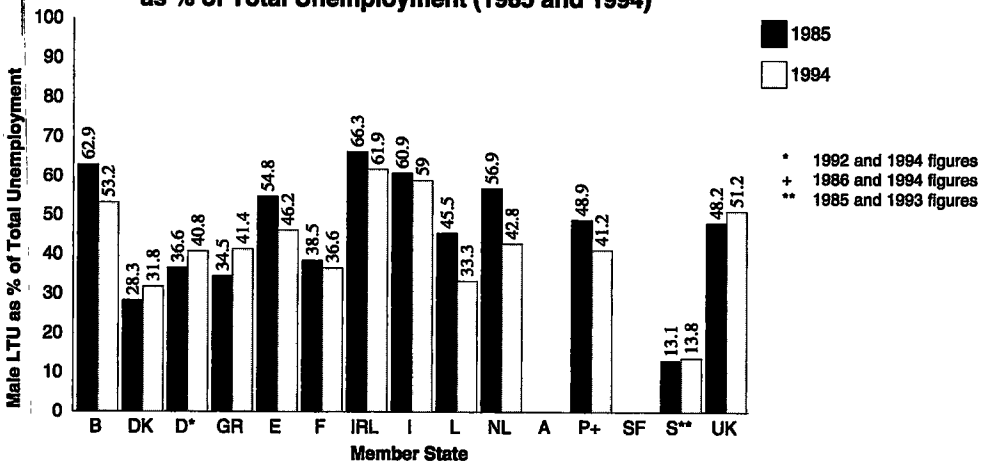
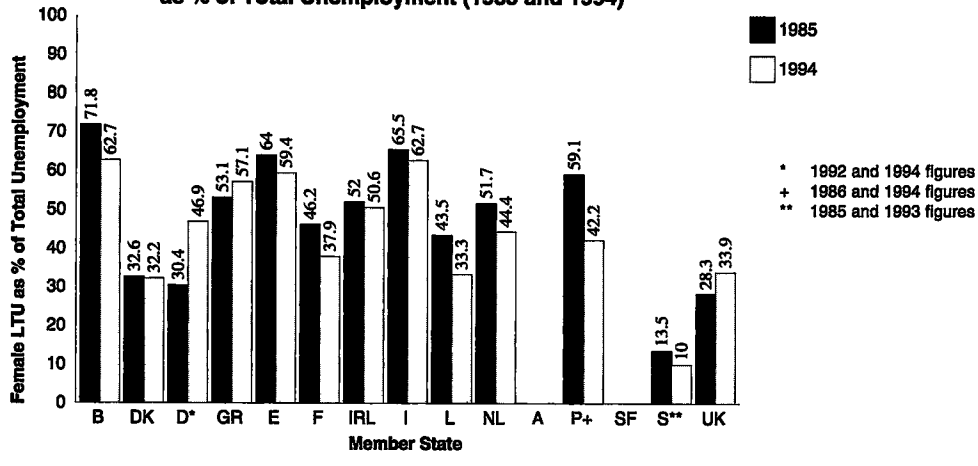


Figure 6c
Female Long-term Unemployment (LTU)
as % of Total Unemployment (1985 and 1994)



Commentary

Economic and Labour Market Indicators

In this statistical supplement, statistics on basic economic and labour market indicators are used to review the overall situation in EU Member States in 1994 and where possible, the changes over the ten years since 1985. The economic indictors used include measures of GDP, industrial production and balance of trade using conventional methods of measurement.

Data Sources

Changes in consumer prices between 1990 and 1994 are also given and can be compared to the movements in hourly earnings (limited to manufacturing industry only), again for the same period. The economic indicators have been drawn from the OECD[1] and represent a useful source of data on all 15 Member States but essentially rely on nationally generated information with adjustments in the interests of comparability (GDP in US$ billion).

The labour market indicators are drawn from the Statistical Annex of the 1995 *Employment in Europe* report[2] which contains the latest information for all 15 Member States and uses a variety of source material, much of it generated by Eurostat. In the absence of more recent information for all EU Member States, 1994 is the latest year available. The indicators were chosen to give a basis for broad comparisons between the Member States, particularly in terms of changes to these indicators over time.

Continued on page 26

The Statistics

The overall size of GDP is measured in Figure 1(a) in US$ billion at current prices and current exchange rates. In terms of change in GDP, Figure 1(b) shows that over the period 1990-94 only two Member States saw GDP decline, Finland and Sweden. The remaining nine Member States shown saw generally modest growth in GDP, although Germany experienced a larger than average growth rate and this despite a fall in industrial production over the same period. Industrial production also fell in another five Member States: Belgium, Greece, Spain, France and Portugal although in most cases the falls were relatively modest. Of those Member States recording an increase in industrial production, the largest by a considerable margin was Ireland with an index of 133.2. Figure 1(d) provides a view of the net trade balance for each Member State in 1994 (ie, the difference between imports and exports on the balance of trade account) showing that nine Member States showed a positive balance (ie, exports exceeding imports) with the largest in Germany at US$3.81 billion. Of the five Member States with negative trade balances, the UK had the largest at US$1.88 billion in 1994.

Movements in the retail prices indices in each Member State over the period 1990-94 are shown in Figure 1(e). Two Member States in particular stand out with considerably higher rates of inflation than the rest. In Greece the increase in prices over the period was 175.6% whilst in Portugal it was 135.9 %. Hourly earnings also increased significantly over this period in Greece, going up by 166% which was less than the increase in inflation, although the statistics in Figure 1(f) only refer to manufacturing industry. In the majority of Member States the increase in hourly earnings in manufacturing outstripped that in consumer prices. Only in Sweden as well as Greece did the increase in earnings fall below consumer price movements.

The labour market indicators begin with Figure 2 showing the change in the size of the working populations (ie, those aged 15-64) in each Member State over the period 1985-94. Increases were particularly significant in Greece, Luxembourg and Spain and change was particularly modest in Belgium. The increase in males of working age exceeded that for females in all Member States except Ireland which is likely to be accounted for by high emigration of males of working age. In terms of employment change, Figure 3 shows some significant increases between 1985-94. In Luxembourg and the Netherlands, for example, recorded increases were over 30% which contrasts with falls in employment in Denmark, Germany (1991-94), Italy, Finland (down by 17% overall) and Sweden. However, male employment levels fell additionally in Belgium, France, Portugal and the United Kingdom indicating the much more significant growth in female employment in all but four Member States.

Many of these changes in overall employment are reflected in the sectoral shifts over the period 1985-94 and summarised for the three broad sectors of agriculture, industry and services in Figure 4. In all Member States employment in agriculture continued to decline with large falls in developing Member States of Greece, Ireland and Portugal, although in all three it remains a very significant employer. Even in those Member States with small agricultural sectors, employment continued to fall such that the United Kingdom has the lowest employment proportion at 2.1% followed by Belgium at 2.9% and Luxembourg at 3.0%. Employment in industry also continued to decline in all Member States alongside growth in service sector employment. Change was particularly significant in France, where employment in industry fell from 32.4% to 26.9% over the ten year period, in Finland (from 31.5 to 26.3%) and in the United Kingdom (34.7 to 27.8%). The Netherlands followed by Greece had the smallest manufacturing sectors (as measured by employment) in 1994 with just over 23% of total employment in both cases. The Netherlands, Sweden, Luxembourg and the United Kingdom had the largest service sector employment, all over 70% of the total.

Comparative unemployment rates for 1985 and 1994 are shown in Figure 5. Male unemployment has increased in all but five Member States, with the largest rise in Finland from 6.5% to 19.9%. In Spain, Ireland, the Netherlands, Portugal and the United Kingdom male unemployment fell over the period, albeit by small margins in all cases. By contrast, female unemployment fell in seven Member States between 1985 and 1994, although in only four Member States (ie, Austria, Finland, Sweden and the United Kingdom) was the 1994 rate of female unemployment below that for males. Long-term unemployment (ie, unemployment for 12 months or more) has tended to fall as a proportion of overall unemployment in nine Member States, as shown in Figure 6. Generally, however, the falls have been small and in all but one Member State the proportion of long-term unemployment can be considered high. The exception is Sweden, where the figure was 12.3% (1993) and this contrasts with the highest proportion found in Italy with 60.9% in 1994. In just three Member States, Ireland, Sweden and the United Kingdom, was the level of long-term unemployment lower for women than for men, although in Luxembourg the rates were similar.

1 The main source is *Main Economic Indictors* (Paris, OECD, January 1996).

2 *Employment in Europe 1995* (Brussels, European Commission, DGV, 1995). Most of the statistics are from Eurostat sources. Available from: Office for Official Publications of the European Communities, and national agencies.

Ireland

1. The Legal and Contractual Situation of Teleworkers 2. The Legal and Contractual Situation of Teleworkers. Social Security Aspects

BUTLER N (FORTHCOMING)

These reports, which have been reviewed together as they are closely interrelated, indicate that while there is no research available that provides estimates for the size of the telework phenomenon in Ireland, it is unlikely that the number of workers involved would exceed more than a few thousand, even on the basis of a very wide definition. However, telework is recognised as an important potential growth area by FORBAIRT (the national industrial development body) which projects that up to 40,000 jobs could be created in this sector over the next 15 years.

Over the last decade or so there has been a significant change in the organisation of employment in Ireland as a growing number of employers are increasingly reluctant to take on staff as 'permanent' employees in order to avoid acquiring legal responsibilities towards these workers. In effect, employers have been seeking to circumvent the protective aspect of employment legislation by entering into contracts which are, *inter alia,* intended to confer on the worker the status of self-employed. This is an issue which is of particular relevance to teleworkers. Since any change in employment practice which gives the employee greater flexibility can be seen legally as supporting a contention that the employee has now become self-employed.

Apart from the loss of employment protection associated with a change of status from employee to self-employed, there may also be a social loss to the worker concerned as he or she will no longer be part of an identifiable organisation spending the greater part of the working day in the company of other workers with a similar commitment and involvement. This is particularly important in a country such as Ireland where outside the Eastern coastal areas, large parts of the country tend to be sparsely populated and have poor public transport infrastructures. Such a decentralised structure is also likely to make employee organisation more difficult, especially for less skilled and more low paid workers. Quite often the introduction of telework involves not only a change in location but a change in the manner in which work is being done and if agreement cannot be reached between the employer and the employee that such telework can be undertaken on a voluntary basis, under existing Irish legislation, it could give rise to a redundancy situation.

The report covering social aspects emphasises that the concepts of 'telework' and 'teleworker' do not exist in Irish law and that there are no specific legal or social security provisions for teleworkers as such in Ireland. While the technological developments of the last two decades have undoubtedly resulted in an increasing number of workers and situations which would fall within the intended definition of telework, it has not attracted sufficient social or political attention to be the subject of express regulation or agreement between the social partners.

