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Leading learning and skills

Skills in England 2004 Volume 2: Research Report

July 2005

Of interest to everyone involved in improving skills and learning opportunities across England

Skills in England 2004 is presented in four volumes. Volume 1 provides key messages and an overview of the research findings in the other three volumes. Volume 2 is the main research report. It contains separate chapters on the demand for and supply of skills as well as mismatches between demand and supply. Finally, Volumes 3 and 4 provide evidence related to industrial sector, and regional and local trends respectively.

Skills in England 2004 has been produced by the Learning and Skills Council (LSC) in partnership with the Department for Educations and Skills (DfES) and Sector Skills Development Agency (SSDA)

For information

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Foreword

I am very pleased to introduce Skills in England 2004. This is the fourth in an annual series of national skills assessments produced by the Learning and Skills Council (LSC) in collaboration with its key partners.

Skills in England 2004 draws upon current analysis, particularly on the demand and supply of skills in England. It is a cross-government publication with views from major departments and agencies involved in the government's skills agenda, helping to identify and focus on priorities. The findings are critical in helping the LSC achieve improvements in transforming learning and skills, including help fulfil its strategic objectives in:

- economic development to provide the skills needed to help all individuals into jobs and to keep them
- collaborating with partners at a national and sectoral level to identify the skills most crucial for economic prosperity; and
- working effectively at a regional level – particularly with regional development agencies and regional skills partnerships.

The report warns that unless Britain has the requisite stock of skills, including entrepreneurship, innovation, and technical capability, then the goal of achieving a high-value added, high-productivity economy would remain elusive. One of the ways to achieve this will be to ensure that skills strategies go hand-in-hand with those policies and strategies that aim to increase levels of capital investment within companies, develop new products and processes, and capture new markets.

And while young people are now leaving Britain's education system with higher-level, more relevant qualifications, there is still a substantial proportion of young people who lack the skills necessary for the workplace. The LSC is determined to transform the outcomes for learners and employers, to ensure that the productivity, employability and lifetime earnings of these groups are not hampered by low skill levels.

Whilst important, skills are only part of the policy mixture necessary to create a more prosperous and socially inclusive Britain and that is why the LSC's work with key partners and stakeholders is critical to help drive forward improvements in the learning and skills development opportunities available to employers and individuals.

In closing, may I take this opportunity to commend Skills in England 2004 to all those who are interested and have a role to play in driving forward the nation's skills agenda. The LSC looks forward to working with you to help achieve world class skills for a more competitive economy.

Christopher N Banks CBE

Chairman, Learning and Skills Council

Summary

The overarching message in the Key Messages volume of *Skills in England 2004* is that **skills matter**: for individuals, organisations and society more generally. This point cannot be made too strongly. Unless Britain has the requisite stock of skills, incorporating entrepreneurship, innovation, managerial effectiveness and technical capability, then the goal of achieving a high value-added, high productivity economy will remain elusive.

But **skills are not a panacea**. First, the vocational education and training (VET) system cannot fully compensate for disadvantages and deficiencies that stem from the compulsory education system. Second, skills strategies need to go hand-in-hand with those policies and strategies that seek, amongst other things, to increase levels of capital investment within companies, develop new products and processes, and capture new markets.

Many of the key messages highlight long-standing themes and many reflect concerns that are currently being addressed by government policy.

- Ultimately the performance of the UK economy is dependent upon the abilities the population can bring to the labour market. Of course, skills are not the only thing that matters and, as with other investments, it is important to channel resources to those areas with the highest return.
- The world economy is becoming more open. The increasing capacity of countries, such as China and India, to produce goods and services at a much lower price than in Britain, has seen work being transferred to these locations. The most constructive response to this development for employers faced with global competition is to develop or move into markets where they are not at a price disadvantage.
- This means increasingly moving into knowledge-intensive, high value, high productivity activities. But for any country, the sustainable shift into higher value-added markets is a formidable challenge. At the very least it requires a mix of entrepreneurial flair, the effective deployment of skills, and access to capital investment.
- On the credit side, the most recent evidence suggests that Britain's competitiveness is improving. Recent years have seen a narrowing of the productivity gap between Britain and its major competitors. But there is still concern that output per hour is less than that recorded in France, Germany and the USA.

- The latest evidence suggests that the gap with France and Germany arises primarily from a lower level of capital investment. The major difference between the UK and the USA relates to total factor productivity. The most plausible explanations for this are, first, more efficient systems of work organisation; and, secondly, greater levels of information and communications technology (ICT) diffusion in the USA. But skills cannot be discounted from the explanation of differences between either France and Germany or the USA. The capacity of organisations to capture capital investment or create high performance work organisations will depend upon the ability of management.
- This highlights the crucial importance of **management skills**: the ability to create a successful strategic vision for an organisation, to implement it, and effectively to deploy the labour force. The evidence points to management skills being an area where there remains a particular need for improvement in the UK. But as management skills are improved and the strategic outlook of business alters, this is likely to give rise to a demand for other higher-level skills within organisations.
- The shift to an even more service-oriented economy, and the greater availability of data to firms about consumption patterns, creates a demand for **customer and information handling skills** at all levels. Competitive advantage can be readily fostered through knowing more about the customer and being able to manage that information effectively to deliver a good or service to the specific requirements of customers as well as to generate new business.
- The skills debate is not just about higher-level skills. It is about improving the quality of the labour force at all levels. Britain's education system is now producing a much larger number of young people with formal, higher-level qualifications, but it still leaves a substantial proportion of young people who lack any formal qualifications or who are deficient in basic skills. The employability and lifetime earnings of this group are hampered by their skill deficiencies.

But, as noted above, **skills will not provide the complete answer on their own**. Developing high performance workplaces is, for instance, also dependent upon capital investment. Improving the lot of the most skill deficient in society is heavily dependent upon a wide range of policies designed to combat social exclusion. Skills, whilst important, are only part of the policy mixture necessary to create a more prosperous and socially inclusive Britain.

Chapter 1: Introduction

Aims, Objectives and Purpose

1.1 The main aims and objectives of *Skills in England 2004* are to identify current and future skills problems and deficiencies. These are prioritised according to the extent to which they are expected to impact on the economy generally. The aim is to inform the Learning and Skills Council (LSC) and its partners and to help them target resources in such a manner as to help overcome the inadequacies identified.

*The main aims and objectives of **Skills in England 2004** are to identify current and future skills problems and deficiencies.*
***Skills in England** is in four volumes:*
Vol. 1: Key Messages
Vol. 2: Research Report
Vol. 3: Sectoral Report
Vol. 4: Regional Report

1.2 Volume 2 is the main research report. Its role is to present the more detailed evidence, expanding upon the key issues that are highlighted in the key messages report (Volume 1). It is aimed at researchers and analysts as well as at all those wishing to supplement the conclusions and findings presented in Key Messages. It explains in more detail the nature of the evidence assembled and how this has been marshalled to reach the conclusions and findings set out in Key Messages. It is intended as an explanatory and signposting tool, bringing together material from a wide range of sources into a single document. While it makes reference to earlier volumes of *Skills in England* it is intended to be self-contained. As well as addressing current and expected future skill problems, it also identifies where there are gaps in the research and where further evidence is required.

1.3 In addition to Key Messages and the Research Report there are two supplementary volumes. Volume 3, the Sectoral Report, is aimed primarily at Sector Skills Councils (SSCs) and others with a strong interest in sectoral issues, including many people in local LSCs with concerns about sectors in their locality. The aim of Volume 3 is to present a set of consistent information at sectoral level. This volume is moving towards the use of SSC footprints as a method of categorising sectors. Because of data limitations, much of the discussion and presentation of results remains based on Standard Industrial Classification (SIC) categories. Volume 4, the Regional and Local Evidence Report, is aimed at regional partners and those operating in local LSCs. It provides a consistent set of information at a spatial level for those users who require a more local view of the key data and information. It replicates a number of the national level indicators presented in Volume 2 at a regional and/or local level.

***Skills in England 2004** draws upon new sources of data and research that have come to light since last year's report.*
The current economic environment provides an attractive one in which to invest in skills.

What's New?

1.4 *Skills in England* is an annual report. As such its aim is to provide an up-to-date assessment of the implications for skill demand and supply of (a) changes in the economy and (b) the availability of new data and research.

1.5 *Skills in England 2004* draws upon new sources of data and research that have emerged since last year's report. This year, whilst there is nothing to match the Census of Population 2001*, National Employers Skill Survey 2003* (NESS 2003), or *Working Futures* data that were all available for the first time for *Skills in England 2003*, a large volume of new evidence has been used in the production *Skills in England 2004*. This includes NESS 2004. The new evidence has been assembled, collated, assessed and synthesised in order to reach clear, albeit often qualified, conclusions on what are the main problems surrounding skills and why they are important.

1.6 The demand for skills is a derived demand. The demand for skills will, ultimately, depend upon the state of the economy. That said, it needs to be recognised that the extent of both latent and manifest skill shortages and gaps has implications for the economic cycle. This issue is considered more fully below. Here it is pertinent to note that the UK labour market currently exhibits many positive features, not least of which are historically high levels of employment and low levels of unemployment.

The Economy in 2004

1.7 As noted above, the economic environment in which decisions relating to skills are being taken can explain much about an individual's or an employer's behaviour. In most ways, the present economic environment provides an attractive one in which to invest in skills. In summary, the UK economy currently exhibits the following characteristics.

- GDP growth, though slackening, has been growing steadily at around 2 per cent a year for some time.
- Inflation is low.
- Levels of unemployment are at a historically low level.
- Although the growth in the size of the workforce has slowed, employment levels are also at historically high levels.

Against this background the indicators suggest a positive rate of return in investment in education and training.

Skills matter: it is the capacity of, principally, employers and managers to identify and capture high value-added markets that results in a country's competitiveness.
But investment is needed from individuals and employers as well as the State. Investment in skills can reap substantial returns but it is difficult to identify precisely what skills to invest in – by the State, employers or individuals.

1.8 The principal source of uncertainty relates to the US economy and the extent to which its recovery is sustainable. The relatively low value of the US dollar relative to the euro and sterling has stirred fears of a downturn in the global economy. This certainly creates problems for UK exporters to the USA. But for now, most medium-term forecasts, including those from Cambridge Econometrics (CE) and the Institute for Employment Research (IER) project both historically high levels of employment and historically low levels of unemployment.

The Importance of Skills

1.9 Skills matter in relation to the national economy in two main ways. First, there is empirical evidence that suggests some of the productivity differences between countries such as France and Germany result from differences in skill structures. Put simply, about 20 per cent of the difference in productivity per hour worked between the UK and France and Germany relates to more highly skilled workers in the latter countries. Second, it is the capacity of, principally, employers and managers to identify and capture high value-added markets that results in a country's competitiveness. This relates very much to the importance of management skills. Evidence is presented in this year's *Skills in England* about the importance of management skills in fostering competitiveness.

1.10 But the argument is not just about investment by the State. Increasing the stock of the (right) skills in the economy requires investment from individuals and employers as well.

1.11 Evidence on the rate of return to qualifications shows that there is still a premium associated with obtaining additional qualifications. Reality is a little more complex than this suggests, with certain types as well as levels of qualifications (general certificate of secondary education (GCSE), national vocational qualification (NVQ), general national vocational qualification (GNVQ), etc.) being associated with higher earnings over the lifecycle, *ceteris paribus*.

1.12 Recent evidence relating to graduates reveals that there is still a substantial positive rate of return from obtaining a degree, even if it has declined a little in real terms (which is not surprising given the massive expansion in higher education). Perhaps the biggest issue here is identifying the right skills and qualifications to invest in. There are no easy answers, although Chapter 2 gives some clues with respect to the future demand for skills.

Skills are also important to increase employability. There is also evidence that investment in skills benefits employers but this requires other elements as well for maximum effect.

1.13 Another important benefit of skills to the individual is with respect to their employability. Evidence demonstrates that possession of skills provides advantage in entering employment, sustaining that status, and achieving some form of progression through the labour market. Evidence relating to social exclusion demonstrates that, in part, those in poverty – defined as below 60 per cent of the income of the median household after adjusting for household composition – have become worse off in a relative sense. Changes in the demand for skills have benefited the more highly skilled (as revealed by increased levels of wage dispersion). More generally, investment in education and training tends to increase the probability of an individual finding and retaining a job.

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1.14 Finding measurable evidence that the employer benefits from investing in training and skills proves to be a little more elusive. In the past it has been presumed that employers benefit when they invest in non-transferable skills. Yet recent evidence suggests that employers benefit most where they invest in generic, transferable skills. Amongst those employers that train and develop their staff there is clearly a belief that it benefits the organisation. Often their view is simply that investment in their employees is essential to the production of their goods or services.

1.15 Employers' investment in training and skills is often linked to high-level work practices and high performance workplaces. Without doubt the creation of either of these is dependent on a highly skilled workforce. But what is equally apparent in the evidence is that creating an environment where those skills can be effectively deployed is dependent on having appropriate systems of work organisation in place.

Skills in Context

1.16 Government has outlined five drivers of productivity in various documents, such as HM Treasury's Benchmarking UK Productivity Performance, where they are described as (p.21):

Government has identified five key drivers for productivity performance which include raising skill levels as a fundamental prerequisite.

- encouraging **investment**, to increase the stock of physical capital through stronger more efficient capital markets
- supporting science and **innovation**, to promote the development of new technologies and more efficient ways of working
- raising **skill** levels to create a more flexible and productive workforce
- promoting **enterprise** through measures aimed at removing barriers to entrepreneurship and developing an enterprise culture
- improving **competition**, which promotes flexible markets and increases business efficiency and consumer choice.

The report draws attention to the importance of skills to allow organisations to 'generate new ideas and adapt to a changing economic environment' (p.49), as well as drawing attention to the link between skills and higher productivity. Attention is also drawn to the lower quality of management in the UK compared to the USA, France and Germany – the issue of management skills is returned to in Chapter 5.

1.17 The five drivers of productivity performance outlined by the Government is instructive, from a skills perspective, in that it stresses the importance of improving skills alongside, and presumably simultaneously with, increased investment, innovation, enterprise and entrepreneurship. This is consistent with one of the key themes of this report: that improving skill supply and skill utilisation alone cannot improve economic performance. But without the necessary skills at some level within an organisation, investment, innovation and enterprise – which all lead to improved competitiveness – are unlikely to materialise. Therefore, **skill is in a key sense the most important of all the drivers of productivity performance.**

The Meaning of Skills

1.18 There is insufficient space here to develop a full typology of different skills. But there is a need to be clear about the particular type or class of skills being addressed. The most common ways of measuring skills are with respect to occupation and qualification. Reference is also made to classes of skills such as generic as opposed to technical skills, and transferable as opposed to non-transferable skills. Particular attention is drawn in this year's report to the importance of:

- management skills
- communication and customer handling skills
- information handling (IT) skills.

These types of skill have been selected because they are much in demand (see Chapter 5).

Skills in England 2004 *concentrates upon management skills, communication and customer handling skills, and information handling skills. These types of skill have been selected because they are much in demand.*
The principal weakness ascribed to the UK labour market is one of relatively low productivity compared with principal competitor nations. But matters are improving.

Is There a Skills Problem?

1.19 Skills are commonly addressed from the perspective that there is a problem. This problem has been succinctly summarised as Britain being stuck in a **low-skills equilibrium**. There is no doubt that Britain has weaknesses in relation to skills, but such statements need to be placed in context. The principal weakness ascribed to the UK labour market is one of relatively low productivity compared with principal competitor nations. Domestically, there has been concern for many decades that too much economic activity has been concentrated in relatively low value-added activities. Britain has both failed to retain its position in many key market areas and failed to capture many new markets based on high value-added products and services as they have emerged. Chapter 5 points to this being a problem arising from lack of management skills.

1.20 But things are improving. For instance, Britain's productivity per worker, if not per hour worked, is now similar to that of Germany. The stock of skills in the economy, measured by qualifications, has shown steady improvement. And the evidence points to positive rates of return related to the acquisition of formal qualifications, despite the huge increase in educational participation.

1.21 Another dimension to Britain's skills problem relates to social exclusion and the relatively large share of the population without formal qualifications or with basic skills deficiencies. This is not simply a cohort effect. There are many young people leaving the compulsory education system today with these characteristics. All the evidence points to the demand for more highly skilled and qualified people rising relative to those with few skills or no qualifications. Government policy is currently addressing the issue, but, nonetheless, the issue of employability remains an important one in assessing where weaknesses exist in the vocational education and training (VET) system.

A further dimension to Britain's skills problem relates to social exclusion and the relatively large share of the population without formal qualifications or with basic skills deficiencies.

Skill Demand and Supply

1.22 Chapter 2 addresses the changing demand for skills in England. There are a number of factors creating a shifting pattern of demand for skills. These include:

- technical change which has resulted in automation substituting for jobs and allowing some functions to be outsourced. Technical change also leads to a demand for different or additional skills, especially where employees are required to have knowledge of new and emerging technologies
- rising real incomes which have resulted in people spending more of their income on leisure and entertainment, as well as on health care and education, and consequently giving rise to a demand for skills related to these activities
- transference of some jobs, typically in manufacturing but increasingly in data processing, to locations abroad with much lower labour costs
- organisational change resulting in work being conducted differently from the past and creating demands for different types of skill resulting from, for instance, team work.

The demand for skills is continuing to change rapidly. Supply is adapting, but there are concerns that it may not be doing so quickly enough.

1.23 Chapter 3 addresses the changing pattern of skills supply in England. Evidence is provided relating to:

- changes in skill supply over time
- current levels of participation in education and training, especially amongst young people
- the future supply of skills
- comparisons with major competitor economies.

On the basis of these criteria, the evidence points to the supply of skills amongst the workforce in England improving. Partly, this is a cohort effect as older less-qualified workers retire and are replaced by younger workers who are more qualified. But the rate of growth in qualifications compares favourably with that of a number of major competitor economies.

1.24 It is tempting to infer that this improvement in the supply of skills may partly explain both high levels of employment and also the improvement in Britain's relative productivity performance in recent years. But it is also apparent that the rate of growth in qualifications amongst the workforce has slowed a little in recent years, and that there remains a substantial proportion of the population with few of the skills necessary to engage in the labour market in modern Britain.

There are still occupational hot spots where skill shortages are rife. Three major areas require increased investment in skills. The coming decade presents both challenges and opportunities, both of which require appropriate investment in skills.

Skill Mismatches

1.25 In Chapter 4 evidence is assembled relating to skill mismatches. This draws on information relating to both relative wage levels (from various sources) and on skill deficiencies (from the NESS reports). Typically, where occupations receive a relatively high wage level this reflects their scarcity in the economy. Rising relative wage levels can provide an indication of the extent to which there are skill shortages. From the evidence presented in Chapter 4, the wage gap between the more highly skilled and those with relatively few skills has continued to increase over recent years. NESS 2004 provides an up-to-date picture of employers' perceptions of the skill problems that they face.

Skills in Most Demand

1.26 Chapter 5 provides an overview of a number of the key skills expected to be most in demand over the coming decade. These can be divided into three broad categories:

- management skills
- technical skills, in particular IT skills
- communication and customer handling skills.

The chapter begins by outlining the changing economic and societal context that has resulted in major shifts in the nature and mix of skills being demanded by employers, focusing on these three areas. It then highlights the key features for each group of skills that make them the top priority for investment over the next decade.

There are a number of important skill challenges facing the economy: modest improvements in the volume of skill supply; enduring concerns about the economy getting stuck in a low-skills equilibrium; and the large stock of people with poorly developed basic skills. That said, there are a number of opportunities too. The economy is relatively buoyant, unemployment is at a historically low level and employment levels are at an historical high. This, at the very least, provides a favourable context for individuals, employers and the State to invest further in skills.

Conclusion

1.27 *Skills in England 2004* sets out the current state of skills demand and supply and the outlook for the medium term. It highlights the costs and benefits of investing in skills for the individual, employer and State. Understanding the returns to investment in skills provides a crucial element in guiding policy for the future.

1.28 The key benefits of investment in skills are:

- ***individual:*** enhanced employability, progression through the labour market and improved earnings
- ***employer:*** enhanced productivity, identification, entry, and capture of relatively high value-added markets for goods and services
- ***State:*** growth in GDP, capacity to foster socially inclusive economy and society.

It is important for such messages to reach all these groups in order that the economy will prosper.

Understanding the returns to investment in skills is crucial. There are benefits to individuals, employers and society more generally. Some State intervention may be needed. There needs to be a new focus on how flexibility has affected enterprise funding of training, and the conditions under which firms can expect to reap benefits from training Managers play a key role and adoption of high performance work practices may be limited by poor management skills.

1.29 It is crucial to present the most persuasive evidence to individuals and employers in order to encourage them to make the necessary skills investments. Where that fails to happen, for whatever reason, the State may need to intervene. Of course, all investments carry a risk, so the issue is also about the extent to which the risk is borne by each of the three parties.

1.30 It is widely recognised that the UK labour market has become increasingly flexible over recent years. The mobility of individuals between firms and between sectors, as well as the effects of part-time working and temporary working, amongst others, appear likely to have resulted in quite profound effects on the rates of return to employer-funded, *vis-à-vis* individual- and Government-funded training. These effects, and their implications for skills, particularly the firm- and sector-specific skills that may be required for improved dynamic performance in an increasingly competitive global environment, are still not fully understood, but may be crucial to understanding new policies needed to encourage the supply of and demand for skills.

1.31 The evidence about management skills in the UK and their effects on domestic economic performance is also still far too spartan. But there can be little doubt of the central role that managers play in determining economic performance. There is also a crucial link between management formal qualifications, generic skills and enterprise performance. These links appear likely to produce synergies between the effects of management *per se* and the associated use of high performance work practices. Poor managers are unlikely to be using (at least with any degree of success) internally consistent packages of high performance work practices that are also consistent with the goals and strategies of the enterprise.

1.32 It can be argued that the adoption of high performance work practices that embed high levels of training should be offered tax breaks by government parallel to those for research and development (R&D). Further research is needed on the role of management skills and management processes. In particular, there is an urgent need to establish minimum standards for management in these different contexts. The work on what skills are required for the successful introduction of ISO 9000 and similar schemes might throw light on this issue.

Good management is critical and the adoption of high performance work practices may be limited by poor management skills. A case can be made for offering tax breaks for the adoption of high performance work practices. The growing importance of transferable skills raises substantial questions over the returns to investment in skills for employers. There are still major gaps in current understanding of the links between skill and performance. A key issue is how to improve the dynamic between business strategy and skills.

1.33 The growing importance of generic and other key skills is now widely recognised. The transferable nature of such skills raises real concerns about the ability of employers to capture the returns to any investment that they might make in such areas, and therefore questions about who should pay for such investments. The 'ideal mix' of harder and softer skills across occupations, functions and tasks is still not entirely clear. In addition, further research is required on the degree to which the various generic skills can be trained and the degree to which they are, in some sense, innate (or at least given by the time the individual enters employment). Thus, more needs to be known about the methods by which such skills can be imbued within individuals and the costs of doing so.

1.34 The review has identified some major gaps in knowledge concerning skills and performance. The Skills Pay report, produced by the SSDA, emphasises a number of outstanding questions: 'How does the UK compare to our competitors across the various elements of the model? Are our people as enthused as those in other countries? What kind of jobs do we allow people to do? What strategies do we pursue? How are the various components of high performance working practices distributed across the model? What is the contribution of the various 'bundles' of practices to overall impact?'

1.35 Skills Pay goes on to argue that:

'...the most dynamic interplay...is the diagonal between application (i.e. business strategy) and ability (i.e. the skills and capability of the workforce). This is the dynamic which has plagued policy makers in their attempts to improve UK economic success. Is this best done by increasing the supply of skills so that organisations find themselves awash with human capital and raise their game to utilise it better, or should we rely on measures to lift business and product market strategies, increasing and encouraging competition and knowledge exchange to increase the demand for skills? In reality, most organizations find themselves locked more or less into an equilibrium, which is resistant to movement. The overwhelming challenge is how we move to a position where demand for skills is raised and organisations seek to increase the skills and motivation of their workforces and to utilise them more demandingly.'

Development of a relatively highly skilled workforce is a key element in competing with emerging economies with low labour costs.

1.36 All this points to substantial challenges ahead if the national economy is to not only achieve but even surpass the achievements of its main competitors and fend off increasing competition from China, India and beyond. The capacity to do so, in the first instance, is a skill issue. If the future success of the economy is to trade increasingly on ideas (R&D, design, marketing, etc.) then this requires people who can generate and act upon those ideas. This implies a critical mass of activity is required to safeguard jobs and maintain full employment. This is not future gazing but simply the logical implication of extrapolation of trends already apparent – in particular, the evidence that low labour cost production countries, such as China, are already moving on from reliance on competing on price towards investing in design and development of goods and services. In this sense, skills is very much a first order issue for the future prosperity of Britain.

Chapter 2: The Demand for Skills

Overview and Summary

The aims of the chapter are to identify the main trends in the demand for skills. It summarises the key drivers of skill demand and highlights the main trends in employment and the demand for skill.

2.1 This chapter sets out the actual and potential drivers of the demand for skills and the impact that these will have on the skills likely to be needed over the next few years. It also considers the need to act on those drivers to raise demand, which, it is argued, may be just as important a policy requirement as the need to tackle supply.

2.2 This chapter focuses primarily on the skills needs (and problems) that the economy faces, in the immediate future and over the medium term. It identifies those skills which are in highest demand. Chapter 4 will consider where difficulties exist in meeting the demand at present, while Chapter 5 returns to focus on the main skills identified as being in demand.

2.3 The current demand for skills in England is considered in three main ways. First, overall trends in employment by industry, occupation and region are examined, and the implications of these trends for the skills composition of the employed workforce are considered. Second, information is presented on the qualifications of the employed workforce as an indication of employers' demand for skills. Third, recent survey evidence on the demand for key and generic skills is reviewed.

2.4 Skills demand is derived from the demand for goods and services. The key drivers are:

- changing patterns of demand for goods and services, including:
  - i rising incomes
  - ii innovation
  - iii competition and alternative sources of supply
- changing ways of producing goods and services, including:
  - i technology
  - ii productivity
  - iii specialisation or sub-contracting.

International evidence on how the UK compares with other countries in this regard is also briefly reviewed.

2.5 This chapter describes recent developments in the economy and the labour market affecting the demand for skills, focusing upon employment. It begins by outlining the main sectoral and industry trends. Occupational employment is a key indicator of changing skill needs. This chapter therefore highlights the key occupational trends. Change in occupational employment is summarised, including occupational change within industries. This chapter also emphasises the importance of considering replacement demand to offset losses from the existing workforce due to retirement and other factors.

The focus is on England but patterns are common across all regions although there are significant regional differences, often linked to the underlying economic structure.

2.6 Some reference is also made to regional and local trends. The prime geographical focus of the volume is at the national (England) level, but where there are particular messages of interest at a regional, local LSC (or sectoral) level, then these are highlighted. Further details on implications at a more detailed level are provided in Volumes 3 and 4.

Trends in the qualifications of the employed workforce and key and generic skills are also assessed. The average level of formal qualifications held has risen sharply. Skill requirements within occupations are also increasing with higher qualifications, greater generic skill needs and longer training times needed.

2.7 The patterns of changes in skill requirements, as measured by changes in sectoral employment, occupations and qualifications, are repeated in broad terms across most regions. However, the pace and extent of change varies considerably. This reflects the dominant patterns of specialisation by sector. There has been particularly strong growth in managerial, professional and associate professional or technical jobs in London and the South East.

2.8 Changing occupational employment patterns are just one aspect of the changing demand for skills. The chapter also reviews evidence on the growing demand for formal qualifications as well as on the need for various key and generic skills that may not always be formally certified.

2.9 The average level of formal qualifications held by employed people has increased markedly over the 1990s. This provides one important piece of evidence about an overall increase in the demand for skills throughout the economy. But it is important to note that it also reflects the considerable increase in the supply of qualifications as described in Chapter 3, and there have been some expressions of concern about over-qualification in some areas.

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2.10 Occupations and qualifications provide only a partial picture of changing skill needs. Employers set great store on other aspects including key and generic skills. The increasing importance of such skills is explored, based on information provided by recent surveys.

2.11 Detailed investigations of the skills needed to undertake most jobs suggest a general increase in skill requirements. Most jobs need more training and more learning time, as well as high formal qualifications. Higher levels of technical and (particularly) generic and information technology (IT) skills are also required.

2.12 Ideally, policy makers and the various other actors in the labour market would like to know about the pattern of future skill needs. While no one possesses a crystal ball which can reveal precisely how the future will unfold, there have been various attempts to consider likely developments over the next five to ten years in a systematic fashion. In 2001 the Sector Skills Development Agency (SSDA) commissioned the Warwick Institute for Employment Research (IER) in conjunction with Cambridge Econometrics (CE) to develop the most detailed set of employment projections ever produced in the UK. These have been published under the *Working Futures* banner. A new round of projections has recently been commissioned which will be published in the summer of 2005.

2.13 For the present, detailed reference here is to the original *Working Futures*, reworked to focus on England over the period 2003 to 2012. The discussion highlights:

- the macroeconomic trends underlying the projections
- changes in the sectoral and/or industrial structure of employment
- expected changes in employment patterns by status and gender
- the projected changes in the occupational structure of employment both in aggregate and within sectors (only a summary is provided here, with more details in Volume 3)
- changes by region (again only a summary is provided here, with more details in Volume 4)
- replacement demands.

2.14 The evidence suggests that there will be significant increases in the demand for skills. Although the links between skills, productivity and general economic performance are complex, the consensus remains that skills are an important part of the agenda. The evidence discussed suggests that there are major benefits to employers and society at large in having a skilled workforce.

The chapter also outlines possible future demand for skills based on the Working Futures projections produced on behalf of the SSDA. It concludes that the demand for skills will continue to grow and that they will remain a key factor in determining future economic performance. The demand for skills is derived from the demand for goods and services. Government has placed greater emphasis on sectoral involvement in assessing skill needs and the Skills for Business movement offers a major opportunity for employers to voice their skill needs.

Key Drivers of Skill Demand

2.15 The demand for skills is driven by the demand for goods and services which people are employed to provide. In assessing the demand for skills it is important, therefore, to consider the various influences on the changing pattern of demand for goods and services.

2.16 Recent changes in government policy have placed an increasing emphasis on involving employers and individuals in the assessment of changing skill needs in their sectors. It is difficult to fault the aim of the sector skills councils (SSCs) and the Skills for Business movement to provide an effective mechanism for employers to articulate their needs and concerns. This appears to provide a much-needed rebalancing of the training system.

2.17 This more demand-orientated approach to skills represents a significant change from the supply-side dominated strategies of the past. The Department of Trade and Industry (DTI) and others have developed the notion of five key drivers of productivity, including investment, innovation, enterprise, competition and skills. HM Treasury and the DTI share a joint Public Service Agreement (PSA) target to improve productivity in the UK relative to key foreign competitors. The evidence suggests that a key part of the explanation for the UK's poor productivity performance compared with its international competitors lies in its poor workforce skills. While this has been long recognised, there is an increasing realisation that it is necessary to stimulate employers' demands for skills as well as skills supply, if the economy is to avoid or escape from the so-called 'low-skills equilibrium' (Hogarth and Wilson, 2002). This is the vicious circle in which the supply of low-skilled individuals encourages employers to adopt production techniques requiring less-skilled workers. This in turn reinforces the demand for low-skilled rather than high-skilled workers, compounding low added-value business strategies.

There is a continued need for demand-sideinitiatives: *increased supply of skills must be accompanied by policies to increase the demand for higher skill levels. Skills, performance and the rationale for training evidence suggests UK companies tend to operate in lower-quality market niches, employing lower skills than key international competitors.*

2.18 The empirical evidence is clear that, on balance, UK firms operate in lower quality niches of the market, using lower skill levels, than, for example, their German counterparts. The recent discussion has suggested that the movement of UK companies *up-market* is unlikely to occur with policies operating solely on the supply side (i.e. an increased supply of more educated or trained labour). What appears to be required is again a rebalancing, with greater emphasis placed on encouraging the demand for higher quality products and, thereby, for more highly educated and skilled labour. It has been suggested that an initial step in this direction would be to change the emphasis of government and local authority procurement policies from cost to greater quality, approaching the issue of *value for money* from a somewhat different angle.

2.19 A wide range of evidence exists linking education and skills with productivity performance. For example, research by the Institute of Fiscal Studies (IFS) suggests that a 5 percentage point increase in the proportion of workers trained raises value added per worker by 4 per cent. The National Institute of Economic and Social Research (NIESR) matched plant study (extending over two or more decades) provides consistent evidence that UK producers tend to produce lower quality goods and to be less productive. In addition, they suggest that skills gaps are an important contributory factor to these differences in productivity performance, accounting for as much as a fifth of the productivity gap between the UK and Germany.

2.20 The problem with these findings is that increased productivity does not necessarily translate into better enterprise performance in terms of profits. As argued in *Skills in England 2003*, this depends on whether the individual worker receives the benefit through higher pay or the firm receives the benefit through lower costs. The conventional wisdom is as follows: individuals are more willing to pay for training in general skills that have value across employers, but will expect to receive the benefits of such training in higher pay; employers are more willing to pay for training that is specific to their operations (and not to other employers), but would expect themselves to receive the benefits of such investment. This is an issue which is discussed in more detail in Chapter 5.

Training to improve skills may raise salaries, but not enterprise profits and market value. The consensus is that there is a need to boost the demand for skills as well as supply.
The latest evidence has highlighted some of the detailed underlying causes of changing skill needs.

2.21 The new approach which emphasises the need to boost the demand for skills as well as their supply is probably best summarised in the report from the Performance and Innovation Unit (PIU, 2001) *In demand: Adult skills in the 21st Century*, and the follow-up report published by the Strategy Unit (2002). The latter identifies a number of key drivers for workforce development, as follows.

- **Employers** demand higher skills to enable them to meet business objectives more effectively. In the private sector this entails developing new products and new markets as well as increasing profitability. For the public sector, the objectives centre on the efficiency and quality of service provision.
- **Individuals** demand skill development for a number of reasons primarily related to economic benefits and personal satisfaction. This demand may be met independently or through their employers.
- **Society and Government** demand skills to correct particular market failures or in support of specific policy objectives such as social inclusion.

2.22 The key drivers of changing skill requirements include:

- **technological change**, especially information and communications technology (ICT), which is affecting both the products and services produced as well as the way in which they are produced, resulting in increased demands for IT skills
- **competition** and changing patterns of consumer demand, which has increased the emphasis on customer handling skills
- **structural changes**, including globalisation, sub-contracting and extension of supply chains, emphasising the need for high-quality managerial skills at various levels
- **working practices**, such as the introduction of team- or cell-based production in engineering, and call centres in financial services, resulting in increased demand for communication and team working skills
- **regulatory changes**, including increased concern about environmental issues, which have made important skill demands upon staff for some key sectors, including construction and finance.

2.23 Annex 9 of PIU, 2001 summarises the differences between the various workforce development systems in a number of countries. A range of contrasting systems exist to stimulate the development of skills amongst the workforce. At one extreme, countries like the US principally use the market mechanism to equate the demand for skills and supply of skills to meet that demand. At the other extreme, in countries such as Singapore, the state effectively coordinates both the demand for and the supply of skills. Britain can be seen to have elements of both systems, although it is located more towards the market-led end of the spectrum.

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2.24 The primary advantage of a more market-orientated approach, in which employers signal their excess demand by increasing the amount they pay for skills in relatively short supply, is its flexibility. But it can be slow to adjust to shortages of skills. Having recognised a gap in the supply of particular skills, the appropriate education and training curricula need to be devised and implemented, and students need to complete these courses, before there is any increase in the skills supply to meet particular skill deficiencies. In addition, such an approach only responds to the immediate needs of employers rather than being forward-looking, and reflective of the wider and longer term needs of the economy as a whole.

2.25 The alternative to the market-led approach is government co-ordination of the supply and demand for skills, as exemplified by Singapore. The State identifies the long-term objectives regarding the future industrial composition and, together with knowledge about employers' current demands for skills, coordinates the output of the education and training systems. In this sense, the Government can be argued to be 'supplementing' or 'shaping' the market. Intervention takes place at many levels and, in the case of Singapore at least, has facilitated rapid economic growth over the last three decades with no apparent deficiencies in the supply of the requisite skills. Such a system has the disadvantage of being relatively inflexible, and its success relies on the correct identification of the appropriate target industries for the future.

A variety of systems for workforce development are in operation in different countries. Both market-orientated and interventionist systems can be seen to have their strengths and weaknesses. Britain's system is more market-orientated than in many other European countries.

2.26 In contrast to these two extremes, Britain's system of workforce development is more piecemeal and fragmented. The market discipline in which it mirrors the system operating in the US has failed to stimulate a strong demand for skills, and productivity remains weak by international standards. The system has also produced a rather polarised skills distribution, with an elite of highly educated workers, and a long tail of low-skilled adults who have few, if any, certified skills or qualifications. The gap between these two extremes is in the intermediate technical and vocational skills that Britain lacks as compared with, say, Germany.

Transferring successful policies and systems from other countries may not be feasible. The emphasis in the UK is changing towards placing greater emphasis on employers' needs. Local bodies have also been charged with assessing needs in their own areas.

2.27 Of course, while it is possible to learn important lessons from the experiences of other countries, this does not mean that it is necessarily feasible to transfer examples of good practice between different countries. A range of other factors, including the market orientation, industrial profile, and cultural, social and political institutions and systems, are all important ingredients in the operating characteristics of any system of workforce development. In the encouragement and stimulation of the demand for skills, workforce development cannot be considered in isolation from these other factors.

Basic skills; intermediate skills; generic skills; IT skills; and management skills are highlighted as priority areas.

2.28 With the setting up of the SSDA and the SSCs, the emphasis in the UK is changing towards trying to ensure that the views of employers about changing skill needs are met. These institutions are beginning to undertake new research to try to capture and articulate these views and to work out their implications for policy and education and training priorities.

2.29 Recently local and regional bodies have also been charged with helping to identify, prioritise and meet skill needs in their areas. In order to meet these aims a large amount of research has been conducted. This has resulted in a growing body of evidence. While much of this simply serves to reinforce and confirm the results from national studies, there are also important insights into the specific problems facing certain localities as well as responses to these difficulties.

2.30 Local and regional studies confirm the emphasis on:

- **basic skills:** the great majority of jobs now require at least basic levels of literacy and/or numeracy
- **intermediate skills:** skills that are above the routine level, but below professional skills
- **generic skills:** such as problem solving, communication and team working
- **IT skills:** ranging from basic keyboard skills to advanced programming
- **management skills:** not just among those in managerial occupations and including leadership skills, entrepreneurship, cultural awareness and adaptability to change.

Skills need to be deployed effectively if they are to foster economic performance. High performance work places (HPWs) deploy a variety of policies and practices to optimise economic performance.

High Performance Work Organisations and Skills

2.31 An important element of employers' demand for skills is how they are deployed in the workplace. In relation to economic performance it is not simply about acquiring skills but optimising their use. There has been much written in recent years about the relationship between high performance workplaces (HPWs), associated high performance work practices and skills. The mainly US research on high performance work practices, which subsume various people management policies, including the development and training of staff, generally paints a positive picture of their impact on enterprise performance in terms of increased profitability and market value. Most recently this body of evidence has been reviewed in the SSDA's *Skills Pay* (Tamkin *et al*., 2004). *Skills in England 2003* (Chapter 7) also provided an extensive discussion of the issues relating to organisational effectiveness and investment in skills.

2.32 HPWs refer to those workplaces where skills are effectively deployed to maximise economic performance. The starting point is that a highly skilled and qualified workforce is unlikely to generate productivity improvements if the workplace is unable to effectively utilise the talents of its employees. Analysts have tended to assume that the link between effective performance and skills is rooted in the development of firm-specific, non-transferable skills generated through employer-provided training. However, more recent evidence has questioned this assumption. For example, a recent review (by Barrett and O'Connell, 2001) across several countries suggested little support for the direct role of training in boosting firm-level productivity. In fact, it appears to be transferable skills that are most associated with workplace productivity.

2.33 More generally, such research provides further insights into the benefits of employer-provided training. For example, King's *High Performance Work Systems and Firm Performance* (King, 1995) emphasises the effects of three specific working practices:

- training
- compensation linked to worker or firm performance; and
- employee involvement in decision making.

Whilst the evidence indicates a positive contribution of all three factors with company performance, the author concludes '...these positive effects appear to be mutually reinforcing...the impact on productivity of systems of interrelated practices appears to be greater than the sum of independent impacts when each component is implemented in isolation.' (p. 30).

2.34 King speculates as to the key factors which need to be interlinked to create a HPW:

- participation of employees in decision making and problem solving are likely to increase employee commitment to achieving the organisation's goals
- assurances about job security may be necessary to induce workers to share the ideas that may lead to productivity improvements
- flexible assignment of workers to jobs might then be needed to make job security viable
- flexibility and long-term employment might then make training of workers more attractive to firms.