The report goes on to consider various aspects of social protection and contemplates the likely effects on teleworkers under each heading, in so far as these can be inferred from existing Irish social security provisions. If a teleworker is self-employed in a legal sense, then he or she would not be eligible to participate in many statutory contribution based social protection programmes including, for example, unemployment benefit, disability benefit and maternity benefit. They would, however, be eligible to participate in the statutory state pension scheme as (Class S) self-employed persons.

The report concludes that the attractions of greater flexibility are likely to encourage employers to organise their employment relationships so that teleworkers working for them will be defined as self-employed rather then employed persons. While higher skilled professional teleworkers may benefit financially and are likely to be able to organise supplementary private insurance cover to deal with the various hazards involved, lower skilled and lower paid teleworkers are more likely to be at risk, especially if they are women. However, the author considers that in Ireland the perceived need to protect teleworkers is likely to be balanced against the desire to maintain flexibility in the labour market in order to promote employment creation.

Available from: European Foundation for the Improvement of Living and Working Conditions, Loughlinstown House, Shankill, Co. Dublin. EN.

Telecommunications, Employment and Growth

FORBAIRT (1995)

This report was produced by a Task Force which included representatives of the private and public sectors, equipment manufacturers and software developers. The report notes that the telecommunications sector in Ireland is already significant, forming an important part of the economy in terms of employment and exports. An efficient telecommunications system is also an essential element in the social infrastructure.

Recognising these factors the Task Force set itself the objective of defining the conditions that would establish Ireland as an internationally recognised centre of excellence in niche, but key areas of telecommunications, technology and services by the year 2000.

The report identifies opportunities in the form of a growing market which should be availed of by Ireland's expanding base of telecommunications software companies and expertise. It also identifies some disadvantages however, especially apathy on the part of Irish companies vis-à-vis co-operative product development and the threat of domination/ takeovers by major world players. The area obviously requires constant innovation and involves significant costs in developing or buying new technology. The report notes that there was also in general a greater degree of support for R&D activity by governments in other countries.

With regard to promoting collaboration between indigenous Irish enterprises,

the Task Force recommended that as a first step firms identify a significant industrial development project which could be undertaken on a collaborative basis, and to work together to get the financial and market support for it. The Task Force also stressed that the higher education sector must aim to develop a closer working relationship with industry, particularly in relation to applied and commercially relevant research.

The report recommends that the feasibility of establishing a European Telemarketing Centre in Ireland be examined. Such a centre could integrate Ireland, for telemarketing purposes, into the major economies of Europe and the US, while at the same time offering companies speedy and low cost access to the European market place.

The report also recommends that financial support be provided for promoting teleworking and telecottage industries in Ireland. The report indicates that in the context of developing the teleworking sector in Ireland there are a number of obstacles which need to be addressed. These are:

- the provision of technical support (advice and referral);
- enterprise support tailored to the needs of teleworking businesses;
- dealing with a lack of marketing skills and resources on the part of individual teleworking businesses;
- the cost of access to international e-mail services outside of the Dublin area.

The Task Force concludes that if its recommendations are implemented the Irish telecommunications sector will make an enhanced contribution to the Irish economy. This will be of two kinds, the first relating to the effectiveness with which businesses in general can conduct their affairs; the second is of a more direct nature: the telecommunications industry worldwide is likely to grow in the coming years and the rate of employment and export growth in Ireland's telecommunications sector can be significantly accelerated if the key recommendations of the report are implemented. The Task Force envisages that between now and the year 2000 employment in telecommunications related industries can be increased from the current level of just over 8,000 to more than 17,000, and that the value of exports can be increased from the IR£200 million estimated today to almost IR£500 million.

Available from: FORBAIRT, Wilton Park House, Wilton Place, Dublin 2. EN.

Comment

No comprehensive review of IT, or its impact, has been carried out in Ireland and, therefore, it was necessary to select studies for review which appear to be most relevant to the subject.

The Report on the Telecommunications Industry was prepared by the national industrial development agency (FORBAIRT) and sets out a strategic framework to facilitate the medium- and long-term growth and development of the sector. Of considerable significance in this context will be the manner of restructuring of the national telecommunications company, Telecom Éireann, which is at present under consideration and is likely to involve part privatisation.

Recommendations for enhanced IT facilities have also been made in various reports concerned with regional development in Ireland (especially with regard to the underdeveloped regions on the West coast) but these have tended to form but one element in much wider regional strategies.

With regard to teleworking, and the position of teleworkers, a particular problem encountered in the preparation of the reports on this subject was the uncertain definition of the teleworker. As the reports point out there are two types of telework which are features of the Irish employment landscape. The first of these is home telework whereby workers who were formerly based in centralised establishments now perform similar work from home with varying levels of communication available to the central workplace. The second type of telework involves international or multinational companies in Ireland; for example, at present there are three multinational hotel chains who operate all of their centralised world-wide reservation and booking systems through bases in Ireland. The former type of worker is likely to perceive himself or herself as a teleworker because of the fact that he or she is no longer working at a fixed central location. However, the latter is unlikely to perceive himself or herself as anything other than a traditional employee working in an office or central location, even though the particular circumstances of this employment would not have been possible without the development of IT.

Federal Republic of Germany

Die Informatisierung der Arbeitswelt - Multimedia, offene Arbeitsformen und Telearbeit *(The Increasing Prevalence of the Use of Information and Communication Technologies at Work - Multimedia, Non-standard Forms of Employment and Teleworking)*

DOSTAI W (1995)

The author describes the inexorable advance of ICT applications into every sphere of the working environment. He charts the development of computerised equipment from its early applications which, due to their complexity and specialised nature, often rendered work organisation less flexible, to the new, so-called *multi-media* generation of processors. The user-friendly nature of contemporary ICT equipment has dramatically increased the potential for use in the workplace. There is an expectation that sectors involved in the production and utilisation of such equipment will experience a huge influx of investment which will, in turn, foster job creation. The author, however, insists that the latter is far from being a foregone conclusion, since it remains unclear where these jobs are to be created, and over what period of time. The application of advanced ICTs eases the move towards a globalisation of markets and as a result leads to greater competition, not only in product markets, but also between different forms of work organisation.

Unrelated to the advance of *multimedia* applications, non-standard, more flexible forms of employment have emerged and are becoming increasingly prevalent. These developments are due partly to changes in work organisation and content, but they also represent a response to increasing employee demands for autonomy and flexibility. Companies are operating in ever less stable markets and therefore expect greater adaptability from their employees.

The application of advanced multimedia technologies and the proliferation of new forms of employment is crystallised in teleworking. The latter has been the subject of debate for many years. The German government continues to be hesitant in promoting teleworking in its own employment programmes since the legal and practical problems associated with this form of working remain unresolved.

Available from: Mitteilungen aus der Arbeitsmarkt und Berufsforschung, Heft 4, 1995, Verlag W. Kohlhammer, Stuttgart. DE.

Comment

The essay by Dostal provides a comprehensive and up-to-date assessment of developments in the information society and their impact on employment. It evaluates different aspects of this development, ie new forms of self-employment, internationalisation, virtual enterprises and so on, against the background of the possibilities of ICTs and their impact on employment, employee qualifications and social security. The author is one of the most renowned and experienced analysts of the societal impact of information technology.

Hofmann and Saul present a comprehensive literature review on the impact of the increasing use of ICTs on employment using the most recent national and transnational material. This literature clearly indicates the uncertain nature of employment impact. The uncertainty is caused by the lack of data and the difficulty in defining the speed of diffusion of these technologies and dynamic competitive processes.

The report by Gerstenberger, Golinelli and Vogler-Ludwig forms part of a study commissioned by DGV, CEC, and the Task Force for Human Resources, co-ordinated by ifo (Munich) in co-operation with BIPE Conseil (Paris), Prometeia (Bologna) and the Institute for Employment Research (Warwick). In detailed studies of producer and user sectors, the effects of the diffusion of ICTs were assessed and placed in perspective with the assistance of the HERMES model. The main aim was the assessment of the quantitative effects of the diffusion of ICTs in two different scenarios. MERIT (Maastricht Economic Research Institute on Innovation and Technology) produced a companion volume which forecasts the qualitative employment impact of ICTs.

The report by Kalmbach and Kurz is based on a project undertaken at Bremen University on the theme of 'microelectronics and employment'. This study is characterised by an interesting, methodological approach and well founded empirical results.

The much utilised input-output approach is developed further through an endogenous treatment of investment activity. The best-practice method is included in the input-output analysis. In doing so the problems of assessing the impact of technology are not omitted. Changes to the price of new technologies and its effect on external trade are difficult to assess empirically. New technologies are characterised by the breadth of opportunity created, which makes it harder to assess their employment impact. There is no claim that a definite answer can be provided and care is taken that those which are given are founded on a solid methodological basis.

Qualitative und Quantitative Auswirkungen der Informationsgesellschaft auf die Beschäftigung *(The Qualitative and Quantitative Employment Impact of the Information Society)*

HOFMANN H, SAUL C (1996)

This study assesses the societal impact of moves towards a global information society. It looks at the impact on economy and labour market policies, of the liberalisation of telecommunications markets, the rapid expansion of communication networks, and the use of these technologies. These developments are particularly relevant as they are strongly linked to hopes for an improvement in the labour market situation. Using a review of German and international literature on the subject, the authors describe the most up-to-date findings as well as exposing gaps in the research.

The first part of the study considers the assumption that the use of new technologies can assist in the launching of new services into new markets, by evaluating the impact of ICTs on the production sector. All sectors expect an expansion in market penetration, and it is probable that the telecommunications sector, in particular, will increase its market share. However, at the same time, no

positive employment effects are anticipated.

It is argued that in sectors involved in the manufacture of IT investment and consumer goods, positive employment effects can only be expected if their competitive position is improved. A positive overall trend is expected in the printmedia and software industry.

The application of ICTs generates substantial changes in the areas of work organisation, training and the generation of added value. The study found that 16% of workers in Germany were using some form of computerised equipment in 1992. This represents a twofold increase over a period of seven years, and numbers are set to rise further. Significantly, the authors question whether these developments will lead to an increasing demand for training as new technologies are becoming more and more user friendly.

Available from; ifo Institut für Wirtschaftsforschung, Poschingerstr. 5, Postfach 86 04 60, 81631 München. DE.

The Impact of Information Technologies on Future Employment in the European Community

GERSTENBERGER W, GOLINELLI R, VOGLER-LUDWIG K (1991)

The aim of this report is to forecast the employment impact of information technology in the European Community up to the year 2005. In detailed studies of selected industries, the report assesses the direct effects of the increasing use of ICTs on production and employment, distinguishing between manufacturers and users of these technologies. It then goes on to evaluate the competitive position of European manufacturers of ICT equipment. Finally, the authors look at different scenarios for the diffusion of ICT using the HERMES model.