2.35 In summary, the key issues are:

- HPWs will have in place the product market strategies necessary to optimise their performance over the long term
- in the first instance, creating effective product market strategies is dependent upon the skills of management within an organisation
- innovation – an important element in the definition of HPWs – is dependent upon acquiring and developing research and development skills
- new ventures – often necessary to foster a move into new product markets – are also dependent upon investments in certain types of skill.

The effective deployment of skills associated with HPWs is dependent upon a complementary set of human resource practices. A number of elements are required to create a successful HPW and a number of key policies and strategies are usually involved. The lack of management skills may have undermined the investments of firms in high performance work practices.

2.36 Overall, the evidence points to a strong relationship between skill development and the adoption of high performance work practices. The variety of skills HPWs invest in depends upon the nature of their business. But the evidence suggests that if skills are to be effectively deployed there needs to be in place a set of complementary human resource practices that allows employees to deploy their skills in the interests of the business.

Causes of low investment and low performance are interrelated (and synergistic).

2.37 The evidence suggests that there is generally a positive impact on enterprise performance in terms of increased profitability and market value. Such policies tend to be firm-specific, resulting in improved productivity, without all of the benefits of such gains being eroded in higher wages and factor incomes. According to *Skills Pay*, '...this presents a persuasive argument for good people management but the uptake of such practices in the UK has been relatively low.' (Tamkin *et al.*, 2004).

Strong employment growth has increased the demand for skills. This has been reinforced by structural changes. These reflect a variety of influences including technological change and globalisation.

2.38 There are a number of possible explanations for this, and all seem likely to play a part. First, international differences in the quality of management may mean that UK companies do not recognise the benefits of such strategies. Second, management quality in the UK may mean that, while recognising the potential benefits in other contexts, insufficient numbers of managers feel they can successfully introduce and operate such systems in the UK. Third, the returns to such investments may be lower in the UK than in the US. Fourth, and relatedly, employers may need guidance about such investments for two reasons: (i) the package of high performance work practices chosen should be internally consistent, and practices should reinforce one another; (ii) the package should be consistent with the product market strategies and goals of the organization; for example, a cost-reduction strategy might want a quite distinct package of measures compared with a quality-enhancing strategy.

2.39 The Council for Excellence in Management Leadership argues the need to increase, in particular, the demand for higher management skills – in both large and small organisations and from individuals. They see this as crucial to achieving the objective of creating a pool of talent for the future that will match improvements in supply. They also point to the need to build better links between supply and demand.

Recent Trends in Employment and the Demand for Skills

2.40 Total employment grew rapidly in the UK during the 1990s and the start of the new millennium. This has inevitably increased the total demand for skills.

2.41 In common with most other developed economies, the UK has seen significant changes in the sectoral structure of employment in recent decades. Table 2.1 and Figures 2.1 and 2.2 summarise the broad patterns by sector. These shifts have had important implications for the occupational structure of employment and, therefore, the kinds of skills required.

2.42 The structural changes reflect the influence of a number of interrelated factors including technological change; changes in the patterns of world trade (including globalisation); increasing specialisation; and changing patterns of demand for goods and services.

2.43 Sectoral patterns have moved in favour of financial and business services; distribution, hotels and catering; and non-marketed services such as education and health. In contrast, the manufacturing and primary sectors have experienced a continued decline in employment.

Sectoral and other structural changes have changed the patterns of employment in favour of high-level non-manual occupations and at the expense of traditional manual jobs. Total demand has risen especially sharply in the South East. Employment levels are now at an all-time high, although most of the growth has been in part-time employment.

2.44 Even in sectors where employment has been declining, there is a need to replace the workers retiring from the labour force or leaving for other reasons. This 'replacement demand' is typically much greater than any sectoral shifts, and thus serves to heighten demand in the expanding sectors and moderate the impact of decreases in employment in the declining sectors.

2.45 These sectoral developments have also contributed to significant changes in the occupational structure of employment. This has involved a continued rapid growth in the absolute numbers and shares of managerial, professional and associate professional occupations. Employment in personal service and sales occupations has also grown, but to a lesser extent. Employment for skilled trades, operatives and elementary occupations has fallen.

2.46 Much of the growth in employment has occurred in the South of England. In total, employment increased by 2.7 million between 1993 and 2003, of which almost three-quarters of a million was in London and a further 600,000 in the rest of the South East (Table 2.1). In part, the overall increase reflects the recovery from the recession of the early 1990s but, even so, it represents an exceptional period of growth for many parts of the country.

2.47 Total employment levels are now at an all-time high. In contrast, unemployment levels are lower than at any time since 1973. Much of the employment increase has been for part-time jobs. Nevertheless, such large increases clearly represent a significant growth in the demand for labour and hence for skills over the period.

Table 2.1: Employment change by sector and region, 1983–2012 (000s)

1983–2003

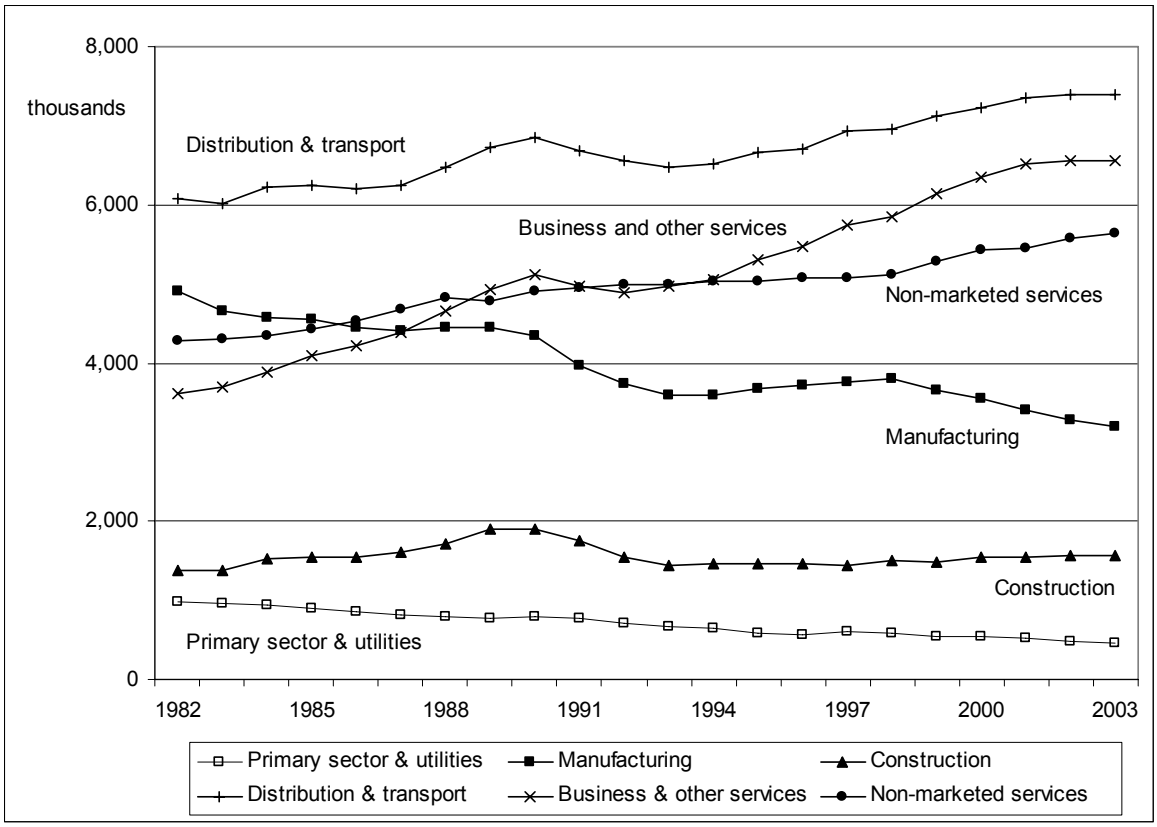
	Primary and utilities		Manufacturing		Construction		Distribution, transport etc.		Business and misc. services		Non-marketed services		All industries	
	1983–1993	1993–2003	1983–1993	1993–2003	1983–1993	1993–2003	1983–1993	1993–2003	1983–1993	1993–2003	1983–1993	1993–2003	1983–1993	1993–2003
London	-15	-17	-271	-45	-23	6	-112	210	258	515	-91	77	-253	746
South East	-18	-20	-150	-21	33	23	145	204	263	380	167	29	441	595
East	-15	-35	-108	-16	11	37	80	126	163	165	83	40	214	317
South West	-3	-38	-44	-16	21	20	83	118	110	141	133	78	299	304
West Midlands	-20	-29	-153	-69	8	-3	87	97	85	121	85	97	92	214
East Midlands	-55	-31	-64	-61	9	28	80	43	91	81	67	103	128	163
Yorkshire and the Humber	-73	-30	-62	-57	13	-6	38	56	104	73	102	77	123	113
North West	-45	-19	-156	-82	-7	22	55	71	137	111	97	119	80	221
North East	-41	-4	-58	-25	4	-4	12	-4	48	8	47	30	13	2
England	-283	-221	-1,065	-393	69	124	468	921	1,260	1,594	689	652	1,137	2,677

1993–2012

	Primary and utilities		Manufacturing		Construction		Distribution, transport etc.		Business and misc. services		Non-marketed services		All industries	
	1993–2003	2003–2012	1993–2003	2003–2012	1993–2003	2003–2012	1993–2003	2003–2012	1993–2003	2003–2012	1993–2003	2003–2012	1993–2003	2003–2012
London	-17	-4	-45	-42	6	-15	210	-6	515	333	77	31	746	297
South East	-20	-8	-21	-59	23	21	204	110	380	180	29	61	595	306
East	-35	-2	-16	-44	37	-3	126	66	165	134	40	35	317	185
South West	-38	-11	-16	-37	20	16	118	48	141	56	78	39	304	110
West Midlands	-29	-5	-69	-63	-3	-18	97	35	121	98	97	46	214	93
East Midlands	-31	-7	-61	-51	28	3	43	30	81	55	103	39	163	70
Yorkshire and the Humber	-30	-7	-57	-46	-6	-17	56	55	73	97	77	28	113	109
North West	-19	-7	-82	-74	22	-19	71	23	111	130	119	39	221	92
North East	-4	-2	-25	-21	-4	2	-4	9	8	23	30	3	2	14
England	-221	-53	-393	-438	124	-31	921	370	1594	1108	652	320	2677	1277

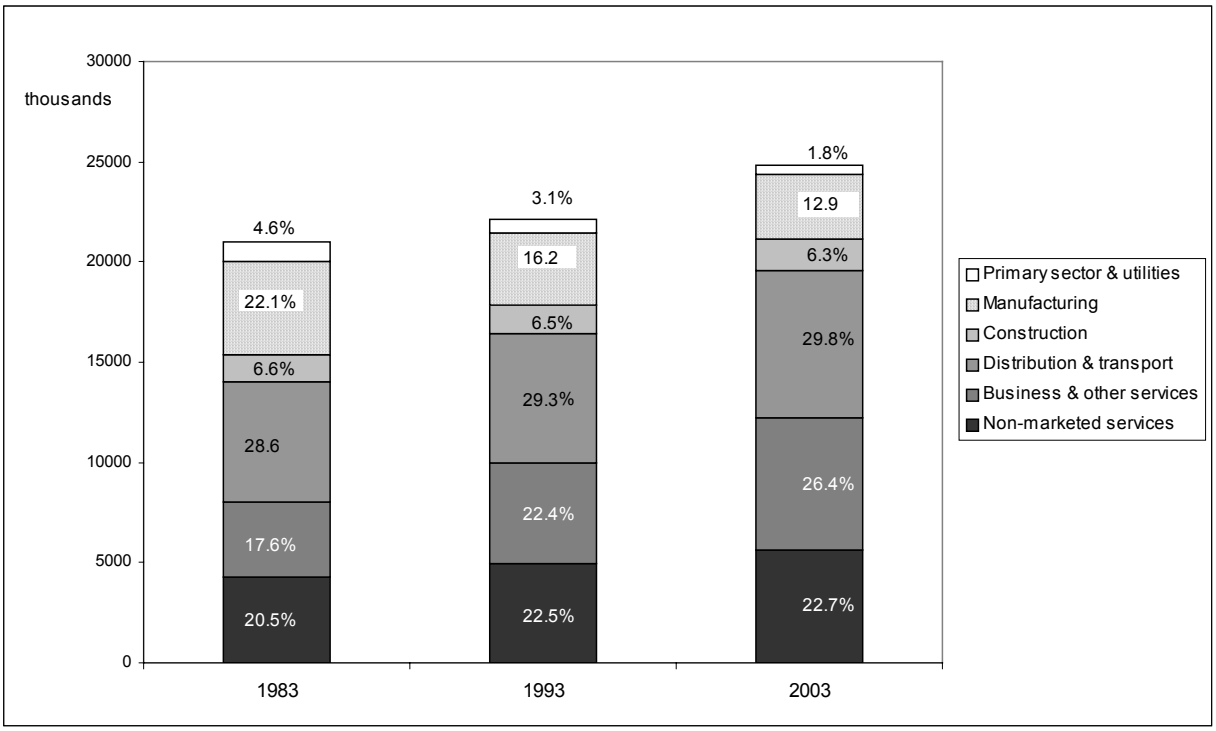
Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Figure 2.1: Employment trends by sector, England 1983–2003



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Figure 2.2: Sectoral structure of employment, England 1983, 1993 and 2003



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Detailed industry trends

2.48 Many traditional areas of employment have experienced dramatic job losses. This has had a direct impact on the demand for many skills. Large falls in employment have taken place in the primary sector. Agriculture and mining have borne the brunt of these changes although, more recently, the utilities have also seen sharp job losses, especially following privatisation. The decline in employment has been even greater in manufacturing. A combination of pressures from international competition and the continuing process of specialisation and sub-contracting has resulted in severe contraction for many parts of the sector.

Many traditional areas of employment have seen large-scale reductions, especially manufacturing and the primary sector (including utilities).
But these job losses have been more than offset by increases elsewhere with large job increases in many parts of the service sector.

2.49 Job losses have been more than offset by growth in other areas. A significant part of the growth has reflected the process of specialisation in manufacturing. Many functions previously undertaken within manufacturing companies are now done by specialist service companies. The functions include research, design and development, as well as finance, marketing, cleaning, security and catering. Rising real incomes have also resulted in people spending more of their income on leisure and entertainment, as well as on health care and education. This has all been facilitated by technological developments, especially in the areas of information technology, communications and transport, which have resulted in many new products and services, at the same time as revolutionising many processes.

Currently available data are for standard industry categories but new information on an SSC basis will soon be available.

2.50 As a consequence of these various factors, the sectoral pattern of jobs growth has seen large increases in employment for business services, distribution and transport, and non-marketed services, including health and education. Table 2.2 and Figures 2.3 and 2.4 provide a more detailed analysis. The figures clearly illustrate the increasing importance of business services as a growth area during the 1990s as well as the deceleration in the rate of job loss in most primary and manufacturing industries as compared with the 1980s.

2.51 With the setting up of the SSDA and the various SSCs the focus of attention is now moving away from industry categories based on the Standard Industrial Classification (SIC) towards a greater emphasis on the *footprints* of the new SSCs. The new set of projections being undertaken on behalf of the SSDA (*Working Futures II*) as well as NESS 2004 will adopt these as standard. The present analysis uses the SIC-based sectors adopted by the SSDA in its Sector Skills Matrix.

Table 2.2: Changing industrial employment patterns by region, 1993–2003

	London		South East		East		South West		West Midlands	
	000	%	000	%	000	%	000	%	000	%
Agriculture	-2	-24.3	-10	-12.6	-28	-44.4	-33	-35.3	-21	-2
Mining and quarrying; utilities, of which:	-15	-54.3	-10	-30.1	-7	-30.8	-5	-20.1	-8	-15
Mining and quarrying	-3	-53.9	3	82.6	0	-0.4	0	5.1	-3	-3
Electricity, gas and water	-11	-54.5	-12	-42.8	-7	-38.3	-6	-28.1	-5	-11
Food, drink and tobacco	0	-1.0	-1	-4.2	-4	-9.4	3	7.1	-3	0
Textiles and clothing	-16	-45.3	-9	-54.5	-8	-41.7	-14	-54.8	-23	-16
Wood, paper; printing and publishing, of which:	5	4.8	-6	-7.0	-6	-9.8	0	-0.9	-3	5
Wood and paper products	-5	-12.5	-8	-10.6	-5	-9.1	-1	-3.5	-1	-5
Printing and publishing	10	33.8	2	3.2	-2	-3.9	1	2.7	-2	10
Chemicals and non-metallics	-14	-32.7	9	12.4	1	1.9	-1	-2.2	-20	-14
Metals and metal goods	-11	-34.8	-2	-4.9	-3	-6.7	-6	-15.2	-25	-11
Engineering	-9	-18.5	1	0.6	-11	-11.2	-3	-4.3	-10	-9
Transport equipment	0	3.2	-15	-32.0	9	31.2	2	5.8	11	0
Manufacturing not elsewhere specified (nes) and recycling	-1	-6.7	4	15.3	7	37.7	3	17.7	3	-1
Construction	6	3.1	23	8.9	37	21.5	20	12.8	-3	6
Sales and maintenance of motor vehicles	-11	-14.8	3	3.3	-4	-5.5	3	5.0	-2	-11
Wholesale distribution	29	16.9	57	34.0	16	14.7	13	15.6	13	29
Retail distribution	55	16.2	61	16.1	58	24.4	50	21.8	31	55
Hotels and catering	103	53.2	41	19.5	32	24.9	39	24.0	19	103
Transport	28	12.5	26	18.3	6	5.7	6	9.0	26	28
Communications	6	6.3	15	24.2	17	41.9	8	22.1	11	6
Banking and insurance	19	6.1	14	9.6	-7	-7.4	-1	-1.3	1	19
Professional services	39	37.6	53	57.4	21	36.1	8	16.9	9	39
Computing and related	77	148.9	72	115.2	27	97.9	23	170.1	20	77
Other business services	265	46.8	162	44.8	72	34.0	64	39.0	53	265
Public administration	-22	-9.2	-30	-14.9	-4	-3.9	2	1.4	-1	-22
Education	35	15.5	39	14.0	17	10.2	52	33.8	58	35
Health and social work	64	19.8	20	5.3	27	12.3	24	10.2	40	64
Miscellaneous services	116	45.3	79	43.8	52	49.6	47	43.9	38	116
Total	746	20.0	595	16.6	317	13.8	304	14.0	214	9.1

(continued)

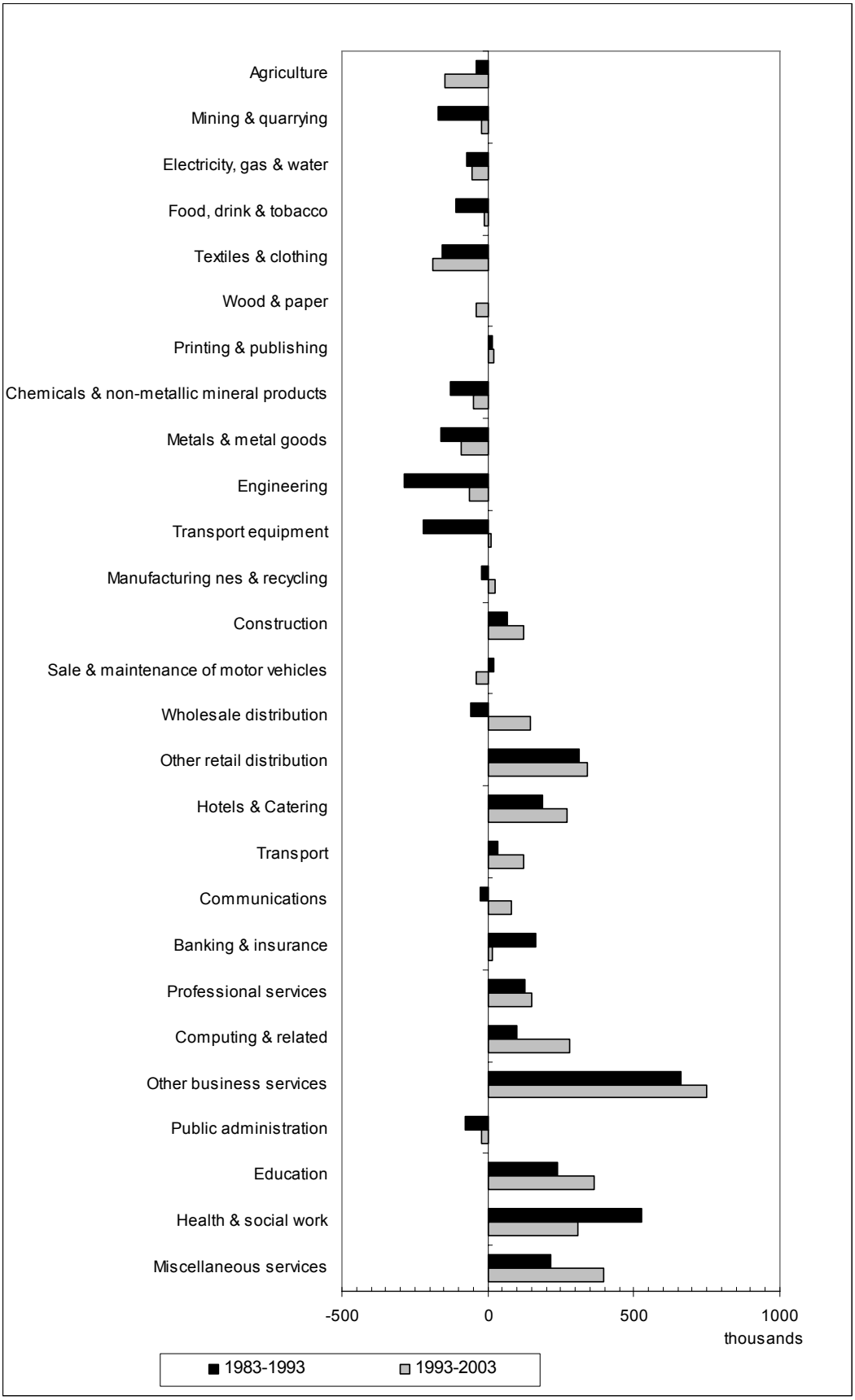
Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Table 2.2: Changing industrial employment patterns by region 1993–2003 (continued)

	East Midlands		Yorkshire and the Humber		North West		North East		England	
	000	%	000	%	000	%	000	%	000	%
Agriculture	-2	-24.3	-10	-12.6	-28	-44.4	-33	-35.3	-21	-37.3
Mining and quarrying; utilities, of which:	-15	-54.3	-10	-30.1	-7	-30.8	-5	-20.1	-8	-33.2
Mining and quarrying	-3	-53.9	3	82.6	0	-0.4	0	5.1	-3	-55.1
Electricity, gas and water	-11	-54.5	-12	-42.8	-7	-38.3	-6	-28.1	-5	-27.1
Food, drink and tobacco	0	-1.0	-1	-4.2	-4	-9.4	3	7.1	-3	-7.1
Textiles and clothing	-16	-45.3	-9	-54.5	-8	-41.7	-14	-54.8	-23	-57.9
Wood, paper; printing and publishing, of which:	5	4.8	-6	-7.0	-6	-9.8	0	-0.9	-3	-7.7
Wood and paper products	-5	-12.5	-8	-10.6	-5	-9.1	-1	-3.5	-1	-1.1
Printing and publishing	10	33.8	2	3.2	-2	-3.9	1	2.7	-2	-1.7
Chemicals and non-metallics	-14	-32.7	9	12.4	1	1.9	-1	-2.2	-20	-22.6
Metals and metal goods	-11	-34.8	-2	-4.9	-3	-6.7	-6	-15.2	-25	-19.7
Engineering	-9	-18.5	1	0.6	-11	-11.2	-3	-4.3	-10	-9.2
Transport equipment	0	3.2	-15	-32.0	9	31.2	2	5.8	11	17.3
Manufacturing nes and recycling	-1	-6.7	4	15.3	7	37.7	3	17.7	3	13.6
Construction	6	3.1	23	8.9	37	21.5	20	12.8	-3	-2.2
Sales and maintenance of motor vehicles	-11	-14.8	3	3.3	-4	-5.5	3	5.0	-2	-3.3
Wholesale distribution	29	16.9	57	34.0	16	14.7	13	15.6	13	10.9
Other retail distribution	55	16.2	61	16.1	58	24.4	50	21.8	31	13.7
Hotels and catering	103	53.2	41	19.5	32	24.9	39	24.0	19	14.8
Transport	28	12.5	26	18.3	6	5.7	6	9.0	26	32.9
Communications	6	6.3	15	24.2	17	41.9	8	22.1	11	30.3
Banking and insurance	19	6.1	14	9.6	-7	-7.4	-1	-1.3	1	0.7
Professional services	39	37.6	53	57.4	21	36.1	8	16.9	9	21.8
Computing and related	77	148.9	72	115.2	27	97.9	23	170.1	20	109.4
Other business services	265	46.8	162	44.8	72	34.0	64	39.0	53	27.2
Public administration	-22	-9.2	-30	-14.9	-4	-3.9	2	1.4	-1	-0.9
Education	35	15.5	39	14.0	17	10.2	52	33.8	58	34.4
Health and social work	64	19.8	20	5.3	27	12.3	24	10.2	40	18.0
Miscellaneous services	116	45.3	79	43.8	52	49.6	47	43.9	38	37.8
Total	746	20.0	595	16.6	317	13.8	304	14.0	214	9.1

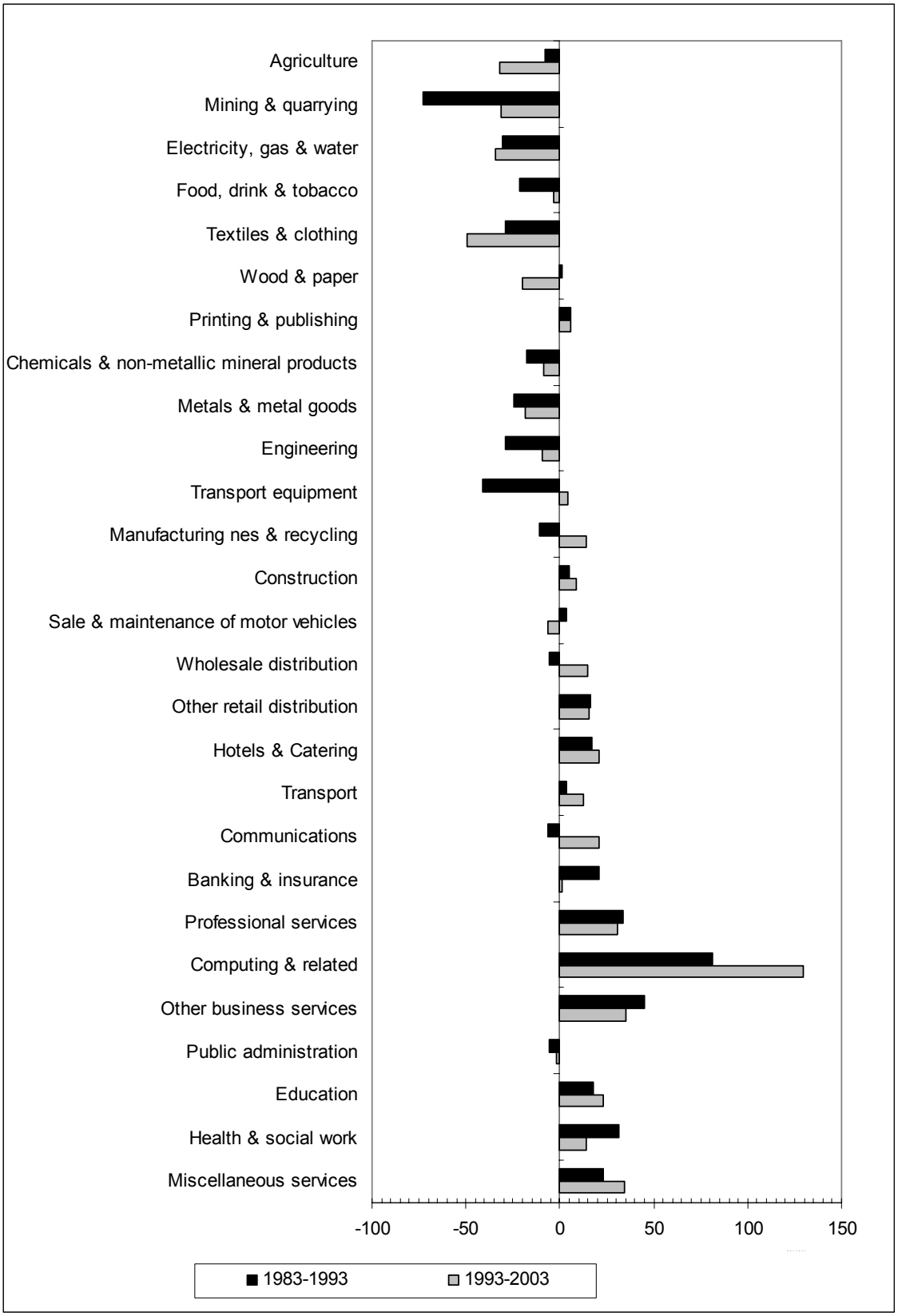
Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Figure 2.3: Changes in employment by industry, England 1983–93 and 1993–2003



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).
Note: This figure shows absolute changes in thousands between the years indicated.

Figure 2.4: Rates of employment growth by industry, England 1983–93 and 1993–2003



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).
Note: This figure shows percentage changes between the years indicated.

Occupational trends

There has been strong growth in employment for managerial, professional and related occupations and gradual decline among more traditional blue-collar occupations while there have been severe job losses amongst many manual occupations.

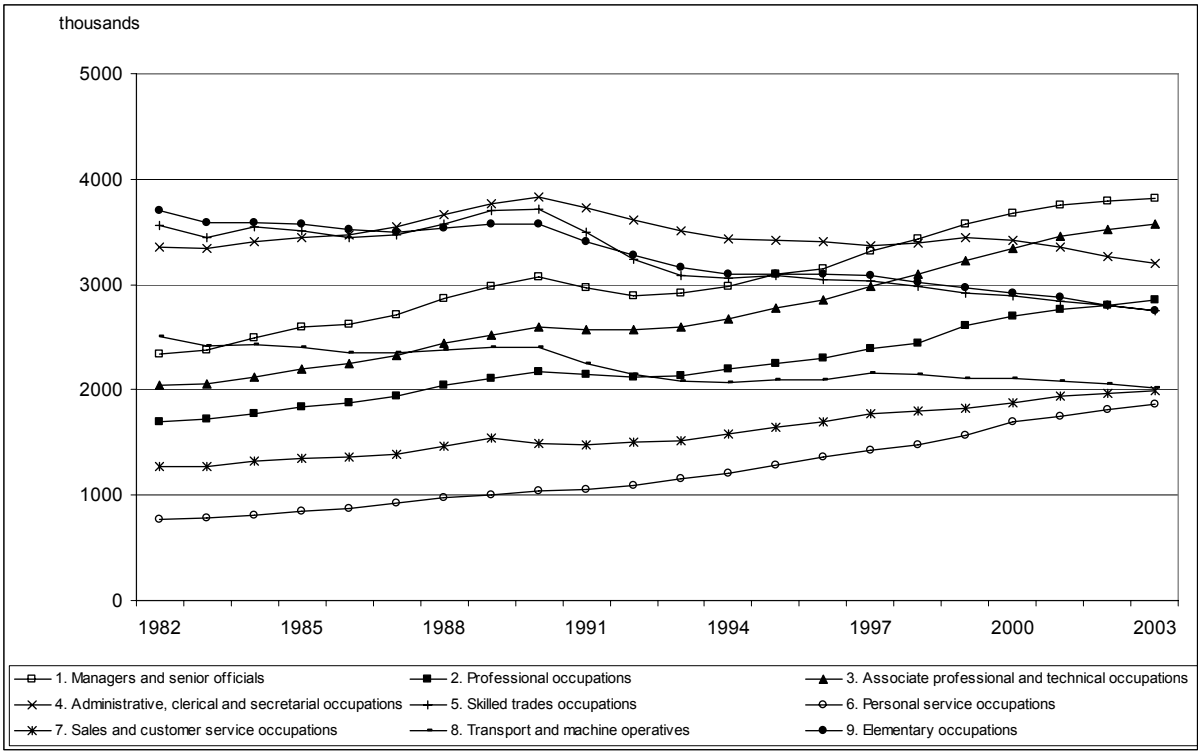
2.52 The last 20 years have seen large increases in the share and number of people employed in managerial, professional and service occupations, offset by declines in the share and number employed in lower-level manual and non-manual occupations (see Figure 2.5). This reflects a combination of the effects of changing sectoral employment patterns, which have tended to favour service-orientated managerial and professional jobs at the expense of more traditional blue-collar industries, reinforced by shifts of occupational structure within industries, which have also favoured the same groups. In recent years, changes within industries have been the main factor, driven by technological change and related changes to the way that work is organised.

2.53 The employment share of managerial, professional and associate professional occupations has increased substantially from a third to more than 40 per cent over the last decade, an increase of more than 2.5 million jobs. In contrast, the share of skilled trades and process, plant and machine operative jobs fell from around a quarter to just under a fifth, with the loss of more than half a million jobs (see Figure 2.6).

2.54 A summary of recent employment change based on the 25 Standard Occupational Classification (SOC) sub-major occupational groups is presented in Figure 2.7. Of the 2.6 million additional managerial, professional and associate professional jobs, over 800,000 have been for corporate managers.

2.55 Job numbers have declined dramatically amongst many manual occupations (both skilled and unskilled), although some job losses have also occurred for less-skilled white-collar workers in administrative and secretarial and related occupations. At the start of the 1990s, around 40 per cent of all jobs were to be found amongst SOC categories 5, 8 and 9 (skilled trades, process, plant and machine operators, drivers and elementary occupations). By 2003 the proportion of employment accounted for by these jobs had fallen to just over 30 per cent.

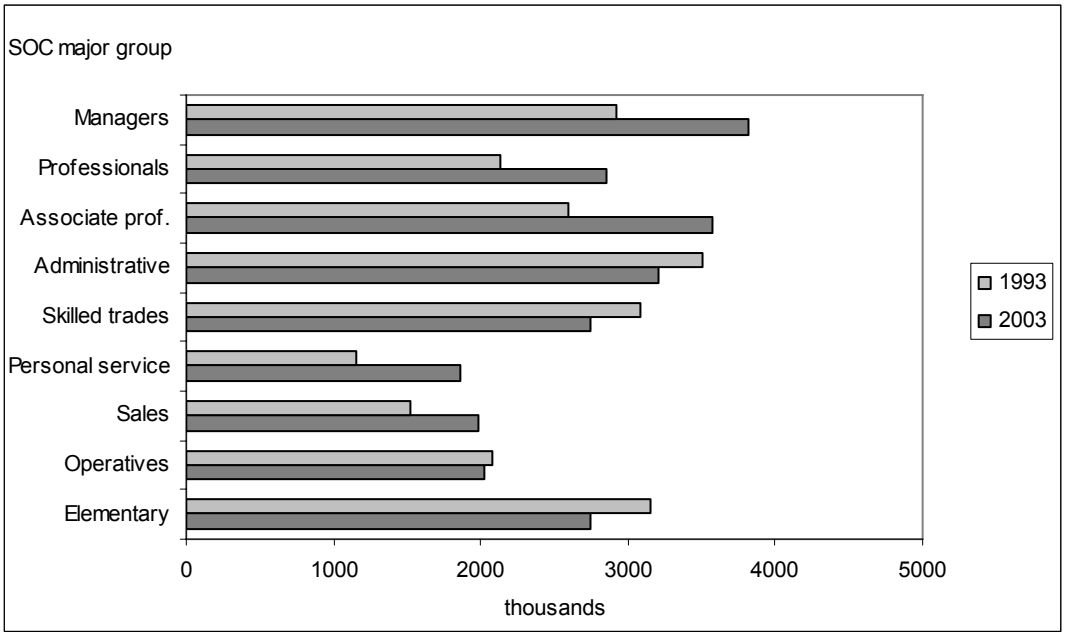
Figure 2.5: Occupational profiles, England 1983–2003



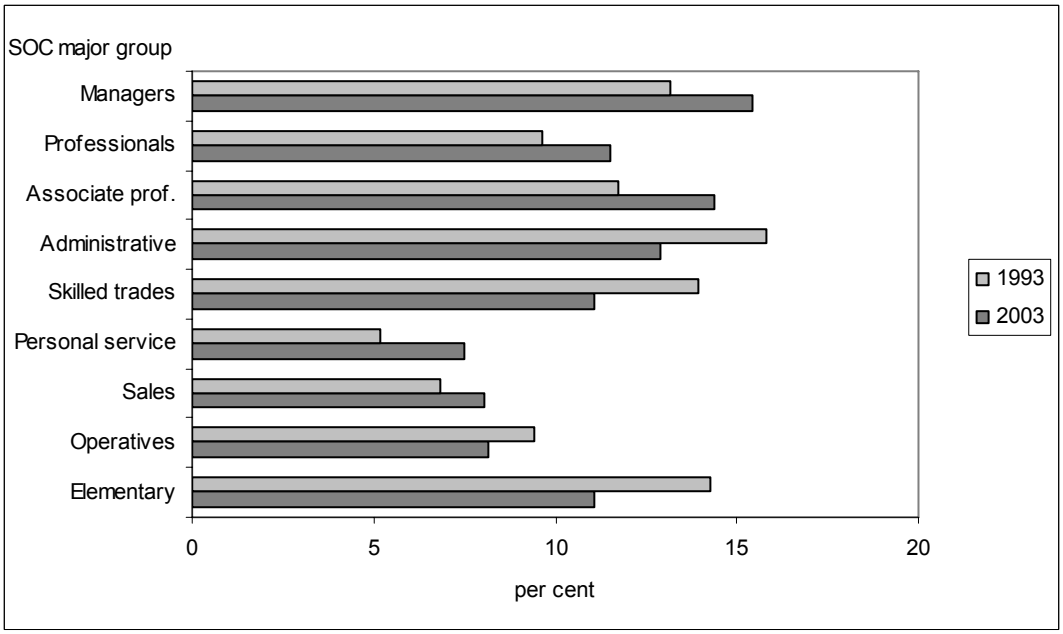
Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Figure 2.6: Changing occupational structure of employment, England 1993 and 2003

Numbers in employment

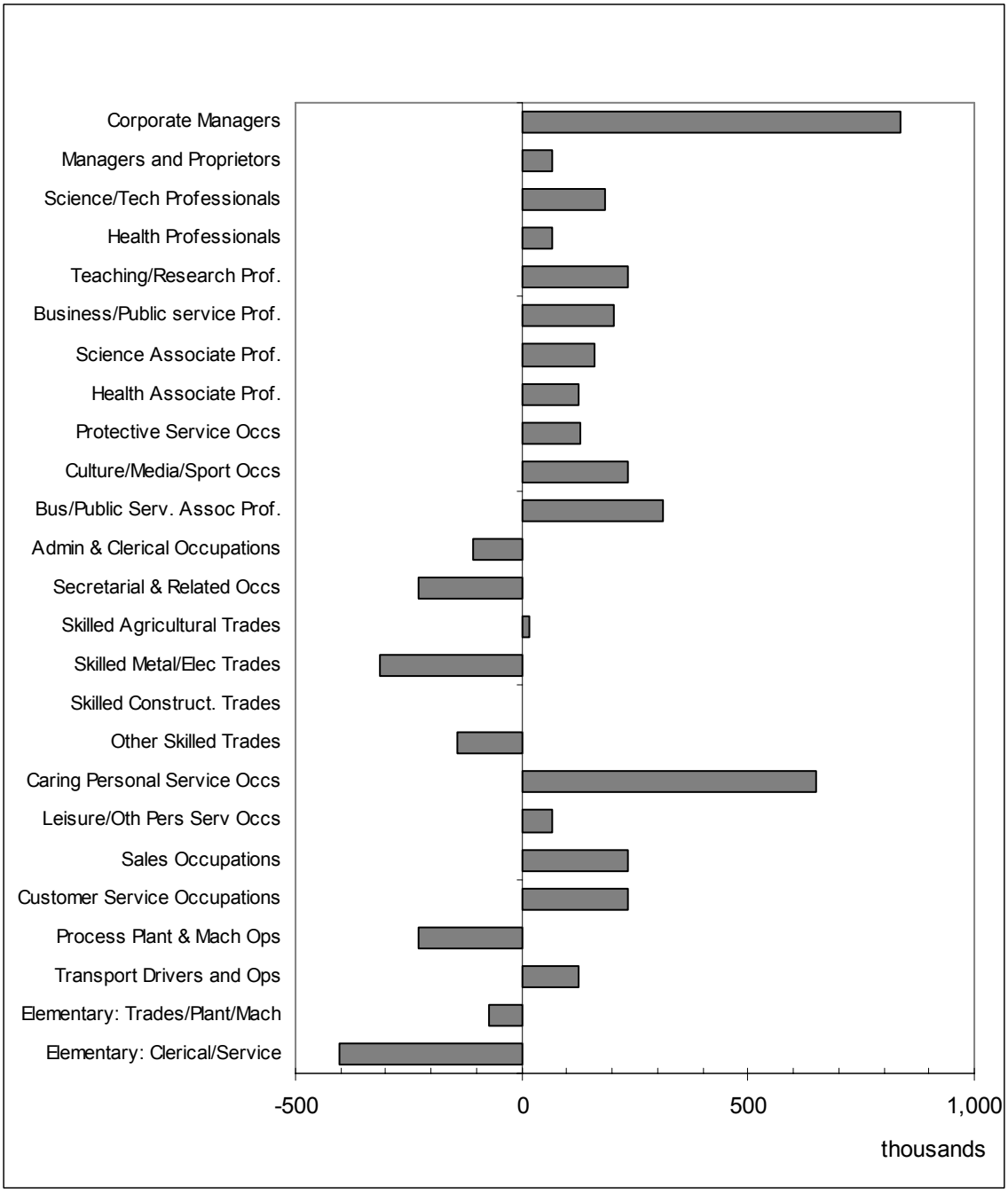


Percentage shares of total employment



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Figure 2.7: Occupational change by SOC sub-major group, England 1993–2003



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).
Note: Figures shown in thousands.

2.56 The occupations most seriously affected have been:

- trades, plant- and machine-related jobs within elementary occupations
- process, plant and machine operators
- skilled metal and/or electrical trades
- administrative, secretarial and related occupations.

Nevertheless, manual jobs still account for a significant part of employment although employers often face problems recruiting new entrants. Changing occupational shares within sectors have generally reinforced the sectoral effects.

2.57 Despite the job losses, many of these occupations still account for a substantial proportion of the workforce. Replacement demand, as a result of labour turnover in these occupations, continues to be a key element of overall labour demand. This poses a problem for many employers, as recruitment of new workers into such jobs is often difficult. The past history of job losses tends strongly to discourage many potential new entrants. This is often reinforced by relatively poor pay and working conditions, in a context of rising aspirations among many young people, following their participation in higher education.

2.58 There have been substantial shifts in occupational structure *within* most sectors as shown in Table 2.3. The shaded cells highlight those occupations for which the proportion of employment in the sector has declined. All sectors, except primary and utilities, have seen an increase in the proportion of those employed in managerial, professional and associate professional occupations. Business services and manufacturing sectors have experienced the most notable increases (see Figure 2.8).

2.59 In contrast, all sectors have witnessed a fall in the share employed in administrative and related occupations, skilled trades, and transport and machine operatives. The loss of administrative and secretarial jobs has largely occurred amongst business services and non-marketed services. The decline in the employment share of skilled trades and operatives has been most marked in manufacturing.

2.60 A more detailed analysis of changes in the occupational structure of employment within industries is shown in Table 2.4. The rising share of managerial, professional and associate professional jobs is apparent in almost every industry, as illustrated in Figure 2.9.

Table 2.3: Occupational structure, broad sectors, England 1993 and 2003

Percentage employed in each occupation

	Primary and utilities		Manufacturing		Construction		Distribution, transport etc.		Business and misc. services		Non-marketed services		All industries	
	1993	2003	1993	2003	1993	2003	1993	2003	1993	2003	1993	2003	1993	2003
1 Managers and senior officials	9.2	8.2	10.6	13.8	10.0	12.3	17.7	19.4	15.7	17.9	8.0	9.6	13.2	15.4
2 Professional occupations	3.8	3.9	5.3	6.2	4.5	5.1	2.4	2.7	11.7	14.0	22.3	25.6	9.6	11.5
3 Associate professional and technical occupations	3.5	4.2	8.2	10.8	3.8	4.9	6.2	7.6	15.9	19.8	20.8	22.5	11.7	14.4
4 Admin., clerical and secretarial occupations	8.6	7.9	9.7	8.8	8.4	6.7	11.0	10.2	28.3	20.7	17.2	11.8	15.8	12.9
5 Skilled trades occupations	33.1	30.6	24.6	21.0	50.6	46.5	13.6	11.2	4.9	4.2	2.4	1.9	13.9	11.1
6 Personal service occupations	4.0	6.0	1.2	1.6	0.3	0.4	2.6	3.7	5.7	8.0	12.5	17.4	5.2	7.5
7 Sales and customer service occupations	1.7	2.6	2.2	3.0	0.8	1.2	18.3	20.3	3.4	4.3	1.2	1.4	6.8	8.0
8 Transport and machine operatives	10.4	8.5	23.9	21.7	10.1	10.2	10.3	9.9	4.2	4.0	2.6	2.2	9.4	8.1
9 Elementary occupations	25.7	28.2	14.2	13.0	11.4	12.6	18.0	15.0	10.2	7.1	12.8	7.6	14.3	11.1
All occupations	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100.0	100.0	100

Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).
Note: Shaded cells indicate occupations where the proportion of employment in the sector has declined between 1993 and 2003.

Table 2.4: Occupational structure within industries, England 1993 and 2003

row % shares

	Managers and senior officials		Professional occupations		Associate prof. and technical		Administrative and secretarial		Skilled trades occupations	
	1993	2003	1993	2003	1993	2003	1993	2003	1993	2003
Agriculture	9.4	6.7	0.9	0.8	1.6	1.5	4.1	2.6	35.7	35.4
Mining and quarrying; utilities, of which:	8.7	11.0	9.3	10.1	7.3	9.5	17.3	18.2	28.1	21.0
Mining and quarrying	9.4	13.5	6.6	7.5	6.9	9.5	8.2	10.3	29.2	22.6
Electricity, gas and water	8.4	10.0	10.4	11.1	7.5	9.5	20.8	21.4	27.6	20.3
Food, drink and tobacco	8.5	12.6	2.9	3.8	6.4	8.5	11.2	8.3	16.7	14.6
Textiles and clothing	8.4	15.5	1.7	2.8	4.9	8.4	8.3	7.1	14.0	12.7
Wood, paper; printing and publishing, of which:	11.5	15.3	3.0	3.7	12.0	16.5	14.9	12.2	23.6	17.8
Wood and paper products	12.0	13.6	2.7	2.9	9.0	10.8	10.3	11.2	32.6	26.6
Printing and publishing	11.3	16.0	3.2	4.1	13.7	19.1	17.6	12.6	18.3	14.0
Chemicals and non-metallics	11.4	13.6	6.6	7.2	9.1	10.7	9.4	7.8	17.5	15.2
Metals and metal goods	10.9	13.0	4.9	5.4	5.9	7.3	5.7	7.2	35.2	28.8
Engineering	12.7	15.9	9.1	10.3	10.2	12.8	10.7	9.0	26.7	22.5
Transport equipment	8.2	9.5	8.0	7.9	7.1	8.8	5.6	9.4	36.1	28.3
Manufacturing nes and recycling	10.2	13.5	2.4	3.0	5.4	7.1	9.9	7.7	31.5	31.3
Construction	10.0	12.3	4.5	5.1	3.8	4.9	8.4	6.7	50.6	46.5
Sale and maintenance of motor vehicles	26.3	22.1	2.9	2.8	8.4	8.3	4.4	5.9	19.7	14.5
Wholesale distribution	24.8	22.0	2.8	2.9	8.2	8.5	6.2	6.3	18.0	13.9
Other retail distribution	13.6	16.7	1.8	2.6	6.1	8.2	14.4	10.6	8.6	8.4
Hotels and catering	25.5	30.2	0.9	1.3	3.7	5.9	7.3	6.7	12.5	11.2
Transport	8.9	11.0	4.1	4.2	6.9	8.4	13.7	16.0	14.3	10.1
Communications	5.9	7.5	4.0	4.2	4.6	5.7	19.3	21.1	24.0	18.1
Banking and insurance	13.5	15.7	6.0	7.7	10.5	12.7	52.3	44.2	3.2	3.1
Professional services	19.2	19.2	16.8	16.6	18.9	20.8	20.8	17.3	5.7	4.2
Computing and related	20.1	19.3	22.5	20.2	17.7	19.0	18.9	21.1	6.6	4.9
Other business services	15.9	18.6	13.5	15.9	16.8	20.8	28.6	19.7	5.0	4.2
Public administration	10.0	12.6	10.0	11.4	17.9	23.0	34.5	27.6	4.4	3.4
Education	3.9	5.3	48.6	51.2	13.1	14.8	8.5	6.0	1.5	1.1
Health and social work	9.8	11.6	10.2	12.3	28.0	28.2	14.2	8.8	2.0	1.7
Miscellaneous services	15.0	17.0	8.9	11.3	17.1	22.5	12.5	9.0	5.3	4.7
Total: %	13.2	15.4	9.6	11.5	11.7	14.4	15.8	12.9	13.9	11.1
000	2,915	3,823	2,129	2,852	2,601	3,575	3,503	3,201	3,083	2,748

(continued)

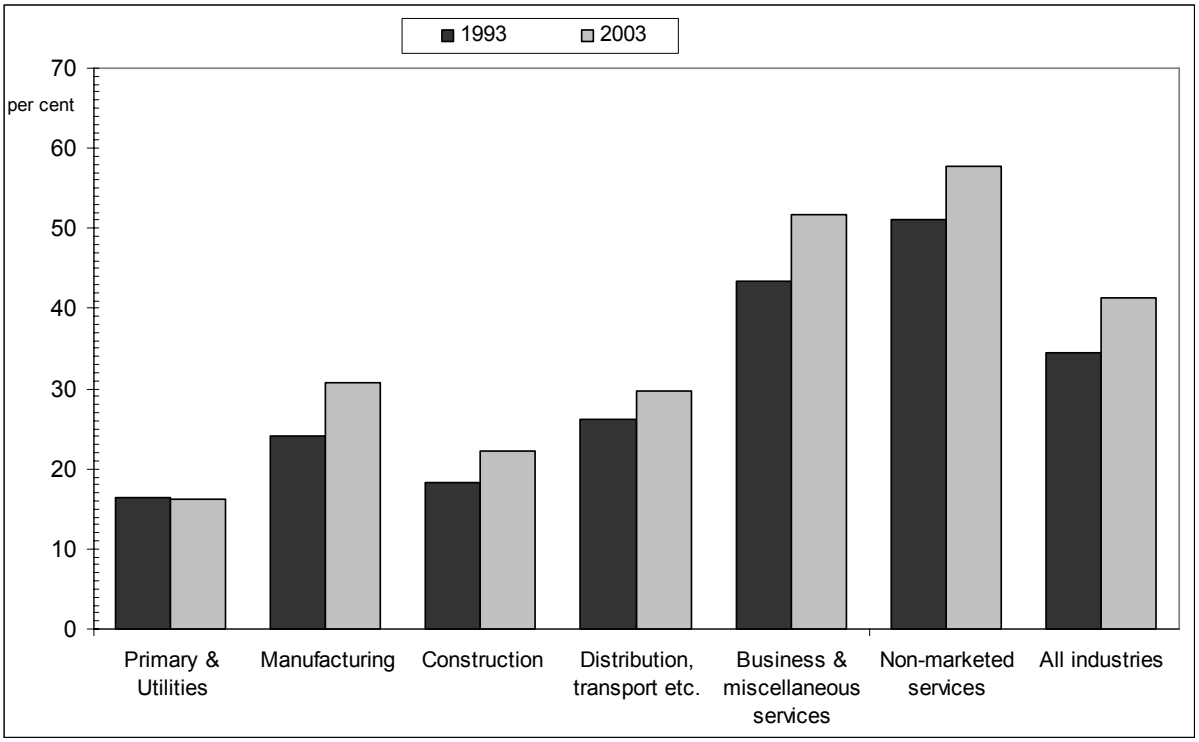
Table 2.4: Occupational structure within industries, England 1993 and 2003 (continued)

row % shares

	Personal service occupations		Sales and customer service		Transport and machine ops		Elementary occupations		All occupations (100%) 000	
	1993	2003	1993	2003	1993	2003	1993	2003	1993	2003
Agriculture	5.3	7.9	0.8	0.9	9.4	7.2	32.7	37.0	449	304
Mining and quarrying; utilities, of which:	1.4	2.2	3.5	6.0	12.5	11.2	11.8	10.8	229	153
Mining and quarrying	1.2	1.7	0.9	1.8	19.2	16.7	18.5	16.3	64	44
Electricity, gas and water	1.5	2.3	4.5	7.7	10.0	9.0	9.2	8.6	165	109
Food, drink and tobacco	0.6	0.6	6.8	7.4	26.4	27.3	20.5	16.8	395	383
Textiles and clothing	2.1	2.6	1.8	2.4	45.6	36.0	13.2	12.5	380	191
Wood, paper; printing and publishing, of which:	1.9	2.8	3.0	4.1	17.7	16.9	12.3	10.7	529	508
Wood and paper products	1.2	2.2	1.9	3.5	18.9	18.3	11.3	11.0	194	155
Printing and publishing	2.3	3.1	3.7	4.3	17.0	16.3	12.9	10.5	335	353
Chemicals and non-metallics	1.4	1.9	1.7	2.2	25.3	24.6	17.6	16.8	582	533
Metals and metal goods	0.8	1.1	0.9	1.7	21.0	21.0	14.6	14.4	506	413
Engineering	1.0	1.4	1.5	2.2	17.5	16.4	10.5	9.3	704	638
Transport equipment	0.7	1.1	0.7	1.7	20.4	20.1	13.2	13.1	312	324
Manufacturing nes and recycling	0.7	1.0	1.7	2.1	26.0	23.0	12.2	11.3	175	199
Construction	0.3	0.4	0.8	1.2	10.1	10.2	11.4	12.6	1448	1572
Sale and maintenance of motor vehicles	2.7	4.3	14.9	24.6	10.7	9.3	10.1	8.3	602	562
Wholesale distribution	3.0	4.6	17.1	24.9	9.8	8.8	10.1	8.2	994	1142
Other retail distribution	2.1	2.7	37.8	36.4	5.2	5.9	10.3	8.4	2240	2580
Hotels and catering	3.2	4.0	4.1	5.0	1.6	2.1	41.2	33.7	1297	1567
Transport	2.9	4.5	1.6	3.2	29.4	27.8	18.3	14.9	960	1082
Communications	2.0	3.0	3.1	5.7	21.5	20.3	15.8	14.3	387	469
Banking and insurance	1.3	1.6	5.8	8.3	1.8	2.0	5.5	4.6	969	985
Professional services	4.9	8.9	2.4	3.5	4.0	3.5	7.3	5.9	499	650
Computing and related	1.6	2.6	2.3	4.2	4.2	3.5	6.2	5.3	216	497
Other business services	4.8	7.4	3.0	3.9	3.8	3.6	8.6	6.0	2126	2875
Public administration	3.1	5.0	1.4	2.1	4.3	3.6	14.5	11.4	1198	1177
Education	7.0	10.0	0.8	1.0	2.4	2.2	14.1	8.3	1583	1947
Health and social work	21.6	28.9	1.4	1.5	1.9	1.6	11.0	5.3	2204	2513
Miscellaneous services	12.2	14.6	2.6	2.7	7.2	6.5	19.2	11.7	1152	1550
Total %	5.2	7.5	6.8	8.0	9.4	8.1	14.3	11.1	100.0	100.0
000	1,152	1,859	1,516	1,990	2,081	2,018	3,158	2,748	22,138	24814

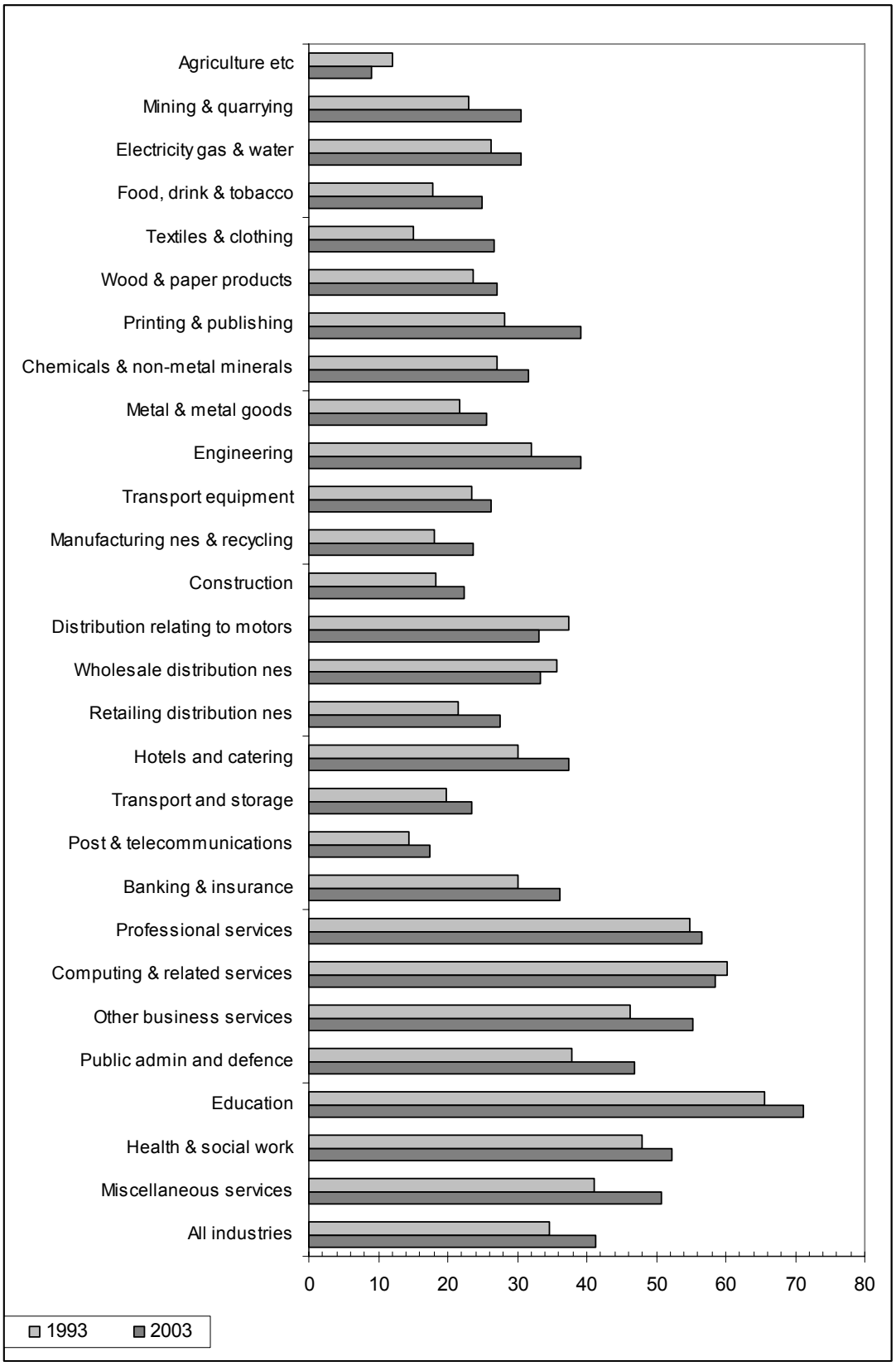
Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Figure 2.8: Proportion of employment in managerial, professional and associate professional occupations by sector, England 1993 and 2003



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Figure 2.9: Proportion of employment in managerial, professional and associate professional occupations by industry, England 1993 and 2003



Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).

Regional and local trends

2.61 The patterns of sectoral change described above have been common across most regions of England, as shown in Tables 2.1 and 2.2. It is clear that some regions have suffered more because of their specialisation in both the primary and manufacturing sectors (notably the Midlands and the Northern regions). Others have benefited from the move towards a more service-oriented economy (particularly London and the South East). In consequence, the overall patterns of growth and decline in employment have differed across regions.

These basic patterns have been repeated across all regions but some have fared much better than others. Regional changes have favoured the south-eastern parts of the country especially for managerial and professional occupations.

2.62 Total employment growth has been much stronger in southern and eastern regions of England. This is reflected in Table 2.5, which shows the main changes in occupational employment by region. The shaded cells indicate those occupations where total employment has fallen over the decade since 1992. The net change in employment over the last decade was positive for all regions with the exception of the North East. As is apparent from Table 2.5, the South has clearly benefited to a much greater extent than has the North. Over 75 per cent of the growth in employment has been in the South.

2.63 To an extent, these changes reflect the regional variations in sectoral employment trends illustrated in Table 2.1. These have had significant implications for occupational trends at the regional level. Recognising that there are important differences in terms of sectoral structure, similar patterns emerge for all regions in terms of the patterns of growth and decline for particular occupations.

2.64 The number of people employed as managers and professionals has increased rapidly in all regions, but especially in London and the South East. Similarly, the growth in employment amongst associate professional and technical occupations has also been concentrated in the South East and London, with more modest increases elsewhere. Employment growth for personal service and sales and customer service occupations has been more evenly distributed across the regions. All regions have experienced a decline in the absolute numbers of people employed in administrative and secretarial occupations; skilled-trades; and elementary occupations.

2.65 Further information on regional and local patterns is presented in the Volume 4 as well as in *Working Futures* (Wilson *et al.*, 2004).

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Table 2.5: Occupational change within regions, 1993–2003 (000s)

		London	South East	East	South West	West Mid.	East Mid.	Y and H	North West	North East	England
1	Managers and senior officials	253	202	116	80	57	54	50	77	18	908
2	Professional occupations	206	114	61	74	60	50	45	97	15	723
3	Associate professional and technical occupations	305	172	97	81	83	58	55	100	24	974
4	Admin., clerical and secretarial occupations	-95	-53	-33	-26	-13	-6	-18	-39	-18	-302
5	Skilled trades occupations	-28	-25	-16	-24	-55	-52	-56	-52	-27	-335
6	Personal service occupations	99	119	70	76	86	76	67	86	27	707
7	Sales and customer service occupations	78	90	47	65	46	38	47	53	10	474
8	Transport and machine operatives	-20	8	6	5	-3	-21	-10	-18	-11	-63
9	Elementary occupations	-50	-32	-31	-28	-47	-35	-67	-83	-36	-410
	Total	746	595	317	304	214	163	113	221	2	2,677

Source: IER estimates, based on *Working Futures,* Wilson *et al.* (2004).
Note: Shaded cells indicate occupations where the number in employment has declined.

Qualifications of the Employed Workforce

Numbers and proportions employed with formal qualifications have risen sharply. This has been driven by changes in the occupational structure of employment although it also reflects the rapid increase in educational participation rates.

2.66 There have been dramatic increases in the proportions and numbers of people employed who have formal qualifications, but it is difficult to distinguish demand from supply influences. Both factors have played an important role in determining the outcome observed.

2.67 The shift in occupational structure in favour of those (higher-level) occupations which tend to employ large proportions of qualified people has been one important driver. Between 1993 and 2003, total employment in these higher-level occupational categories grew by around 2.6 million.

2.68 But the observed increases are also, in part at least, supply driven. Increased participation in higher education has been encouraged by both the present and previous governments and this has led to a sharp rise in the number of those acquiring national vocational qualifications (NVQ) Level 4 qualifications. These trends are discussed in more detail in Chapter 3.

The numbers qualified at intermediate and lower levels have also risen, but a substantial proportion still have no formal qualifications. There has also been an increase in vocational qualifications held, with many new qualifications being introduced and the flow of those obtaining A-levels and other NVQ Level 3 qualifications has risen steadily.

2.69 The proportions in employment holding intermediate and lower-level qualifications have also risen in recent years, although not as rapidly as for higher-level qualifications. This reflects the fact that many of those acquiring intermediate-level qualifications go on to obtain even higher-level qualifications. As shown in Table 2.6 and 2.7 and Figure 2.10, according to the Labour Force Survey (LFS), by 1994 over 4 in 5 of the employed workforce had formal qualifications of some kind. By 2004, this has risen to almost 9 in 10, and now almost 60 per cent of the employed workforce is qualified to at least NVQ Level 3. But some 11 per cent of the workforce still has no formal qualifications and, despite the fall in this proportion in recent times, almost 30 per cent of those in employment are qualified below NVQ Level 2 (see Figure 2.11).

2.70 There have been a number of innovations in the area of intermediate and lower-level qualifications in recent years, with the introduction of general national vocational qualifications (GNVQs) and other new vocational qualifications. Pressures to raise standards, combined with changing emphasis on different aspects of the curriculum and other influences, have resulted in rising success rates in GCSEs and A-Levels. These essentially supply-side changes have been reflected in rising employment shares for people holding such qualifications. As discussed in Chapter 3, at NVQ Levels 2 and 3, the flow obtaining GCSEs and A-level or equivalent qualifications rose sharply in the 1990s. This rate of growth was facilitated by various new qualifications such as GNVQ, which grew to quite substantial levels in just a few years after their introduction.

The impact on the stocks of those with these as their highest qualification has been modest, since many have gone on to acquire even higher qualifications.

2.71 When the total stocks of persons holding such qualifications as their highest qualification are assessed, a somewhat different picture emerges. As Table 2.6 and Figure 2.12 show, on this measure, the overall proportion of the employed workforce with NVQ Level 2 as their *highest* qualification actually fell slightly between 1994 and 2004, while the corresponding figure for those with NVQ Level 3 as their highest qualification only rose relatively modestly. This is because of the focus on 'highest qualification held'. The overall numbers holding such qualifications have risen rapidly but many people have 'upgraded' and now have degrees.

Table 2.6: Qualifications held by those in employment, England 1994 and 2004

	Numbers (000)		Percentages	
Qualifications	1994	2004	1994	2004
No qualification	3,904	2,516	18.6	10.7
NVQ 1 GCSE (below grade C)	3,423	3,579	16.3	15.2
NVQ 1 GNVQ foundation		7	0.0	0.0
NVQ 1 BTEC 1st certificate etc.	808	878	3.9	3.7
NVQ 1 total	4,231	4,463	20.2	19.0
NVQ 2 GCSE(grades A–C)	2,312	2,733	11.0	11.6
NVQ 2 GNVQ intermediate		76	0.0	0.3
NVQ 2 BTEC 1st diploma etc.	2,197	2,151	10.5	9.2
NVQ 2 total	4,508	4,961	21.5	21.1
NVQ 3 A-level and equivalent	1,011	1,523	4.8	6.5
NVQ 3 GNVQ advanced		200	0.0	0.9
NVQ 3 ONC BTEC national etc.	2,448	2,849	11.7	12.1
NVQ 3 total	3,459	4,573	16.5	19.5
NVQ 4 First degree and equivalent	2,330	3,374	11.1	14.4
NVQ 4 HE below degree level	247	476	1.2	2.0
NVQ 4 HNC BTEC and RSA higher etc.	889	1,032	4.2	4.4
NVQ 4 Nursing and teaching	874	689	4.2	2.9
NVQ 4 total	4,340	5,571	20.7	23.7
NVQ 5 Higher degree	527	1,402	2.5	6.0
Total	20,970	23,485	100.0	100.0

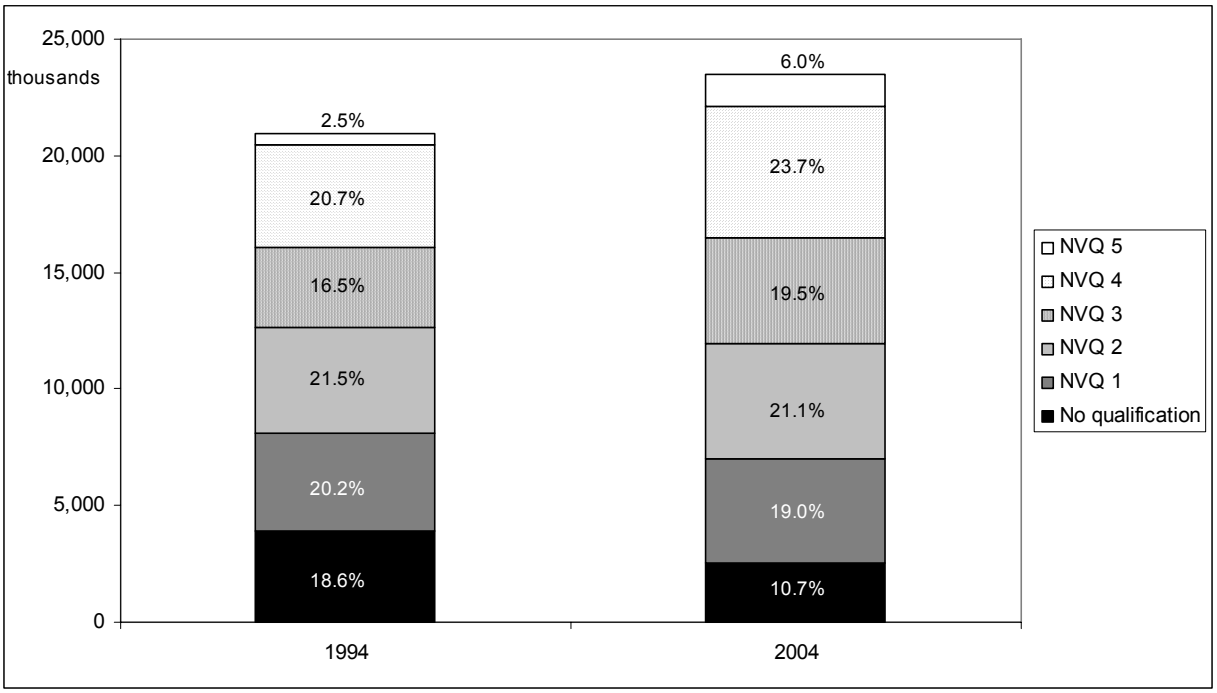
Source: IER estimates based on the Labour Force Survey, Spring 1994 and 2004.
Notes: Highest qualification held for all those in employment. The figures differ slightly from those published elsewhere due to different treatment of certain responses. 'Don't knows' are included here with those reporting no qualifications. Some low level qualifications that do not attain NVQ Level 1 status are also included in the 'no qualification' category. In total these differences boost the 'no qualifications' category by almost 1 percentage point.

Table 2.7: Qualification level by occupation, England 1994 and 2004

		NVQ 5		NVQ 4		NVQ 3		NVQ 2		NVQ 1		No Quals.		Total	
		1994	2004	1994	2004	1994	2004	1994	2004	1994	2004	1994	2004	1994	2004
Managers and senior officials	000	99	263	791	1,149	505	714	610	675	488	492	342	233	2,835	3,526
	%	3.5	7.5	27.9	32.6	17.8	20.2	21.5	19.2	17.2	13.9	12.1	6.6	100.0	100.0
Professional occupations	000	302	800	1,411	1,594	177	254	179	186	122	104	50	28	2,240	2,966
	%	13.5	27.0	63.0	53.7	7.9	8.6	8.0	6.3	5.4	3.5	2.2	0.9	100.0	100.0
Associate prof. and technical	000	74	211	1,034	1,446	394	571	455	542	372	350	241	90	2,571	3,209
	%	2.9	6.6	40.2	45.1	15.3	17.8	17.7	16.9	14.5	10.9	9.4	2.8	100.0	100.0
Administrative and secretarial	000	23	55	382	492	449	571	886	840	884	785	424	208	3,047	2,951
	%	0.7	1.9	12.5	16.7	14.7	19.3	29.1	28.5	29.0	26.6	13.9	7.0	100.0	100.0
Skilled trades occupations	000	12	18	235	200	868	923	747	651	473	463	620	352	2,955	2,606
	%	0.4	0.7	8.0	7.7	29.4	35.4	25.3	25.0	16.0	17.8	21.0	13.5	100.0	100.0
Personal service occupations	000	11	19	152	287	185	402	288	506	307	415	263	181	1,207	1,809
	%	0.9	1.1	12.6	15.8	15.3	22.2	23.9	27.9	25.4	22.9	21.8	10.0	100.0	100.0
Sales and customer service occupations	000	4	13	186	171	437	384	651	540	730	461	746	294	2,752	1,862
	%	0.1	0.7	6.8	9.2	15.9	20.6	23.6	29.0	26.5	24.8	27.1	15.8	100.0	100.0
Process, plant and machine operatives	000	1	8	37	84	97	298	137	437	184	545	190	350	647	1,723
	%	0.2	0.4	5.7	4.9	14.9	17.3	21.2	25.4	28.5	31.7	29.4	20.3	100.0	100.0
Elementary occupations	000	3	10	135	124	367	421	609	598	768	788	1,080	759	2,962	2,698
	%	0.1	0.4	4.5	4.6	12.4	15.6	20.6	22.1	25.9	29.2	36.5	28.1	100.0	100.0
Total	000	529	1,397	4,364	5,546	3,478	4,537	4,562	4,974	4,326	4,403	3,957	2,495	21,216	23,352
	%	2.5	6.0	20.6	23.7	16.4	19.4	21.5	21.3	20.4	18.9	18.6	10.7	100.0	100.0

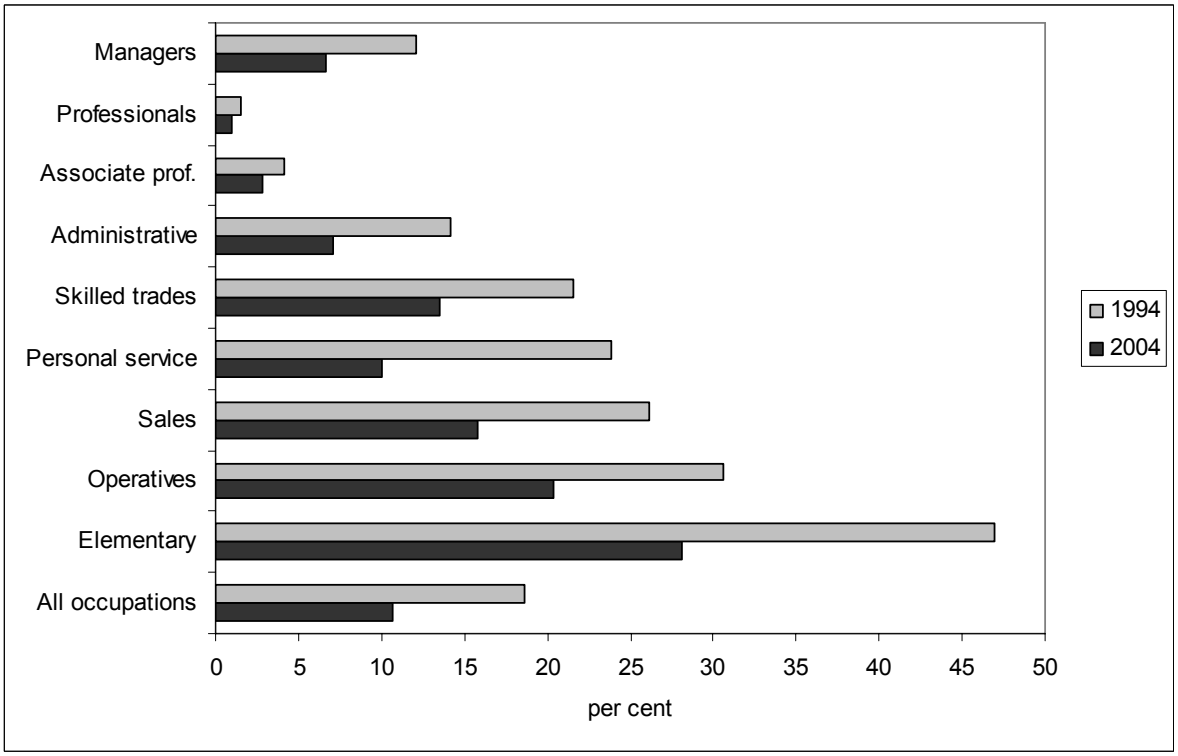
Source: Labour Force Survey, Spring 1994 and 2004.
Note: See Table 2.6. Those with no known occupation are excluded here.

Figure 2.10: Qualifications of individuals in employment, England 1994 and 2004



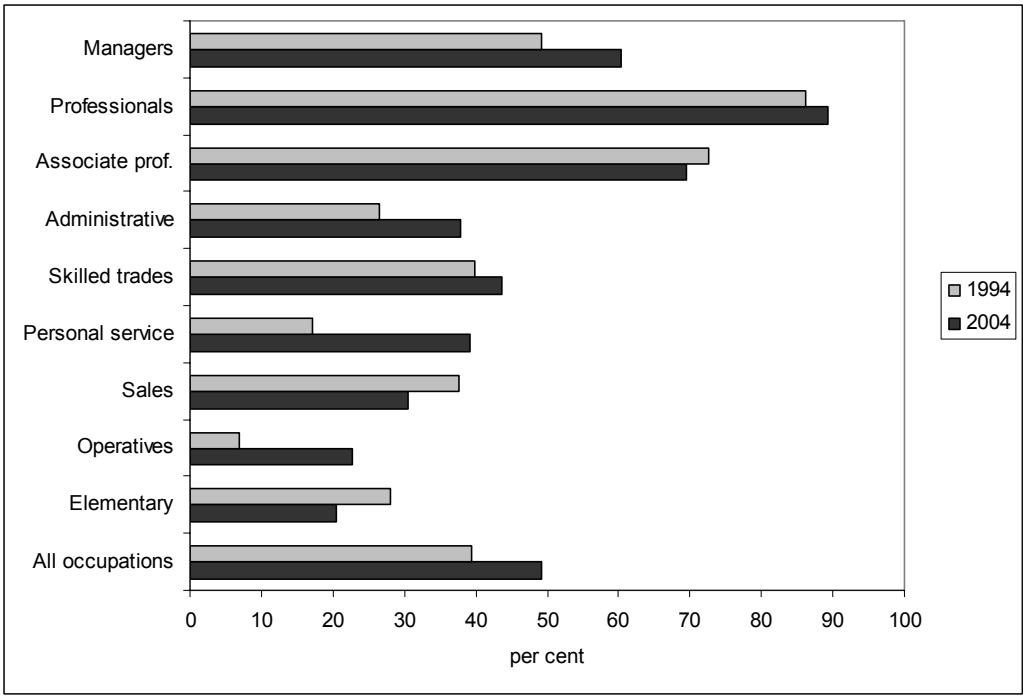
Source: Labour Force Survey, Spring 1994 and 2004.
Note: See Table 2.6.

Figure 2.11: Percentage of employees with no qualifications by occupation, England 1994 and 2004



Source: Labour Force Survey, Spring 1994 and 2004.
Note: See Table 2.6.

Figure 2.12: Percentage of employees qualified to NVQ Level 3 and above, by occupation, England 1994 and 2004



Source: Labour Force Survey, Spring 1994 and 2004.
Note: See Table 2.6.

2.72 At NVQ Level 1 the pattern is similar; RSA, BTEC first certificates and other such qualifications have seen the fastest rates of increase, while the proportion of those with GCSE below grade C as their highest qualification has fallen slightly over the last decade.

The position at NVQ Level 1 is similar, with little change in the stocks despite increased flows.

2.73 All occupational groups are becoming more qualified as measured, for example, by the proportion of employees qualified to NVQ Level 3 or equivalent and above (see Table 2.7). The increases are greatest amongst managers and administrative and secretarial occupations, with a large increase also among those employed in sales occupations.

Increases at NVQ Level 3 or above have been concentrated in managers and clerical and secretarial occupations. The growth for higher-level qualifications has been greatest amongst professionals. Many occupations are now graduate-orientated, especially for new recruits. This has raised some concerns about over-education and qualification inflation. Other occupations have also seen sharp increases in proportions qualified at lower levels. NVQ Level 3 qualifications remain the norm amongst many occupations.

2.74 For higher-level qualifications, the fastest increases have been amongst professional occupations (NVQ Level 5); managers (NVQ Levels 4 and 5); and amongst associate professionals (NVQ Level 4). There has also been a general increase for NVQ Levels 3 and 4 across many occupations, including administrative and secretarial and sales occupations.

2.75 Higher-level qualifications (NVQ Levels 4 and 5) are heavily concentrated amongst particular occupational categories (most notably professional occupations). The proportions qualified at this level have also risen in other occupations (especially amongst associate professional groups). For example teachers, and more recently nurses, have seen moves towards an all-graduate profession. Some have argued that this represents qualifications inflation. The more general consensus is that it reflects real changes in the requirements of the jobs.

2.76 The analysis in Wilson (2001a) also illustrates that there has been a general increase in the proportions qualified at intermediate and lower levels across nearly all occupations. This is less marked than for higher-level qualifications, mainly because many people who previously held NVQ Level 3 qualifications as their highest qualification have now been replaced by people with qualifications at NVQ Levels 4 and 5. For higher-level occupations, in particular, there has been a tendency for the structure to shift away from NVQ Level 3 towards Levels 4 and 5.

2.77 Qualifications at NVQ Level 3 remain significant amongst managers; associate professionals; administrative and secretarial; skilled trades; personal, sales and customer service occupations. In all of these, around 20 per cent or more of the employed workforce are currently qualified at that level. For skilled trades it is higher at over 35 per cent.

2.78 Lower-level qualifications are spread much more evenly across all occupations than are higher-level qualifications. The proportions holding no formal qualifications have fallen sharply in all occupations as shown in Figure 2.11. It is notable, however, that there are still significant numbers of high-status occupations who hold few formal qualifications. For example, almost 40 per cent of managers are still only qualified to NVQ Level 2 or below.

Many occupations still have large numbers with no formal qualifications. Occupations and qualifications provide only a partial picture of trends in skill requirements.