The most important impact of information technology will be the networking of existing *islands*, bringing about a further globalisation of markets and stimulating new products and services. While changes are likely to affect all economic sectors, the market in services will feel the impact most strongly.

One of the main conclusions is that the impact of information technologies on employment in the European Community is very much determined by the competitiveness of European ICT industries. Since a number of factors indicate a weak competitive position, the authors argue that a rapid diffusion of information technologies could, in fact, lead to job losses. Positive employment effects are more likely to be found in Japan and in the newly industrialised countries of South-East Asia. The potential for job creation is estimated at around 3.3 million, should Europe's competitive position improve, which the authors argue is not beyond the realms of possibility.

Any strategy to achieve such an improvement has to address both supply and demand side issues. An increase in the number of large European suppliers is required, and more resources have to be expended on innovation. The removal of barriers to EC internal trade, an opening of markets for third country competitors and an improvement in the business environment for ICT industries are equally of central importance.

Demand would be stimulated through the improvement of public data networks, ICT investments in the public sphere and through initial and continuing education.

Available from: ifo Institut für Wirtschaftsforschung, Poschingerstr. 5, Postfach 86 04 60, 81631 München. EN.

Chips & Jobs - Zu den Beschäftigungswirkungen Programmgesteuerter Arbeitsmittel *(Chips & Jobs - On the Employment Impact of Computerised Equipment)*

KALMBACH P, KURZ H D (1992)

The book by Kalmbach and Kurz evaluates who benefits and who suffers as a result of technological change. Is the use of new ICTs more likely to create or to destroy jobs? On the basis of a dynamic input-output model, the study produces calculations showing the impact of three different scenarios for the diffusion of ICTs. The main point of reference is the calculation based on so-called *best practice technologies* (the most advanced technologies on the market). Input and productivity coefficients make it possible to calculate employment and growth effects in a model. The simulations in this study were based on West German input-output statistics.

One of the most important findings of this study is that, with the rise in the use of ICTs, increases in labour productivity will not be entirely compensated for by increases in output. It is therefore to be expected that jobs will be lost as a result of the introduction of new technologies. While there are certain compensatory effects, these are insufficient to prevent related redundancies.

There are likely to be changes in the sectoral and occupational distribution of employment. Among the winners are sectors involved in the manufacture of ICT equipment, ie the computer and electronics industry; telecommunications, as a large scale user, is also included under this heading. Interestingly, the construction industry can also anticipate positive growth effects, resulting from growing investment and the limited potential for the application of ICTs in this sector.

Contrary to popular opinion, the report argues that unemployment is unlikely to increase as a result of the rapid introduction of ICTs. Rapid diffusion (over 15 years) can be shown to have less of a negative impact on employment than slow diffusion (30 years). Additionally, the positive output effects generated by rapid diffusion are much stronger.

This study categorically rejects calls seeking to prevent the introduction of new technologies, arguing that the adverse effects of such a strategy on competitiveness would be catastrophic. Nevertheless, policy needs to address the employment effects of technological changes, either by instituting policies for growth or a reduction in working time.

Available from: Metropolis Verlag für Ökonomie, Gesellschaft und Politik GmbH, Bahnhofstr. 16, 35037 Marburg. DE.

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Freeman C, Soete L (1991) **Gesamtwirtschaftliche und sektorale Analyse der zukünftigen Entwicklung von Beschäftigung und Ausbildung in der Europäischen Gemeinschaft unter dem Einfluß der neuen Informations- und Kommunikationstechniken *(An Economic and Sectoral Analysis of Future Training and Employment Trends in the European Union under the Influence of New Information and Communication Technologies)*** MERIT Rijksuniversiteit Limburg, PO Box 616, NL-6200 Maastricht, The Netherlands. DE.

France

Les Autoroutes de l'information, Rapport pour le premier ministre. *(Information Superhighways. A Report for the Prime Minister)*
THERY G (1994)

In 1994, the French government commissioned Gérard Théry, General Engineer of Telecommunications, to conduct a study on information superhighways. The aim was to examine the potential application of superhighways, and the capacity of French industry to produce and develop corresponding software and technology to respond to them. An attempt was also made to evaluate how information superhighways could contribute to the general tasks of government, such as national and regional development, education, vocational training, research, culture, public health and urban policy.

Théry was also asked to analyse how the roles of the main actors in the sector could be expected to develop and, lastly, to highlight the impact of information superhighways on employment. We are concerned, here, mainly with the latter aspect of the report.

Théry first places his remarks in an international context. Information superhighways represent a universal challenge, posing a threat to established positions in the telecommunications and information field and presaging major societal change, not least in terms of employment. Besides the improvement in the quality of infrastructures brought about by the information superhighways, account also has to be taken of the new activities and services which are likely to arise.

Théry regards equality of access to information as an important guiding principle. In the competitive regime which seems likely to develop, Théry considers that it is essential to ensure that a 'universal' service is developed. Such a service would provide every citizen with access not only to the telephone, but also to the full range of multimedia services. Furthermore, the objective of universality must be combined with ease of use at the technical level.

Théry observes that we are entering an intermediate period in which many new services - apart, of course, from mobile telephones - are not yet marketable. He argues that the market for low-speed telecommunication services is reaching saturation point, with the exception of the mobile phone market. The telephone and Minitel are nearing the end of their lives and the household multimedia equipment cycle seems unlikely to begin before 1997, and then only on condition that the necessary investment is made in high-speed infrastructures.

Decisions have, therefore, to be made and action taken on investment in information superhighways and multimedia in France, if employment in the telecommunications sector is not to be become unstable or even endangered.

The report claims that information superhighways will have both direct and indirect effects on employment. New employment opportunities can be expected as a result of the increased competitiveness of existing enterprises and from the development of new services. Prospects for new services exist in a large number of sectors, as a result of new modes of service delivery and consumption. In Théry's view, these represent new markets, not so-called substitution markets. He makes a comparison with the case of Minitel which is said to have led to the creation of 15,000 - 20,000 new jobs, only one third of which were with France Telecom, the major telecoms utility.

The changes have particular implications for the services sector, where communications and information-processing techniques are increasingly necessary. 'For every one franc of turnover achieved by the telecommunications utility, it is believed that some three francs will be generated in the service sector'. This, according to the study, is where the greatest potential for job-creation lies. Small companies in the service sector - though not exclusively in that sector - are set to be the major beneficiaries from these developments.

Non-repetitive services characterised by high labour costs and enjoying geographical advantages could be particularly productive for the French economy in employment terms. The risk of these jobs being exported to other locations is lower than is the case with services involving repetitive tasks with low added value.

This will only be the case, however, if rapid action is taken. The ability of executives to anticipate and react, with the

Comment

The publication of these two state-commissioned reports, one on information superhighways and the other on teleservices, has facilitated a debate on the information society and its consequences for employment. Though there are potential gains in employment resulting from the application of new information and communication technologies, both authors stress that such gains are not linked solely to the rate of dissemination of new technologies. Moreover, the authors do not claim that these technologies provide a solution to unemployment.

France is well positioned in terms of telecommunications and can, potentially, take advantage of current technological developments. However, the capacity of French companies to anticipate and react is crucial to the development of new activities and jobs related to the new communication technologies. To take a concrete example, Minitel, which was created by France Télécom 15 years ago and regarded at the time as a genuine innovation, has developed little in technological terms (even if its terminals have been improved). The arrival of the Internet is, therefore, likely to have a revolutionary impact on the current French scene, particularly as, unlike Minitel, it is a global technology. This illustrates both the high technical ability of the French telecoms utility, but also its inadequate commercial responsiveness, thus far.

In conclusion, if the take-off of the new communication technologies in France has been slow, this is also because French consumers do not assimilate technology quickly, as can be seen from the example of the mobile phone market, which has taken longer to emerge in France than in most other European countries.

support of political decision-makers, is crucial if the opportunities offered by digital communications are to be fully exploited in employment terms.

Collection des rapports officiels. Available from: La Documentation Française, 29 quai Branly, 75007 Paris. FR.

Le Télétravail en France. Rapport pour le Ministère de l'Intérieur et le Ministère des Entreprises et du Développement Economique *(Teleworking in France. A Report for the Ministry of the Interior and the Ministry for Business and Economic Development)*

BRETON T (1994)

One of the challenges facing economies in the coming years will be to increase the flexibility of work and to continually improve the competitiveness of the tertiary sector. In this context, teleworking is without doubt one of the modes of work organisation which will meet the new demands of service delivery and also respond also to the changes in markets.

Breton's report describes several aspects of teleservices. Firstly, 'tele-services companies' may be developed as companies providing tele-secretarial work, aiming to offer services performed with the aid of computer and telecommunications technology. Secondly, 'tele-deployment' may arise, involving the creation by companies of 'satellite' centres - booking tele-centres, tele-centres for archives, and so on - in a remote location and involving several teleworkers operating at a single site. Finally, 'teleworking' is set to develop, where an individual wage-earner or entrepreneur carries out their work away from the immediate area of the enterprise where the product of the work is to be delivered. A large part of this report is devoted to teleworking.

According to the author, there were around 16,000 paid teleworkers in France at the end of 1993. Breton estimates that by the year 2005, this figure will rise to between 300,000 and 500,000, although the Institut de l'Audiovisuel et des Télécommunications en Europe estimates the figure for the year 2000 at 200,000-300,000.

Whatever the projections, it is the case that teleworking is developing in a growing number of French companies. Many developments of this kind were established in 1992 and 1993, largely as a result of the economic situation which forced enterprises to review their budgets and, in some cases, their organisation.

In parallel with the Breton commission, an initiative aimed at encouraging companies, administrative bodies and local authorities to develop teleworking was launched in 1992 by DATAR (Délégation à l'aménagement du Territoire), a body which falls under the aegis of the Ministry of the Interior. More than 150 projects received support under this initiative, aimed mainly at promoting job creation in rural areas. The outcome of this work is not yet known, although an evaluation of it is believed to be underway.

The Ile de France region, where there is a high level of transport congestion, has set up a project, being carried out by CATRAL (Comité pour l'Aménagement du temps de travail et de loisirs de la région Ile de France). The aim is to create local tele-offices, equipped with telecommunications technology, around the Ile de France, to relieve the congestion of Paris and its suburbs.

Despite such initiatives, teleworking in France is developing slowly. The Breton Report concludes that teleworking will not spread at the rate of penetration of the new technologies, but at the rate of dissemination of the new modes of organisation. It also comments that, processes affecting the modification of work organisation can only be implemented pragmatically and with caution since they call into question all the traditional practices of the company and require a broad process of prior consultation between the various parties concerned. We are looking, then, at a complete overhaul of traditional ways of working.

Yet, in many ways, teleworking is attractive to the French: the various doorstep polls carried out have shown that more than half those interviewed were prepared to work full-time or part-time from home. However, in some cases, people fear that their temporary distancing from the workplace may lead to their receiving less recognition from their employer and may reduce opportunities for promotion. Moreover, the isolated situation in which the salaried teleworker may be placed presupposes a very high degree of responsibility, maturity and autonomy, together with good time-management.

A further report on teleworking by Gontier[1] also stresses that teleworking is not without its dangers for employees, who could lose their employment rights. It notes that contracts of employment tend to become more elastic and to slide towards a contract to provide a service. It is clear that there are serious, unresolved issues regarding the employment rights of teleworkers.

For companies, teleworking may present several advantages: reduction of costs; time and productivity gains; and improvement of the quality of work. However, the position of management may seem to be weakened as a result of the loss of day-to-day contact with workers and the greater autonomy of workers. Consequently, in order to counter the disadvantages of isolation and lack of contact with colleagues, some companies have opted for alternate teleworking, which is a compromise between working from home and working at the company's premises. This form of teleworking probably represents one of the best ways of gradually disseminating new modes of organisation throughout companies.

Given France's current infrastructures - particularly in telecommunications - it is possible for the whole of the economy to avail itself of teleworking. Its introduction should not, however, be regarded as a universal panacea, but rather as one of the expressions of economic, organisational and social change which are currently having a profound effect on all Western countries, as is stressed in the Breton Report.

Available from: La Documentation Française, 29 quai Branly, 75007 Paris. 1994. FR.

[1] Geneviève Gontier, Le télétravail, vague de fond ou engouement passager ? *(Telework - here to stay or just a passing craze?)* dossier no.4, new series, 1994. Available from: Centre d'études de l'Emploi, 29, Promenade Michel Simon, 93166 Noisy-le-Grand Cedex.

Italy

Innovazione e Occupazione nell'Industria Italiana. Un'analisi per Imprese e Settori *(Innovation and Employment in Italian Industry. A Firms and Sectors Survey)*

EVANGELISTA R (1995)

This article presents data from a survey which looked at the effect of innovative processes and products on employment and capital investment. The survey was carried out by Istat and CNR, in 1990, in over 8,220 innovative firms. It considers the effects of technological changes in the manufacturing sector, during the period 1980 to 1985.

The results show a clear displacement effect of labour by technology, but also highlight significant differences across sectors. Sectors heavily reliant on research and development, such as pharmaceuticals and aerospace, as well as specialised sectors, such as machine tools and electronic components producers, display positive employment effects as a result of the introduction of innovative processes. In contrast, the traditional manufacturing sector has been characterised by significant restructuring processes and job losses. Since the latter sector predominates in Italy, innovation has led to significant job losses.

L'industria - Rivista di economia e politica industriale, Anno XV, No 1, January-March 1995. Available from: Società Editrice il Mulino, Strada Maggiore 37, 40125 Bologna. IT, EN.

Tecnologia, Produzione Snella ed Occupazione *(Technology, Lean Production and Employment)*

MARIOTTI S (1995)

This paper discusses the effects of the development of IT and lean production on employment. The author argues that unemployment is resulting from the labour saving impact of new technologies and lean production, as well as from the slow rate of introduction of product innovations.

The production of new services based on IT is largely dependent on costly and long-term investments in IT infrastructures. According to the author, consumer training in the use of such technology is also required.

The report concludes that it is necessary to invest in information infrastructures and in research and development for product innovations, in order to increase the demand for new products and services. Long-term investment in human resource development is also seen to be important.

L'industria - Rivista di economia e politica industriale, Anno XV, No 2, April-June 1995. Available from: Società Editrice il Mulino, Strada Maggiore 37, 40125 Bologna. IT. EN abstract.

Technology Policy and the Regional Demand for ICT Skills. National Report: Italy

VIVARELLI M (1994)

This report describes the development of information and communications technology in Italy and examines its impact from a regional perspective. It is noted that Italy appears to be falling behind other countries, particularly in terms of the automation of production and office automation.

Within Italy, the southern region lags behind the north in terms of innovative IT developments. Indeed, this 'technological' gap can be seen to be a more important factor explaining the general underdevelopment of the Mezzogiorno than the different levels of economic development.

The application of computer-based technologies, in both manufacturing and services sectors, has brought about extensive changes in the Italian education and training systems. In the past two decades, new courses have been developed for schools and the number of vocational courses devoted to electronics and informatics increased. However, although such courses are now more widely available, they do not necessarily convey the most up-to-date knowledge, nor are they aimed specifically at the needs of adults.

Technology Policy and the Regional Demand for ICT Skills the Case of Information and Communication Technology: Austria, Greece, Ireland, Italy Synthesis Report by W Blumberger and Dietmar Nemeth. July 1994. Available from: M Vivarelli, Università Cattolica del Sacro Cuore, Facoltà di Economia e Commercio, Sede die Piacenza, Via Emilia Parmense 84, I-29100 Piscenza. EN.

Effetti Occupazionali del Progresso Tecnico nel Settore delle Telecomunicazioni *(Occupational Effects of Technological Change in the Telecommunications Sector)*

FREY M, VIVARELLI M (1989)

This paper is organised in four parts. The first considers the structure of the telecommunications sector and its evolution in recent years, whilst the second

Comment

In Italy, there is very little research on the effects of information technology on employment.

The majority of the available research relates to either innovation or to the industrial policy aspects of the telecommunications sector. This interest is conditioned by the current transformation of the sector in Italy, including liberalisation of the market, the privatisation of the public sector, the reform of the Telecommunication Ministry and the creation of an anti-trust commission.

The Istat-CNR survey is widely used in Italy to examine the dissemination of innovative practices. However, there is no analysis by type of innovation, nor is there a consideration of the effect of these developments on employment, particularly in terms of type of jobs lost and/or gained.

Vivarelli, and Frey and Vivarelli consider the employment effects of developments in telecommunications. Vivarelli comments on the way in which the Italian education and training systems have responded to IT developments. However, as Frey and Vivarelli point out, the development of Italy's telecommunications sector continues to lag behind that of other European countries. Cainarca et al also highlight the shortage of skilled technical personnel, particularly in the manufacturing sector.

analyses the sector's occupational impact. The third part provides a more detailed analysis of differences in labour force composition by gender, age and qualification. The final part presents an analysis of the literature on the occupational effects of technological innovation. The paper is based on five case studies of large Italian firms in the telecommunications sector.

The telecommunications sector is seen to play a strategic role in the economic development of a country. The Italian telecommunications sector is relatively under-developed compared to other European countries, although its market potential is high. The main reasons for this are the lack of high levels of investment, necessary for research and development, and the need to revise national regulatory frameworks in order to stimulate the sharing of research and development costs with international partners.

The telecommunications sector in Italy experienced substantial development in the early 1970s, followed by a halt in growth in the later 1970s. Unemployment was avoided by Government intervention and in the 1980s, the sector was restructured in order to meet increasing demand.

After 1985, large scale redundancies were again threatened as a result of the introduction of labour saving techniques. This situation was exacerbated by the growth in production capacity that had taken place in the 1970s. Unemployment in the telecommunications sector was less dramatic than elsewhere because of the labour intensive nature of the installation and maintenance processes. However, there was a rise in unemployment in the software production sector.

Those workers in telecommunications who did lose their jobs tended to be the least qualified blue collar workers, with low levels of education and training and who also included a high proportion of women. Natural wastage was insufficient to absorb the loss of jobs, even though the numbers of graduates and white collar workers rose as a result of increasing research and development activities. The loss of jobs was concentrated in southern Italy, which has a relatively high proportion of production plants employing blue collar workers.

Quaderni di economia del lavoro, No 38. Available from: Franco Angeli, viale Monza 106, 20127 Milano. IT.

Nuove Tecnologie ed Occupazione. L'impatto dell'Automazione Flessibile sull'Occupazione nell'Industria. Un Indagine Microeconomica *(New Technologies and Employment. The Effect of Flexible Automation on Employment in the Manufacturing Sector. A Microeconomic Survey)*

CAINARCA G C, COLOMBO M G, MARIOTTI S (1991)

This article analyses the effects on employment of the introduction of flexible automation in the manufacturing sector. It was carried out by a team of economists and engineers and is based on case studies and data from postal and telephone questionnaires. The 12 case studies were used to examine the skills required for the introduction of flexible automation in metalworking and the mechanical industry. The questionnaire, administered to 106 firms, aimed to look at job losses arising from the introduction of flexible automation.

The findings indicate that the development of computer-based technologies leads to a 2.6% reduction in total employment (4% for blue collar workers). It is argued that unemployment related to technological innovations will double by the end of the 1990s.

The results also suggest that technological developments will lead to an upgrading of skills in highly skilled jobs and downgrading of skills for manual workers in traditional sectors. Most job losses are expected in assembly and production processes. The workers affected are unlikely to find employment elsewhere, since it is very difficult to provide them with effective re-training. However, the growth of flexible automation is expected to increase the demand for highly skilled technicians (engineers, experts in computer science, etc), who are in short supply.

Quaderni della Fondazione Adriano Olivetti. Available from: Fondazione Adriano Olivetti, Via Zanardelli 34, 00186 Rome. IT.

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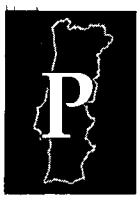
Bozzetti M (1995) **Politica industriale e ICT: le reti avanzate di comunicazione *(Industrial Policy and IT: Advanced Information Networks)*** Soiel International srl. Via Martiri Oscuri 3, 20125 Milano. IT.

Pacelli L, Rapiti F (1995) **Struttura occupazionale e mobilità del lavoro nei settori a diversa intensita' innovativa. Primi risultati da un'analisi empirica *(Employment and Mobility of Workers in Sectors with different Intensity of Innovation. First Evidence from a Panel of Workers and Firms)*** *L'industria - Rivista di economia e politica industriale, il Mulino, Anno XV, No 1, gennaio-marzo.* Società Editrice il Mulino, Strada Maggiore 37, 40125 Bologna. IT. (EN abstract).

Leoni R (1995) **Carenze di risorse umane, innovazioni tecnologiche e processi di aggiustamento *(Human Resource Shortage, Technological Innovations and Adjustment Processes)*** *L'industria - Rivista di economia e politica industriale, il Mulino, Anno XV, No 2, April-March.* Società Editrice il Mulino, Strada Maggiore 37, 40125 Bologna. IT (EN abstract).

Taddei Elmi G (1992) **Informatica e diritto del lavoro, spunti di riflessione *(Information Technology and Labour Law. Some Ideas)*** *Economia e diritto del terziario, Franco Angeli, Anno 4, no 1.* Franco Angeli, v. le Monza 106, 20127 Milano. IT.