The Demand for Key and Generic Skills

2.79 The previous discussion suggests that the skill requirements for those in employment have risen substantially over the last decade. But this picture fails to recognise fully the changing nature of jobs *within* particular occupation titles.

2.80 One concern is that increasing educational attainment and the employment of individuals with more formal qualifications does not imply that these are either necessary or appropriate to meet the requirements of the modern workplace. A second concern is that there are changes in the nature of what is required from the workforce in their jobs which cannot be measured by occupational titles or formal qualifications. This has been reflected in a small but growing body of research focused upon *key and generic skills*.

Employers have emphasised the importance of key and generic skills. The Skills Surveys undertaken in 1997 and 2001 provide information on the skills used by individuals in their jobs. The Skills Surveys enable 10 generic skills to be identified.

2.81 A number of new surveys have attempted to track trends in such skills. The link between the nature of the product or service and the associated demand for skills has also been the focus of attention. Two surveys specifically focusing upon the skills people use in their jobs were undertaken in 1997 and 2001. These are referred to as the Skills Surveys. In addition the LSC has undertaken a National Employers Skill Survey (NESS) since 2003. This also provides a comprehensive overview of the skills used in England. The latest findings from NESS 2004 are discussed in Chapter 4.

2.82 The results in the Skills Surveys are based on individual employees' responses to detailed questions regarding the skills and qualifications both used and required in their jobs. These results were reviewed in some detail in previous *Skills in England* reports; the discussion here is therefore brief.

2.83 Based on the individual responses to the surveys, 10 broad generic skills can be identified:

- literacy skills: both reading and writing forms, notices, memos, signs, letters, short and long documents etc.
- physical skills: the use of physical strength and/or stamina
- number skills: adding, subtracting, division, decimal point or fraction calculations etc. and/or more advanced mathematical or statistical procedures
- technical know-how: knowing how to use tools, equipment or machinery, knowing about products and services, specialist knowledge and/or skill in using one's hands
- high-level communication: a range of related managerial skills, including persuading or influencing others, making speeches or presentations, writing long reports, analysing complex problems in depth
- planning skills: planning activities, organising one's own time and thinking ahead
- client communication: dealing with people, selling a product or service, counselling or caring for customers or clients
- horizontal communication: teaching or training and/or working with a team of people, listening carefully to colleagues
- problem-solving: detecting, diagnosing, analysing and resolving problems
- checking skills: noticing and checking for errors.

Generic skills are related to occupational groups but provide a richer classification of skills used. Most non-manual generic skills increase in line with formal qualification levels.

2.84 There is a close correspondence between occupations and the generic skill indices. For example, those engaged in managerial occupations tend to use above-average levels of high-level communication, planning and client communication skills. Managers are similar in this regard to those engaged in professional occupations, but the latter are characterised by higher levels of literacy and high-level communication and lower levels of client communication. Workers in craft occupations utilise both physical skills and what can be termed technical know-how. These can be contrasted with operatives and other elementary occupations which, while also demanding physical skills, require little in the way of technical know-how, and score well below average on communication skills. Client communication skills are important to those in sales-based occupations, but are apparently not combined with other skills dimensions unlike those in managerial occupations. Thus these measures of generic skills provide a richer and more detailed classification in terms of the skills utilised by the different occupations.

2.85 Most of the non-manual generic skills identified by the surveys increase in line with educational qualifications. This is as would be expected for literacy and numeracy, since these are formally tested with educational qualifications, but it is perhaps more surprising for some of the other measures of generic skills. The widest variation in generic skills across education is for high-level communication skills.

2.86 There are only small differences in the mean levels of literacy skills used by men and women in their jobs. But there are larger and significant differences between men and women in numeracy, technical know-how and problem-solving skill utilisation, all of which are more widely used by men. Men also utilise more physical skills than women, but fewer communication skills, with the exception of high-level communication. The latter is undoubtedly related to occupational differences and, especially, the fact that women who work part-time use lower levels of generic skills.

With the exception of literacy skills, on average, men use more generic skills in their jobs than women. Between 1997 and 2001, there was an increase in the use of all generic skills apart from physical skills. Computing skills are becoming increasingly important and widespread and the complexity of computer utilisation is also increasing.

2.87 Differences between the two skills surveys suggest that, with the exception of physical skills, the utilisation of all of these skills amongst the employed workforce grew between 1997 and 2002. In all cases the increases are significantly different from zero.

2.88 The use of computers was *essential* in the jobs of around a third of the workforce surveyed, rising from just over 30 per cent in 1997 to almost 40 per cent in 2001. The proportion reporting that computer use was 'not at all important' fell by one-third from 30 per cent to just over 20 per cent. These are large changes given that the surveys were administered only four years apart, signalling a continuing rapid diffusion of computing technologies.

2.89 Despite the rapid spread of computer usage to wider sections of the workforce, there is no evidence that the average level of complexity of use is falling. Indeed, there has been an increase in the complexity of computing usage at the less sophisticated end of the range, with a shift in the proportion reporting 'straightforward' usage to those reporting 'moderate' usage on the basis of the above scale. At the more advanced end of the range of complexity, there was little change between the two survey dates.

2.90 Thus the evidence from the two skills surveys is that there has been a continued increase in the demand for generic skills in recent years, and that computing skills continue to expand rapidly amongst the workforce in Britain. For further details the reader is referred to Felstead *et al.* (2002) and Dickerson and Green (2002).

Employer Perspectives Survey 2002

2.91 The Employer Perspectives Survey 2002 (Green *et al*, 2003) was a follow-up survey of the employers of the individuals interviewed in the 2001 Skills Survey. Its focus is specifically on the factors underlying employers' demands for skills in Britain. In particular, it was designed to elicit information on the link between the demand for skills and the specification of the product or service generated at the establishment.

2.92 The survey findings indicate that establishments producing 'high-spec' products or services tend to have increasing demands for skills. In particular, managers in such establishments perceive that there have been recent changes in skill needs. This is consistent with the notion that the dominant form of technological change in recent times is 'skill-biased'.

2.93 But, if the chosen product or service specification is relatively low, then skills demands reflect this with the risk that the economy as a whole can get stuck in a low skill–low value-added rut. But without internationally comparable data on product and service specification, it is difficult to quantify the importance of this effect. Higher levels of computerisation and greater technological change are also associated with a greater demand for skills.

*The **Employer Perspectives Survey** focuses explicitly on employers' demand for skills. The evidence suggests that 'high-spec' products and services demand higher skills but if product strategies focus upon 'low-spec' products there is a danger of getting caught in a so-called 'low-skills equilibrium', with a low demand for skills.*

Future Skill Needs

Predicting future skill needs

2.94 Past trends in the demand for and supply of skills provide some indication of priorities for investment in education and training. However, given the long lead times involved in such investments, it is the position 5 and 10 years hence that decision makers (those participating in the labour market as well as policy makers) need to have in mind.

2.95 Predicting future changes in skill needs is not straightforward. Nobody possesses a crystal ball that can reveal the precise pattern of future skill needs. But various approaches to predicting changing skill needs have been developed.

2.96 The approaches include the comprehensive, quantitative projections undertaken for the SSDA, in partnership with the LSC and other bodies, as part of the *Working Futures* series. These present the most detailed and comprehensive picture of changing employment patterns ever produced in the UK. As well as considerable industrial detail, using SIC categories, these also include benchmark projections for individual local LSC areas. The main focus is upon the likely requirement of employers and how these are influenced by changes in the economy and the labour market.

2.97 The *Working Futures* series of projections was undertaken in 2003 and is due to be updated in 2005. The new set of results will look forward to 2014 and focus upon skill needs in SSCs. For the time being the results from the previous round of projections based on SIC categories have been reworked, focusing on expected changes from 2003 to 2012.

2.98 Surveys of employers suggest that they expect the main problems in the future will relate to various key and generic skills including communication, customer handling, team working and management skills. IT skills are also expected to be critical.

*Ideally decision makers would like to know about the **future** demand for skills but anticipating future skill needs is not straightforward. The **Working Futures** series of projections provides a set of benchmark forecasts. **Working Futures** is being updated in 2005 but the old results have been reworked here to focus upon the period 2003 to 2012.*

Aggregate trends

2.99 The macroeconomic context for the *Working Futures* projections is one of continued growth with low inflation. Broad measures of national output are projected to display long-term growth rates of approximately 2.5 per cent per annum over the period to 2012. Continued low inflation is assumed. Sterling is expected to maintain a stable value against the euro. The projections are based upon an assumption of a modest acceleration in public expenditure growth in real terms. The main tax rates are assumed fixed.

2.100 Given these assumptions, general labour market prospects are for further employment growth at around 0.5 per cent per annum.

- Between 2003 and 2012, over a million additional jobs are projected for England as a whole.
- Just under three-quarters of the additional jobs are projected to be taken by women, and most will be part-time in nature.
- The level of unemployment is expected to remain stable, increasing slightly over the longer term. For most people unemployment will be a transitory experience, although a significant minority will suffer long-term unemployment.

The macroeconomic scenario assumed is one of steady growth and modest inflation. General labour market prospects remain optimistic.
Projections of output by sector are in line with recent historical trends.

2.101 Major structural change is projected to continue. Output prospects for many sectors are positive but much of this growth will not result in increases in jobs; indeed, in many cases, growth will be accompanied by continuing job losses. The output prospects for broad sectors are as follows.

- Primary and utilities, including agriculture, mining, electricity, gas and water, are expected to display the weakest growth (below 0.5 per cent per annum).
- Manufacturing output growth is forecast to grow somewhat more slowly than in the recent past, averaging around 1.7 per cent per annum. This is underpinned by high growth in technology and R&D-related industries, while textiles, clothing and leather and metals are weaker performers.
- Construction output is projected to grow at a slightly higher rate.
- Output growth is projected to be much faster in distribution, transport, etc. Distribution and retailing are expected to grow faster than the average, but the main engine of growth here is transport and communications, where output is forecast to grow by over 4 per cent per annum, with communications displaying the strongest growth of any services outside of computing.
- Business and miscellaneous services are also expected to grow rapidly at around 3 per cent per annum over the longer term, with the fastest increases in computers and related services and in other business services.

Non-marketed services output is forecast to grow by around 2.5 per cent per annum, with the main increase being for education and health and social work.

2.102 Continued productivity growth will offset output growth in many sectors, resulting in further decline in employment levels in manufacturing and the primary sector employment. This will be offset by expansion of employment in the service sector, where productivity gains are expected to be more modest. If anything, manufacturing employment is now expected to decline more rapidly compared with trends observed over the past 10 years, while growth in services is expected to decelerate. Employment gains are expected to be greatest in business and miscellaneous services (see Table 2.8 and Figure 2.13).

Sectoral changes are key drivers for the future demand for skills. The prospects for employment change by industry are for job losses in manufacturing and gains in services.

Major structural change will continue with sharply increasing demand for many high-level occupations although there will be job losses for a number of occupations.

2.103 Employment prospects to 2012 for the other broad sectors are as follows:

- Construction is projected to maintain fairly stable employment between 2003 and 2012.
- Employment in the distribution, hotels, transport and communications sectors is expected to grow – especially in distribution, which accounts for most of the projected increase of around 400,000,
- There is a projected increase of around 400,000 in the number of jobs in non-marketed services, concentrated in education and health services.

2.104 These changes will in turn drive changing patterns of the demand for skills. Further changes in the occupational structure of employment are expected as a consequence (see Figure 2.14). These changes will require new skills and qualifications from the workforce. Related changes will continue to favour jobs typically undertaken by part-time women.

2.105 The occupational structure of employment is projected to continue to change in favour of managerial, professional, associate professional and technical, and personal service occupations. In many cases these jobs will require high-level formal qualifications. However, some of the most rapid growth is expected for caring personal services and customer service occupations, which are not quite so demanding. Other areas of rapid growth are for culture, media and sports occupations; business and public service (and associate) professionals; teaching, research and science or technology (and associate) professionals; and corporate managers. In combination, these occupations are expected to see an increase of almost 2 million jobs over the next decade.

2.106 Job losses are expected amongst administrative, clerical and secretarial, skilled metal and electrical trades, process, plant and machine operatives, and elementary occupations, especially those related to clerical and service activities.

*However, **replacement demands** are also important and there will be problems in meeting the skill needs in both rapidly growing and in declining occupations. Patterns of employment by status and gender are also expected to continue to change.*

2.107 The projected net change in employment (*expansion* or *structural* demand) tells only a part of the story. It is crucial to recognise that there will be many job openings, and important education and training requirements, for many occupations where employment levels are expected to fall. These arise because of the need to 'replace' the existing skills that will be 'lost' as a result of retirements and other aspects of the normal process of labour turnover. The scale of replacement demand is projected to substantially outstrip the scale of expansion demand (by a factor of almost 10 to 1). Figure 2.15 illustrates for the 9 major occupational groups the expected patterns of 'expansion' or structural demand and total requirements (the sum of replacement demand and expansion demand) across all sectors. The patterns vary considerably across occupations (as well as sectors), but even where substantial structural job losses are projected, the replacement demand elements are usually more than sufficient to offset this. It is essential, therefore, for employers, education and training providers, and public agencies to recognise the different characteristics and requirements of these two different components of future skill needs.

2.108 Some occupations are projected to experience rapid growth of both expansion and replacement demand. Employers recruiting these occupational groups will face stiff competition and may need to work with providers, as well as themselves, engaging in training and recruitment activities in order to ensure that their needs are met.

2.109 It is in areas where employment is expected to decline that employers will face the greatest challenge. Where employers are laying off workers, meeting replacement demands for those organisations that are continuing in operation can be problematic. The fact that these types of jobs are in decline can discourage new entrants, as well as those displaced from other companies, from taking up such jobs. Meeting such needs can be especially challenging from the points of view both of employers and of education and training providers.

The demand for formal qualifications will also increase as will the need for key generic and other work-based skills.

2.110 Changes in the industrial composition of employment are expected to have significant implications for other aspects of employment structure, including the mix of employment by gender and status. This reflects both demand and supply-side factors, including the greater involvement of women in the formal economy and pressures from both supply and demand sides in favour of more flexible work patterns. In particular:

- the projected decline of employment in the primary and manufacturing sectors is likely to be accompanied by the loss of many more full-time jobs, most of which have traditionally been held by men
- the growth of jobs in the service sector will create more opportunities for women, particularly part-time opportunities.

2.111 Changes in the occupational structure are also likely to drive up the demands for formal qualifications. The occupations projected to grow fastest are those with high proportions of qualified people typically employed. Those occupations expected to decline tend to have low shares of qualified people.

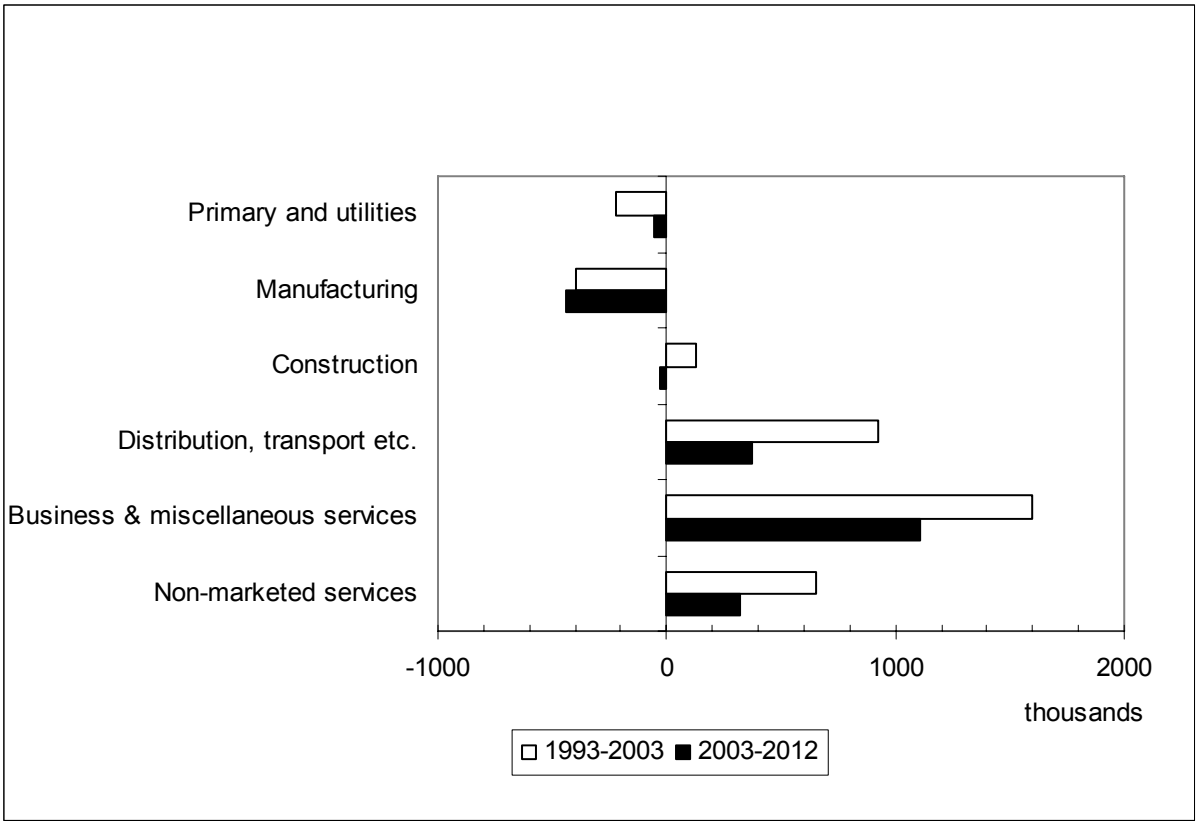
2.112 Analysis of likely changes in key generic and other skill requirements also suggests important changes. Verbal and communication skills (especially among managers), numerical skills (especially among clerical and secretarial occupations), and planning skills (especially amongst sales occupations) are all projected to increase in importance. Key skills such as problem solving, team working and computing are increasing significantly in many occupations. Changes in autonomy (closeness of supervision) and the training and learning times needed to obtain and effectively discharge a job are also expected to increase in importance. Education courses and programmes need to reflect the increasing value placed upon such skills by employers.

Table 2.8: Expected future changes in employment in England by broad sector, 2003–2012

	Changes, 2003–2012				% share of employment in:	
	Output (GVA)		Employment		2003	2012
	%	% pa	000	%		
Primary and utilities	1.9	0.2	-53	-11.5	1.8	1.5
Manufacturing	19.0	1.8	-438	-13.7	12.9	10.5
Construction	16.4	1.5	-31	-2.0	6.3	5.9
Distribution, etc	33.0	2.9	370	5.0	29.8	29.8
Business and misc. services	33.9	3.0	1,108	16.9	26.4	29.4
Non-market services	23.9	2.2	320	5.7	22.7	22.8
Total	26.8	2.4	1,277	5.1	100.0	100.0

Source: *Working Futures,* Wilson *et al.* (2004).

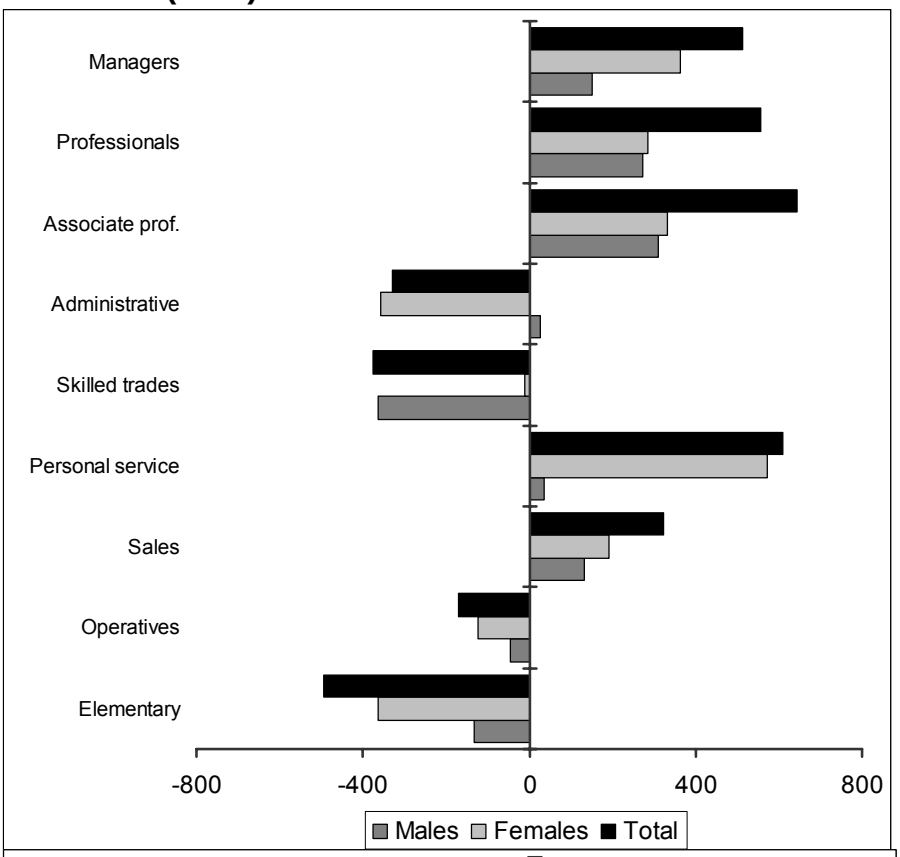
Figure 2.13: Employment change by broad sector, 1993–2003 and 2003–2012



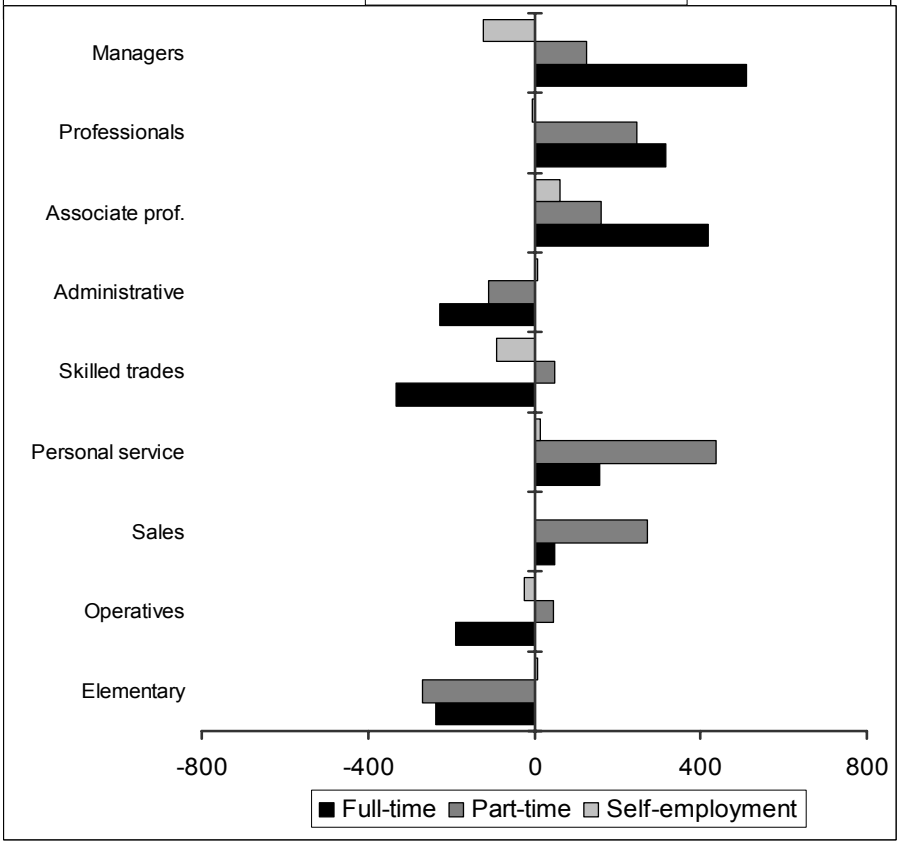
Source: *Working Futures,* Wilson *et al.* (2004).
Notes: Primary and utilities = agriculture, mining and utilities
Distribution, etc = retail and wholesale distribution, hotels and catering, and transport and communications.
Business and misc. = professional services, banking and business services and other personal services.
Non-marketed services = health, education, public administration and defence.

Figure 2.14: Projected occupational change by gender and status, England, 2003–2012 (000s)

Gender

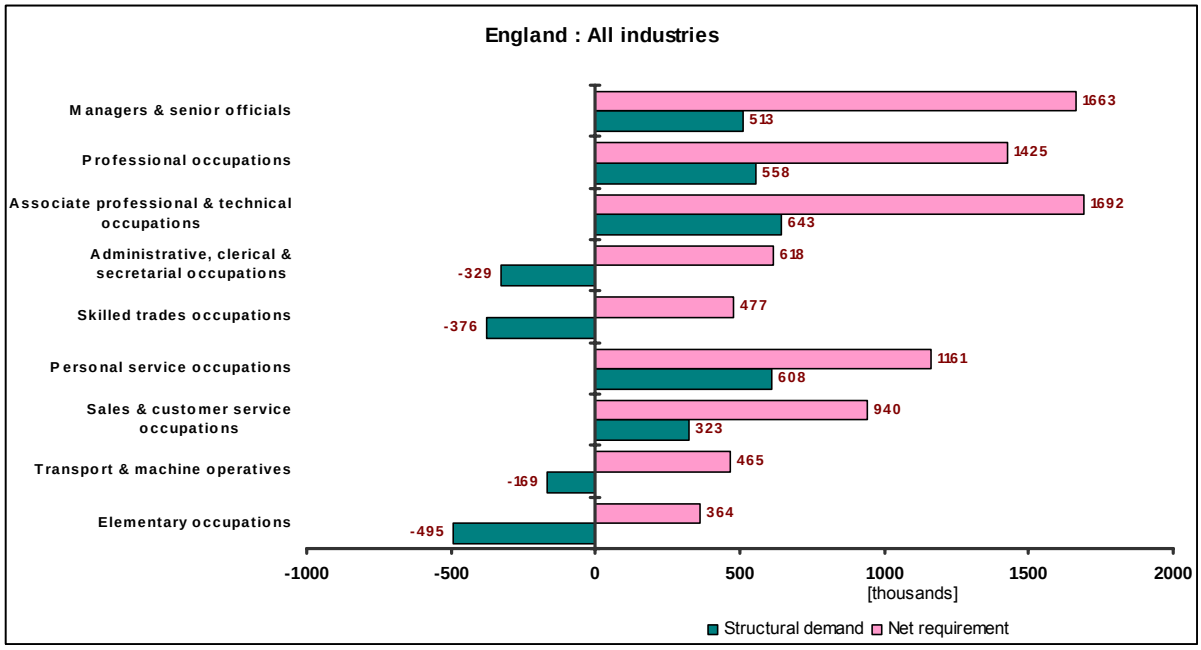


Status



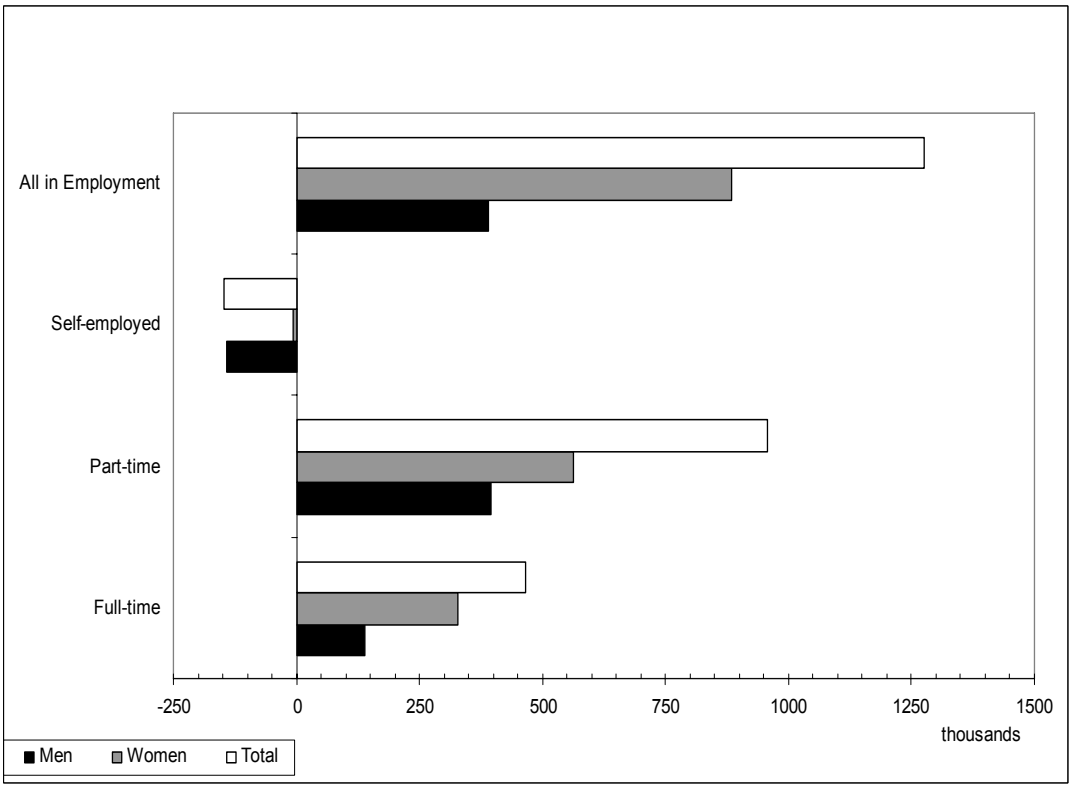
Source: *Working Futures,* Wilson *et al.* (2004).
Note: Figures are in thousands.

Figure 2.15: Net requirements and expansion demand by SOC 2000 sub-major group, England, 2003–2012



Source: *Working Futures,* Wilson *et al.* (2004).
Note: These estimates do not allow for any losses due to occupational or geographical mobility.
Total requirements = replacement demand plus expansion (or structural) demand.

Figure 2.16: Changing patterns of employment by gender and status, England, 2003–2012



Source: *Working Futures,* Wilson *et al.* (2004).
Note: Figures in thousands.

Prospects for sectoral change in greater detail

The new projections include the most detailed analyses by sector and geographical area ever produced in the UK. Sectoral changes will continue to favour services at the expense of manufacturing and other production industries.

2.113 A much more detailed picture of the changes expected and how these compare with recent historical experience is shown in Figures 2.17 and 2.18. These show trends in the 27 industries based on SIC definitions adopted by the LSC and SSDA for more detailed analysis. The importance of services as a source of additional jobs is clear. In most cases the pace of change is projected to be slow. However, computing and related industries remains the fastest growing industry, although the rate of growth projected for the next 10 years is less than half that observed over the last decade. All the industries within manufacturing are projected to display a consistent picture of continued decline in employment levels. Especially rapid job losses are projected for textiles and clothing and in transport equipment. But, at the same time, these will remain important areas of employment contributing large numbers of jobs. The replacement demands from such industries will continue to result in significant education and training needs in these areas.

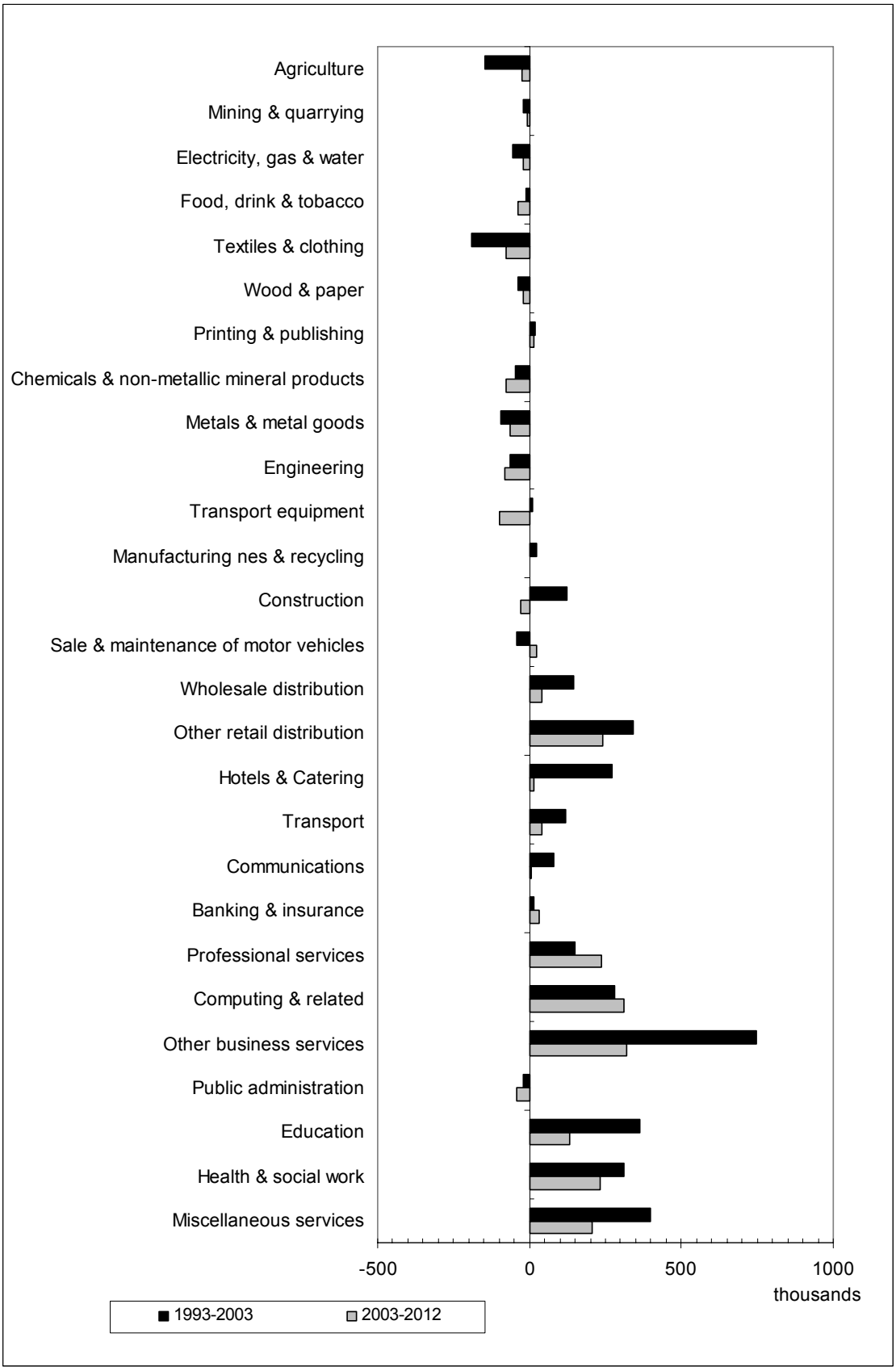
2.114 Within manufacturing:

- engineering is expected to be the largest contributor to job losses
- metals and mineral products, and textiles and clothing, are projected to display the largest percentage job losses.

Amongst other services:

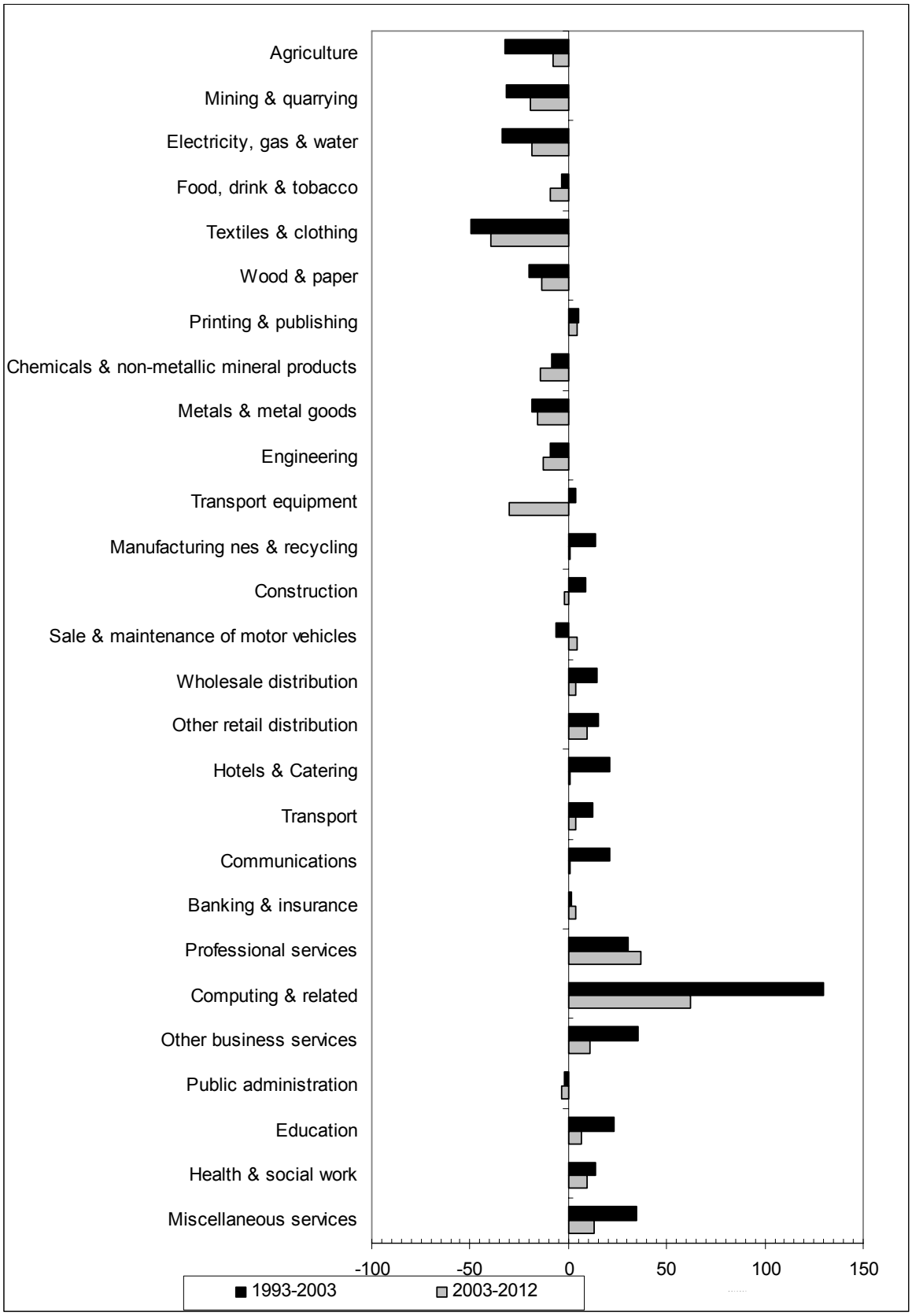
- rapid increases are projected in professional services
- banking and business services and other services are forecast to see more modest increases in non-marketed services
- all the projected employment growth is accounted for by health and education services
- public administration and defence is forecast to see small declines in employment.

Figure 2.17: Historical and projected changes in employment by detailed sector, England, 1993–2003 and 2003–2012



Source: *Working Futures,* Wilson *et al.* (2004).
Note: The bars show changes in thousands over the periods shown.

Figure 2.18: Historical and projected changes in employment by detailed sector, England, 1993-2003 and 2003-2012



Source: *Working Futures,* Wilson *et al.* (2004).
Note: The bars show changes in per cent over the periods shown.

Detailed occupational prospects

The latest evidence confirms that technological change and structural factors are continuing to affect the demand for skills and further change is in prospect. Job losses are projected for many manual workers although these will be offset by growth for non-manual and white-collar occupations.

2.115 The *Working Futures* projections, taking into account the latest information on trends from the 2001 Census of Population, suggest that the economy is continuing to experience significant changes in the occupational structure of employment. The latest projections for the 25 SOC sub-major occupational groups suggest continuing rapid employment growth for managers and for sales and service occupations, offset by expected declines for administrative, clerical and secretarial occupations and many skilled trades.

2.116 Further significant changes in the occupational structure of employment are projected over the coming decade. The main driving forces are:

- shifts in the sectoral composition of output (themselves a function of changing patterns of consumer demand and national competitive advantage)
- technological change
- other changes in the way that work is organised.

Together, these factors are expected to continue to alter the mix of skills that are required in order to produce the changing patterns of output and services demanded.

2.117 Technological change and pressures from international competition are expected to lead to the continued loss of job opportunities for many skilled craft workers and for transport and machine operatives in manufacturing.

2.118 But substantial growth in the number of jobs for many professional, managerial and clerical workers (including doctors, nurses, teachers) will arise in the public services sector. Within the private service sector, the emphasis is more on leisure and other personal service occupations, sales occupations, professional and associate professional jobs.

2.119 The changes in sectoral employment structure are expected to be reinforced by changes in the nature of many jobs within particular sectors. Many organisations will be restructuring the way that work is organised and making changes in response to technological innovation, especially related to IT. The application of IT and its integration with communication technology is at last beginning to have a dramatic negative effect on many traditional clerical and secretarial jobs. However, the increased emphasis on information handling jobs at other levels will more than offset this.

2.120 The introduction of new ICT-based technologies in manufacturing is also expected to displace many skilled manual workers. Many jobs have been taken over by computer-controlled machinery, such as robots in motor manufacturing and assembly.