Various (1995) **Telecomunicazioni: dieci anni pieni di promesse *(Telecommunications: Ten Years of Promises)*** *Politica ed economia, no 3-4, maggio-agosto.* Politica ed economia, via Mentana 2, 00185 Roma. IT.



Portugal

Estudo Nacional de Literacia *(National Literacy Study)*

BENAVENTE A, ROSA A, FIRMINO DA COSTA AND AVILA P (1995)

A research team from the Social Studies Institute, presents the preliminary findings from a study evaluating the reading, writing and arithmetic skills of the Portuguese population aged between 15 and 65. The authors used both quantitative and qualitative methods including a sociographic study of reading, writing and arithmetic skills, a survey based on self-assessment, evaluative tests of these skills and in-depth studies of specific groups to analyse styles of handling written information.

The main concepts of literacy are discussed; literacy is defined as being the ability to handle written information in everyday life. Following an analysis of similar studies carried out in the USA and Canada, the authors established a literacy scale for Portugal ranging from level zero, which does not exist in the countries where similar studies have been carried out, but which equates to a total inability to carry out any task, to level four.

The distribution of the population over the five literacy levels is as follows: level 0 - 10.3%; level 1 - 37%; level 2 - 32.1%; level 3 - 12.7% and level 4 - 7.9%.

The report draws a number of conclusions which indicate a comparatively low level of literacy. The authors argue that the socio-professional composition of the Portuguese population reflects a profile made up of wage-earners with meagre economic resources and low skill levels, which is often combined with low levels of literacy. This is aggravated by the fact that, compared to other European countries, the Portuguese do not read a great deal of books, magazines or newspapers. The highest literacy scores were obtained for what the authors term 'informal' reading practices, such as the reading of captions on television or information about products and services. The most frequent written activities were writing messages and filling in forms. Arithmetic skills are mainly used to make purchases and in the management of the family budget. At work, the level of application of various skills differs according to socio-professional category.

Available from: ICS, Edificio ISCTE, Avenida das Forças Armadas, P-1600 Lisboa. PT.

Comment

In Portugal, the employment implications of the Information Society are not, as yet, a topic that is highly developed. This lack of forward thinking may be attributed to either the slow pace at which new technologies have been introduced within most organisations or possibly to the peripheral position that Portugal holds in terms of hardware and software production and the production and dissemination of data for different information systems.

However, if we look at the transformations taking place in the telecommunications sector,[1] we can see that, since the early 1990s, Portugal has been engaged in a process of acceleration due to the availability of new services - mobile phones, paging, trunking, value-added lines, data communication and so on. This process is linked to the liberalisation of this sector, which has enabled new operators to enter the telecommunications market.

In spite of these changes, employment in this sector has not risen and represents only 0.5% of total employment.[2]

The sectors most in favour of the adoption of new information technology (IT) are banking, with the spread of ATM terminals, and commerce and services, which have introduced automatic forms of payment.

The jobs created directly by the information society are concentrated in a small number of occupations, principally those linked to computing and telecommunications. The increase in the demand for staff in these particular occupations has led to them being valued more highly.

The spread of IT can, in some cases, produce an unfortunate side-effect: the exclusion of part of the population from either access to the world of work or access to information and leisure. This risk is all the greater because the Portuguese population is characterised by low skill levels and low educational attainment.

To avoid new social divisions of this kind, training in IT has to be extended into initial and on-the-job training. Individuals also have to be equipped with the skills to master the available information. The contributions chosen reflect this concern. The CESO paper shows that, in spite of the efforts made to improve the skill levels of workers, the absence of active participation by the social partners, coupled with the specific nature of the sector, have led to slow progress in the restructuring process.

The success of such restructuring depends on the creation of measures which will stimulate independent shopkeepers to speed up the modernisation process and, in particular, to improve the skill levels of their staff.

Efforts must also be made to identify the market niches in which the competitive advantage of independent shops enables them to respond to the changes which are currently taking place, associated with the proliferation of large supermarkets.

The national literacy study carried out by the Social Studies Institute is an important tool to generate data on the educational and skills profile of the Portuguese population and highlights the difficulties which still persist in the 1990s in the areas of reading, writing and arithmetic.

The use of similar methodological approaches to those used in other studies in the USA and Canada enables comparisons to be made between the different results.

1 *An EU-sponsored study is currently being carried out, with Portuguese participation, to analyse the impact on employment of the liberalisation/privatisation of the telecommunications sector*

2 *ICP (1995) Estatísticas das Comunicações 1990-1994, Lisbon, ICP. Instituto da Informática (1994) Impactes das Tecnologias da Informação na Administração Pública, Lisbon, II.*

continued on page 36

Analise das Tendencias e dos Obstáculos à Coerência Dinâmica entre os Sistemas de Formação, as Necessidades de Formação Profissional e os Partenariados Sócio-educativos *(Analysis of Trends towards and Obstacles to Dynamic Cohesion between Training Systems, Training Needs and Socio-educative Partnerships)*

AMBRÓSIO T (1995)

This study, which was sponsored by the CNE (National Education Council), analyses the trends within - and links between - training systems, vocational training needs and educational partnerships.

This critique of published material aims to characterise the Portuguese training system, identify methodologies for the analysis of such systems and highlight the importance of co-operation between the different social partners in improving education and training policies.

The study stresses the need to improve the effectiveness of vocational training by planning the provision of skills training in a way which meets the employer's needs.

The three main conclusions drawn from this study are firstly, that in spite of the increasing diversification of the education and training system, which is linked to the increasing vocational element of education, better links still need to be established with the world of work. Secondly, it is argued that Portugal still lacks the basic analytical tools such as a directory of career patterns, and national strategic models have yet to be identified. Finally, co-operation with the social partners must be improved in order to achieve greater levels of participation in the definition of training requirements.

The authors conclude that policy should seek to promote the pro-active management and provision of skills training to meet the needs of employers. In order to achieve this, a concerted effort is required to increase current skill levels in the workforce and specific tools will have to be created to ensure ongoing human resource management providing employment specific training. One such tool is the directory of career patterns which has, for the most part, already been developed by other EU countries, and which is crucial to the implementation of a sustained human resources development policy.

Available from: CNE, Rua Florbela Espanca, P-1700 Lisboa. PT.

Emprego, Estrutura Profissional e Formação no Sector do Comércio a Retalho em Portugal *(Employment, Occupational Structure and Training in the Independent Retail Sector in Portugal)*

CONCEIÇÇO CORDEIRO M, KÓVACS I, BRANDAO MONIZ A, DIAS I AND LAVADINHO J (1995)

This document presents the findings of a study carried out within the framework of the FORCE programme which sought to assess and compare recent developments in the independent retail sector in the European Union. The aim of the project was to establish the consequences of these developments for vocational training policy. The Portuguese national case study was carried out by a team of researchers from the CESO research centre. The national picture was compiled using available statistical data and case studies, in particular, good practice studies of enterprises involved in innovative vocational training projects.

The Portuguese retail sector is characterised by a large number (11.8 per 1,000 inhabitants) of small scale establishments (2.3 workers per shop) in Portugal. The majority of these establishments belong to the food sector, which accounts for more than 55% of all independent retail outlets.

The sector is undergoing change, largely as a result of competition from large supermarkets which has resulted in an increased need for modernisation, and an improvement in the quality of services provided. It is, therefore, of paramount importance that the low skill levels of workers in this sector are addressed.

Investment in training is the strategic requirement to ensure an increase in competitiveness by independent shopkeepers, but the specific features of the sector, characterised by small family businesses, means that it is difficult to identify and satisfy training needs.

Available from: Inc Force Portugal, Praça de Londres, 7, P-1000 Lisboa. PT.

Sweden

The 1995 Medium Term Survey of the Swedish Economy

MINISTRY OF FINANCE (1995)

This report is part of a series of surveys of the economy published every two or three years since 1948. The surveys are undertaken by the Ministry of Finance, although their terms of reference are not specified by the Government, and are intended to provide a foundation for future policy decisions. The report deals mainly with the question of how to regain and maintain growth in the Swedish economy. However, several annexes to the report comment on the impact of the information society on employment.

According to the report, the supply of expertise in natural sciences and technology is unlikely to keep pace with demand, unless measures are instituted to increase the number of science and engineering graduates, which is currently lower in Sweden than in most OECD-countries.

The report also argues that the Swedish telecommunications system is well developed compared with other countries and that the price of telecommunication services is one of the lowest in the OECD. Access to computerised telephone exchanges and mobile telephone networks is virtually universal and more advanced, high-capacity networks for digital communication are being installed. However, the report states that it is still too early to assess the economic potential of investment in the further development of electronic highways. Linking up a sufficient number of households and firms is difficult and costly, but Sweden's geography and the strength of its telecommunications sector provide strong arguments for exploring such developments.

Available from: Fritzes, Kundtjänst, S-106 47, Stockholm. SV, EN.

Sveriges ekonomiska geografi. Bilaga 5 till Långtidsutredningen 1995 *(Sweden's Economic Geography. Annex 5 to The 1995 Medium Term Survey of the Swedish Economy)*

NUTEK (NATIONAL BOARD FOR INDUSTRIAL AND TECHNICAL DEVELOPMENT) (1994)

This report identifies the possibility of long-term economic growth in the Swedish economy from a regional perspective. It is expected that improvements in information technology will create new opportunities for more peripheral regions, while the advantage of the central regions will probably be strengthened.

Although the use of telecommunications may decrease the demand for personal transport and thus lessen the negative impact of large distances for regions on the periphery, developments to date suggest the opposite to be the case. The increasing complexity and internationalisation of production have required improved personal transport systems, despite continuously improving telecommunications.

Available from: Fritzes, Kundtjänst, S-106 47, Stockholm. SV.

Teknologiska system och ekonomisk tillväxt. Bilaga 10 till Långtidsutredningen 1995 *(Technological Systems and Economic Growth. Annex 10 to The 1995 Medium Term Survey of the Swedish Economy)*

CARLSSON B, BRAUNERHJELM P (1994)

This report analyses the impact of different technological systems on the competitiveness of Swedish manufacturing industry. The study focuses on several industrial sectors, including electronics and computer technology in both the private and public sectors. Academic research on the manufacture of electronic industrial products started late in Sweden, at least ten years after the United States. Despite this, Swedish suppliers have been successful in certain areas, including the public sector, for example, in the development of tele- and radiocommunications.

The report claims that the most important role for Government policy is to encourage improvements in education and academic research. Policy also needs to facilitate the creation of new enterprises and the flow of information between users, suppliers, academic institutions, research institutes, employer and employee organisations.

Available from: Fritzes, Kundtjänst, S-106 47, Stockholm. SV.