2.121 The management and operation of such technologies is expected to require increased employment for many other occupations. Managerial, professional and associate professional occupations, including technicians of various kinds, will be needed to install, maintain, oversee and run such equipment.

2.122 ICT is also expected to continue to open up many new areas. This is particularly so in the service sector, where a myriad of new information-based services are expected to be invented and marketed. This will also create many new jobs of a professional, associate professional and managerial nature.

2.123 In all cases, flexibility and further skill development while on the job are likely to be required in order to adapt to the rapidly evolving labour market requirements of ICT developments.

2.124 Detailed occupational projections for the 25 sub-major occupational groups are presented in Table 2.9 and Figure 2.19. These highlight that the largest employment increases are expected for:

- managers
- caring personal service occupations.

2.125 Substantial increases are also projected for:

- teaching and research professionals
- science and technology professionals
- business and public service professionals
- business and public service associate professionals
- culture media and sports occupations
- sales occupations
- customer service occupations.

These eight groups account for the growth of over 2 million jobs over the period 2003 to 2012.

2.126 Job losses will be concentrated amongst administrative, clerical and various blue-collar jobs. In general, the projected changes represent the continuation of long-established trends.

New technologies will lead to job losses in many areas but will also create many new opportunities especially for managers, professionals and. associate professionals. But more detailed occupational projections reveal a more complex pattern. Job losses will be concentrated amongst administrative, clerical and various blue-collar jobs.

2.127 Corporate managers will remain by far the largest occupational category, alone accounting for 3.5 million jobs. Despite job losses, it is expected that administrative and clerical occupations, clerical and services-related elementary occupations, caring personal service occupations, sales occupations, business and public service professionals, and business and public service associate professionals will remain the most significant areas of employment. These seven occupational groups are projected to account for well over half of all jobs in 2012. As noted below, even where occupations are expected to see declining job numbers, this does not mean that there will not continue to be large numbers of job openings in these areas, with concomitant education and training implications.

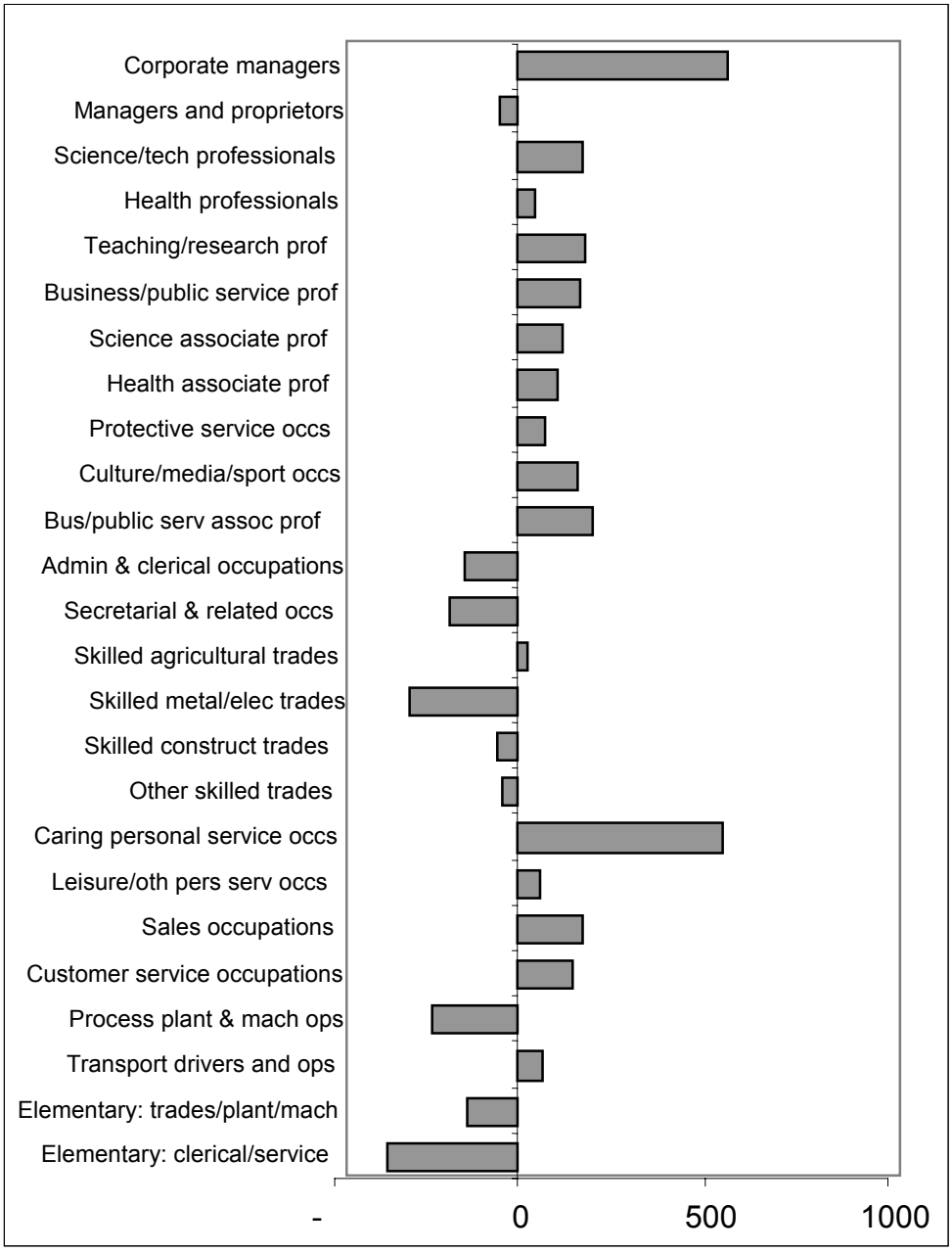
Managers, administrative and clerical occupations will continue to be the largest categories of employment.

Table 2.9: Projected occupational change, SOC sub-major group, England, 2003–2012

	2003	2012	Change 2002–12 000	Change 2002–12 %	% shares 2003	% shares 2012
Corporate managers	2,891	3,912	1,021	35.3	11.7	12.8
Managers/proprietors in agriculture and services	932	1,021	89	9.6	3.8	3.3
Science and technology professionals	792	1,103	311	39.4	3.2	3.6
Health professionals	221	312	90	40.8	0.9	1.0
Teaching and research professionals	1,146	1,642	496	43.3	4.6	5.4
Business and public service professionals	693	951	259	37.3	2.8	3.1
Science and technology associate professionals	512	733	222	43.3	2.1	2.4
Health and social welfare associate professionals	838	1,147	309	36.9	3.4	3.7
Protective service occupations	341	490	149	43.9	1.4	1.6
Culture, media and sports occupations	564	810	246	43.6	2.3	2.6
Business and public service associate professionals	1,320	1,715	394	29.9	5.3	5.6
Administrative and clerical occupations	2,361	2,663	302	12.8	9.5	8.7
Secretarial and related occupations	840	771	-69	-8.2	3.4	2.5
Skilled agricultural trades	272	365	93	34.1	1.1	1.2
Skilled metal and electrical trades	1,068	898	-170	-15.9	4.3	2.9
Skilled construction and building trades	874	950	77	8.8	3.5	3.1
Textiles, printing and other skilled trades	534	588	54	10.0	2.2	1.9
Caring personal service occupations	1,380	2,271	891	64.6	5.6	7.4
Leisure and other personal service occupations	480	623	144	30.0	1.9	2.0
Sales occupations	1,632	2,129	497	30.5	6.6	6.9
Customer service occupations	359	603	244	68.0	1.4	2.0
Process, plant and machine operatives	1,121	1,104	-17	-1.5	4.5	3.6
Transport and mobile machine drivers and operatives	897	1,121	224	24.9	3.6	3.7
Elementary occupations: trades, plant and machine related	913	958	45	4.9	3.7	3.1
Elementary occupations: clerical and services-related	1,835	1,779	-56	-3.1	7.4	5.8
Total	24,814	30,658	5,843	23.5	100.0	100.0

Source: *Working Futures,* Wilson *et al.* (2004).

Figure 2.19: Projected occupational change, SOC sub-major group England, 2003-2012 (000s)



Source: *Working Futures,* Wilson *et al.* (2004).

2.128 Previous studies (Wilson, 2001) have developed even more detailed occupational projections at the three-digit level. While these were based on a different set of macroeconomic and sectoral employment projections, they can still provide some useful additional information.

Previous projections distinguished even greater detail.

2.129 Some of the occupational groups projected to experience the most rapid growth included:

- caring and personal services occupations
- health care and related personal service
- business and statistical professionals
- leisure and travel service occupations
- ICT professionals
- childcare and related personal services.

Leisure, caring and business-related occupations, including ICT professionals, were projected to grow fastest.

2.130 A number of relatively large occupational groups were projected to experience quite rapid job losses (more than 2 per cent a year). These included cleansing service elementary occupations and plant and machine operatives.

Rapid growth was also anticipated for many particular professional and associate professional groups.

2.131 These projections indicated quite wide variations in growth prospects within many of the broader groupings. This indicates the importance of considering more detailed breakdowns. For example, amongst managers, while the number of jobs for health and social services managers was projected to increase quite rapidly, the numbers of managers and proprietors in agriculture and service industries were projected to fall. These differences reflect different prospects for individual industries as well as detailed changes in work patterns within industries.

2.132 Other occupations which were projected to experience rapid growth were in the professional and associate professional occupations. These included:

- legal and professions
- health professionals
- design, media, artistic and literary
- sports and fitness.

In contrast, the draughtspersons and building inspectors group was projected to show one of the fastest rates of decline.

2.133 Most blue-collar occupations were expected to experience relatively rapid job losses. These included:

- metal working trades
- textile and garment trades
- skilled craft jobs in metal forming
- metal machining
- electronics and vehicle assembly
- plant and machine operatives.

Some job growth was expected for transport drivers and operatives. Substantial job losses were expected for many of the least skilled categories, including:

- elementary agricultural trades
- cleansing service operatives.

Some growth was expected for elementary security and safety services.

It was amongst particular blue-collar manual occupations, especially the least skilled categories, that the largest job losses were expected. There is considerable variation across sectors at a detailed occupational level.

2.134 Most clerical and secretarial occupations were projected to experience well below average employment growth in these earlier forecasts. These prospects would be even less optimistic given the declines now projected for the sub-major group as a whole in the latest *Working Futures* projections

Prospects by detailed occupation within sectors

2.135 The projections also make possible a more detailed examination of occupational trends within sectors. Table 2.10 provides some further insights into how the importance of different occupational categories varies across individual industries, as well as making it possible to identify those that are growing or declining most rapidly.

2.136 In many respects the overall patterns of change are similar across sectors. However, their overall economic prospects together with their different existing employment structures result in substantial variations in the projected changes. Table 2.26 provides an overview of this more complex picture. Shading and use of + and - signs in the cells helps to highlight which occupations are numerically important in different industries as well as which are growing or developing most rapidly. The shaded cells within the main body of Table 2.26 indicate employment of 100,000 or more in 2002 or 2012. Row and column header shading indicates changes for the sector or occupation as a whole.

2.137 The pattern illustrates the importance of the service sector in terms of providing jobs across the occupational spectrum. The + signs indicate rates of growth of employment in excess of 20 per cent over the period 2002 to 2012. Certain occupations are expected to achieve this in almost every sector (caring personal service occupations (61) and customer services occupations (72)). Rapid job losses in excess of 20 per cent, indicated by the '-' sign, are concentrated amongst low and unskilled occupations (SOCs 81, 91 and 92 in almost all sectors).

Replacement demands may be as important as projected net changes in employment. Replacement demands easily outweigh projected job losses in all occupations, even in cases such as administration and clerical or skilled trades, where quite sharp declines are projected in overall numbers.

Replacement demand by detailed occupation and sector

2.138 Projected changes in the level of employment may give a misleading impression of priorities for education and training. It is also important to consider replacement demands. These reflect the need to replace those leaving the workforce principally because of retirement. Combining replacement demands with the projected structural or 'expansion' demand, an estimate of the overall net requirement for each occupation can be obtained.

2.139 Results for each of the 25 occupational sub-major groups are set out in Table 2.11 and Figure 2.20. This information relates to the whole of England. Replacement demands outweigh the net projected decline in all occupations where job losses are expected. Between 2003 and 2012 there is expected to be an overall requirement of some 11.5 million new job openings. Retirements from the workforce are the main component of replacement demands.

2.140 Even in occupations such as administrative and clerical occupations, secretarial and related occupations, skilled metal and electrical trades (as well as other skilled trades), process plant and machine operatives, and elementary occupations, total requirements are strongly positive despite negative expansion demand. In other cases, expected retirements will add to positive expansion demand to create even higher overall requirements for new entrants to these occupations.

Table 2.10: Projected changes in occupational structure by SSDA Sector Matrix Industry, 2003–2012

	11	12	21	22	23	24	31	32	33	34	35	41	42	51	52	53	54	61	62	71	72	81	82	91	92
Agriculture etc								+		+					-		-	+			+	-		-	
Mining and quarrying			-										-		-		-	+			+	-		-	-
Food, drink & tobacco										+					-			+			+	-			-
Textiles & clothing	-	-	-	-		-			-		-	-	-		-	-	-	+	-	-		-	-	-	-
Wood and paper products			-												-	-			+		+	-		-	-
Publishing and printing	+		+	+	+	+	+		+	+	+				-		-	+			+				-
Chemicals & non-metal minerals												-	-		-		-					-			-
Metal & metal goods										+			-		-			+			+	-			-
Engineering												-	-		-		-					-			-
Transport equipment		-	-			-					-	-	-	-	-	-	-			-		-	-	-	-
Manufacturing nes & recycling			+	+					+	+				+				+			+				-
Electricity, gas & water												-	-		-		-		-	-		-			-
Construction				+	+		+	+	+	+			-					+			+				
Distribution relating to motors				+	+	+	+	+	+					+	-			+			+				
Wholesale distribution nes				+	+		+		+				-	+	-			+			+				
Retailing distribution nes	+		+	+	+	+	+		+	+	+		-	+				+	+		+			-	
Hotels and catering							+	+	+					+	-			+			+				
Transport and storage	+			+	+	+		+	+	+					-			+			+				
Post & telecommunications	+			+	+			+		+	+				-			+	+	+	+				
Banking & insurance					+	+	+	+	+	+			-		-			+			+				
Professional services	+		+	+	+	+	+	+	+	+	+			+				+		+	+		+		
Computing & related services	+	+	+	+	+	+	+	+	+	+	+	+		+		+	+	+	+	+	+		+		+
Other business services	+		+	+	+	+	+	+	+	+			-	+				+			+				
Public admin. and defence													-		-	-	-	+			+	-		-	-
Education	+												-		-	-	-	+			+	-		-	-
Health & social work	+												-		-		-	+	-		+	-		-	-
Miscellaneous services	+		+	+	+	+	+	+	+	+	+			+	-			+	+		+				-

Source: *Working Futures*, Wilson *et al*. (2004).

Level of employment in 2003 and/or 2012 is 100,000 or greater (all cells).
\+ 2003–2012 growth in cell is forecast to be 20% or greater.
\- 2003–2012 growth in cell is forecast to be -20% or less.
2003–2012 growth is forecast to be 10 % or greater (row and column titles only).
2003–2012 growth is forecast to be -10 % or less (row and column titles only).

Table 2.11: Replacement demand by SOC sub-major group, England, 2003–2012

	(1) Expansion demand (or decline)	(2) Retirement and mortality	(3) Overall net requirement (1+2)
	000	000	000
1. Corporate managers	567	865	1,432
2. Managers/proprietors in agriculture and services	-53	285	232
3. Science and technology professionals	175	238	413
4. Health professionals	40	65	105
5. Teaching and research professionals	180	350	530
6. Business and public service professionals	163	213	376
7. Science and technology associate professionals	118	154	272
8. Health and social welfare associate professionals	104	236	340
9. Protective service occupations	67	96	163
10. Culture, media and sports occupations	157	168	324
11. Business and public service associate professionals	198	396	594
12. Administrative and clerical occupations	-143	699	557
13. Secretarial and related occupations	-187	247	61
14. Skilled agricultural trades	22	90	112
15. Skilled metal and electrical trades	-295	330	35
16. Skilled construction and building trades	-61	273	212
17. Textiles, printing and other skilled trades	-42	160	118
18. Caring personal service occupations	551	405	956
19. Leisure and other personal service occupations	57	148	205
20. Sales occupations	174	509	683
21. Customer service occupations	149	108	257
22. Process, plant and machine operatives	-233	340	106
23. Transport and mobile machine drivers and operatives	64	295	359
24. Elementary occs: trades, plant and machine-related	-138	287	149
25. Elementary occs: clerical and services-related	-357	572	215
Total	1,277	7,528	8,805

Source: *Working Futures,* Wilson *et al.* (2004).
Note: These estimates do not allow for any losses due to occupational or geographical mobility.

2.141 In principle, replacement demands will vary across regions and sectors depending upon the gender and age structures of their workforces as well as variations in the rates of flows, including geographical and other mobility flows. In practice, measuring these is far from straightforward. Currently, the estimates of age structures and rates of flows are based on the Labour Force Surveys (LFS). While this is adequate to generate reasonably robust estimates at national level, the sample size is too small to produce meaningful estimates differentiated by sector or by region. The estimates here are therefore based on the same assumptions about age structures and flow rates as at national (UK) level.

Replacement demand estimates have also been produced by sector and by region, although these are based on limited data. The replacement demand estimates by individual sector exhibit many features in common. The overall scale of replacement demands is driven primarily by the size of the sector in terms of employment.

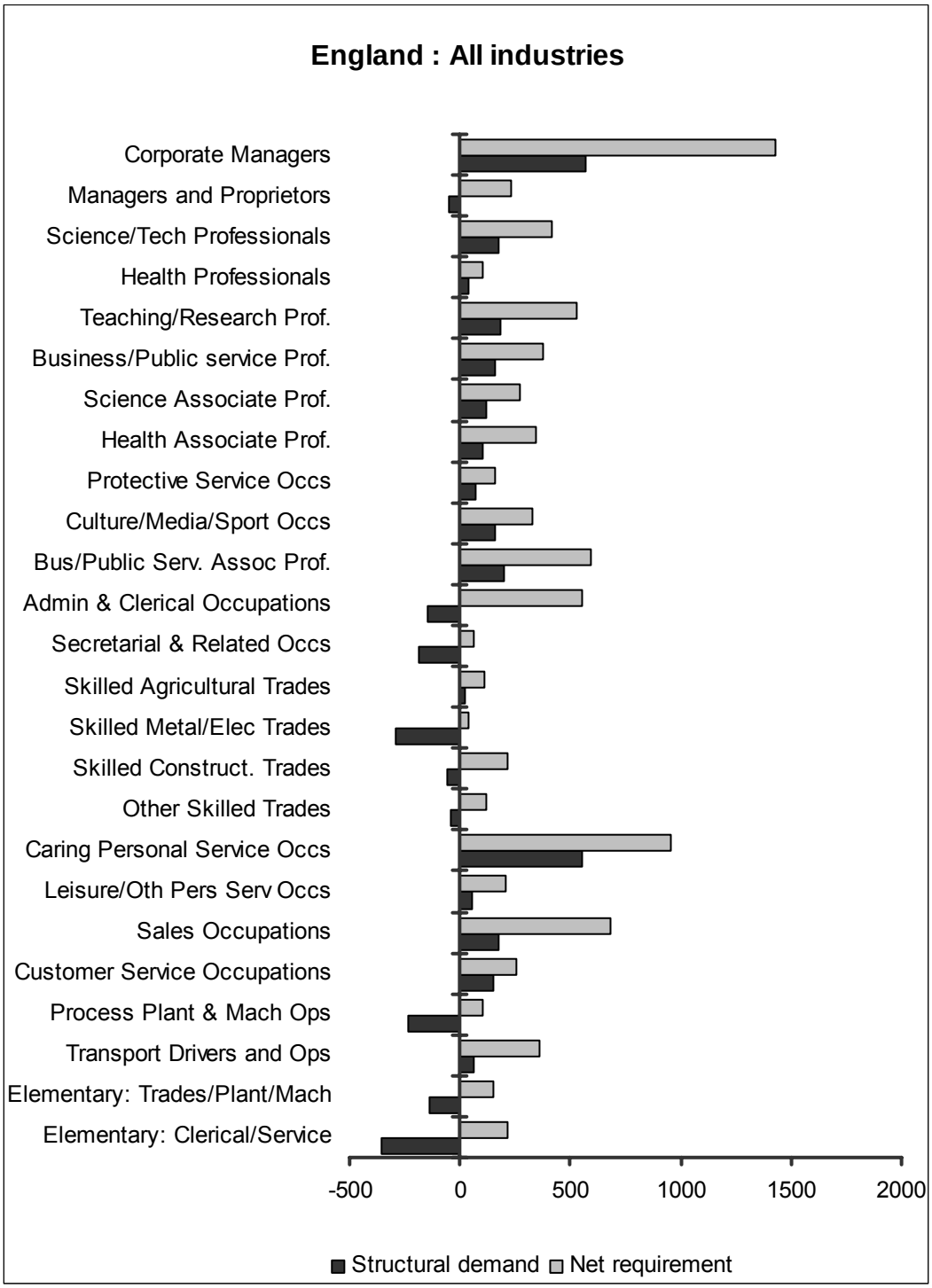
2.142 Nevertheless, such benchmark estimates are useful in emphasising that, even for sectors (and regions) where quite sharp employment losses are projected, replacement demands are likely to be more than sufficient to outweigh these trends. Table 2.12 presents corresponding estimates to those in Table 2.10 but for 16 broad sectors. Regional results are presented at the end of this chapter.

2.143 There are common patterns at a sectoral level across all occupations. For four occupational categories (SOC major groups 4, 5, 8 and 9) structural or expansion demand is negative in almost every industry. The few exceptions are all quite trivial. Replacement demands are positive throughout and in all cases outweigh any negative expansion demands.

2.144 In many industries, total requirements for SOCs 4, 5, 8 and 9 are substantial. In all four occupational groups total requirements amount to at least 0.5 million new job openings over the period 2002 to 2012. In the case of SOC 4 (administrative, clerical and secretarial occupations), there are projected to be well over a million such openings despite the overall decline in the total number of such jobs.

2.145 In the case of the other occupational categories, replacement demands reinforce positive expansion demands to result in even greater numbers of new job openings, requiring educated and trained entrants. To a large extent the patterns by sector reflect the overall size in terms of employment. The largest requirements are therefore in sectors such as retail distribution and other business activities, while they are only tiny in utilities and mining and quarrying (which now employ relatively small numbers of people).

Figure 2.20: Net requirements and expansion demand by SOC 2000 sub-major group, England, 2003–2012



Source: *Working Futures,* Wilson *et al.* (2004).
Notes: These estimates do not allow for any losses due to occupational or geographical mobility.
Total net requirements = replacement demand plus expansion (or structural) demand.

Table 2.12: Replacement demand by occupation by sector, England, 2003–2012

a) Expansion demand (000)	Occupational group[a]									
Sector	1	2	3	4	5	6	7	8	9	All occs.
1. Agriculture, hunting, forestry and fishing	0	0	1	0	-4	9	1	-4	-27	-24
2. Mining and quarrying	0	-1	0	-1	-3	0	0	-2	-2	-8
6. Electricity, gas and water	0	-1	0	-7	-6	0	-1	-2	-3	-20
3. Food, drink and tobacco	4	1	2	-4	-11	0	2	-15	-14	-36
4. Engineering	1	1	2	-15	-38	0	0	-21	-14	-83
5. Rest of manufacturing	2	-3	13	-36	-120	4	5	-110	-73	-319
7. Construction	30	12	18	-12	-66	1	4	0	-18	-31
8. Retail distribution	66	29	71	-32	-51	84	186	3	-47	309
9. Hotels and restaurants	-9	3	14	-5	1	43	14	1	-45	15
10. Transport, storage and communication	39	11	23	23	-51	17	25	-13	-28	46
11. Banking and insurance	19	15	21	-38	-2	3	20	1	-4	34
12. Other business activities	233	250	293	-70	0	110	48	18	-16	867
13. Public admin. and defence	21	7	12	-56	-12	23	4	-9	-31	-42
14. Education	22	140	25	-24	-6	48	2	-8	-67	132
15. Health and social work	49	44	55	-45	-7	207	2	-10	-64	231
16. Non-marketed services	38	49	95	-5	0	61	10	2	-42	207
All Sectors	513	558	643	-329	-376	608	323	-169	-495	1277

b) Replacement demand (000)	Occupational group[a]									
Sector	1	2	3	4	5	6	7	8	9	All occs.
1. Agriculture, hunting, forestry and fishing	6	1	1	2	35	7	1	7	35	96
2. Mining and quarrying	2	1	1	2	4	0	0	2	2	15
6. Electricity, gas and water	4	4	4	10	9	1	4	3	3	41
3. Food, drink and tobacco	17	4	12	14	20	1	10	38	24	140
4. Engineering	35	19	27	25	57	3	6	37	20	228
5. Rest of manufacturing	101	33	80	84	172	13	22	170	96	773
7. Construction	65	23	26	46	241	2	8	50	55	516
8. Retail distribution	291	35	133	171	176	52	499	105	144	1604
9. Hotels and restaurants	178	7	36	47	64	23	30	12	255	650
10. Transport, storage and communication	56	19	42	117	79	21	24	132	78	567
11. Banking and insurance	55	22	46	186	11	5	34	7	19	385
12. Other business activities	280	195	300	348	64	102	65	50	98	1502
13. Public admin. and defence	56	41	115	140	14	21	11	14	53	465
14. Education	43	373	110	54	8	72	9	16	79	763
15. Health and social work	125	101	331	102	16	270	17	15	63	1041
16. Non-marketed services	108	53	134	61	26	82	17	36	78	593
All Sectors	1422	929	1397	1410	997	674	756	694	1100	9378

c) Total requirements (000)	Occupational group[a]									
Sector	1	2	3	4	5	6	7	8	9	All occs.
1. Agriculture, hunting, forestry and fishing	6	1	2	2	32	16	1	3	9	72
2. Mining and quarrying	2	0	1	1	1	0	0	1	0	6
6. Electricity, gas and water	3	3	3	3	3	1	3	2	1	21
3. Food, drink and tobacco	20	5	14	10	9	1	12	23	10	104
4. Engineering	36	20	29	11	19	3	6	16	6	145
5. Rest of manufacturing	103	31	93	48	52	17	27	60	23	454
7. Construction	96	35	43	35	176	2	12	50	36	485
8. Retail distribution	357	63	204	138	125	136	685	108	97	1913
9. Hotels and restaurants	168	9	49	41	65	66	45	12	209	665
10. Transport, storage and communication	95	29	64	140	28	38	50	119	50	613
11. Banking and insurance	73	37	67	148	9	8	54	7	15	418
12. Other business activities	513	445	592	278	65	212	113	68	81	2369
13. Public admin. and defence	77	48	127	84	2	44	15	5	22	423
14. Education	65	513	134	30	1	120	11	7	12	895
15. Health and social work	174	146	387	56	9	477	19	5	-1	1272
16. Non-marketed services	146	101	229	56	25	143	27	38	36	800
All Sectors	1935	1487	2040	1081	621	1282	1079	525	605	10655

Source: *Working Futures,* Wilson *et al.* (2004).

Note: [a] Occupational groups:

1 Managers and senior officials	4 Admin, clerical and secretarial	7 Sales and customer service
2 Professional	5 Skilled trades	8 Transport and machine operatives
3 Associate prof. and technical	6 Personal service	9 Elementary

Implications for the demand for qualifications

Previous forecasts provide some guide to the future demand for qualifications. The demand for qualified people will depend on changes in occupational mix as well as changing qualification requirements within those jobs. However, the link between occupation and qualification is not rigid and much of the recent growth in qualified employment has been as much supply as demand driven. The combination of occupational change and rising average qualification requirements will lead to rapid growth, especially for higher-level qualifications.

2.146 The *Working Futures* projections did not include forecasts of qualifications. Earlier results such as *Projections of Occupations and Qualifications* (Wilson, 2001) did provide some useful indications of likely developments. While these are now becoming somewhat dated, they are all that is available until the next round of *Working Futures* projections is completed.

2.147 The future demand for qualified people will depend on a combination of the changes in occupational structure and changes in the proportion of people employed in these occupations requiring particular qualifications. The pattern of occupational employment is changing in such a manner as to increase the demand for better-qualified persons. The occupations which are increasing in importance tend to require higher qualifications, whereas those in decline are much less demanding.

2.148 In practice, there is not a rigid link between occupations and qualifications. For most occupations there is quite a wide range of qualifications which are acceptable. Typically, recent entrants are better qualified than those reaching retirement age. The average levels of qualifications held by those in employment have therefore risen because of this supply-side cohort effect. Nevertheless, as noted earlier in this chapter as well as in Chapter 4, there is some evidence that there has been a real increase in requirements from the demand side as well.

2.149 The combination of rapid growth in the numbers employed in several occupational groups where the qualification levels are relatively high (such as corporate managers, professionals and associate professionals, in particular), together with the decline in several other occupational groups (such as administrative, clerical and secretarial and related occupations, as well as process, plant and machine operatives) where the qualification levels are relatively low, will in itself lead to an overall increase in the demand for higher-level qualifications. When this is combined with the projected changes in the qualifications mix within occupations, then substantial increases in the demand for higher-level qualifications can be expected, as indicated in Table 2.13.

Table 2.13: Projected change in demand for qualifications in England, 1999–2010

		Change in demand for those qualified to:				
Occupation	Employment change [b]	NVQ4+	NVQ3	NVQ2	NVQ1	No quals.
	000	000	000	000	000	000
Corporate managers	244	336	156	-24	-188	-37
Managers in agriculture and services	-278	-47	-71	-14	-93	-53
Science and engineering profess.	228	211	29	-3	-7	-2
Health professionals	137	123	-1	2	14	0
Teaching professionals	448	442	-6	-1	13	0
Professional	358	363	18	-5	-18	0
Science and engineering assoc. profs.	77	74	21	-4	-10	-3
Health associate professionals	82	104	-13	-2	-7	0
Other associate professionals	327	318	64	0	-44	-11
Clerical	-82	52	-21	-5	-39	-69
Secretarial	-130	-8	-64	-15	-26	-17
Skilled construction trades	21	2	19	-4	27	-24
Skilled engineering trades	-28	-4	12	-13	-4	-18
Other skilled trades	-85	-10	4	-17	9	-70
Protective service	52	16	47	1	-3	-9
Personal service	422	66	34	41	379	-98
Sales representatives	-11	6	-9	-2	1	-6
Other sales	30	14	96	19	-21	-79
Indust. plant and machine operatives	41	-1	-16	2	154	-98
Drivers and mobile m/c operatives	17	1	-5	-3	47	-23
Other occupations in agriculture etc.	-24	-2	-7	-1	-8	-6
Other elementary	88	1	-2	14	225	-151
Total	1,933 [b]	2,057	283	-33	402	-776
As a percentage of new jobs [a]	100	106 [a]	15	-2	21	-40
Change as a percentage of current workforce qualified to each NVQ level in 2000		34	7	-1	8	-27

Source: *Projections of Occupations and Qualifications*, Wilson (2001), balance demand scenario.
Notes: (a) The percentages can exceed 100 per cent, since some offsetting changes are negative.
(b) These results are based on an earlier round of occupational employment projections (*Projections of Occupations and Qualifications*, Wilson, 2001) rather than to *Working Futures* which is the source for most of the other projections reported here. However, general trends are unlikely to have changed significantly. They also relate to a slightly different period (1999–2010).

2.150 The bulk of the net increase in jobs was projected to be at NVQ Level 4 or above. About a quarter of all new jobs were expected to be for those qualified to NVQ Level 3 and just under a fifth at NVQ Level 2 or equivalent. The demand for those with no formal qualifications was projected to fall. The most rapid growth at NVQ Level 4 was for 'other' professionals, 'other' associate professionals and teaching professionals. At NVQ Level 3 or equivalent, growth was projected to be fastest for personal service occupations and 'other' associate professionals.

2.151 In the particular scenario developed, nearly a third of those in employment were projected to be qualified to NVQ Level 4 or 5 or the equivalent by the end of 2010. In contrast, fewer than 10 per cent were projected to have no formal qualifications. Similar patterns would be likely to emerge were these projections to be updated linked to the latest employment projections.

The majority of new jobs are expected to be for people qualified at NVQ Level 4 or higher. The demand for basic, key and generic skills is also projected to increase. Previous projections can provide some guidance on likely developments. Verbal, numerical planning and various communications skills will be in greater demand.

Future trends in key and generic skill requirements

2.152 Employers are also placing increasing emphasis upon various key and generic skills such as communication, IT, team working, problem solving, reasoning and work process skills. Previous projections have also considered how these might change in the coming decade. Results based on the 1997 Skills Survey were published in *Projections of Occupations and Qualifications,* (Wilson 2001).

2.153 Again, although these projections have not been updated, they can still provide some useful insight into the likely change in the pattern of demand for such skills. These results were discussed in great detail in *Skills in England 2002.* That discussion is not repeated here but the latest evidence on changing patterns of demand for such skills only serves to reinforce these messages.

2.154 The results from the previous projections suggested that many skills were likely to become increasingly important, including verbal skills, numerical skills, planning skills and various types of communication skills. Manual skills were projected to be of decreasing importance. Verbal skill requirements were projected to increase, especially amongst managers. Numerical skills were projected to increase in importance among administrative, clerical and secretarial occupations. The need for planning skills was projected to rise among sales occupations. Communication skills were projected to increase most amongst managers (both within the workplace and when dealing with customers or clients).

2.155 The Skills Surveys (Felstead *et al.,* 2002) also enabled an analysis of trends in other kinds of work skills including:

- autonomy (reflecting closeness of supervision and the extent of choice over job tasks)
- required qualifications (reflecting the level of qualifications someone would need today to get the type of job an individual already held)
- training time (reflecting the amount of training, since starting the type of work they do that had been undertaken)
- learning time (reflecting how long it took workers to learn how to do the job well)
- a composite index of the above.

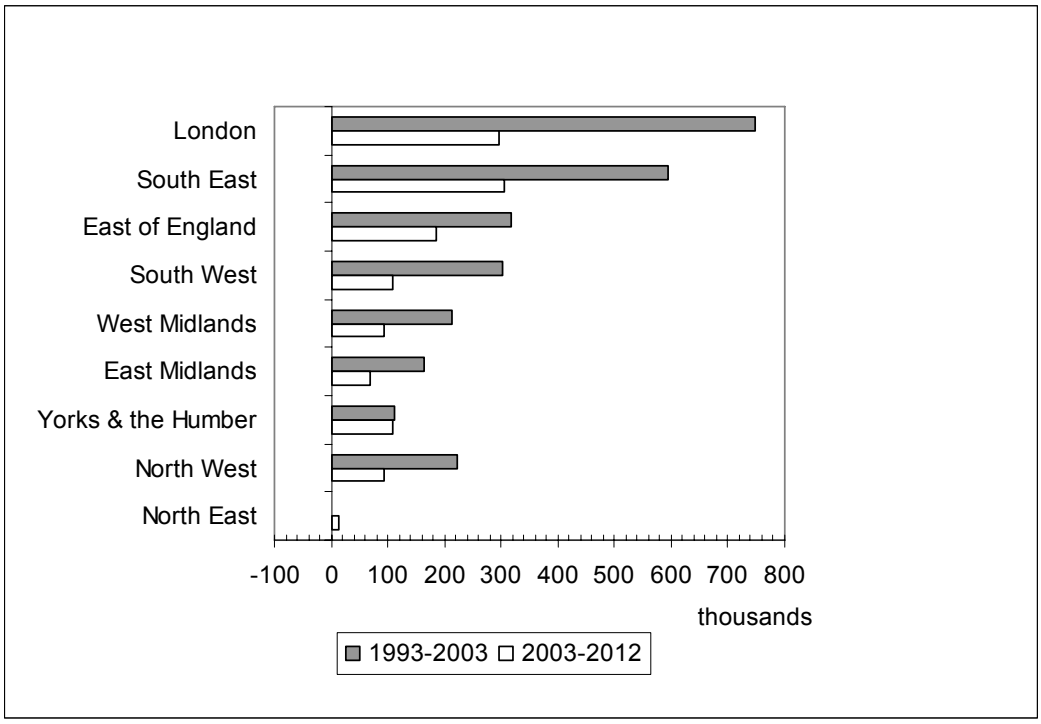
Although there are many common patterns across regions, particular economic structures mean that demands vary significantly. Differences in existing economic structure and general prospects will mean marked variations in skills needs across regions with the southern regions expected to see the most rapid growth.

Regional variations in future skill needs

2.156 Substantial regional variations in the pattern of expected future skill needs are projected (see Figure 2.21). This reflects the particular economic structures of the regions. Specific skill needs in each region will need to be compared with likely availability. Significant variations in provision are likely to be needed in each region. Variations in regional patterns of growth and decline across a wide range of occupations will have important implications for developments in the supply of skills required at the regional level. Providers will have to tailor their provision to meet these specific needs.

2.157 The growth in total employment levels is expected to continue to favour most parts of England. However, employment prospects are projected to vary quite significantly across regions (see Figure 2.21). London and the South East are expected to show the fastest growth, although, as the figure clearly shows, the disparities are not as pronounced as over the last 10 years. Differences in general economic prospects, together with differences in their existing employment structures, mean that the skills needs of different regions will vary significantly. However, the same kinds of general trends in occupational mix within industries are expected. This is reflected in terms of the projected changes in occupational employment, qualifications and other indicators.

Figure 2.21: Employment change by region, 1993–2012



Source: *Working Futures,* Wilson *et al.* (2004).

The fastest growth in demand is expected to be for particular occupations in the southern regions of England.

2.158 London, the South East, East of England and South West regions are expected to record relatively rapid job growth over the coming decade. The West and East Midlands, Yorkshire and the Humber, and the North West are all projected to experience growth rates around the national average. The North East is projected to show little change. The four regions of the South East, South West, London and the East are projected to account for over 70 per cent of the expected additional 1.3 million jobs expected over the period to 2012.

2.159 Particularly strong growth is expected in the demand for managers in London, the South East and East of England; for professionals in London; for associate professional and technical occupations in London (and to a lesser extent the South East and East of England); for personal service occupations in the Midlands, the South East and the East of England; and for sales and customer service occupations in the South West, in the Midlands, and in Yorkshire and the Humber.

Sectoral prospects by region

2.160 Details of broad sectoral employment prospects for individual regions are shown in Tables 2.14, 2.15 and 2.16. The dependence of particular regions on certain sectors of employment is illustrated in Tables 2.14 and 2.15, which show the scale and share of employment in each sector. While it is clear that distribution, transport, etc., business and miscellaneous services, and non-marketed services now account for a very significant part of employment in all regions, the importance of manufacturing in many regions is also apparent. The changes expected over the decade to 2012 shown in Table 2.16 illustrate the preponderance of negative effects (shaded) in the top part of the table. These relate to primary, manufacturing and utilities. The declines in manufacturing are especially significant in both absolute and percentage terms for regions in the Midlands and the north of England.

Table 2.14: Projected employment levels by broad sector, 2003–2012

Regions:	London		South East		East of England		South West		West Midlands	
	2003	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**
	000	000	000	000	000	000	000	000	000	000
Primary and utilities	19	15	92	83	50	48	81	70	51	46
Manufacturing	285	243	434	375	352	308	299	262	458	396
Construction	201	186	283	304	211	208	179	194	146	128
Distribution, transport, etc	1,308	1,302	1,268	1,379	818	883	756	805	749	784
Business and misc. services	1,798	2,131	1,225	1,405	656	791	567	623	553	651
Non-marketed services	870	901	883	944	531	566	597	635	598	645
Total	4,481	4,777	4,185	4,491	2,618	2,803	2480	2590	2556	2649

	East Midlands		Yorks. and the Humber		North West		North East		All Regions (England)	
	2003	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**
	000	000	000	000	000	000	000	000	000	000
Primary and utilities	50	43	50	44	42	35	22	20	457	404
Manufacturing	353	301	375	328	473	399	160	139	3189	2751
Construction	142	146	140	123	199	181	71	73	1572	1542
Distribution, transport, etc	564	594	684	739	967	990	287	296	7402	7772
Business and misc. services	391	446	465	561	702	832	200	223	6557	7665
Non-marketed services	472	511	581	609	804	842	300	304	5637	5957
Total	1,972	2,042	2,296	2,404	3,187	3,280	1040	1054	24814	26091

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.15: Employment shares by broad sector, 2003–2012

Regions:	London		South East		East of England		South West		West Midlands	
	2003	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**
	%	%	%	%	%	%	%	%	%	%
Primary and utilities	0	0	2	2	2	2	3	3	2	2
Manufacturing	6	5	10	8	13	11	12	10	18	15
Construction	4	4	7	7	8	7	7	8	6	5
Distribution, transport, etc	29	27	30	31	31	32	31	31	29	30
Business and misc. services	40	45	29	31	25	28	23	24	22	25
Non-marketed services	19	19	21	21	20	20	24	25	23	24
Total	100	100	100	100	100	100	100	100	100	100

	East Midlands		Yorks. and the Humber		North West		North East		All Regions (England)	
	2003	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**
	%	%	%	%	%	%	%	%	%	%
Primary and utilities	3	2	2	2	1	1	2	2	2	2
Manufacturing	18	15	16	14	15	12	15	13	13	11
Construction	7	7	6	5	6	6	7	7	6	6
Distribution, transport, etc	29	29	30	31	30	30	28	28	30	30
Business and misc. services	20	22	20	23	22	25	19	21	26	29
Non-marketed services	24	25	25	25	25	26	29	29	23	23
Total	100	100	100	100	100	100	100	100	100	100

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.16: Projected employment changes by broad sector, 2003–2012

Regions:	London		South East		East of England		South West		West Midlands	
	2003	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**
Primary and utilities	-4	-20.9	-8	-9.0	-2	-4.6	-11	-13.7	-5	-9.5
Manufacturing	-42	-14.8	-59	-13.5	-44	-12.6	-37	-12.5	-63	-13.7
Construction	-15	-7.6	21	7.5	-3	-1.6	16	8.8	-18	-12.7
Distribution, transport, etc	-6	-0.4	110	8.7	66	8.0	48	6.4	35	4.6
Business and misc. services	333	18.5	180	14.7	134	20.5	56	9.9	98	17.8
Non-marketed services	31	3.5	61	6.9	35	6.6	39	6.5	46	7.8
Total	297	6.6	306	7.3	185	7.1	110	4.4	93	3.6

	East Midlands		Yorks. and the Humber		North West		North East		All Regions (England)	
	2003	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**	**2003**	**2012**
Primary and utilities	-7	-13.3	-7	-13.6	-7	-15.9	-2	-9.5	-53	-11.5
Manufacturing	-51	-14.6	-46	-12.4	-74	-15.6	-21	-13.1	-438	-13.7
Construction	3	2.4	-17	-12.3	-19	-9.4	2	2.7	-31	-2.0
Distribution, transport, etc	30	5.3	55	8.0	23	2.4	9	3.1	370	5.0
Business and misc. services	55	14.2	97	20.9	130	18.6	23	11.7	1108	16.9
Non-marketed services	39	8.3	28	4.7	39	4.8	3	1.0	320	5.7
Total	70	3.6	109	4.7	92	2.9	14	1.4	1277	5.1

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.17: Projected employment levels by SSDA Sector Matrix Industry, England, 2003–2012

Regions:	London		South East		East of England		South West		West Midlands		East Midlands		Yorks. and Humber		North West		North East		All Regions (England)	
	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012
Agriculture	7	6	69	65	35	34	60	52	35	33	32	28	32	31	21	18	13	11	304	280
Mining and quarrying; utilities, of which:	12	9	22	18	15	14	21	18	16	13	18	15	18	12	21	17	9	8	153	124
Mining and quarrying	3	2	6	4	4	4	7	6	2	2	7	5	8	6	4	4	4	3	44	36
Electricity, gas and water	10	7	16	14	11	10	15	12	14	11	11	10	10	7	17	13	5	5	109	89
Food, drink and tobacco	33	24	31	30	43	37	39	33	37	38	55	53	63	57	64	57	18	17	383	347
Textiles and clothing	19	11	8	4	11	8	11	8	16	10	47	25	29	20	41	24	8	5	191	116
Wood, paper; printing and publishing, of which:	112	111	79	80	60	60	46	45	38	35	43	44	53	53	59	58	18	19	508	502
Wood and paper products	11	12	21	19	19	18	16	15	16	12	18	14	20	17	26	20	9	8	155	134
Publishing and printing	101	99	58	61	40	42	31	30	22	23	25	30	33	36	34	38	9	11	353	368
Chemicals and non-metallic mineral products	29	25	80	72	55	43	41	36	70	60	55	52	63	52	107	90	34	28	533	457
Metals and metal goods	20	15	48	36	37	37	32	26	102	85	41	36	63	52	47	42	23	19	413	347
Engineering	39	30	128	107	85	75	68	62	95	83	57	48	57	52	77	70	31	28	638	555
Transport equipment	16	10	32	21	36	24	43	31	74	57	33	21	20	15	51	34	18	13	324	226
Manufacturing nes and recycling	17	17	27	25	24	25	18	20	27	27	22	23	28	27	26	26	11	11	199	201
Construction	201	186	283	304	211	208	179	194	146	128	142	146	140	123	199	181	71	73	1572	1542
Sale and maintenance of motor vehicles	61	63	107	114	63	71	67	68	66	68	52	55	55	59	67	65	23	25	562	587
Wholesale distribution	197	200	226	238	122	135	94	97	128	131	96	100	101	107	144	139	34	36	1142	1182
Other retail distribution	394	399	438	493	298	333	278	312	259	296	197	218	252	276	354	380	110	116	2580	2823
Hotels and catering	298	288	249	265	161	152	199	205	144	144	111	101	136	149	203	216	66	63	1567	1583
Transport	253	252	171	183	114	129	76	81	104	105	80	89	103	111	146	132	35	39	1082	1122
Communications	104	99	78	86	59	64	42	41	47	40	28	31	38	38	54	58	19	17	469	475
Banking and insurance	325	334	164	169	84	91	90	96	76	80	43	42	73	78	102	101	29	28	985	1019
Professional services	144	217	144	184	78	107	58	66	53	73	39	50	45	65	69	100	21	27	650	888
Computing and related services	128	217	134	203	54	88	37	55	38	68	26	43	24	42	45	73	12	17	497	806
Other business services	830	943	524	559	284	329	229	226	247	274	177	192	198	234	303	351	84	87	2875	3195
Public administration	220	209	170	162	99	94	129	126	108	104	85	82	120	115	172	172	74	70	1177	1135
Education	263	272	317	342	188	203	208	225	227	247	172	188	202	214	279	293	91	92	1947	2078
Health and social work	387	420	396	440	243	269	260	284	263	293	216	240	259	279	353	378	136	141	2513	2744
Miscellaneous services	371	421	260	290	157	176	154	181	140	155	106	120	125	142	183	208	55	64	1550	1757
Total	4481	4777	4185	4491	2618	2803	2480	2590	2556	2649	1972	2042	2296	2404	3187	3280	1040	1054	24814	26091

Source: *Working Futures,* Wilson *et al.* (2004).
Note: Figures are in thousands.

Table 2.18: Employment shares by SSDA Sector Matrix Industry, England, 2003–2012 (percentages)

Regions:	London		South East		East of England		South West		West Midlands		East Midlands		Yorks. and Humber		North West		North East		All Regions (England)	
	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012
Agriculture	0.2	0.1	1.7	1.5	1.3	1.2	2.4	2.0	1.4	1.2	1.6	1.4	1.4	1.3	0.6	0.6	1.2	1.1	1.2	1.1
Mining and quarrying; utilities, of which:	0.3	0.2	0.5	0.4	0.6	0.5	0.9	0.7	0.6	0.5	0.9	0.7	0.8	0.5	0.7	0.5	0.9	0.8	0.6	0.5
Mining and quarrying	0.1	0.0	0.1	0.1	0.2	0.1	0.3	0.2	0.1	0.1	0.4	0.3	0.3	0.2	0.1	0.1	0.3	0.3	0.2	0.1
Electricity, gas and water	0.2	0.1	0.4	0.3	0.4	0.4	0.6	0.5	0.5	0.4	0.6	0.5	0.5	0.3	0.5	0.4	0.5	0.5	0.4	0.3
Food, drink and tobacco	0.7	0.5	0.7	0.7	1.6	1.3	1.6	1.3	1.5	1.4	2.8	2.6	2.7	2.4	2.0	1.7	1.8	1.6	1.5	1.3
Textiles and clothing	0.4	0.2	0.2	0.1	0.4	0.3	0.5	0.3	0.6	0.4	2.4	1.2	1.2	0.9	1.3	0.7	0.8	0.5	0.8	0.4
Wood, paper; printing and publishing, of which:	2.5	2.3	1.9	1.8	2.3	2.1	1.9	1.7	1.5	1.3	2.2	2.1	2.3	2.2	1.9	1.8	1.7	1.8	2.0	1.9
Wood and paper products	0.2	0.3	0.5	0.4	0.7	0.6	0.6	0.6	0.6	0.4	0.9	0.7	0.9	0.7	0.8	0.6	0.8	0.7	0.6	0.5
Publishing and printing	2.3	2.1	1.4	1.3	1.5	1.5	1.2	1.2	0.9	0.9	1.3	1.5	1.4	1.5	1.1	1.2	0.9	1.0	1.4	1.4
Chemicals and non-metallic mineral products	0.6	0.5	1.9	1.6	2.1	1.5	1.6	1.4	2.7	2.3	2.8	2.5	2.7	2.2	3.3	2.7	3.3	2.7	2.1	1.8
Metals and metal goods	0.5	0.3	1.1	0.8	1.4	1.3	1.3	1.0	4.0	3.2	2.1	1.7	2.7	2.2	1.5	1.3	2.2	1.8	1.7	1.3
Engineering	0.9	0.6	3.1	2.4	3.3	2.7	2.8	2.4	3.7	3.1	2.9	2.4	2.5	2.2	2.4	2.1	3.0	2.6	2.6	2.1
Transport equipment	0.4	0.2	0.8	0.5	1.4	0.9	1.7	1.2	2.9	2.2	1.7	1.0	0.9	0.6	1.6	1.0	1.7	1.2	1.3	0.9
Manufacturing nes and recycling	0.4	0.4	0.6	0.6	0.9	0.9	0.7	0.8	1.0	1.0	1.1	1.1	1.2	1.1	0.8	0.8	1.0	1.1	0.8	0.8
Construction	4.5	3.9	6.8	6.8	8.1	7.4	7.2	7.5	5.7	4.8	7.2	7.1	6.1	5.1	6.3	5.5	6.8	6.9	6.3	5.9
Sale and maintenance of motor vehicles	1.4	1.3	2.6	2.5	2.4	2.5	2.7	2.6	2.6	2.6	2.7	2.7	2.4	2.4	2.1	2.0	2.2	2.4	2.3	2.2
Wholesale distribution	4.4	4.2	5.4	5.3	4.7	4.8	3.8	3.7	5.0	4.9	4.8	4.9	4.4	4.5	4.5	4.2	3.2	3.4	4.6	4.5
Other retail distribution	8.8	8.4	10.5	11.0	11.4	11.9	11.2	12.0	10.1	11.2	10.0	10.7	11.0	11.5	11.1	11.6	10.6	11.0	10.4	10.8
Hotels and catering	6.6	6.0	5.9	5.9	6.2	5.4	8.0	7.9	5.6	5.4	5.6	5.0	5.9	6.2	6.4	6.6	6.3	5.9	6.3	6.1
Transport	5.6	5.3	4.1	4.1	4.4	4.6	3.1	3.1	4.1	4.0	4.0	4.3	4.5	4.6	4.6	4.0	3.4	3.7	4.4	4.3
Communications	2.3	2.1	1.9	1.9	2.3	2.3	1.7	1.6	1.8	1.5	1.4	1.5	1.7	1.6	1.7	1.8	1.8	1.6	1.9	1.8
Banking and insurance	7.2	7.0	3.9	3.8	3.2	3.2	3.6	3.7	3.0	3.0	2.2	2.0	3.2	3.3	3.2	3.1	2.8	2.6	4.0	3.9
Professional services	3.2	4.5	3.4	4.1	3.0	3.8	2.3	2.5	2.1	2.8	2.0	2.5	1.9	2.7	2.2	3.0	2.0	2.6	2.6	3.4
Computing and related services	2.9	4.5	3.2	4.5	2.1	3.1	1.5	2.1	1.5	2.6	1.3	2.1	1.0	1.8	1.4	2.2	1.1	1.6	2.0	3.1
Other business services	18.5	19.7	12.5	12.5	10.8	11.7	9.2	8.7	9.7	10.3	9.0	9.4	8.6	9.7	9.5	10.7	8.0	8.3	11.6	12.2
Public administration	4.9	4.4	4.1	3.6	3.8	3.4	5.2	4.9	4.2	3.9	4.3	4.0	5.2	4.8	5.4	5.2	7.1	6.6	4.7	4.3
Education	5.9	5.7	7.6	7.6	7.2	7.2	8.4	8.7	8.9	9.3	8.7	9.2	8.8	8.9	8.7	8.9	8.7	8.8	7.8	8.0
Health and social work	8.6	8.8	9.5	9.8	9.3	9.6	10.5	11.0	10.3	11.1	11.0	11.8	11.3	11.6	11.1	11.5	13.0	13.4	10.1	10.5
Miscellaneous services	8.3	8.8	6.2	6.5	6.0	6.3	6.2	7.0	5.5	5.9	5.4	5.9	5.4	5.9	5.7	6.3	5.3	6.1	6.2	6.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.19: Projected employment change by SSDA Sector Matrix Industry, England, 2003–2012

Regions:	London		South East		East of England		South West		West Midlands		East Midlands		Yorks. and Humber		North West		North East		All Regions (England)	
	000	%	000	%	000	%	000	%	000	%	000	%	000	%	000	%	000	%	000	%
Agriculture	-1	-8.6	-4	-5.9	-2	-4.3	-8	-12.9	-2	-6.1	-3	-11.0	-1	-3.3	-2	-10.6	-1	-10.9	-24	-8.0
Mining and quarrying; utilities, of which:	-3	-27.9	-4	-18.6	-1	-5.3	-3	-15.8	-3	-16.9	-3	-17.4	-6	-32.2	-4	-21.0	-1	-7.6	-29	-18.6
Mining and quarrying	-1	-19.2	-2	-27.6	0	-8.9	-1	-17.5	0	-12.7	-2	-24.3	-2	-25.6	0	-5.1	-1	-15.4	-8	-19.1
Electricity, gas and water	-3	-30.4	-3	-15.4	0	-3.8	-2	-15.0	-2	-17.6	-1	-13.0	-4	-37.0	-4	-24.8	0	-2.6	-20	-18.5
Food, drink and tobacco	-9	-26.1	-1	-2.3	-7	-15.2	-5	-13.3	1	2.8	-3	-4.9	-6	-9.3	-7	-10.3	-1	-6.0	-36	-9.4
Textiles and clothing	-8	-41.4	-4	-49.1	-3	-24.8	-3	-28.1	-6	-37.3	-22	-46.7	-8	-28.6	-18	-43.0	-3	-40.2	-75	-39.3
Wood, paper; printing and publishing, of which:	-1	-1.0	0	0.5	0	-0.1	-2	-3.9	-3	-8.9	1	2.4	0	-0.1	-2	-2.8	1	5.7	-6	-1.1
Wood and paper products	1	13.8	-2	-10.2	-1	-7.3	-1	-8.4	-4	-25.6	-4	-20.7	-3	-15.8	-6	-22.7	-1	-11.3	-21	-13.6
Publishing and printing	-3	-2.5	3	4.5	1	3.3	0	-1.6	1	3.1	5	18.7	3	9.4	4	12.5	2	22.6	15	4.4
Chemicals and non-metallic mineral products	-4	-15.1	-8	-10.3	-12	-22.6	-5	-12.1	-9	-13.2	-3	-5.6	-11	-17.6	-17	-16.0	-6	-16.8	-76	-14.3
Metals and metal goods	-5	-25.2	-12	-25.4	0	-0.3	-6	-18.4	-17	-16.4	-5	-13.1	-11	-18.0	-5	-11.3	-4	-17.2	-66	-15.9
Engineering	-9	-23.7	-21	-16.5	-11	-12.7	-6	-8.9	-12	-12.6	-9	-15.1	-5	-8.1	-7	-9.6	-3	-11.0	-83	-13.0
Transport equipment	-6	-38.6	-11	-33.4	-12	-34.0	-12	-27.6	-17	-23.2	-12	-35.6	-5	-23.8	-18	-34.4	-6	-30.6	-98	-30.2
Manufacturing nes and recycling	0	2.2	-2	-8.4	1	3.3	2	9.2	1	2.4	1	4.9	-1	-2.0	-1	-2.2	1	8.9	2	1.0
Construction	-15	-7.6	21	7.5	-3	-1.6	16	8.8	-18	-12.7	3	2.4	-17	-12.3	-19	-9.4	2	2.7	-31	-2.0
Sale and maintenance of motor vehicles	1	2.2	7	6.4	8	11.9	1	1.4	2	3.4	3	5.4	4	6.8	-2	-2.7	2	7.3	25	4.5
Wholesale distribution	3	1.6	12	5.2	13	10.8	3	3.3	3	2.0	4	4.3	6	5.9	-5	-3.8	2	6.7	41	3.6
Other retail distribution	5	1.3	55	12.5	35	11.7	34	12.3	36	14.0	21	10.9	24	9.5	26	7.3	6	5.7	243	9.4
Hotels and catering	-10	-3.2	16	6.4	-10	-5.9	6	3.0	-1	-0.5	-9	-8.5	13	9.8	13	6.2	-3	-5.1	15	1.0
Transport	-1	-0.2	12	7.3	15	12.8	5	6.5	1	1.0	9	11.0	8	8.1	-13	-9.1	4	10.6	40	3.7
Communications	-5	-5.2	9	11.1	5	8.5	-1	-1.9	-7	-14.4	2	8.1	0	-0.4	5	8.8	-2	-9.2	6	1.2
Banking and insurance	9	2.7	6	3.6	7	8.3	6	6.2	4	5.7	-1	-2.5	6	7.8	-1	-1.1	-1	-3.9	34	3.5
Professional services	72	50.0	40	27.4	30	38.1	8	14.6	20	38.5	11	28.7	20	44.8	31	44.5	6	30.6	238	36.6
Computing and related services	89	69.8	69	51.2	34	63.0	18	48.6	30	79.5	17	64.3	18	76.5	29	64.1	5	45.8	309	62.2
Other business services	113	13.6	36	6.8	45	15.8	-3	-1.3	27	11.1	15	8.4	36	18.1	48	15.7	4	4.6	320	11.1
Public administration	-11	-5.1	-8	-4.8	-5	-5.1	-3	-2.2	-4	-3.3	-2	-2.6	-5	-4.1	0	0.0	-4	-5.5	-42	-3.6
Education	9	3.4	25	8.0	15	7.8	18	8.5	20	8.8	17	9.8	12	5.9	15	5.3	2	2.0	132	6.8
Health and social work	33	8.5	44	11.1	25	10.5	24	9.2	30	11.3	25	11.4	21	7.9	24	6.8	5	4.0	231	9.2
Miscellaneous services	50	13.6	30	11.7	19	12.1	27	17.5	16	11.5	14	12.9	17	13.6	25	13.4	9	16.3	207	13.4
Total	297	6.6	306	7.3	185	7.1	110	4.4	93	3.6	70	3.6	109	4.7	92	2.9	14	1.4	1,277	5.1

Source: *Working Futures,* Wilson *et al.* (2004).
Note: Shaded areas indicate projected employment decline.

2.161 Tables 2.17, 2.18 and 2.19 illustrate a more detailed industrial breakdown for the 27 SSDA Sector Matrix Industries. Patterns at this level of detail are more varied and reflect the detailed industrial specialisms of the regions. Nevertheless, the overall messages in terms of industrial structural changes are common across most regions. Again, primary and utilities and manufacturing industries present a picture of consistent employment decline, with just one or two minor exceptions. The position in some of the service industries is more mixed. Communications and public administration are projected to experience job losses in most regions. Transport and hotels and catering are expected to see job losses in London and some other regions but other regions have more favourable prospects. It is in business and professional services, miscellaneous services and non-marketed services such as education and health that most regions are projected to gain employment.

Occupational changes are projected to follow a similar pattern across all regions. Job losses are concentrated in the same occupations. Employment gains will benefit managers, professional and associate professionals especially.

Occupational prospects by region

2.162 Subject to the differences imposed by their different industrial structures, trends in occupational structure are expected to follow similar patterns in most regions to those at national level. However, these different industrial structures mean that there are some substantial variations in occupational prospects across the regions over the coming decade.

2.163 Tables 2.20 to 2.22 illustrate the common patterns of change across the regions for SOC major groups. In particular, Table 2.22 shows how declining employment (shaded cells) are in the same categories in every region. Job losses are projected to be concentrated in:

- administrative, clerical and secretarial occupations
- skilled trades
- transport and machine operatives
- elementary occupations.

2.164 Other occupations are projected to grow in all regions. There is expected to be especially strong growth in demand for managers and senior officials in London, the South East and East of England; for professionals and associate professional occupations in London; and for personal service occupations in the South East, East of England and the Midlands.

2.165 Managers account for an above average share of employment in London, the South East and the East of England. This is projected to become even more pronounced, with some of the largest increases in employment for these categories being in these regions. More modest growth is expected elsewhere.

2.166 The share of employment in professional occupations is projected to increase across all regions. London, the East of England and the South East are again expected to be the main hot spots. The North East is expected to have the lowest rate of employment increase for professionals across the English regions, but even that region is expected to experience a substantial increase.

Rates of increase in the northern regions are expected to be much less for associate professionals.

2.167 The shares of employment in associate professional and technical occupations are also above average in London. Employment for these occupations is also expected to grow most rapidly here and in the South East and East of England. The prospects for growth in the North East and Yorkshire and the Humber is barely half that expected for the UK as a whole.

The demand for personal service, sales and customer care occupations is expected to grow everywhere.

2.168 Administrative, clerical and secretarial occupations also account for a disproportionately large share of employment in London and the South East, although this is changing. Trends here are generally downward. All regions are now projected to experience job losses for these occupations.

2.169 Both shares and levels employed in personal service occupations are expected to rise in all regions. In many cases these changes are very significant, especially in the South East, West Midlands, East Midlands and the East of England. Growth is expected to be slowest in the North East and London.

2.170 All regions are also projected to experience employment growth in sales and customer service occupations. The fastest increases are for Yorkshire and the Humber. For customer service occupations, increases of around 50 per cent are expected for this occupational group in all regions outside London and the South East. For the much larger sales occupations group, rates of increase are much more modest but in absolute terms they are often as significant as for the customer care group.

The demand for skilled manual workers is projected to decline in most regions as is the demand for transport and machine operatives.

2.171 Employment amongst skilled trades is expected to decline in all regions. London, the West Midlands and the North West are all projected to see large job losses, concentrated in the skilled metal and electrical trades.

2.172 Transport and machine operatives are projected to see significant job losses across England as a whole. Some modest job gains are expected for transport and mobile plant drivers and operatives outside London.

Table 2.20: Projected employment levels by occupation, 2003–2012 (000s)

Regions:	London		South East		East of England		South West		West Midlands	
	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012
Managers and senior officials	816	956	731	850	430	505	365	400	336	368
Professional occupations	635	807	491	581	289	352	271	317	261	302
Associate professional and technical occupations	860	1077	626	734	361	436	321	365	325	381
Administrative, clerical and secretarial occupations	610	477	567	486	334	297	301	264	325	316
Skilled trades occupations	373	309	436	404	308	275	313	287	325	267
Personal service occupations	272	338	305	417	185	250	201	262	205	281
Sales and customer service occupations	290	317	329	384	208	235	223	267	205	244
Transport and machine operatives	219	179	265	255	209	201	193	182	277	253
Elementary occupations	407	318	435	381	295	252	291	246	296	236
Total	4,481	4,777	4,185	4,491	2,618	2,803	2,480	2,590	2,556	2,649

	East Midlands		Yorks.& the Humber		North West		North East		All Regions (England)	
	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012
Managers and senior officials	283	317	309	347	430	461	123	133	3,823	4,337
Professional occupations	203	237	231	269	365	427	105	116	2,852	3,410
Associate professional and technical occupations	239	274	283	318	427	488	132	145	3,575	4,218
Administrative, clerical and secretarial occupations	235	219	288	291	415	403	126	118	3,201	2,872
Skilled trades occupations	234	191	271	227	361	301	127	110	2,748	2,372
Personal service occupations	170	236	188	251	250	328	84	106	1,859	2,468
Sales and customer service occupations	162	192	204	249	273	315	96	111	1,990	2,313
Transport and machine operatives	206	188	238	222	303	267	107	102	2,018	1,849
Elementary occupations	237	187	285	231	363	291	139	113	2,748	2,253
Total	1,972	2,042	2,296	2,404	3,187	3,280	1,040	1,054	24,814	26,091

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.21: Employment shares by occupation and region, 2002–2012 (percentages)

Regions:	London		South East		East of England		South West		West Midlands	
	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012
Managers and senior officials	18	20	17	19	16	18	15	15	13	14
Professional occupations	14	17	12	13	11	13	11	12	10	11
Associate professional and technical occupations	19	23	15	16	14	16	13	14	13	14
Administrative, clerical and secretarial occupations	14	10	14	11	13	11	12	10	13	12
Skilled trades occupations	8	6	10	9	12	10	13	11	13	10
Personal service occupations	6	7	7	9	7	9	8	10	8	11
Sales and customer service occupations	6	7	8	9	8	8	9	10	8	9
Transport and machine operatives	5	4	6	6	8	7	8	7	11	10
Elementary occupations	9	7	10	8	11	9	12	9	12	9
Total	100	100	100	100	100	100	100	100	100	100

	East Midlands		Yorks.& the Humber		North West		North East		All Regions (England)	
	2003	2012	2003	2012	2003	2012	2003	2012	2003	2012
Managers and senior officials	14	16	13	14	13	14	12	13	15	17
Professional occupations	10	12	10	11	11	13	10	11	11	13
Associate professional and technical occupations	12	13	12	13	13	15	13	14	14	16
Administrative, clerical and secretarial occupations	12	11	13	12	13	12	12	11	13	11
Skilled trades occupations	12	9	12	9	11	9	12	10	11	9
Personal service occupations	9	12	8	10	8	10	8	10	7	9
Sales and customer service occupations	8	9	9	10	9	10	9	11	8	9
Transport and machine operatives	10	9	10	9	10	8	10	10	8	7
Elementary occupations	12	9	12	10	11	9	13	11	11	9
Total	100	100	100	100	100	100	100	100	100	100

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.22: Projected employment changes by occupation and region, 2003–2012

Regions:	London		South East		East of England		South West		West Midlands	
	000	%	000	%	000	%	000	%	000	%
Managers and senior officials	140	17.2	119	16.3	75	17.4	35	9.6	32	9.5
Professional occupations	172	27.1	90	18.3	63	21.8	46	17.1	41	15.8
Associate professional and technical occupations	217	25.3	108	17.3	75	20.9	43	13.5	56	17.3
Administrative, clerical and secretarial occupations	-133	-21.8	-81	-14.3	-37	-11.0	-37	-12.3	-9	-2.8
Skilled trades occupations	-63	-17.0	-32	-7.4	-33	-10.6	-26	-8.3	-58	-17.9
Personal service occupations	66	24.4	112	36.6	65	34.9	61	30.5	75	36.7
Sales and customer service occupations	26	9.1	55	16.6	27	13.2	44	19.8	39	18.9
Transport and machine operatives	-40	-18.4	-10	-3.9	-8	-3.8	-11	-5.9	-23	-8.5
Elementary occupations	-89	-21.9	-54	-12.5	-43	-14.5	-46	-15.6	-60	-20.2
Total	297	6.6	306	7.3	185	7.1	110	4.4	93	3.6

	East Midlands		Yorks.& the Humber		North West		North East		All Regions (England)	
	000s	%	000s	%	000s	%	000s	%	000s	%
Managers and senior officials	34	11.9	37	12.0	31	7.3	10	8.1	513	13.4
Professional occupations	34	16.7	38	16.6	61	16.8	11	10.8	558	19.6
Associate professional and technical occupations	34	14.3	35	12.5	60	14.1	13	9.7	643	18.0
Administrative, clerical and secretarial occupations	-16	-6.8	3	1.1	-12	-2.8	-8	-6.4	-329	-10.3
Skilled trades occupations	-43	-18.5	-43	-16.0	-60	-16.6	-17	-13.3	-376	-13.7
Personal service occupations	66	38.7	63	33.6	78	31.4	22	26.3	608	32.7
Sales and customer service occupations	30	18.6	45	22.1	42	15.3	15	15.4	323	16.2
Transport and machine operatives	-19	-9.0	-16	-6.5	-36	-12.0	-5	-5.1	-169	-8.4
Elementary occupations	-50	-21.1	-54	-19.0	-73	-20.0	-26	-18.8	-495	-18.0
Total	70	3.6	109	4.7	92	2.9	14	1.4	1277	5.1

Source: *Working Futures,* Wilson *et al.* (2004).
Note: Shading indicates areas of expected employment decline.

2.173 The projections also make possible a more detailed examination of occupational trends at regional level, using the 25 SOC 2000 sub-major occupational groups (see Tables 2.23 to 2.25). Table 2.26 provides some further insights into how the importance of different occupational categories varies across regions, as well as making it possible to identify those which are growing or declining most rapidly.

There is considerable variation across regions at a detailed occupational level. Healthcare, childcare and animal care occupations are projected to grow especially rapidly in the East and West Midlands. Demand for business and public service occupations is expected to grow fastest in London and the South East.

2.174 Although the overall patterns of change are similar across regions, their different existing employment structures result in substantial regional variations in the projected changes. Table 2.26 provides an overview of this more complex picture. Shading and use of + and – signs in the cells helps to highlight which occupations are numerically important in different locations as well as which are growing or developing most rapidly. The shaded cells indicate employment of 100,000 or more in 2002 or 2012. Shading of row and column headers indicates changes for the whole sector or occupation.

2.175 The pattern illustrates the dominance of London and the South East regions but also highlights the importance of particular types of jobs in other regions. The + signs indicates rates of growth of employment in excess of 20 per cent over the period 2002 to 2012. Certain occupations are expected to achieve this in every region (science or technology associate professionals; caring personal service occupations; and customer services occupations). Rapid job losses in excess of 20 per cent, indicated by the '–' sign, are concentrated amongst low and unskilled occupations, especially in London, the West Midlands and the North West.

2.176 Specific features within individual regions can be highlighted by focusing on some of the most rapidly growing occupations. The fastest increases are expected in customer service occupations and caring personal service occupations (e.g. lower-skilled jobs in health care, child care and animal care). In the case of customer services, a 47 per cent increase is projected for England as a whole. The fastest increases are expected in the East and West Midlands, Yorkshire and the Humber and the North East, with the slowest increases being in London. For caring personal services, rates of growth are less varied across regions.

2.177 Rapid growth, nationally, is also expected amongst professionals such as science and technology, health, and business and public service professionals. Amongst business and public service professionals (e.g. solicitors, surveyors, accountants, social workers and architects), a 25 per cent increase is projected for England as a whole. Here the largest increases are expected in London. The South East and the East of England also have average rates of increase. Much slower increases are expected elsewhere.

Table 2.23: Projected employment levels by SOC sub-major group, by region, 2003–2012

	Regions: London		South East		East		South West		West Midlands	
	000	%	000	%	000	%	000	%	000	%
Corporate managers	630	778	567	692	329	404	264	310	258	300
Managers/proprietors in agriculture and services	186	178	164	158	101	101	101	91	78	68
Science and technology professionals	145	185	164	197	97	122	73	85	75	90
Health professionals	55	66	32	38	21	26	19	20	19	22
Teaching and research professionals	213	264	176	200	105	121	125	150	116	129
Business and public service professionals	222	292	119	146	66	82	54	63	51	61
Science and technology associate professionals	94	116	94	113	57	73	47	58	46	55
Health and social welfare associate professionals	178	228	126	139	75	81	82	85	85	97
Protective service occupations	72	86	62	81	33	44	23	25	31	38
Culture, media and sports occupations	186	251	98	121	57	76	50	62	43	54
Business and public service assoc. professionals	330	396	245	281	139	163	119	135	119	137
Administrative and clerical occupations	431	351	402	361	241	224	224	205	247	252
Secretarial and related occupations	179	126	165	125	93	73	77	59	78	64
Skilled agricultural trades	23	25	48	54	29	33	39	41	36	37
Skilled metal and electrical trades	144	103	166	127	118	90	108	81	141	98
Skilled construction and building trades	116	104	140	143	104	97	108	110	95	83
Textiles, printing and other skilled trades	90	78	82	80	58	55	58	56	53	49
Caring personal service occupations	183	247	221	316	135	191	153	209	158	227
Leisure and other personal service occupations	88	90	85	101	50	59	48	53	47	53
Sales occupations	228	237	267	299	170	182	188	218	167	186
Customer service occupations	62	80	62	85	38	53	35	49	38	57
Process, plant and machine operatives	76	36	132	103	116	97	112	93	176	143
Transport and mobile machine drivers and operatives	143	142	133	152	93	104	82	89	101	110
Elementary occupations: trades, plant and machine-related	91	71	138	124	103	93	103	91	112	91
Elementary occupations: clerical and services-related	315	247	296	257	192	159	188	154	184	145
Total	4,481	4,777	4,185	4,491	2,618	2,803	2,480	2,590	2,556	2,649

(continued)

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.23: Projected employment levels by SOC sub-major group, by region, 2003–2012 (continued)

	East Midlands		Yorks. & the Humber		North West		North East		All Regions (England)	
	000	%	000	%	000	%	000	%	000	%
Corporate managers	211	249	227	266	319	361	87	98	2,891	3,458
Managers/proprietors in agriculture and services	72	68	83	80	110	101	36	35	932	879
Science and technology professionals	58	71	55	68	98	117	27	31	792	966
Health professionals	17	21	20	24	26	28	12	14	221	261
Teaching and research professionals	84	91	106	117	174	206	46	49	1,146	1,326
Business and public service professionals	44	54	50	60	66	75	20	22	693	855
Science and technology associate professionals	37	45	45	57	70	86	23	28	512	630
Health and social welfare associate professionals	63	67	73	72	114	127	41	45	838	942
Protective service occupations	22	26	33	39	46	51	17	19	341	408
Culture, media and sports occupations	29	35	35	42	54	66	13	14	564	721
Business and public service assoc. professionals	89	100	97	109	145	159	38	38	1,320	1,518
Administrative and clerical occupations	177	171	219	232	321	326	100	97	2,361	2,218
Secretarial and related occupations	59	48	68	59	94	78	26	21	840	653
Skilled agricultural trades	26	27	28	30	31	33	13	13	272	294
Skilled metal and electrical trades	93	65	102	71	145	101	50	37	1,068	773
Skilled construction and building trades	73	63	87	76	110	97	41	40	874	813
Textiles, printing and other skilled trades	43	36	53	50	75	70	23	21	534	492
Caring personal service occupations	133	195	144	201	189	261	63	84	1,380	1,931
Leisure and other personal service occupations	37	41	44	50	60	67	20	22	480	537
Sales occupations	134	152	171	198	225	242	82	91	1,632	1,806
Customer service occupations	28	41	33	51	49	73	14	20	359	508
Process, plant and machine operatives	132	109	143	121	168	125	67	60	1,121	888
Transport and mobile machine drivers and operatives	74	79	95	101	135	142	41	42	897	961
Elementary occupations: trades, plant and machine-related	91	77	109	93	117	93	48	41	913	774
Elementary occupations: clerical and services-related	146	110	176	138	246	198	91	72	1,835	1,479
Total	1,972	2,042	2,296	2,404	3,187	3,280	1,040	1,054	24,814	26,091

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.24: Employment shares by SOC sub-major group, by region, 2003–2012

Regions:	London		South East		East		South West		West Midlands	
	2002	2012	2002	2012	2002	2012	2002	2012	2002	2012
	%	%	%	%	%	%	%	%	%	%
Corporate managers	14.1	16.3	13.5	15.4	12.5	14.4	10.7	12.0	10.1	11.3
Managers/proprietors in agriculture and services	4.1	3.7	3.9	3.5	3.9	3.6	4.1	3.5	3.1	2.6
Science and technology professionals	3.2	3.9	3.9	4.4	3.7	4.4	2.9	3.3	2.9	3.4
Health professionals	1.2	1.4	0.8	0.8	0.8	0.9	0.7	0.8	0.8	0.8
Teaching and research professionals	4.8	5.5	4.2	4.5	4.0	4.3	5.1	5.8	4.6	4.9
Business and public service professionals	5.0	6.1	2.9	3.3	2.5	2.9	2.2	2.4	2.0	2.3
Science and technology associate professionals	2.1	2.4	2.2	2.5	2.2	2.6	1.9	2.2	1.8	2.1
Health and social welfare associate professionals	4.0	4.8	3.0	3.1	2.9	2.9	3.3	3.3	3.3	3.7
Protective service occupations	1.6	1.8	1.5	1.8	1.3	1.6	0.9	1.0	1.2	1.4
Culture, media and sports occupations	4.2	5.3	2.3	2.7	2.2	2.7	2.0	2.4	1.7	2.1
Business and public service assoc. professionals	7.4	8.3	5.9	6.3	5.3	5.8	4.8	5.2	4.7	5.2
Administrative and clerical occupations	9.6	7.3	9.6	8.0	9.2	8.0	9.0	7.9	9.6	9.5
Secretarial and related occupations	4.0	2.6	3.9	2.8	3.6	2.6	3.1	2.3	3.1	2.4
Skilled agricultural trades	0.5	0.5	1.1	1.2	1.1	1.2	1.6	1.6	1.4	1.4
Skilled metal and electrical trades	3.2	2.2	4.0	2.8	4.5	3.2	4.4	3.1	5.5	3.7
Skilled construction and building trades	2.6	2.2	3.3	3.2	4.0	3.5	4.4	4.2	3.7	3.1
Textiles, printing and other skilled trades	2.0	1.6	2.0	1.8	2.2	2.0	2.3	2.1	2.1	1.9
Caring personal service occupations	4.1	5.2	5.3	7.0	5.2	6.8	6.2	8.1	6.2	8.6
Leisure and other personal service occupations	2.0	1.9	2.0	2.2	1.9	2.1	1.9	2.1	1.9	2.0
Sales occupations	5.1	5.0	6.4	6.7	6.5	6.5	7.6	8.4	6.5	7.0
Customer service occupations	1.4	1.7	1.5	1.9	1.4	1.9	1.4	1.9	1.5	2.2
Process, plant and machine operatives	1.7	0.8	3.2	2.3	4.4	3.5	4.5	3.6	6.9	5.4
Transport and mobile machine drivers and operatives	3.2	3.0	3.2	3.4	3.6	3.7	3.3	3.4	4.0	4.2
Elementary occupations: trades, plant and machine-related	2.0	1.5	3.3	2.8	3.9	3.3	4.1	3.5	4.4	3.4
Elementary occupations: clerical and services-related	7.0	5.2	7.1	5.7	7.3	5.7	7.6	6.0	7.2	5.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(continued)

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.24: Employment shares by SOC sub-major group, by region, 2003–2012 (continued)

	East Midlands		Yorks. & the Humber		North West		North East		All Regions (England)	
	2002	2012	2002	2012	2002	2012	2002	2012	2002	2012
	%	%	%	%	%	%	%	%	%	%
Corporate managers	10.7	12.2	9.9	11.1	10.0	11.0	8.3	9.3	11.7	13.3
Managers/proprietors in agriculture and services	3.7	3.3	3.6	3.3	3.5	3.1	3.5	3.3	3.8	3.4
Science and technology professionals	2.9	3.5	2.4	2.8	3.1	3.6	2.6	2.9	3.2	3.7
Health professionals	0.9	1.0	0.9	1.0	0.8	0.9	1.2	1.4	0.9	1.0
Teaching and research professionals	4.3	4.5	4.6	4.9	5.5	6.3	4.5	4.6	4.6	5.1
Business and public service professionals	2.2	2.6	2.2	2.5	2.1	2.3	1.9	2.1	2.8	3.3
Science and technology associate professionals	1.9	2.2	2.0	2.4	2.2	2.6	2.2	2.7	2.1	2.4
Health and social welfare associate professionals	3.2	3.3	3.2	3.0	3.6	3.9	4.0	4.3	3.4	3.6
Protective service occupations	1.1	1.3	1.4	1.6	1.4	1.5	1.6	1.8	1.4	1.6
Culture, media and sports occupations	1.5	1.7	1.5	1.8	1.7	2.0	1.3	1.3	2.3	2.8
Business and public service assoc. professionals	4.5	4.9	4.2	4.5	4.5	4.8	3.6	3.6	5.3	5.8
Administrative and clerical occupations	9.0	8.4	9.6	9.6	10.1	9.9	9.6	9.2	9.5	8.5
Secretarial and related occupations	3.0	2.4	3.0	2.5	2.9	2.4	2.5	2.0	3.4	2.5
Skilled agricultural trades	1.3	1.3	1.2	1.3	1.0	1.0	1.2	1.3	1.1	1.1
Skilled metal and electrical trades	4.7	3.2	4.5	3.0	4.6	3.1	4.8	3.5	4.3	3.0
Skilled construction and building trades	3.7	3.1	3.8	3.2	3.4	2.9	3.9	3.8	3.5	3.1
Textiles, printing and other skilled trades	2.2	1.7	2.3	2.1	2.3	2.1	2.3	2.0	2.2	1.9
Caring personal service occupations	6.8	9.5	6.3	8.3	5.9	8.0	6.1	7.9	5.6	7.4
Leisure and other personal service occupations	1.9	2.0	1.9	2.1	1.9	2.0	2.0	2.1	1.9	2.1
Sales occupations	6.8	7.4	7.4	8.2	7.0	7.4	7.9	8.6	6.6	6.9
Customer service occupations	1.4	2.0	1.4	2.1	1.5	2.2	1.4	1.9	1.4	1.9
Process, plant and machine operatives	6.7	5.3	6.2	5.0	5.3	3.8	6.4	5.7	4.5	3.4
Transport and mobile machine drivers and operatives	3.8	3.8	4.1	4.2	4.2	4.3	3.9	4.0	3.6	3.7
Elementary occupations: trades, plant and machine-related	4.6	3.8	4.7	3.9	3.7	2.8	4.6	3.9	3.7	3.0
Elementary occupations: clerical and services-related	7.4	5.4	7.7	5.7	7.7	6.0	8.8	6.8	7.4	5.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: *Working Futures,* Wilson *et al.* (2004).