Svenskt näringslivs teknologiska specialisering. Bilaga 11 till Långtidsutredningen 1995 *(Technological Specialisation in Sweden's Business Sector. Annex 11 to The 1995 Medium Term Survey of the Swedish Economy)*

NUTEK (NATIONAL BOARD FOR INDUSTRIAL AND TECHNICAL DEVELOPMENT) (1994)

This report describes the development of technological resources in Sweden's business sector. It concludes that technological development in international networks is now well advanced, compared to the situation ten years ago.

Following strong growth in the first half of the 1980s, technological investments in Swedish industry have declined markedly. Research and development expenditure has decreased in real terms, except in the telecommunications and pharmaceuticals sectors.

From 1985 to 1990, there was a growth in the numbers of qualified technicians and engineers in the business and construction sectors. During the recession in the early 1990s, there was a fall in the rate of growth in the construction sector, although the growth continued at a slower pace in the IT-related sector. It is primarily the IT sector which is pushing for an increase in technical expertise among employees.

Available from: Fritzes, Kundtjänst, S-106 47, Stockholm. SV.

IT-kommissionens arbetsprogram 1995-96 *(The 1995-96 Work Programme of the IT-Commission)*

VARIOUS AUTHORS (1995)

This report is written by the IT-Commission for the Promotion of the Widespread Utilisation of Information Technology (referred to as the IT-Commission), appointed by the Swedish government in 1995. The purpose of the IT-Commission is to advise the Government on strategic issues in IT.

As regards the relationship between IT, working life and the organisation of work, the Commission argues that the use of IT means that new types of contract and agreements between labour market partners need to be developed and that work will increasingly be judged on results, rather than on time devoted to it.

Distance work, temporary and part-time work and continuing education will become more common. Such developments require changes in the skills available in the labour market and in labour law. Although IT has created new employment possibilities for many disabled people, the Commission claims that many more disabled people could hold IT-supported jobs and that this goal must have a high priority.

However, the introduction of IT can also create problems, such as potential exclusion from the labour market of those people who do not master the new technology. It is therefore important to promote developments where IT is used to facilitate work for all people.

Available from: Fritzes, Kundtjänst, S-106 47, Stockholm. SV. Summary in EN available from: IT-Kommissionens Sekretariat, Statsrådsberedningen, S-103 33 Stockholm.

Vilka konsekvenser får IT för vårt sätt att organisera vårt arbete? *(What Are the Consequences of IT for the Way We Organise Our Work?)*

VARIOUS AUTHORS (1995)

This report was produced by the Royal Swedish Academy of Engineering Sciences to examine how IT affects business and labour market relations. It is implied that some of the rules, procedures and institutions that currently characterise working life are obsolete. Concepts like workplace, working time and employer are becoming less and less meaningful at a time when many people have flexible work patterns, performing their tasks at varying times and in varying places.

The large and growing number of workers who are already in such new circumstances are insufficiently covered by unemployment benefit funds, industrial injury insurance and other institutional arrangements that were designed for labour market relations relevant for the old industrial society.

The report concludes by suggesting the need for an overhaul of the legislation relating to distance work and a programme that encourages the social partners to find appropriate and effective arrangements for distance work, within existing labour market legislation.

Available from: IT-kommissionens sekretariat, Statsrådsberedningen, S-103 33 Stockholm. SV.

Informationsteknologi (IT). En översiktlig regional redovisning *(Information Technology (IT). A Brief Regional Account)*

WESTERMARK T, ELFVING A (1994)

This report provides an account of the infrastructural prerequisites for the use of IT in different parts of the country. The main question from a regional policy point of view is how the availability of IT could be increased and how the cost of introducing IT in different parts of the country could be levelled out.

The development of the telephone system AXE has been more rapid in more densely populated areas, although the difference between the northern and the southern parts of Sweden is small. However, there are large price differences for access to the ISDN-net, depending on where access is made. Prices are higher in the sparsely populated areas, especially in the northern part of Sweden.

Cellular telephone networks have rather uniform prices throughout the country. The older analogue network covers almost the whole country. Expansion of the digital GSM-network is at present restricted to the regions north of Stockholm, further south and along the north-east coastline.

There is a positive link between the establishment of an ISDN-zone and the development of new enterprises in the services sector, with regional policy support. At present, it is still mainly the simpler type of network services (reliable telephone and fax connections) that are in demand. It is only the larger firms which require additional data transmission services. The report argues that increased ease of access to more sophisticated networks is likely to increase demand, since the services will become more attractive, in terms of both price and facilities.

The report states that Sweden is today one of the leading countries in terms of IT-infrastructure. However, it is important that the expansion of Sweden's IT-infrastructure does not slow down, since there is a need to ensure that all regions have access to the different communication networks.

Available from: NUTEK, S-117 86 Stockholm. SV.

Comment

The advances in telecommunications that have been made in Sweden are emphasised in this collection of papers. There have been suggestions that such developments may assist the more remote and less populated regions of Sweden. However, the NUTEK report 'Sveriges ekonomiska geografi' argues that technological advances, far from bringing about less dependence on personal transport systems, have actually required improved physical transport arrangements.

Carlsson & Braunerhjelm point to the importance of Government policy in bringing about improvements in education and training in IT. There are signs that, without such efforts, Sweden is unlikely to be able to meet its needs for technical and engineering skills in IT.

The IT-Commission highlights new ways of working, which are made possible by IT and which may be well-suited to Sweden's circumstances. Several of the articles here comment on the need for amendments to labour law to provide appropriate protection for teleworkers and other atypical workers. Westermark & Elfving provide a summary of the infrastructure necessary for Sweden to take full advantage of new ways of working, using IT. It is noted that the IT infrastructure in Sweden is ahead of that in other countries, although it requires further development.

20 sekunder till jobbet. Distansarbete från bostaden *(20 Seconds to Work. Distance Work from Home)*

FORSEBÄCK L (1995)

This report is published by Teldok, a documentation centre of Telia AB, the largest Swedish telecommunications corporation. Distance work is of particular relevance for Sweden, given that it is one of the most sparsely populated countries in the world. The telecommunications market in Sweden is the most deregulated in Europe and in international terms, the costs for telecommunications services are very low.

Ten distance workers were interviewed about the advantages and disadvantages of working in this way. Their main conclusion is that both employers and employees need to be able to manage the new social situations that arise from distance working.

The report also analyses Swedish labour law and agreements between the social partners in relation to the requirements of distance work. It concludes that current labour law constrains, rather than facilitates the development of distance work. Suggestions for changes in legislation are presented.

Available from: DirektSvar, Tel: +46 8 23 00 00. SV.

Datorvanor 1995 *(Computer User 1995)*

HINTZE A (1995)

This report is based on a telephone survey, of over 10,000 people, on computer usage in Sweden. It follows similar surveys carried out in 1984 and 1989.

There are just under 5.2 million people in Sweden aged between 16 and 64. Of these, approximately 3.1 million (60%) use, or have used, computers at work or in their homes. Approximately 2.1 million, or just over 50%, of all employed individuals aged between 16 and 64, use computers in their work, while just under 1.4 million people in this age group use computers in their homes.

At work, computers are used primarily for word processing and for straightforward graphics work. Writing, management of private finances, club/association-related activities, and so on, are the most common spheres of home use. About half a million use computers at home for education and training and a further 100,000 home users would like to use them for this purpose.

Men use computers to a greater extent than women. This is particularly noticeable in respect of home use. Just over 30% of all men aged between 16 and 64 use computers at home, while approximately 22% of women do. About 17% of 16 to 64 year olds who use a computer at home also use a modem to link with other computers.

Around 42% of people in employment who use computers at home, use the home computer as part of their work. This means that almost half a million people use the computer at home in order to partly, or completely, carry out their work.

However, most of the people who use a home computer do not work very much at home. Around 81% of the people who use a home computer spend 25% or less of their working time working at home.

Available from: SCB Förlag, S-701 89 Örebro. SV, EN summary.

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NUTEK (National Board for Industrial and Technical Development) (1994) **Näringslivets tillväxtförutsättningar till 2010. Bilaga 6 till Långtidsutredningen 1995** ***(Conditions for Business Sector Growth up to 2010. Annex 6 to the 1995 Medium Term Survey of the Swedish Economy)*** Fritzes, Kundtjänst, S-106 47 Stockholm. SV.

Various authors (1994) **Informationsteknologin - Vingar åt människans förmåga** ***(Information Technology - Wings for Human Capacity)*** Fritzes, Kundtjänst, S-106 47 Stockholm. SV.

Carlberg Jr M (ed) (1995) **Factors for Success in European National Systems for Support to Technology Based Enterprises** NUTEK, S-117 86 Stockholm. SV, EN.

Various authors (1995) **Teletjänster och IT-användning i Sverige** ***(Teleservices and the use of IT in Sweden)*** NUTEK, S-117 86 Stockholm. SV.

Holloway L (1994) **Telestugor, telearbete och distansutbildning, Rapport nr 90** ***(Telecottages, Telework and Distance Education),*** *Report no 90E,* DirektSvar (Tel: +46 8 23 00 00). SV, EN.

Wolvén O, Olsson S, Bengtsson J, Ekholm S, Nordin T (1994) **Att ta steget in i framtiden. Rapport nr 1994:3** ***(To Take the Step into the Future)*** *Report no 1994:3,* Mitthögskolan, S-831 25 Östersund. SV.

Finland

Suomi tietoyhteiskunnaksi - Kansalliset linjaukset *(Towards an Information Society in Finland - National Lines of Action)*

MINISTRY OF FINANCE WORKING GROUP (1994)

This is the final report of a working group commissioned by the Ministry of Finance to draw up a national action plan to help transform Finland into an information society. The report argues that, to start to tackle long-term problems, the development of information and communication technologies (ICTs) and the networking of activities using such technical means is imperative.

Proposed actions are grouped under the following objectives. Firstly, information technologies and networks should be introduced as major tools for renewing activities in the business and public sectors. The report argues that there needs to be a particular emphasis on new database services, access to networks, messaging and videotex services, and so on.

Secondly, the information sector should be developed into an important branch of industry, with an emphasis on software production and the development and dissemination of new information products. The third objective seeks to improve professional skills in the field of information and communication technologies (ICTs), including pilot IT studies of 'teleuniversities'.

The report presents a fourth objective which is to provide each citizen with the basic skills and technical opportunities for using the services of the information society. Finally, improvements are sought in the range of information services, through well-developed and moderately priced basic services.

Available from: Ministry of Finance, Box 286, FIN-00171 Helsinki. FI.

ICCP Reviews of Information and Communication Policies: Finland

OECD (1992)

This report is the first review of information and communications policy undertaken by the OECD Information, Computers and Communications Policy Committee (ICCP). It is based on a 1992 survey and provides an outline of Finnish policies on information and communication technologies and their use. It also discusses issues such as software and information services development, R&D and education.