Table 2.25: Projected employment changes by occupation, 2003–2012

Regions:	London		South East		East		South West		West Midlands	
	000	%	000	%	000	%	000	%	000	%
Corporate managers	149	23.6	125	22.1	75	22.8	45	17.1	42	16.4
Managers/proprietors in agriculture and services	-8	-4.5	-6	-3.8	0	-0.3	-10	-10.1	-10	-13.2
Science and technology professionals	40	27.6	33	20.3	25	25.9	12	16.4	16	21.2
Health professionals	11	20.3	6	18.4	6	26.9	2	9.5	3	16.0
Teaching and research professionals	51	23.8	24	13.8	16	15.7	24	19.2	12	10.7
Business and public service professionals	70	31.5	27	22.2	16	23.9	9	16.0	10	19.6
Science and technology associate professionals	22	23.4	19	20.6	16	28.4	10	21.5	9	19.6
Health and social welfare associate professionals	50	28.1	12	9.7	6	8.2	3	3.5	12	14.3
Protective service occupations	13	18.5	18	29.1	10	30.3	2	9.5	6	19.9
Culture, media and sports occupations	65	35.0	23	23.3	19	33.2	12	24.8	11	26.6
Business and public service assoc. professionals	67	20.2	36	14.6	24	17.4	16	13.3	17	14.5
Administrative and clerical occupations	-80	-18.6	-41	-10.2	-17	-7.0	-19	-8.4	6	2.3
Secretarial and related occupations	-53	-29.6	-40	-24.3	-20	-21.3	-18	-23.5	-15	-18.8
Skilled agricultural trades	3	12.1	7	13.7	5	15.9	2	4.3	1	3.1
Skilled metal and electrical trades	-42	-28.8	-39	-23.6	-28	-23.5	-27	-24.9	-43	-30.7
Skilled construction and building trades	-12	-10.7	3	1.9	-6	-6.2	1	1.3	-12	-12.7
Textiles, printing and other skilled trades	-12	-13.3	-2	-2.5	-3	-5.6	-2	-3.9	-4	-7.1
Caring personal service occupations	64	35.0	95	43.2	56	41.5	56	36.5	69	43.8
Leisure and other personal service occupations	2	2.3	16	19.4	9	17.3	5	11.1	6	12.7
Sales occupations	9	4.0	32	11.9	12	7.1	30	16.2	19	11.6
Customer service occupations	17	27.6	23	37.0	15	40.7	14	39.5	19	50.8
Process, plant and machine operatives	-39	-51.9	-29	-21.9	-19	-16.0	-19	-16.7	-33	-18.7
Transport and mobile machine drivers and operatives	-1	-0.6	19	14.0	11	11.3	7	8.9	9	9.2
Elementary occupations: trades, plant and machine-related	-20	-22.2	-14	-10.4	-11	-10.2	-11	-11.0	-21	-18.6
Elementary occupations: clerical and services-related	-69	-21.8	-40	-13.5	-32	-16.9	-34	-18.2	-39	-21.2
Total	297	6.6	306	7.3	185	7.1	110	4.4	93	3.6

(continued)

Source: *Working Futures,* Wilson *et al.* (2004).
Note: Shaded areas indicate projected employment decline.

Table 2.25: Projected employment changes by occupation, 2003–2012 (continued)

	East Midlands		Yorks. & the Humber		North West		North East		All Regions (England)	
	000	%	000	%	000	%	000	%	000	%
Corporate managers	38	18.0	40	17.5	41	12.9	12	13.4	567	19.6
Managers/proprietors in agriculture and services	-4	-5.7	-2	-2.8	-10	-8.9	-2	-4.7	-53	-5.7
Science and technology professionals	13	22.2	13	23.0	19	19.4	4	15.5	175	22.1
Health professionals	4	23.2	4	19.6	2	8.0	2	19.1	40	18.0
Teaching and research professionals	7	8.8	11	10.5	31	17.9	3	5.7	180	15.7
Business and public service professionals	10	22.0	11	21.3	9	13.7	2	11.2	163	23.5
Science and technology associate professionals	8	22.6	12	26.7	16	22.8	5	22.4	118	23.0
Health and social welfare associate professionals	4	7.0	-1	-1.1	13	11.0	4	9.3	104	12.4
Protective service occupations	4	16.1	6	16.7	5	11.4	2	14.4	67	19.7
Culture, media and sports occupations	6	20.6	7	20.5	12	23.0	1	5.3	157	27.8
Business and public service assoc. professionals	12	13.5	11	11.8	14	9.9	1	1.6	198	15.0
Administrative and clerical occupations	-6	-3.2	12	5.6	5	1.4	-3	-3.0	-143	-6.0
Secretarial and related occupations	-10	-17.5	-9	-13.6	-16	-17.2	-5	-19.4	-187	-22.2
Skilled agricultural trades	1	3.6	2	6.0	2	6.3	0	2.4	22	7.9
Skilled metal and electrical trades	-27	-29.5	-31	-30.4	-44	-30.3	-13	-26.8	-295	-27.6
Skilled construction and building trades	-10	-13.1	-11	-12.3	-13	-11.8	-1	-2.4	-61	-7.0
Textiles, printing and other skilled trades	-7	-17.3	-3	-6.3	-5	-6.7	-3	-11.8	-42	-7.8
Caring personal service occupations	61	46.1	57	39.5	72	38.2	20	31.6	551	39.9
Leisure and other personal service occupations	4	12.0	6	14.3	6	10.2	2	9.6	57	11.9
Sales occupations	17	13.0	27	16.0	18	7.9	9	10.5	174	10.7
Customer service occupations	13	45.5	18	54.0	24	49.0	6	44.2	149	41.6
Process, plant and machine operatives	-23	-17.4	-22	-15.3	-44	-25.9	-7	-9.8	-233	-20.8
Transport and mobile machine drivers and operatives	4	6.0	6	6.6	7	5.3	1	2.8	64	7.1
Elementary occupations: trades, plant and machine-related	-14	-15.1	-16	-14.5	-25	-20.9	-7	-14.0	-138	-15.1
Elementary occupations: clerical and services-related	-36	-24.9	-38	-21.8	-48	-19.6	-20	-21.4	-357	-19.4
Total	70	3.6	109	4.7	92	2.9	14	1.4	1277	5.1

Source: *Working Futures,* Wilson *et al.* (2004).
Note: Shaded areas indicate projected employment decline.

Table 2.26: Projected changes in occupational structure by region, 2003-2012

Government Office Regions	London	South East	East of England	South West	West Midlands	East Midlands	Yorkshire and the Humber	North West	North East	England
11 Corporate managers	+	+	+							+
12 Managers & proprietors										
21 Science/tech professionals	+	+	+		+	+	+			+
22 Health professionals	+		+			+				+
23 Teaching/research prof.	+									
24 Business/public service prof.	+	+	+			+	+			+
31 Science/tech associate prof.	+	+	+	+		+	+	+	+	+
32 Health associate prof.	+									
33 Protective service occs		+	+							+
34 Culture/media/sport occs	+	+	+	+	+	+	+	+		+
35 Bus/public serv. assoc prof.	+									
41 Administrative occupations										
42 Secretarial & related occs	-	-	-	-						-
51 Skilled agricultural trades										
52 Skilled metal/elec trades	-	-	-	-	-	-	-	-	-	-
53 Skilled construct. trades										
54 Other skilled trades										
61 Caring personal service occs	+	+	+	+	+	+	+	+	+	+
62 Leisure/oth pers serv occs										
71 Sales occupations										
72 Customer service occupations	+	+	+	+	+	+	+	+	+	+
81 Process, plant & mach ops	-	-						-		-
82 Transport drivers and ops										
91 Elementary: trades/plant/stor	-							-		
92 Elementary: admin/service	-				-	-	-		-	-

Source: *Working Futures,* Wilson *et al*. (2004).

	Level of employment in 2003 and/or 2012 is 100,000 or greater (individual cells).
+	2003–2012 growth in the cell is forecast to be 20% or greater.
-	2003–2012 growth in the cell is forecast to be -20% or less.
	2003–2012 growth is forecast to be 10% or greater (row and column titles only).
	2003–2012 growth is forecast to be -10 % or less (row and column titles only).

2.178 Another group projected to have rapid employment growth (of some 32 per cent between 2002 and 2012) is culture, media and sports occupations (e.g. designers, media, sport and fitness occupations). Here regional variations are less marked, although again it is London and the South East that are projected to have the fastest increases.

Amongst declining occupations, some of the most rapid losses are for skilled metal and electrical trades.

2.179 There are also some regional variations in the patterns of declining occupations. For the group expected to experience the most rapid decline nationally, skilled metal and electrical, where a decline of around 30 per cent is anticipated, regional variations are not great.

Most of the operative jobs that are expected to be lost are in London.

2.180 Secretarial and related occupations (e.g. typists and receptionists) are expected to decline by around 25 per cent. Some regional variations are apparent, however, with the largest and fastest losses being experienced in London (22 per cent). Process, plant and machine operatives are expected to experience a decline of around 23 per cent in England as a whole, but with very large variations being expected across the regions. As many as 52 per cent of such jobs are anticipated to be lost in London.

Replacement demands may be as important as projected net changes in employment. Regional estimates have been produced based on limited data.

Replacement demands by region

2.181 As noted earlier, projected changes in the level of employment may give a misleading impression of priorities for education and training, and it is also important to consider replacement demands. Combining replacement demands with the projected expansion demand, an estimate of the overall requirement for each occupation within each region can be obtained.

2.182 In principle, replacement demands will vary across regions depending upon the gender and age structures of their workforces as well as variations in the rates of flows, including geographical and other mobility flows. In practice, measuring these is far from straightforward. Currently, the estimates of age structures and rates of flows are based on the LFS. While this is adequate to generate reasonably robust estimates at national level, the sample size is too small to produce meaningful estimates differentiated by sector or by region. The estimates here are therefore based on the same assumptions about age structures and flow rates as at national (UK) level. Nevertheless, such benchmark estimates are useful in emphasising that even for regions where quite sharp employment losses are projected, replacement demands are likely to be more than sufficient to outweigh these trends.

2.183 Results for each of the 25 occupational sub-major groups are set out in Table 2.27. Replacement demands outweigh the net projected decline in all occupations where job losses are expected. Between 2003 and 2012 there is expected to be an overall requirement of some 11.5 million new job openings. Retirements from the workforce are the main component of replacement demands.

Replacement demands easily outweigh projected job losses in all occupations even in cases such as administrative and clerical or skilled trades, where quite sharp declines are projected in overall numbers. They highlight the strong replacement demands, even for regions where overall employment prospects are less optimistic.

2.184 Even in occupations such as administrative and clerical occupations, secretarial and related occupations, skilled metal and electrical trades (as well as other skilled trades), process plant and machine operatives, and elementary occupations, total requirements are strongly positive despite negative expansion demand. In other cases, expected retirements will add to positive expansion demand to create even higher overall requirements for new entrants to these occupations.

2.185 The regional results highlight the fact that employment is projected to fall in all regions for occupational groups such as: SOC 4, administrative, clerical and secretarial; SOC 5, skilled trades; SOC 8, transport and machine operatives; and SOC 9, elementary occupations. Replacement demands are substantial for all these groups, more than offsetting such negative trends. In every region total requirements are positive for all the SOC major groups. There will therefore be important education and training needs for people to enter such occupations, despite the fact that the overall numbers are projected to decline.

Table 2.27: Replacement demand by occupation by region, 2003–2012

a) Expansion demand (000)

Region	Occupational group[c]									
	1	2	3	4	5	6	7	8	9	All occs.
London	140	172	217	-133	-63	66	26	-40	-89	297
South East	119	90	108	-81	-32	112	55	-10	-54	306
East of England	75	63	75	-37	-33	65	27	-8	-43	185
South West	35	46	43	-37	-26	61	44	-11	-46	110
West Midlands	32	41	56	-9	-58	75	39	-23	-60	93
East Midlands	34	34	34	-16	-43	66	30	-19	-50	70
Yorks. and the Humber	37	38	35	3	-43	63	45	-16	-54	109
North West	31	61	60	-12	-60	78	42	-36	-73	92
North East	10	11	13	-8	-17	22	15	-5	-26	14
England	513	558	643	-329	-376	608	323	-169	-495	1,277

b) Replacement demand (000)

Region	Occupational group[c]									
	1	2	3	4	5	6	7	8	9	All occs.
London	246	194	254	180	115	81	90	69	128	1357
South East	220	149	184	167	136	91	102	84	136	1269
East of England	130	88	106	99	96	55	64	66	92	796
South West	110	82	94	89	98	59	69	61	91	753
West Midlands	101	79	95	96	101	61	63	87	92	775
East Midlands	85	62	70	69	73	50	50	64	74	597
Yorks. and the Humber	93	70	83	86	84	56	63	75	89	697
North West	129	111	125	123	112	74	84	95	113	967
North East	37	32	38	37	40	25	30	34	43	316
England	1,150	867	1,049	947	853	552	617	635	859	7,528

c) Overall net requirement (000)

Region	Occupational group[c]									
	1	2	3	4	5	6	7	8	9	All occs.
London	386	366	471	47	52	147	117	29	39	1,654
South East	339	239	292	86	104	203	157	74	82	1,575
East of England	205	151	182	62	63	120	92	58	50	981
South West	145	129	138	52	72	121	113	49	46	863
West Midlands	133	121	152	87	43	136	102	63	32	868
East Midlands	119	95	104	54	29	116	80	46	24	667
Yorks. and the Humber	130	108	118	89	41	119	108	59	35	806
North West	160	173	185	112	52	152	126	59	41	1,060
North East	47	43	51	29	23	47	45	28	17	330
England	1,663	1,425	1,692	618	477	1,161	940	465	364	8,805

Source: *Working Futures,* Wilson *et al*. (2004).

Notes:

(a) These estimates do not allow for any losses due to occupational or geographical mobility.

(b) Shaded areas show projected declines.

[c] Occupational groups:

1 Managers and senior officials
2 Professional
3 Associate prof. and technical
4 Admin, clerical and secretarial
5 Skilled trades
6 Personal service
7 Sales and customer service
8 Transport and machine operatives
9 Elementary

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Chapter 3: The Supply of Skills

Overview and Summary

Skills in England are improving but much remains to be done.

3.1 This chapter examines the changing patterns in the supply of skills in England. It has three aims:

- to show how patterns vary across time and between different sections of the population. This gives an indication of improvement in skills supply
- to provide some pointers to the future supply of skills by examining current participation in education and training, especially amongst young people
- to look at how Britain compares to its major competitors in Europe and beyond. This indicates the extent to which Britain's economy exhibits a skills gap with respect to its main competitors.

3.2 On all three of the above measures, the evidence points to the supply of skills amongst the workforce in England improving. Partly, this is a cohort effect as older less qualified workers retire and are replaced by younger workers who are more qualified. But the rate of growth in qualifications is also impressive as compared with a number of our major competitors, especially amongst young people in the 1990s.

3.3 It is tempting to infer that this improvement in the supply of skills in recent years may partly explain both high levels of employment and also the improvement in Britain's relative productivity performance. But it is apparent that the rate of growth in qualifications amongst the workforce has slowed a little in recent years, and that there remains a substantial proportion of the population with few of the skills required to engage effectively in the labour market in modern Britain.

Introduction

This chapter documents the supply of skills. The stock of skills is increasing with greater participation in further and higher education and training. These trends are set to continue.

3.4 This chapter first examines the supply of skills in the workforce and how these differ by employment status, age, gender, ethnicity, occupation and region. Formal academic and vocational qualifications, as well as training provision, are examined. Future skills supply is addressed by examining current participation in education and training, especially amongst the young.

3.5 By all available measures, the supply of skills in the workforce is increasing. More workers are qualified, and to higher levels, and a high proportion of the workforce participates in some form of formal training every year. It is clear that the qualifications gap between Britain and its major industrialised competitors (USA, France and Germany) closed a little in the 1990s, especially amongst young people.

3.6 But there still remains a group of mainly older adults who have few, if any, qualifications, and receive little or no workplace training. In the modern economy this group is becoming increasingly marginalised. They have a much higher probability of being either unemployed or economically inactive.

3.7 At the other end of the age spectrum, young people are participating in education and training in greater numbers than ever before, and with ever greater success. But despite increasing participation, Britain still falls behind its major competitors, especially with regard to intermediate and vocational qualifications.

3.8 Further expansion in the stock of skills is forecast given the targets currently in place for increased participation in further education (FE) and higher education (HE).

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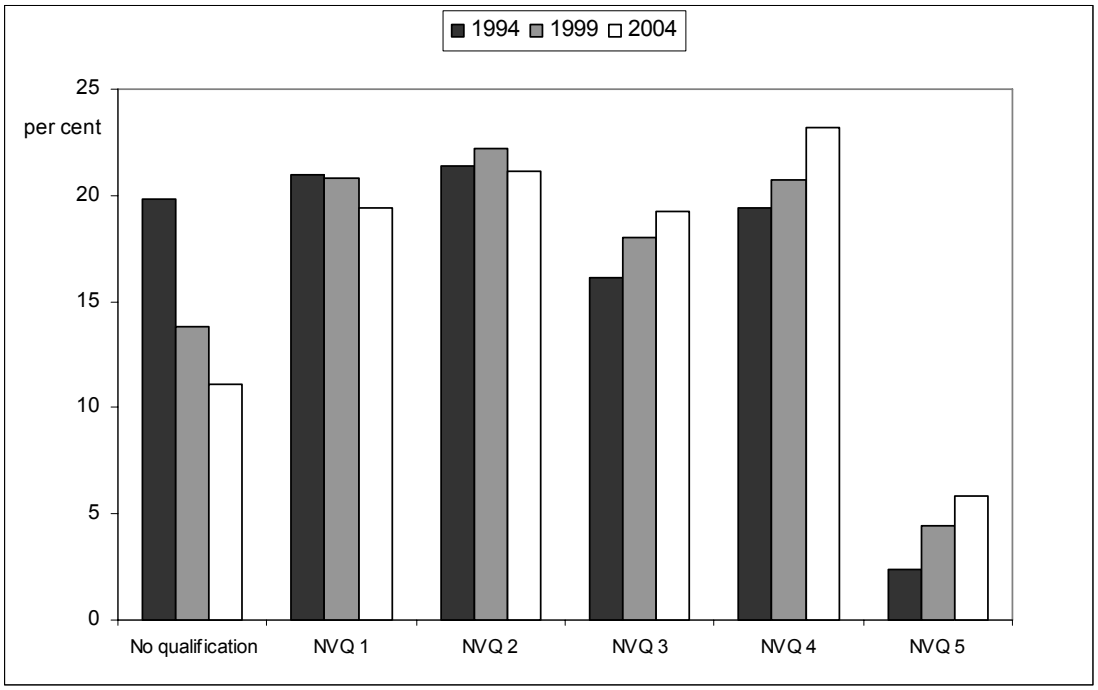
Qualifications Held by the Labour Force

3.9 The most direct evidence on the supply of skills can be obtained from examining the supply of qualifications amongst the economically active labour force (those currently in employment or seeking employment).

Trends in qualifications held

3.10 Using data from the Labour Force Surveys (LFS), Figure 3.1 reports the highest qualification held by the economically active population. The proportion with no qualifications has almost halved over the last decade, from almost 20 per cent in 1994 to just over 10 per cent in 2004. In part this is a cohort effect, the result of older less qualified workers leaving the labour force through retirement, etc. being replaced by younger, more qualified workers recently completing full-time education.

Figure 3.1: Highest qualification held by economically active population, England 1994, 1999 and 2004



Source: Labour Force Survey, Spring 1994, 1999 and 2004.
Note: See Table 3.1.

3.11 There has also been a simultaneous shift upwards in the average qualification level of those with some qualifications, with smaller proportions having NVQ Levels 1 and 2 as their highest qualification, but increasing proportions qualified at the higher levels. The significant expansion of the numbers in HE over the last decade can begin to be seen in the increase in the proportion educated to NVQ Level 4, and this will gather momentum in the next decade as more recent, better qualified cohorts begin to comprise a larger and larger share of the working age population. There has also been a large increase in the proportion with NVQ Level 5 qualifications, mainly higher degrees, which has more than doubled in just the last decade to 6 per cent of the economically active population.

The stock of qualifications in the workforce is increasing due to a cohort effect and because of the growth in accredited learning and training. A new study has compared cohort effects across different countries. Improvements in the UK seem to be primarily restricted to cohort effects.

3.12 Identifying the degree to which the overall increase in qualifications amongst the workforce is due to the cohort effect – whereby older and less qualified workers are retiring and being replaced by younger workers with more qualifications – or due to upgrading of qualifications by those who continue in employment is clearly of interest for policy makers. According to the latest study commissioned by the Department for Education and Science (DfES), using pseudo cohorts of LFS data, the education level of young people (below the age of 33) in the UK is rising (both within and between cohorts) and improving compared with France and Germany. Most of the relative improvement in the UK's position is occurring at the lower end of the qualifications distribution, with fewer individuals failing to reach NVQ Level 2. Higher up the qualifications spectrum, the UK is making less improvement. Within cohort changes in the proportion qualified to Level 3 and above are higher in France and Germany (i.e. individuals there acquire progressively more qualifications as they get older).

3.13 Almost all of the relative gains that the UK has made recently have been in terms of improvement between cohorts (i.e. each successive cohort being better qualified than its predecessor). The results suggest that even if the UK continues to make improvements between cohorts, it will take many years before this is reflected in a significant improvement in the overall stocks. Without improvements within cohorts, the UK is never going to catch France and Germany.

3.14 The evidence suggests that amongst younger cohorts (less than 33 years of age):

- there is some upskilling as workers age, with the proportion of individuals entering the labour market with low qualifications (below Level 2) falling significantly by the time they are in their early 30s
- over time, younger cohorts are entering the labour market with significantly higher qualifications than the previous cohorts
- one consequence of this is that the decline in the proportion of less qualified individuals over time is lower than in the past – this group is increasingly dominated by the hard-to-upgrade individuals who do not subsequently upskill
- within cohorts, the largest growth in qualifications is above Level 3, with the proportions at Levels 2 and 3 remaining approximately constant. This is probably a result of 'bumping up' with approximately equal shares upgrading from Level 2 to Level 3 as upgrade from Level 3 to Level 4, with the consequence that the proportion at Level 3 remains the same.

3.15 There is a wide range of academic and vocational qualifications available in the UK subsumed within the NVQ scale. Table 3.1 illustrates this and the distribution between academic and vocational qualifications for each of the NVQ categories across the workforce.

3.16 Concerns have been expressed about the poor relative status and esteem with which vocational qualifications are regarded. This is likely to be one factor which has affected efforts to increase the take-up of such qualifications. There is a common misconception that vocational qualifications are in some sense inferior to academic qualifications. Evidence on the rate of return to obtaining a qualification does not necessarily support this. The returns to vocational qualifications are more similar to academic qualifications once the differences in time taken to obtain the respective qualifications are taken into account.

There is still a common misconception that vocational qualifications are less valuable. The evidence suggests that in many cases the returns are similar to academic ones.

Table 3.1: Highest qualification held by workforce, England 2004

Qualifications	Category	000	%
No qualification	n/a	**2,733**	**11.1**
NVQ Level 1, GCSE (below grade C)	academic	3,830	15.6
NVQ Level 1, GNVQ foundation	vocational	8	0.0
NVQ Level 1, BTEC 1st certificate etc	vocational	932	3.8
NVQ Level 1 total		**4,769**	**19.4**
NVQ Level 2, GCSE (grades A–C)	academic	2,851	11.6
NVQ Level 2, GNVQ intermediate	vocational	93	0.4
NVQ Level 2, BTEC 1st diploma etc	vocational	2,255	9.2
NVQ Level 2 total		**5,199**	**21.2**
NVQ Level 3, A-level and equivalent	academic	1,592	6.5
NVQ Level 3, GNVQ advanced	vocational	214	0.9
NVQ Level 3, ONC BTEC national etc	vocational	2,933	11.9
NVQ Level 3 total		**4,740**	**19.3**
NVQ Level 4, First degree and equivalent	academic	3,452	14.0
NVQ Level 4, HE below degree level	academic	491	2.0
NVQ Level 4, HNC BTEC and RSA higher etc	vocational	1,059	4.3
NVQ Level 4, Nursing and teaching	vocational	700	2.8
NVQ Level 4 total		**5,702**	**23.2**
NVQ Level 5, Higher degree and NVQ Level 5	mainly academic	**1,435**	**5.8**
Total		**24,578**	**100.0**

Source: Labour Force Survey, Spring 2004.

Notes: Highest qualification held for all those economically active. These figures differ slightly from those published elsewhere due to different treatment of certain responses. 'Don't knows' are included here with those reporting no qualifications. Some low-level qualifications that do not attain NVQ Level 1 status are also included in the 'no qualifications' category. In total these differences boost the 'no qualifications' category by almost 1 percentage point.

Demographics

There is wide variation in the distribution of qualifications: by employment status; by age; by gender; by ethnicity; and by occupation.

3.17 The distribution of qualifications across different groups in the workforce varies considerably. Table 3.2 illustrates the differences across a number of dimensions of the workforce, and for different qualification levels.

3.18 Individuals who are unemployed or economically inactive are between two and three times more likely to have no qualifications as compared with those in employment. In contrast, those with high levels of qualifications are much more likely to be in employment than unemployed or economically inactive people.

3.19 The oldest members of the workforce are disproportionately represented amongst those with no or only low levels of qualifications. Even amongst the economically active population, of those aged between 50 and 59 years, 17 per cent have no qualifications, increasing to 24 per cent for those aged 60 or over. In contrast, fewer than 1 in 10 of the youngest cohorts have no qualifications.

3.20 Women are over-represented amongst those with no or few qualifications, and are significantly under-represented at NVQ Level 3. In part, this may reflect the nature of NVQ Level 3 qualifications and the gender segmentation of certain occupations. But a higher proportion of women than men are qualified at NVQ Level 4 and above, and this gap will widen in the future as a consequence of the fact that more women than men now obtain degrees.

3.21 Inequalities in relation to ethnic group are rather disguised by the simple white to non-white comparisons in Table 3.2. There are far greater differences in qualifications levels between different ethnic groups than between white and non-white groups. For example, ethnic Chinese members of the workforce have a much higher probability of being qualified to NVQ Level 4 or 5 but also a greater chance of having no qualifications, than all other ethnic groups, including whites.

3.22 The occupational distribution of qualifications is extremely diverse and disparities between occupations are large. For example:

- twice as many professionals are educated to NVQ Level 4 or above compared with managers
- more than 30 per cent of administrative and secretarial, skilled trades, personal services and sales workers have NVQ Level 1 or less.

Indeed, a relatively high proportion of managers have few or no qualifications. Even excluding those self-employed managers who are in low-skill jobs, there still remain a high proportion of managers who have low levels of qualification. There are concerns that this may also be reflected in their having poor management skills.

3.23 Until relatively recently, net migration has not been of great significance. Since the early 1990s, from a position of balance, the numbers flowing in have outweighed outflows. Net migration appears to have peaked at just under 200,000 in the late 1990s. The most recent data (2002) suggest a net inflow of 150,000, mostly from the EU. This inflow is greater than the natural increase resulting from births exceeding deaths. The range of skills held by immigrants ranges across the complete spectrum although, on average, immigrants are more highly skilled than the population as a whole. Migration therefore contributes positively to the stock of skills in the UK, especially for health service personnel (nurses and doctors). Migration could contribute as many as 250,000 extra people with NVQ Level 4 or 5 qualifications between 2000 and 2010 if recent trends continue.

Table 3.2: Qualifications of the workforce, England 2004

	No quals.	NVQ 1	NVQ 2	NVQ 3	NVQ 4	NVQ 5	Total
Economic status:							
Economically active	11.1	19.4	21.2	19.3	23.2	5.8	100
In employment	10.7	19.0	21.1	19.5	23.7	6.0	100
ILO unemployed	19.9	28.0	21.8	15.3	12.0	3.0	100
Inactive	31.5	20.2	18.8	16.9	10.5	2.1	100
All of working age	15.4	19.6	20.7	18.8	20.5	5.1	100
For those economically active:							
Age:							
16–24	8.9	23.1	27.1	27.1	12.6	1.2	100
25–49	8.2	19.7	20.3	18.0	26.8	7.1	100
50–59	17.1	17.3	19.8	17.8	22.0	6.0	100
60–64	23.5	16.0	20.1	17.7	18.1	4.5	100
Gender:							
Male	10.7	17.7	20.5	22.5	22.4	6.1	100
Female	11.6	21.3	21.9	15.5	24.1	5.5	100
Ethnicity:							
White	11.0	19.4	21.3	19.6	23.1	5.7	100
Non-white	12.9	20.0	19.8	15.5	24.0	7.8	100
Occupation (SOC 2000):							
Managers and senior officials	6.6	14.1	18.9	20.2	32.7	7.6	100
Professional occupations	0.9	3.6	6.3	8.5	53.7	27.0	100
Associate professional and technical	2.9	11.2	16.6	18.2	44.6	6.5	100
Administrative and secretarial	7.0	26.5	28.4	19.4	16.7	1.9	100
Skilled trades occupations	13.5	17.7	25.2	35.2	7.7	0.7	100
Personal service occupations	10.0	23.8	27.1	22.2	15.8	1.1	100
Sales etc.	15.8	24.4	28.9	21.0	9.2	0.7	100
Operatives	20.3	31.4	25.5	17.5	4.9	0.4	100
Elementary occupations	28.1	29.5	22.0	15.5	4.6	0.4	100

Source: Labour Force Survey, Spring 2004.
Note: See Table 3.1.

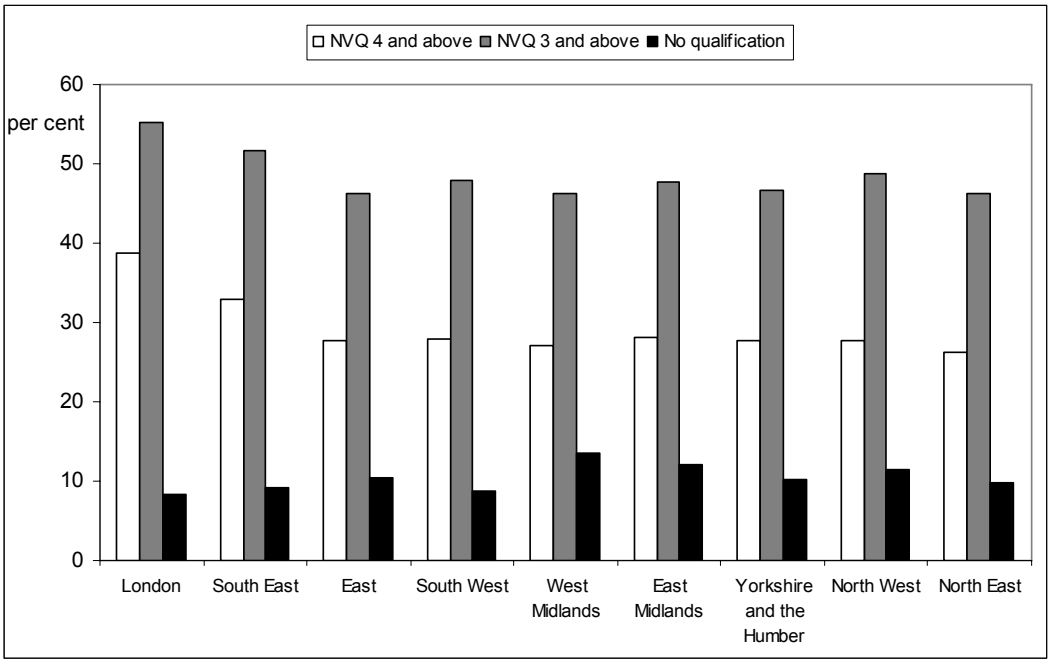
Regional and local patterns

3.24 There are some differences in the regional and local supply of skills. Figure 3.2 illustrates the proportions of the economically active, by region, which have no qualifications, achieve NVQ Level 3 or above, or NVQ Level 4 and above. In general, the differences between regions are small as compared with the occupational or sectoral distribution of qualifications. London and the South East have the highest proportions of workers who have achieved at least NVQ Level 3, with London having a noticeably higher proportion of those with NVQ Level 4 or 5 than all other regions. In part, this simply reflects the regional distribution of sectoral, and more especially occupational, employment.

Regional disparities in the distribution of qualifications are smaller than those by occupation or by sector.
They partly reflect differences in the demand for qualifications as people move to jobs which are matched to their particular skills.

3.25 Of course, the differences in the distribution of qualifications are greater at the local LSC level than at the regional level. They mainly reflect the underlying regional pattern, with local LSCs located in London and the South East tending to have a workforce which is rather more qualified than local LSCs in the North. The extent to which these intra-regional differences in qualification supply are an issue for employers trying to recruit more skilled workers depends on a wide variety of factors. They are also a strong reflection of employers' demand for skills as reflected in the sectoral and locational specificity of employment. It is difficult to know to what extent supply or demand factors dominate in the resulting distribution of qualifications.

Figure 3.2: Percentage of employees qualified by region, 2004



Source: Labour Force Survey, Spring 2004.
Note: See Table 3.1.

Participation in Post-compulsory Education

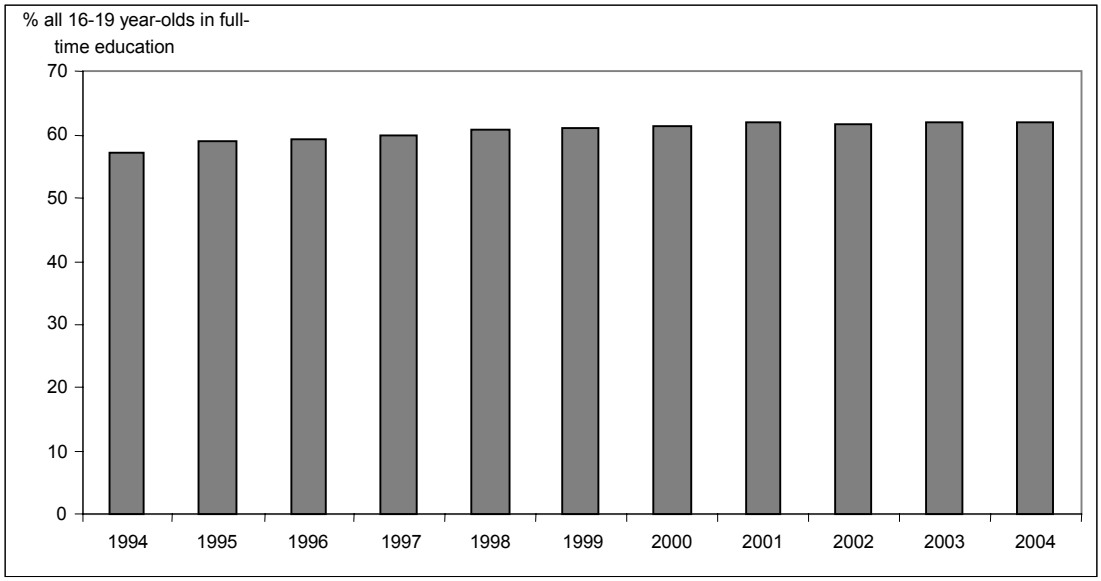
Increasing participation in higher education is measured by the Age Participation Index (API). This varies significantly across social class.

3.26 The rise in participation in post-16 full-time education over the last decade is illustrated in Figure 3.3. For all those aged between 16 and 19, approximately 62 per cent are now engaged in full-time education. This proportion has stabilised in recent years and includes a substantial proportion attending tertiary education.

3.27 As shown in Figure 3.4, participation by young people (aged under 21) in HE in Great Britain, as measured by the Age Participation Index (API), has increased significantly over the last decade, from 19 per cent in 1990/91 to 35 per cent in 2001/02. (The increase in 1997/98 and the subsequent fall in 1998/99 is attributed to the introduction of tuition fees which resulted in some students not taking a gap year but instead entering HE straight after A-levels).

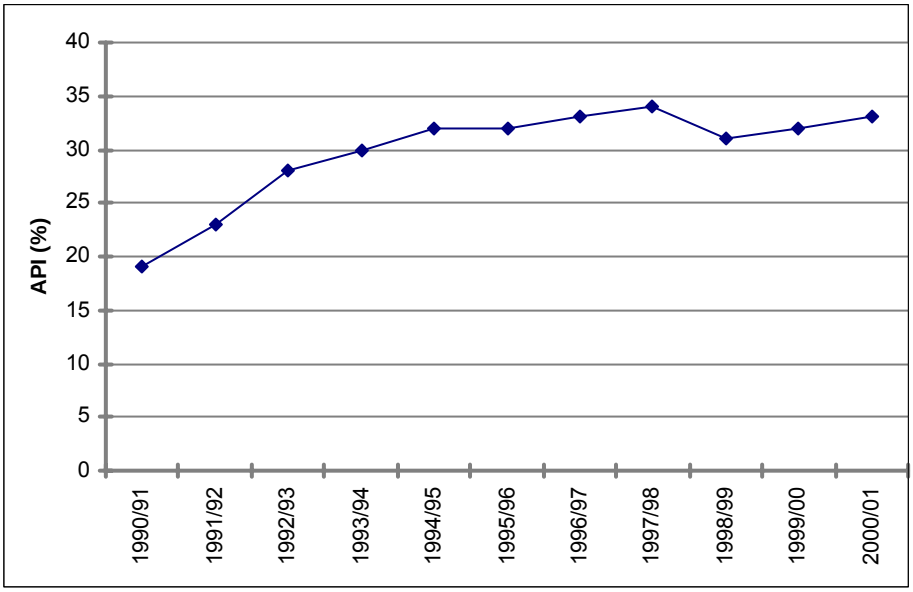
3.28 As has been well documented, HE participation of some groups is considerably lower than that of others. Figure 3.5 presents the API by social class. While the API exceeds 50 per cent for those from non-manual backgrounds, it is still less than 20 per cent for young people from manual social classes.

Figure 3.3: Participation of all 16- to 19-year-olds in full-time education, England 1994–2004



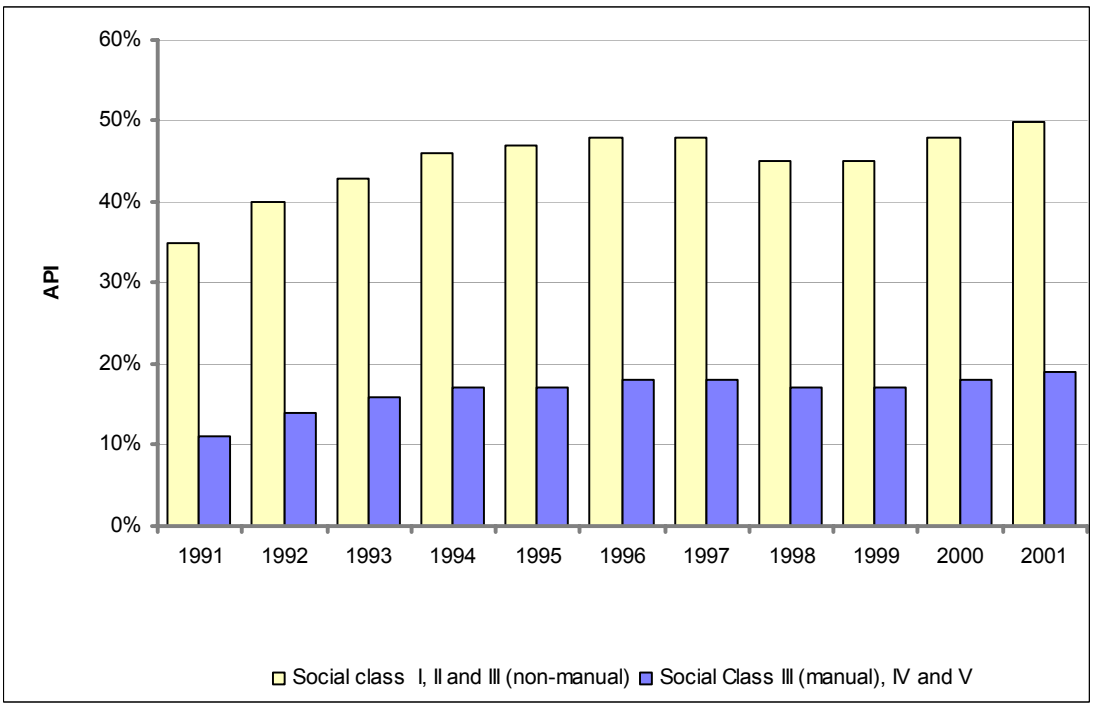
Source: Labour Force Survey, Spring quarters.
Note: See Table 3.1.