The report argues that Finland has reached advanced levels of development, implementation and diffusion of telecommunications systems and services. However, little attention has been paid to the service sector and how it might benefit from greater use of IT. This is in contrast to ambitious national efforts to improve the economic performance of the manufacturing sector, through the use of modern IT products and concepts.

The report concludes that the efficiency and quality of the Finnish system of IT training is high. Since 1985, IT training has been introduced throughout the education system supported by a programme of IT training for teachers. The report emphasises that the creation of a national strategy for life-long IT training, based on extensive co-operation between the public and private sectors is essential.

Available from: OECD Publications, 2 rue André-Pascal, 75775 Paris Cedex 16, France. EN.

Työelämän laatu ja tasa-arvo *(Quality of Working Life and Equality)*

LEHTO A M (1991)

This document was prepared as a supplement to a Committee Report on Working Conditions. It looks at developments in patterns of work, working conditions and job satisfaction from 1984 to 1990. The report considers the effects of new information technologies on job content and working conditions and assesses their implications for equal opportunities. Empirical data are taken from surveys on working conditions, carried out by Statistics Finland.

The 1984 survey suggested that, for manual workers, there had been an increase in the number of tasks, which had become more demanding. As a result, mental stress in the workplace had increased. Among white collar employees, there was evidence of increased polarisation between those in the lower and higher echelons. For the lower levels, work reorganisation led to a downgrading of skills as well as to an increase in job dissatisfaction. On the other hand, there was also a belief among lower level employees that their opportunities for training and job promotion had improved. In respect of working conditions, IT users were more likely to feel stressed due to pressures on working time.

The most significant finding from the 1990 survey was that the repetitiveness of tasks among lower level white collar employees was no longer associated exclusively with the use of IT. The diffusion of IT brought about increasing autonomy of work for all sections of the work force.

Statistics Finland, Studies No. 189. Available from: Statistics Finland, FIN-00022 Helsinki. FI.

The Impact of New Technology by Occupation and Age on Work in Financial Firms: A 2-year Follow-Up

HUUHTANEN P, LEINO T (1992)

In this paper, expectations and actual experiences of using new IT applications were analysed as part of a longitudinal study carried out between 1985 and 1987. The study covered four banks and two insurance companies where new integrated and flexible on-line systems were implemented in the mid-1980s. The subjective assessments of how respondents thought that they had mastered the applications were considered.

In general, new IT applications were thought by users to have increased those characteristics of work which are important for mental well-being. Twelve months after implementation, the actual experiences differed significantly between age groups. Younger employees felt more able to make use of their abilities and felt more productive; they were more interested in work; tasks seemed easier; and they reported an increase in their ability to organise their work. In customer services, younger employees perceived work as being less monotonous. However, it may be that younger people were able to select the more demanding, and therefore less monotonous, tasks.

As regards the perceptions of employees of how well they mastered the applications, actual experiences were more positive than expectations. This was the case for all age groups, but was most marked amongst young office workers and middle-aged employees in customer services. However, the proportions of those who felt they mastered the applications well were lower in 1987 than in 1985, again for all groups of employees.

International Journal of Human-Computer Interaction, Vol 4, No 2, pp123-142. Available from: ABLEX Publishing Corporation, 355 Chestnut Street, Norwood New Jersey 07648, USA. EN.

Etätyön soveltaminen henkilökohtaisella, tuotanto-organisation ja työmarkkina-järjestelmän tasolla. *(Applying Telework: Viewpoints Related to Individuals, Organisations and Labour Market Systems)*

PEKKOLA J (1993)

This study of teleworking was carried out by the Working Environment Department of the Ministry of Labour. The central part of the study is made up of interviews and an analysis of data from Finnish Telecom and Nokia and comparisons are made with Sweden and the USA.

The results suggest that, in Finland and Sweden, the changes associated with the introduction of teleworking are mainly beneficial to teleworkers. Teleworking is usually based on a voluntary arrangement, with job contracts and pay remaining unchanged. Mental stress appears to be declining, except where there is a considerable increase in working hours, which tends to occur during the initial stages of teleworking arrangements. According to the case studies, teleworking leads to an improvement in the content of work. Furthermore, the lack of social interaction was not felt to be a problem for teleworkers.

In Finland and Sweden, telework applications are used mainly by the primary work force. The typical teleworker is a skilled, young or middle-aged man in a white collar occupation. When these employees move to teleworking, their working conditions are likely to improve or remain unchanged. For the peripheral workforce, however, teleworking may present a threat to employment protection and social security.

The study concludes by pointing out that any problems associated with teleworking are in the following areas: methods of guidance; the costs of information systems and equipment; and the possibility of excessive working hours.

Available from: Ministry of Labour, Publication Sales, Box 536, FIN-33101 Tampere. FI.

Tietotekniikka, työtehtävät ja ikä *(Information Technology, Job Tasks and Age)*

HUKKI K, SEPPALA P (1993)

This report presents the results of a survey on the experiences of using IT. It focuses on the influences of IT on job content and stress at work. The survey was carried out among both IT experts and employees in three local government offices in Helsinki.

The results show that staff attitudes towards IT were mainly positive, as were their assessments of the influence of IT on their future work. Problems during the planning and implementation stages of IT programmes were related mostly to the way in which changes were introduced, for example, a lack of employee involvement in the planning phase and insufficient training in automatic data processing (ADP).

There was concern about the effects of the lack of ADP skills among staff aged over 50. Older staff also reported problems with frequent changes in IT work practices and mental stress resulting from the increasing difficulty of tasks. The authors emphasise the vital importance of a user-oriented, interactive approach to the planning of information systems and applications. They also highlight the importance of giving advance notice of changes and the need to plan training so that it takes place near the time of implementation. The significance of giving personal advice and support during the training and implementation phases is equally emphasised.

Available from: Tyoterveyslaitos (Finnish Institute of Occupational Health), Laajaniityntie 1, FIN-01620 Vantaa. FI.

Comment

There is relatively little material on the employment implications of the increasing diffusion of ICTs in Finland. Nevertheless, in 1994 the Ministry of Finance drew up a national action plan designed to move Finland closer to being an 'information society'. The proposed action plan was included in the political programme of the new government, and the Ministry of Finance was required to prepare a detailed programme for its implementation between 1995 and 1997.

This national action plan is reinforced by the OECD review, which indicates that Finland is among the leading OECD countries in terms of the use of ICTs. The report recommends measures that could extend the scope of competition and stimulate further developments in the ICT industries and services.

The article by Lehto looks at the impact of IT on the quality of working life. It reports an increase in autonomy for all sections of the workforce. This is in the context of a growth in the number of IT users (from 17% of total employees in 1984, to 44% in 1990). There were also marked increases in the use of IT amongst older employees and those in the public sector.

The follow-up study reported by Huuhtanen and Leino was continued in one insurance company in 1993. That (unpublished) study shows that, during the seven-year follow-up period, daily VDU work had led to an improvement in the mastery of data applications. This change had not been apparent one year after implementation, but became evident after five-years.

The Pekkola study defines telework as paid work, performed at least partly through the use of IT, away from the traditional work place. According to the 1993 Finnish Labour Force Survey, the number of people working at home using IT was 14,000, only 2,000 of whom were in a formal employment relationship. Therefore, if being an employee is included in the definition of telework, the extent of teleworking in Finland is very small.

The report by Hukki and Seppala forms part of the first phase of a larger research and development project carried out at the Finnish Institute of Occupational Health. Its aim is to develop methods of IT training and implementation which will be suitable for older workers. This is of some importance, given the growth in the number of older workers using IT, as reported by Lehto.

Greece

ΗΜΕΡΙΔΑ: "ΤΕΧΝΟΛΟΓΙΚΗ ΠΟΛΙΤΙΚΗ ΚΑΙ ΑΓΟΡΑ ΕΡΓΑΣΙΑΣ" *(Workshop: Technology Policy and the Labour Market)*

TEAM OF EXPERTS (1995)

This volume contains eight papers presented at a workshop which took place under the auspices of the European Employment Observatory's SYSDEM network in May 1995. The contributions focus on three main topics: industrial reconstruction and employment/labour market problems; technology policy and technology evolution and their impact on employment; and the training and retraining of staff in new technologies.

Although all three topics are interesting, the papers on *Technology Evolution and its Impact on Employment* by Lipovatz-Kremezi and Mandaraka, *Industrial Reconstruction and its Impact on Industrial Workers* by Karamesini, and *Technology Policy and Skill Shortages* by Papatheodossiou bear specific relevance to the assessment of the labour market and policy impact of the increasing use of information and communication technologies (ICTs).

Lipovatz-Kremezi and Mandaraka approach the evolution of technology and the introduction of new technologies from two angles. Firstly, they look at the scale of the introduction of new technologies by production sector as well as the kind of technology introduced. Secondly, they assess the ways in which new technologies have influenced labour demand. The authors look at the food and beverages sector in particular, and include a large amount of data.

Karamesini looks at the reconstruction of Greek industry from the point of view of technological and organisational change, and differentiates between the role of small and larger companies.

The contribution by Papatheosdossiou highlights the increasing demand for staff training resulting from the proliferation of new technologies and outlines existing provision, see *Employment Observatory TRENDS 20.*

Available from: Institute of Technological Education, 56 Sygrou Ave, 117 42 Athens. GR.

Comment

In Greece, the use of sophisticated information and communication technologies (ICTs) is only slowly encroaching upon working environments. Initial data on the prevalence of the use of ICTs in different sectors of industry are only now beginning to emerge. The volume on "Technology Policy and the Labour Market" provides a significant contribution to filling the gap in Greek literature on issues regarding the introduction of ICTs in Greek manufacturing industries. The contributions come from experts within social partner organisations, as well as academics, which help to generate a broader picture. It should be noted that the findings cannot necessarily be generalised as in some cases the data are based on previous sectoral research.

Teleworking and other forms of working, carried out independently of the employer's location, are currently not an important issue in academic literature, and there seems to be little interest among employers to introduce such forms of employment. The country's primary concern remains with the fostering of innovation through technology policy and workforce training to adapt to new demands. In addition to the influence of ICTs on production processes and employment, the papers presented in the SYSDEM workshop describe the secondary influence of ICTs on education and training, as well as several dimensions of regional development.

The study by Papatheodossiou specifically looks at the use of ICTs and other advanced technologies such as Biotechnology, New Material Technology, Environment Technology and so on, and also refers to new technologies in a broad sense. The study not only outlines the issues and problems, but also suggests solutions to the problem of manning the rapidly developing productive sectors of the Greek economy, where modernisation efforts lead to greater demand of advanced and variable skills. The aim was to answer questions raised by a previous study published by the Institute of Technological Education which examined the situation both at national and transnational level in Austria, Greece, Ireland and Italy (TRENDS 20). The research has helped to make the competent bodies aware of the impact of technology policy, and has assisted the implementation and diffusion of findings through the country's education system.

ΤΕΧΝΟΛΟΓΙΚΗ ΠΟΛΙΤΙΚΗ ΚΑΙ ΤΕΧΝΟΛΟΓΙΚΗ ΕΚΠΑΙΔΕΥΣΗ ΣΕ ΜΙΚΡΕΣ ΑΝΕΠΤΥΓΜΕΝΕΣ ΕΘΝΙΚΕΣ ΟΙΚΟΝΟΜΙΕΣ (ΑΥΣΤΡΙΑ, ΕΛΛΑΔΑ, ΟΛΛΑΝΔΙΑ, ΦΙΝΛΑΝΔΙΑ) *(Technology Policy and Technological Education in Small Developed National Economies - Austria, Greece, Holland, Finland)*

PAPATHEODOSSIOU TH (1995)

This volume represents the final report of a study commissioned by the Ministry of Education which was carried out by the Institute of Technological Education. The aim of the study was to investigate the relationship between technology policy, the specialisation of the country in several production sectors, and technological education as the agent responsible for the training of specialist and highly-skilled staff.

More specifically, the author examines the implementation of technology policy, the bodies responsible for this task, and the education system. Particular emphasis is placed on tertiary technological education, and policy and practice is compared between Finland, Austria, the Netherlands and the Greek system.

The main purpose of the report is to examine the rate of specialism of these countries with regard to specific production sectors. The report also looks at the diffusion of innovation, advanced technologies, and new production methods, as well as the correlation of these factors with educational processes and staff training.

Following an analysis of the data, the author concludes with suggestions which are mainly concerned with the introduction of new Departments of Specialisation at the Technological Educational Institutes of Greece.

Available from: Institute of Technological Education, 56 Sygrou Ave. 117 42 Athens. GR.

The Netherlands

Barometer Telewerken. Periodiek onderzoek naar de omvang van telewerken in Nederland. Eindrapport *(Barometer Teleworking. Periodic Research into the Occurrence of Teleworking in the Netherlands. Final Report)*
VAN ASSELDONK Y, OPDAM E (1995)

This report presents the results of a study which aimed to assess the prevalence and distribution of teleworking in different sectors of the Dutch economy. Researchers administered a questionnaire to a sample of 421 enterprises with more than 20 employees. All economic sectors, with the exception of agriculture and fishery, mining, retailing, hotels and bars, were covered by the survey and firms were approached four times in the space of two years.

The findings of the survey show that teleworking is now predominantly concentrated in the banking and insurance sector and in other services (4.7% of workers in these sectors are teleworkers). The average number of days teleworked each week varies from one to five days, but is predominantly restricted to one day per week. The most common forms of work carried out by teleworkers are report writing and financial administration tasks. In 1993, 1.2% of all employees in the Netherlands teleworked; by 1995 this figure had risen to 1.5%. In real terms this means that approximately 75,000 to 90,000 employees telework. Over the three year survey period teleworking was practised to varying degrees in 13% of firms.

Available from: Stichting Werkgroep '2duizend, Heiligenbergerweg 113, 3816 AJ Amersfoort, NL.

Nederland in de kenniseconomie *(The Netherlands in the Knowledge Economy)*
JACOBS D (1995)

This paper provides a contribution to the debate on the competitiveness of the Dutch economy in an increasingly pervasive *knowledge society*. In the Netherlands much of the debate surrounding the competitiveness of industry centres around the issue of added value. Jacobs argues that knowledge is one of the main factors which adds value to goods and services; this form of added value is described as *directed innovation added value*. He goes on to distinguish between three kinds of knowledge: technological knowledge, combination knowledge (strategic and organisational knowledge) and market knowledge. From an organisational point of view, within the area of combination knowledge a further eleven layers of knowledge can be distinguished, ranging from technological knowledge to design, integrated values, logistics and after-sales.

The author also presents the results of a first attempt to position the Netherlands

Comment

In Dutch literature the term 'Information Society' has been replaced by the expression 'Knowledge Society'. Different forms of knowledge as defined in the contribution by Jacobs refer to the way that information generated and communicated with the assistance of new ICTs is being utilised in different areas (technology, management etc).

The study by Van Asseldonk and Opdam provides an invaluable source of basic data on the incidence of teleworking in the Netherlands which are missing in the regular publications of the national statistical bureau. The research was commissioned by the 'Platform Telewerken', an organisation operational for a period of three years from 1992, whose main aim was to promote teleworking. The Platform was dismantled in 1995 because of the positive development in the number of teleworkers. This is regrettable, because although the percentage of employees able to work at home thanks to improved telecommunications equipment, is small, it would have been interesting to monitor the number of teleworkers. The instrument developed by 'Stichting Werkgroep '2duizend', who carried out this study, offers a relatively simple way to provide this information.

The debate on the competitiveness of the Netherlands as a knowledge society tends to focus on technological innovations in the field of industry. It is usually assumed that services will automatically benefit from innovations in related fields of industry. The paper by Jacobs questions the one-way nature of this relationship and argues for the stimulation of innovation in the service sector and the constructive integration of different areas of knowledge.

The study by Fruytier and Timmerhuis argues that as an information society with increasing knowledge intensity, the Netherlands requires a strengthening of the knowledge infrastructure to achieve further economic, social and cultural development. More attention should be paid to the development and application of knowledge and technology, as well as to the clear steering of intervention processes. It is increasingly acknowledged that the development and use of the human capital factor is of prime importance. This not only necessitates the prioritising of education and training within organisations but also the adaptation of national curricula to take account of technological changes. The development and mobilisation of human resources in organisations calls for the implementation of a strategic policy containing elements of individual career development and new ways of organising professionals. As the increasing pervasiveness of the information society leads to possibilities for new forms of working, attention needs to be paid to external and internal labour market mechanisms and a transition towards more flexible employment relationships.

Since the early eighties, the importance of science and technology as sources of economic growth and competitiveness has been widely acknowledged and policy makers are increasingly striving to create optimal conditions for technological development. Minne questions the prevalent assumption that new ideas are stimulated by economic motives. He stresses that the input of original knowledge in the production process consists mainly of skilled knowledge and external know-how and therefore concludes that policy-makers, instead of focusing solely on stimulating tangible investments, should also encourage education and intangible investment and improve the knowledge infrastructure. It is hoped that this integration of both the traditional and new views on economic development will make economic policy more effective.

within the knowledge society which aimed to identify possible bottlenecks. High labour productivity, the shift towards the production of final consumer goods, the budget for immaterial investments and marketing, the growth of the multi-media sector, elements of management quality (eg organisational structure), and export figures for knowledge services all seem to indicate a favourable position for the Netherlands.

Available from: Economisch Statistische Berichten, Postbus 4224, 3006 AE Rotterdam. NL.

Mensen in onderzoek. Het mobiliseren van human resources in wetenschapsorganisaties *(People in Research. Mobilising Human Resources in Scientific Organisations)*

FRUYTIER B, TIMMERHUIS V (1995)

Mensen in onderzoek is the final publication of a large scale research programme focusing on the changes in working conditions and human resource management strategies in the University, semi-public, public and industrial research sector. Conducted on behalf of the Ministry of Economic Affairs and the Ministry of Education between 1991 and 1994, the programme includes 14 case studies which aim to assess the changes in job content, personal growth perspectives and focus of challenges resulting from the increasing knowledge intensity and requirements of the rapidly developing global information society. The case studies reveal a transformation from a traditional, unconditional professional culture to clear, synergetic and goal-oriented work relationships.

Available from: Van Gorcum & Comp. B.V., Postbus 43, 9400 AA Assen. NL.

Onderzoek, ontwikkeling en andere immateriële investeringen in Nederland *(Research, Development and Other Investments in the Netherlands)*

MINNE B (1995)

Progress in the achievement of an Information Society is to a large extent made possible by investments in research and development (R&D). The role of this sector in promoting economic growth and competitiveness has been highlighted by the CEC White Paper on *Growth, Competitiveness and Employment* and is recognised by national governments. In this paper, Minne discusses how R&D expenditure by companies in the Netherlands can be integrated into a traditional macro-economic model in an attempt to establish the relationship between such expenditure and competitiveness.

He concludes that for the Netherlands there is insufficient evidence to demonstrate a robust relationship between R&D and tangible investment, national profits and interest rates. It is suggested that this could be due to the fact that Dutch R&D firms are not representative of the Dutch economy as a whole, as almost all R&D is carried out by multi-nationals such as Philips, Shell, AKZO Nobel, DSM and Unilever (60%), 33 Dutch enterprises (20%) and 17 foreign establishments (15%). The 25% drop in R&D by Philips is the main reason for the fall in Dutch business enterprise R&D since 1988. However, this decrease in nominal Dutch R&D spending may have been largely compensated for by a sharp fall in the cost of R&D. This is indicated by the considerable rise in the number of Dutch patent applications. The cost of R&D fell due to the moderate wage rise, enhanced efficiency in the laboratories, and possibly a better exploitation of know-how.

Available from: Hageman Verpakkers, Postbus 281, 2700 AG Zoetermeer. NL, EN summary.

ABBREVIATIONS USED IN SYSDEM

SYSDEM	European System of Documentation on Employment
EU	European Union
CEC	Commission of the European Communities
DG	Directorate-General of the CEC
ETUC	European Trade Union Confederation
Unice	Union of Industries of the European Communities
MISEP	Mutual Information System on Employment Policies
OECD	Organisation for Economic Co-operation and Development
ILO	International Labour Office
CEDEFOP	European Centre for the Development of Vocational Training
GDP	Gross Domestic Product
GNP	Gross National Product
IT	Information Technology
ICT	Information and Communication Technology

COUNTRY

A	Austria	**IRL**	Ireland
B	Belgium	**I**	Italy
DK	Denmark	**L**	Luxembourg
D	Federal Republic of Germany	**NL**	The Netherlands
		P	Portugal
E	Spain	**S**	Sweden
F	France	**SF**	Finland
GR	Greece	**UK**	United Kingdom

LANGUAGE

DA	Danish	**GR**	Greek
DE	German	**IT**	Italian
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SYSDEM Bulletin is printed by Arron Print Ltd., Unit 30, Enfield Industrial Estate, Redditch, Worcestershire B97 6BY. Translation by Marie-Dominique Maison, 17 Mapperley Gardens, Moseley, Birmingham B13 8RN, UK.

EMPLOYMENT OBSERVATORY

Trends

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CE - DL - 96 - 002 - EN - C

ISSN N° 1019 - 4274