Figure 3.4: Participation in higher education as measured by the Age Participation Index, Great Britain 1990/01–2001/02



Source: www.dfes.gov.uk/trends/

Figure 3.5: Age Participation Index by social class, Great Britain 1991–2002



Source: www.dfes.gov.uk/trends/

There are currently almost 2 million students at HE institutions in England. Most employers provide some form of training for their employees.

3.29 The government target is for 50 per cent of young people to have the opportunity to benefit from HE by 2010. Much of this expansion will be through two-year Foundation Degrees to be developed in collaboration with employers. The first Foundation Degree courses began in September 2002.

3.30 The Higher Education Initial Participation Rate (HEIPR) is used to measure progress towards the 50 per cent target. It extends the API to include part-time students and those aged between 21 and 30 that are participating in HE for the first time. The HEIPR increased from 41 per cent in 1999/00 to 44 per cent in 2002/03.

3.31 The most recent Higher Education Statistics Agency (HESA) figures for 2002/03 show that there are 1.9 million students in English HE institutions. Of these, 22 per cent are registered for a post-graduate qualification. Excluding those from other European Union countries and overseas, there are approximately 1.3 million UK domiciled undergraduate students in England, 58 per cent of whom are women.

3.32 HESA statistics for the destinations of students leaving UK HE institutions in 2001/02 show that approximately two-thirds of leavers reported their first destination as employment in 2002. A further fifth went on to further study. Around 6 per cent were unemployed.

3.33 There were 116,000 new starts on Foundation Modern Apprenticeships (FMA) and 47,000 new starts on Advanced Modern Apprenticeships (AMA) in England in 2002/03. Together, these two programmes account for over 80 per cent of all learners participating in work-based learning for young people. The most popular area of learning is engineering, technology and manufacturing which accounts for just under one-quarter of all learners, but 60 per cent of young men.

Workplace Training

3.34 Given that most formal education is completed before individuals enter the labour market, any updating or further improvement in individuals' skills typically takes place whilst in employment. Workplace training, both formal and informal, is therefore essential for post-education skills development. This sub-section reviews employer provision and employee receipt of workplace training.

Employer provision of training

3.35 The Skill Needs in Britain Surveys, and more recently the Learning and Training at Work Surveys and the Employers Skills Surveys, reveal a fairly high level of employer-provided training. In 2003, around three in five establishments provided some training over the previous 12 months, although among small establishments with fewer than five employees, only 50 per cent had provided any training in the previous year. Training was more common in public than private sector establishments. Where training was provided, half of all establishments reported that at least some of the training was intended to lead to formal qualifications.

Reported training by employers is relatively high compared with other countries but much of this is not aimed at improving productivity in the long term. Older, part-time workers and those with lower qualifications are less likely to receive workplace training.

3.36 Reported training provision in Britain is fairly high by international standards. Given that the majority of employers provide training, the key questions therefore relate to the nature or value of the training provided. A considerable amount of the training reported is for health and safety or induction, and while both of these are undoubtedly important in their own right, they are unlikely to contribute significantly to increasing a worker's productivity in the longer term.

Employee receipt of training

3.37 The LFS asks individuals whether they have been engaged in formal training over the previous 13 weeks. Table 3.3 reveals how the provision of training is distributed across employees. Generally speaking, older, part-time, less qualified workers are less likely to receive training, as are those working in lower-level occupations. Unfortunately, it is precisely these individuals who are most likely to need to improve their skills.

3.38 The LFS reveals that the proportion of employees receiving training rose steadily through the 1980s but has been fairly constant since the mid-1990s. Most is of short duration – around 40 per cent of the training received by employees lasted less than one week. Additional evidence suggests that while participation in training may be fairly constant, the duration of training spells is falling, so that the total volume of training may actually be in decline. Indeed, while provision by employers appears to be high in the UK in comparison with other European countries, and the proportion of workers participating in training is also relatively high, the number of hours of training each individual receives is amongst the lowest in the EU. Only Slovenia and the Czech Republic report fewer hours per training participant.

Table 3.3: Percentage of individuals in receipt of training in the last 13 weeks, England 1995, 1999 and 2004

	1995	1999	2004
	%	%	%
Age:			
16–24	31.8	39.3	35.9
25–49	25.8	28.5	29.9
50–59	16.5	20.2	23.5
60–64	9.1	9.9	13.3
Gender:			
Male	22.7	25.2	24.7
Female	25.7	29.6	32.4
Ethnicity:			
White	24.1	27.2	28.1
Non-white	23.4	26.4	30.1
Full-time/part-time status:			
Full-time	25.0	28.4	29.0
Part-time	19.2	23.6	26.2
Contract status:			
Permanent	25.8	23.4	30.2
Not permanent in some way	10.1	24.0	33.6
Qualifications:			
NVQ Level 5	41.9	44.5	42.7
NVQ Level 4	40.5	41.1	40.3
NVQ Level 3	23.9	33.8	27.4
NVQ Level 2	23.0	28.9	25.1
NVQ Level 1	20.1	27.2	22.8
No qualifications	7.6	14.0	10.0
Occupation:			
Managers and senior officials	26.1	27.8	27.4
Professional occupations	43.2	45.7	44.2
Associate professional and technical	33.5	35.9	39.8
Administrative and secretarial	24.2	26.7	25.1
Skilled trades occupations	16.3	19.1	16.2
Personal service occupations	26.4	31.3	39.5
Sales and customer service occupations	16.6	19.8	23.6
Process, plant and machine operatives	12.4	15.3	14.5
Elementary occupations	15.1	18.4	17.1
All	24.0	27.2	28.3

Source: Labour Force Survey, Spring quarters.

International Evidence on Educational Attainment

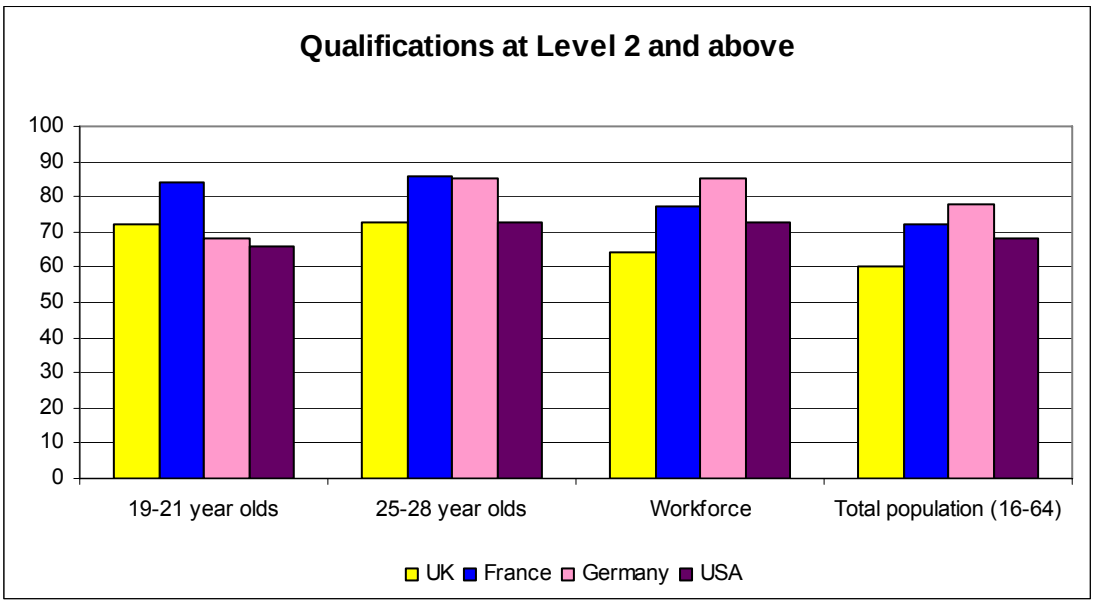
3.39 There are significant differences in educational attainment between countries which provide an indication of differences in the skills of their workforces. The Skills Audit Update uses the UK National Qualifications Framework (NQF) to present comparisons of the qualifications structure of the UK workforce with that of France, Germany, Singapore and the US. In particular, it compares the stock of qualifications amongst:

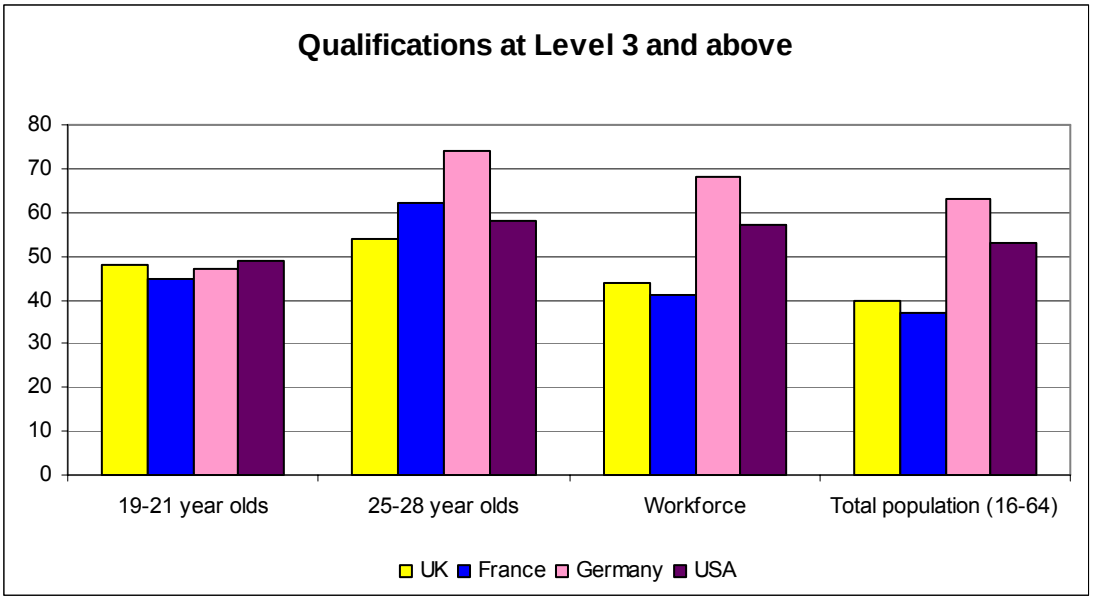
- 19- to 21-year-olds
- 25- to 28-year-olds
- the active labour force aged 16 to 64
- the total population aged 16 to 64.

International differences in educational attainment can be used as indicators of differences in skills. Comparisons with France, Germany and the USA are revealing. In some respects the UK has been catching up but since the 1990s there has been less progress. The legacy of past lack of investment will take some time to put right. The lack of progression in acquisition of vocational qualifications post-age 21 remains a concern.

3.40 Figure 3.6 presents the qualification structure of the UK, France, Germany and the US for 2002/03 separately for the proportions at Level 2 and above and the proportions at Level 3 and above.

Figure 3.6: Qualification structure of UK, France, Germany and the US, 2002/03





Source: Steedman *et al.* (2004).

3.41 Amongst the youngest cohort aged 19 to 21, the proportion with Level 2 and above is higher than in Germany and the US, but lags behind France by a substantial margin. At Level 3 and above for this age group, the proportions are similar in all four countries. The UK has had the highest rate of growth at Level 2 and above over the period 1994 to 2003, and the growth at Level 3 and above over the same period also compares well with the other countries. This growth has been sufficient to catch up with Germany and the US. But much of this growth was in the period 1994 to 1998. Since then, the rate of increase has been sluggish.

3.42 For those aged 25 to 28, the UK still lags behind France and Germany, especially at Level 3 and above, although the UK has a similar proportion to the US qualified to this level. But the faster rate of growth in the UK has helped to reduce the gap with Germany and the US, although France has also enjoyed rapid growth at this level over the last decade.

3.43 While the recent rapid growth in qualifications has considerably improved the UK's relative position for the two younger cohorts, this has yet to feed through into the workforce or total population. The legacy of the past poor qualification levels is still apparent for those aged over 30, and, as most qualifications are acquired before the age of 30, it will be some time before the UK workforce (and population) is as well qualified as those of the other countries. For example, a 'step' increase in the graduation rate amongst young people 10 years ago will only have affected about one quarter of people who are currently of working age.

3.44 As noted in the Skills Audit Update, the other important difference between the qualifications structures in the four countries is that in France and Germany, vocational qualifications contribute considerably to helping young people achieve Level 2 or Level 3 qualifications by age 25 to 28. Qualification levels increase much more slowly in the UK after the ages 19 to 21.

3.45 A comparison of educational participation and attainment, including its benefits and outcomes, across a rather wider set of countries is presented in the OECD's publication, *Education at a Glance*. The most recent edition published in September 2004 reveals a number of findings with regard to the recent comparative performance of the UK education system.

Comparisons using OECD show that participation in higher education has increased in most countries. Despite the increase in participation in the UK it remains well behind some countries, although dropout rates are much lower in the UK. Rates of improvement also still seem to be better in many other countries.

3.46 Almost all OECD countries have experienced large increases in education levels over the past decade. Tertiary level enrolment (including university level education) has increased considerably in a number of countries, including the UK. The first degree completion rate of 36 per cent in the UK compares well with the OECD average of 32 per cent, but is exceeded by that in Australia, Finland, Iceland and Poland, which all have completion rates above 40 per cent.

3.47 University entry rates are increasing and on average across the OECD, half of an age cohort will enter university or equivalent institutions at some point in their lives. The UK rate is currently 47 per cent but that compares with over 70 per cent in Australia, Finland, Iceland, Sweden and Poland. Non-completion rates, however, differ considerably between countries and the UK has one of the lowest dropout rates which contributes to its relatively high completion rates as reported above.

3.48 Ranked by the proportion who have achieved upper-secondary level attainment, the UK is 13th out of 30 OECD countries for 55- to 64-year-olds (who completed schooling 40 years ago) but only ranks 22nd amongst 25- to 34-year-olds (who completed schooling 10 years ago). Thus while achievement levels have been increasing in the UK, other countries have been improving rather faster than the UK.

3.49 After compulsory education is completed, the UK falls behind most other OECD countries, with only 77 per cent of those aged 15 to 19 still in education. This is lower than the OECD average.

Prospects for the Supply of Skills

3.50 While increasing participation rates in FE and/or HE point towards increasing future skills supply in general, there is only limited quantitative evidence about the future supply of particular skills. There are conceptual and practical problems of forecasting the supply in 'occupations' or the supply of key and generic skills. Research in this area is therefore focused upon qualifications rather than the various other measures of skill.

3.51 It is important to make a distinction between the stock of people in possession of formal qualifications and the various flows into and out of this stock. Most of the data on stocks relate to the highest qualification held of individuals in employment, rather than on the total number of individuals with particular qualifications. This is reflected in the forecast information that is available.

3.52 Data on the flow of people through the educational system as they acquire formal qualifications are abundant, especially for higher-level qualifications. Information on many other aspects of supply is much more limited, including mortality rates and migration flows, as well as economic activity rates (which provide an indicator of outflows due to retirement). Given the ease of geographical mobility, such flows are also an important factor at a regional level, especially for those with higher-level qualifications. Available data are weak and few serious attempts have been made to undertake projections at a regional level.

3.53 Demographic considerations lie at the heart of any projection of supply. The population is ageing and the size of the cohort of young people who are the most active in acquiring qualifications is declining. The overall size of the 21-year-old cohort fell by around a third between 1985 and 1998. This has meant a significant fall in the potential numbers available to acquire qualifications. The share of young people in the total population is expected to continue to fall over the next two decades.

Projecting the supply of skills is not straightforward. It is important to distinguish between stocks and flows but relevant data are limited. Demographic considerations would suggest a decline in skills supply but falling population numbers are expected to be offset by rising educational participation rates. Substantial growth is expected in the supply of those with formal qualifications, especially at NVQ Levels 4 and 5.

3.54 While demographic considerations suggest a downturn in numbers acquiring formal qualifications, this is expected to be more than offset by increases in educational participation rates. Participation rates in HE have risen steadily and as a consequence, numbers acquiring higher-level qualifications will continue to rise. Participation of other age groups in HE have also been rising, especially for mature students. These have been growing in importance and are expected to continue to do so. Thus the flow of people acquiring qualifications is projected to continue to rise. In consequence, there will be further substantial increases in the stocks of people holding these qualifications.

The impact on the stocks available with intermediate level qualifications will be modest. Women will show the most rapid increases.

3.55 The main growth is anticipated to be at NVQ Levels 4 and 5. If government targets for the HEIPR are met by the end of the present decade, this could result in some 3 million more people in employment with degree-level qualifications NVQ Levels 4 or 5. Even on much more modest assumptions, an increase of around 1.5 million is expected.

3.56 The numbers acquiring NVQ Levels 1 to 3 have also been rising rapidly, reflecting the increased participation rates in post-compulsory education. Many go on to acquire higher-level qualifications, so the impact on the stock of people with these as their highest qualification is not expected to change greatly. Thus, the numbers with *highest qualifications* at NVQ Levels 2 and 3 will not increase very much, although the overall numbers holding these qualifications will increase substantially. The numbers with no formal qualifications at all will decline to around 2 million (mainly older) people.

3.57 With regard to gender, the numbers of women acquiring formal qualifications have been increasing more rapidly than males at most levels. Women accounted for 50 per cent of the total inflow of newly qualified people at NVQ Levels 4 to 5 in the late 1990s.

3.58 Falling labour market participation rates (earlier retirement and increasing participation in HE and FE) have been a key feature for most groups. The typical retirement age for men has steadily fallen, with many now leaving in their 50s. In the case of women, activity rates for prime-aged women have risen, but they have fallen for younger and older women for the same reasons as for men. Women are expected to account for almost 50 per cent of the workforce by 2010. Further reductions in activity rates for older people seem likely, although the Government is concerned about the implications for pensions. A larger proportion of women have also been retiring early but the Government has introduced legislation to raise the official retirement age from 60 to 65, in line with that for men.

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Chapter 4: Mismatches in Supply and Demand

Overview and Summary

4.1 This chapter examines the mismatch between the supply and demand for skills. There are a number of ways which can be used to assess the degree to which the supply and demand for particular skills or skill levels are at variance.

- Changes in wage differentials over time can be interpreted as illustrating increases in the relative demand and supply for particular skills, but such movements are subject to a number of difficulties in interpretation.
- Estimates of the rate of return to different qualifications and skills provide a more robust measure of the extent to which certain skills are in particular high demand and thus rewarded in the labour market.
- Survey evidence on vacancies, recruitment problems and difficulties, as well as on reported skill gaps, can be used to assess the degree to which employers cannot easily obtain the skills they need.

Information on all three of these aspects is reported in this chapter.

4.2 Overall, there is strong evidence that, despite the large increases in the supply of qualifications, especially of higher-level qualifications, the demand for these qualifications has kept pace with the increases in supply. This is evidenced by increasing wage dispersion associated with increasing skills dispersion, and, in particular, high rates of return to higher-level qualifications. However, there may be some preliminary evidence to suggest that the graduate earnings premium is beginning to decline.

4.3 Evidence from employer surveys suggests that many employers still perceive a mismatch in terms of the key and generic skills that they require. Formal qualifications do not always provide everything that is needed

4.4 A further element to consider in relation to mismatches is that of latent mismatches, that is the extent to which economic disadvantage accrues because individuals, employers, or Government fail to recognise quickly enough that certain skills are required.

Introduction

This chapter looks at the evidence relating to mismatches between the supply of and demand for skills. Relative wage levels provide one means of measuring the extent of mismatch. And employer surveys of hard-to-fill vacancies provide a further measure of mismatches.

4.5 This chapter compares the demand for and the supply of skills, bringing together evidence relating to the balance between the two and the extent of mismatch. There are some important practical problems that must be addressed here, since independent supply and demand indicators are rarely available.

4.6 Changes in the patterns of the demand for skills are reflected primarily in terms of growth and decline in employment in particular occupations. The supply of skills can be measured in terms of relevant qualifications, occupational competence and experience. Chapter 2 and Chapter 3 document these changes in some detail.

4.7 To some extent, market forces will help to regulate the market for particular skills, especially in the long run. When the demand for particular skills grows faster than supply, the market will tend to bid up the price of such skills. Such increases signal the need for increased supply, attracting people to acquire the requisite qualifications and work experience or to move back into areas of employment for which they hold the appropriate skills. In time, these supply adjustments can alleviate skill shortages. Changing patterns of wage differentials may indicate evidence of such market pressures.

4.8 Of course, wages can vary for a host of other reasons such as local cost of living differences, institutional and other constraints such as discrimination and seniority provisions, unsociable hours payments, and so on. For example, many would argue that wages in the public sector are not directly subject to market forces. Thus a better measure of the changing relative demand for particular skills and qualifications is the rate of return that they accrue, having taken account of these other determinants of earnings. It is the recent developments in this literature that therefore provides this chapter's initial focus.

4.9 The second substantive element in this chapter is to report on the latest relevant findings from the *National Employers Skills Survey* (NESS). Headline findings are presented from the 2004 survey (NESS 2004) with more detailed findings reported from NESS 2003. Information on vacancies, and on skills gaps reported by employers, provides evidence on the relative supply and demand for skills and qualifications from the employers' perspective to contrast with the rates of returns that individual employees receive.

Patterns in Earnings Differentials

Jobs requiring relatively low levels of skill are potentially at risk from being substituted by technology. Moreover, the wages of the least skilled in the economy have been increasingly falling behind the more skilled.

4.10 As reported in previous *Skills in England* reports, the dispersion of earnings in the UK has widened in the last two decades. A number of explanations have been proffered, but the weight of evidence is that the major underlying cause is technological change that is 'skill-biased'. That is, technological change has been biased against those with no or few skills. Increasingly, low skill jobs are being replaced by technology which requires higher-skilled individuals to install, maintain and operate. This has resulted in an increase in the relative demand for those with higher-level skills and a relative fall in demand for those with low or few qualifications.

4.11 As evidence of this phenomenon, *Skills in England 2003* reported changing occupational earnings differentials over the last 20 years. For nearly all occupational groups, earnings relativities have increased compared with the least skilled group. The fastest rates of growth of relative earnings have been amongst corporate managers, health professionals, science and technology professionals, teaching and research and business or public service professionals. In the area of associate professional occupations, the rise in relative earnings has been less spectacular, but appears to be continuing.

4.12 There are practical problems associated with the measuring of such skills *premia*. Skill may be equated with occupation and/or qualification, but occupations and qualifications do not necessarily correspond with, say, an employer's understanding of the skills required to perform a particular job. Employers may also be reluctant to raise wage rates for new recruits for fear of disturbing well established differentials amongst existing workers. Moreover, while mismatches in supply and demand may lead to skills earnings *premia*, these are not the only reasons why the earnings of one group of skilled workers may differ from those of another group. Other factors that influence earnings include the age structure of a particular group of workers, regional location, compensation for unsocial hours, etc. Changes in occupational classification and in the nature of qualifications also make comparisons over time problematic. Movements in relative pay may therefore be difficult to interpret and need to be handled with care. More robust evidence on changing relative demand for qualifications can be obtained in the form of estimated rates of return which explicitly take account of these other myriad underlying influences on earnings.

The Returns to Education

4.13 A major programme of research was initiated in 2000 by the newly formed Centre for the Economics of Education (CEE) at the London School of Economics (LSE), sponsored by the Department for Education and Science (DfES). This research – both methodological and empirical – has substantially improved the understanding of the benefits individuals accrue from different types and levels of qualification. A précis of some of the pertinent findings from the CEE research and a number of other major research programmes is given below.

The returns to basic skills, on academic and on vocational qualifications

4.14 While there are difficulties in measuring basic literacy and numeracy skills, the weight of evidence suggests that there are significant labour market returns to even low levels (Level 1) of literacy and – especially – numeracy as compared to individuals with less than basic skills. Better numeracy is also associated with a higher employment probability. The importance of these skills is reflected in the Government's targets to improve literacy and numeracy amongst the adult population.

Positive rates of return are associated with the acquisition of skills at all levels. Low achievement in school is associated not only with poor progress through the labour market but also with early exit from it.

4.15 Recent research has examined the impact of low achievement at school on future qualification achievement, employment and wages. The evidence suggests poor subsequent labour market outcomes for young people who left school in the mid-1990s with no or only very low-level qualifications (no qualifications, or only GCSEs at grade D or below). Two features are particularly notable. First, not only are these individuals less likely to be in formal employment, there is a movement over time away from unemployment and towards inactivity, and hence non-participation in the labour force. This is evident for both men and women. Second, while subsequent acquisition of qualifications at Level 2 or 3 produces improved labour market outcomes similar to their contemporaries who achieved these levels at school (i.e. GCSEs at grades C and above and A-levels respectively), unfortunately, too few low-achieving school leavers subsequently acquire any qualifications. Over 40 per cent have not achieved any further qualifications after leaving school, and a further quarter have only reached Level 1. Thus, those leaving school with no qualifications are mainly consigned to weak labour market outcomes and poor labour market attachment.

4.16 This result – that 'learning leads to learning' – is also reflected in the longer-term evidence on lifelong learning. Those leaving school with Level 2 qualifications were considerably more likely to undertake lifelong learning than those with Level 1 or no qualifications. The evidence points to there being little, if any, wage returns to these post-compulsory education qualifications (the single exception being men with no qualifications who subsequently acquire a degree – a very small group of individuals indeed). The benefits of lifelong learning would appear to be more in terms of re-engagement in the labour market. Individuals who undertook a lifelong learning qualification were much more likely to move from non-employment to employment in the period between being surveyed, particularly where the qualification was occupationally or vocationally (i.e. not purely academic) based.

4.17 The returns to apprenticeship training are around 7 per cent for men, but negligible (essentially zero) for women. This return for men is doubled if the apprenticeship is held in combination with a vocational Level 3+ qualification, and this compares favourably to the return to an equivalent Level 3 academic qualification (2 or more A-levels) which is about 17 per cent. Currently only around one quarter of recently qualifying male apprentices have acquired Level 3 qualifications as well as completing their apprenticeship. Hence the importance of combining Level 3 qualifications with apprenticeships, if the full labour market return of the latter is to be realised, needs greater publicity. That women apparently receive no benefit from apprenticeships is of great concern and warrants further attention.

Returns to academic and vocational qualifications are similar. There is a positive rate of return associated with completing an apprenticeship. Returns to obtaining qualifications have been constant since the mid-1990s.

4.18 Comparing traditional academic and vocational qualifications at the intermediate Levels 2 and 3 reveals that the wage *premia* associated with academic qualifications are about 5 per cent for every successive level of qualification. But once account is taken of the longer time, on average, required to obtain the academic qualification at each level, the returns *per year of study* for academic and equivalent level vocational qualifications are rather similar.

4.19 With the exception of low-level school leaving qualifications (low grade GCSEs), which have seen their return decline effectively to zero, there would appear to be little change in the return on different types of qualification since the mid-1990s, for either men or women. Given the evident upskilling of the workforce over this period, and the attention given to education by the governments since 1997, this is perhaps somewhat surprising. It is clearly the outcome of the balance of various countervailing forces affecting both the supply and demand for qualifications and the 'price' paid for them in the labour market.

4.20 As an indicator of mismatch, this finding suggests that the *status quo* has effectively been maintained in recent years despite the rapid pace of change in the qualifications profile of the workforce.

The returns to a first degree

4.21 The widening earnings premium between those with higher-level skills relative to individuals in jobs that require only elementary or basic skills suggests either a continuing skills gap at the highly skilled end of the labour market, a growing surplus of unqualified labour, or both. In an attempt to disentangle these two possibilities, a growing literature has examined the earnings premium associated with acquisition of a first degree in the UK.

The massive expansion in higher education warrants attention on the returns to graduating. The evidence suggests that there is still a positive and substantial return to obtaining a degree.

But the rate of return has declined somewhat as the numbers graduating has increased.

4.22 As documented in Chapter 3, the number of degree holders in the labour market has been rising rapidly over the past 10 to 15 years. With the rise in participation in higher education (HE) that has taken place since 1985, the age participation index has now risen to around 35 per cent.

4.23 In the face of such an increase, a reduction in the earnings premium associated with a degree might be anticipated. For two different cohorts of individuals, those who graduated in 1979/80 and a group who graduated in 1991/92, Table 4.1 presents the variations in earnings premium. The evidence suggests that while the earnings premium associated with a degree remains high, it would appear to be falling for both men and women as they progress through the labour market. For women, the premium would appear to have been falling for some time.

4.24 One major weakness with the comparisons in Table 4.1 is that the evidence is compiled from graduates who graduated and entered the labour market well before the recent rapid expansion took place. More recent cohorts may have a rather different experience.

4.25 For the cohorts who graduated in 1995 and 1999, the longer term evidence is that the value of a degree is falling. The earnings premium is still large, however, and the rate of growth of earnings of those with a degree still exceeds that of those without a degree in the early years of labour market experience. This evidence suggests that those who claim that there is already a significant over-supply of graduates may have exaggerated their case.

4.26 Some have also attributed this falling premium on a first degree as explaining in part the recent rapid rise in post-graduate enrolment. Between 1995/96 and 2002/03, the number of new entrants to post-graduate programmes in HE has risen by 21 per cent. In 2002/03, there were almost 500,000 post-graduate students in the UK. However, the vast majority of this increase has been overseas students taking taught masters programmes, and who typically return home once they have completed their studies.

International evidence on earnings differentials and rates of return

Comparisons with other OECD countries provides a benchmark.

4.27 In its latest annual review, the OECD reports that, using comparable data, the earnings premium associated with tertiary level education in the UK are among the highest of any country in the OECD. Figure 4.1 illustrates separately for men and women, and for men and women combined, the pay premium over and above the average worker who has only completed upper-secondary-level education.

The level of return on HE in the UK compares favourably to other OECD countries, although levels of participation are still relatively low in the UK.

4.28 The earnings premium for those aged 25 to 64 years with tertiary level education, relative to upper-secondary level education, ranges from 33 per cent in New Zealand to 110 per cent in Hungary. The UK – at 59 per cent – is amongst the highest, although it is lower than in the US. There are some notable differences by gender. In particular, women in the UK not only benefit more from tertiary education than men in terms of the additional earnings they receive, but they can be seen to top the rankings amongst all OECD countries in the earnings premium associated with tertiary level education. Of course, part of the explanation may lie in the low earnings that women with only upper-secondary education receive in the UK.

4.29 Many OECD countries have tertiary level participation rates in excess of that in the UK. Coupled with the large earnings premium that is still associated with a degree, this lends further support to those who argue that there is still room for further expansion in the number of graduates in the labour market in the UK.

4.30 As previously highlighted, earnings *premia per se* can be a misleading indicator of the value of educational attainment or of mismatch between the supply and demand for qualifications. Table 4.2 reports a summary of recent rates of return estimates by region and education level. The returns fall with education level and by level of economic development. That the rates of return to schooling are highest in Latin America and sub-Saharan Africa is to be expected, since these are precisely the regions in which education is in relatively short supply.

4.31 Social returns to education which take account of the external costs – including public subsidies – are lower than private returns, but are still positive and high. Even in developed nations, the returns remain substantial and suggest that further investment in education can be beneficial for individuals and for countries as a whole.

Table 4.1: Variations in the earning premium for a degree, inter-cohort comparisons

Age of graduates and the year in which earnings premium was measured	Earnings premium for a degree	
	Men	Women
26-year-olds in 1981	25%	36%
26-year-olds in 1996	29%	33%
33-year-olds in 1991	40%	45%
33-year-olds in 1999	32%	31%

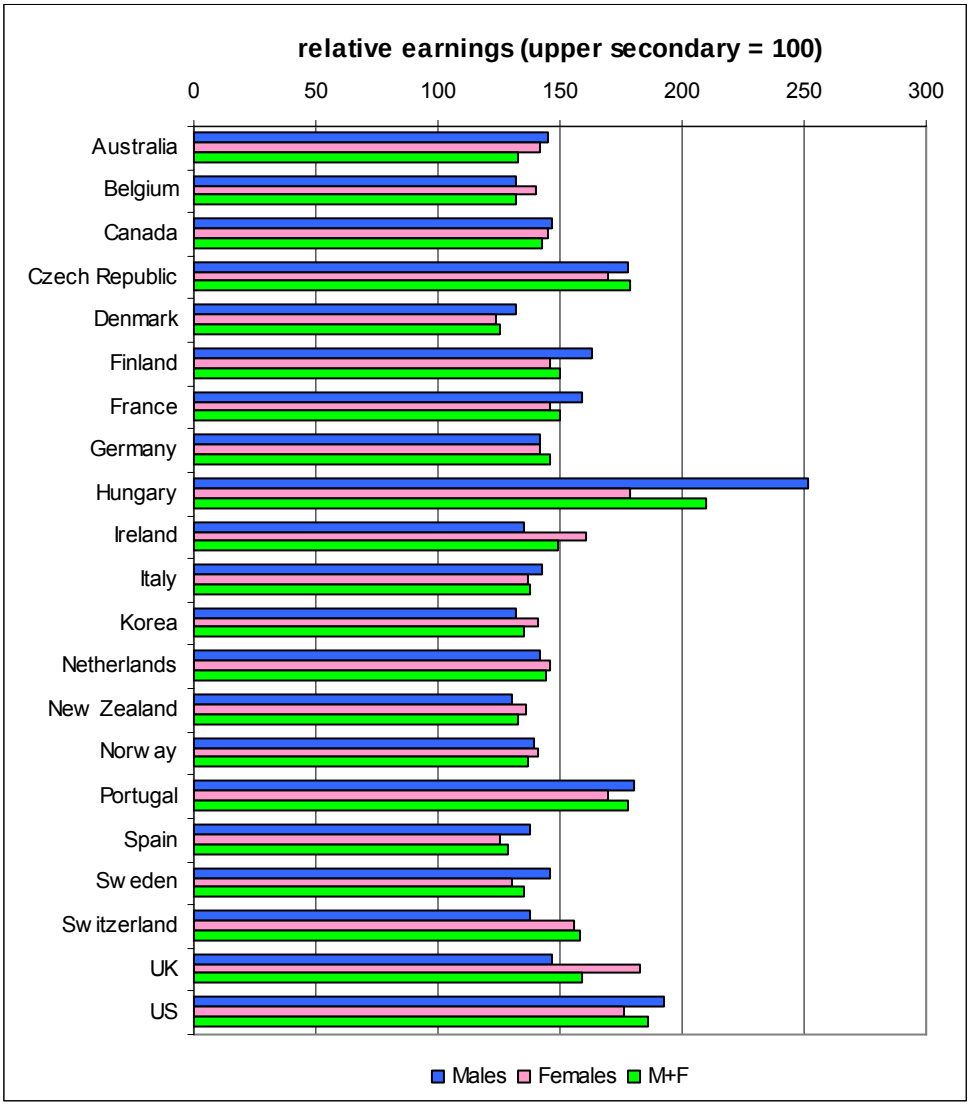
Sources: This table is based on NCDS and BCS data. See Elias and Purcell (2004) for further information.

Table 4.2: Returns to investment in education: regional averages (percentages)

Region	Private returns			Social returns		
	primary	secondary	tertiary	primary	secondary	tertiary
Asia	20.0	15.8	18.2	16.2	11.1	11.0
Europe/Middle East/North Africa	13.8	13.6	18.8	15.6	9.7	9.9
Latin America/ Caribbean	26.6	17.0	19.5	17.4	12.9	12.3
OECD	13.4	11.3	11.6	8.5	9.4	8.5
Sub-Saharan Africa	37.6	24.6	27.8	25.4	18.4	11.3
WORLD	26.6	17.0	19.0	18.9	13.1	10.8

Source: Psacharopoulos and Patrinos (2004), p.114.

Figure 4.1: Relative earnings of employees aged 25 to 64 with tertiary-level education



Source: OECD *Education at a Glance 2004*, Table A11.1a.

Results from the National Employers Skills Survey

4.32 Surveys of hard-to-fill vacancies, and the extent to which these are still related, provides a measure of the extent of skill mismatch in the economy. This section provides headline findings from the recently released NESS 2004 with more detailed findings provided from the previous year's survey – NESS 2003. Detailed findings from NESS 2004 are posted on the LSC website (www.lsc.gov.uk/National/Documents/SubjectListing/Research/default.htm).

4.33 The National Employers Skills Surveys provide comprehensive information about employers' experiences of recruiting labour and the difficulties they encounter. NESS also provides information relating to skills gaps, i.e. the extent to which employers regard their existing workforce as proficient to meet the needs of their business. As well as providing information about the extent of recruitment problems and skills gaps in the economy, NESS looks into the causes and implications of these.

NESS provides the most comprehensive data on skill mismatches from the employers' perspective. NESS is a representative survey of employers in England.

4.34 NESS forms part of a series of surveys that have collected data about employers' skill needs. The series commenced with the Skill Needs in Britain Surveys conducted almost annually between 1992 and 1998. This was subsequently replaced by the Employers Skill Surveys (ESS) in 1999, 2001 and 2002.

Definitions

4.35 NESS, in common with earlier surveys, uses precise definitions to describe employers' skill needs. **Recruitment problems** refer to vacancies that the employer describes as hard to fill. **Hard-to-fill vacancies** (HtFVs) are those vacancies self-classified by the respondent as hard to fill, and **skills-shortage vacancies** (SSVs) are defined as HtFVs resulting from applicants not having the required skills, experience or qualifications the employer demands.

NESS makes use of definitions that distinguish between external skill problems and internal ones. A distinction is made between recruitment problems (both skill and non-skill related) and skills gaps.

4.36 **Skills gaps**, or internal skills gaps, refer to the extent to which employers perceive their employees as not being fully proficient for their job.

NESS allows estimates to be made in relation to either the total number of establishments or the total number of employees.

4.37 **Skill deficiencies** refer generally to both skills gaps and SSVs.

4.38 In several instances a **measure of density** is used to refer to the total number of recruitment problems or skills gaps as a percentage of employment. The benefit of using estimates of density is that it standardises measures across local LSCs, regions, or industrial sectors. Other useful measures include the proportion of all vacancies that are hard to fill or skills-shortage vacancies.

Summary of findings

4.39 Before providing an in-depth analysis of skill deficiencies in England, Table 4.3 provides the headline findings from NESS 2004, NESS 2003 and ESS 2001.

4.40 There are some definitional issues which complicate comparisons across time but the overall picture revealed from Table 4.3 is that the level of skill deficiencies has been stable over the period 2001 to 2004. This needs to be seen in the context of the overall stability of the economy over that period.

4.41 How significant are the results? At first glance, the extent of recruitment problems in all years appears quite modest with around 4 per cent of establishments in both years reporting SSVs

Around 8 per cent of establishments reported HtFVs in 2004, and 4 per cent SSVs. This amounts to 227,000 HtFVs and 145,000 SSVs.

Table 4.3: Overall incidence of skill deficiencies in England, 2003 and 2001

Vacancies and recruitment problems	**NESS 2004**	**NESS 2003**	**ESS 2001**
% of establishments with vacancies	**18**	17	14
% of establishments with HtFVs	**8**	8	8
% of establishments with SSVs	**4**	4	4
Number of vacancies (000)	**617**	**679**	**766**
Number of HtFVs (000)	**227**	271	358
Number of SSVs (000)	**145**	135	159
Vacancies as % employment	**3.0**	3.1	3.7
HtFVs as a % employment	**1.1**	1.2	1.7
HtFVs as a % vacancies	**36.8**	39.9	47
SSVs as a % of employment	**0.7**	0.6	0.8
Unprompted SSVs as a % of vacancies	**17**	19.9	21
Prompted SSVs as a % of vacancies	**23.6**	n/a	**n/a**
Skill gaps*			
% establishments with skill gaps	**20**	22	23
Number of skill gaps (millions)	**1.5**	2.4	1.9
Skill gaps as a % of employment	**7.5**	11	9

Source: NESS 2004 (IFF) NESS 2003 (IFF/IER) ESS 2001 (IER/IFF)
Base: All establishments and employment.
Note: Comparisons between 2001, 2003 and 2004 should be treated as indicative due to differences in the way skill gaps and skill shortage vacancies are measured between 2001 and 2003. These differences reflect both changes in sampling and questioning between the surveys.

4.42 The extent of skills gaps in the economy is substantially greater than recruitment problems. The data point to around 1.5 million employees – 7.5 per cent of all employees – who fall short of full proficiency in their current job according to their employer. Again the data require careful interpretation but previous evidence from ESS 1999 indicates that skills gaps are most manifest where employers are involved in a process of strategic change that consequently requires their employees to acquire new skills (Bosworth *et al.*, 2000; Hogarth and Wilson, 2002). The potential for skills gaps to slow or inhibit an organisation's shift into higher value-added markets is therefore important.

Around 20 per cent of establishments reported skills gaps in 2004. Approximately 1.5 million people were reported as not being fully proficient at their current job.

Recruitment problems in detail

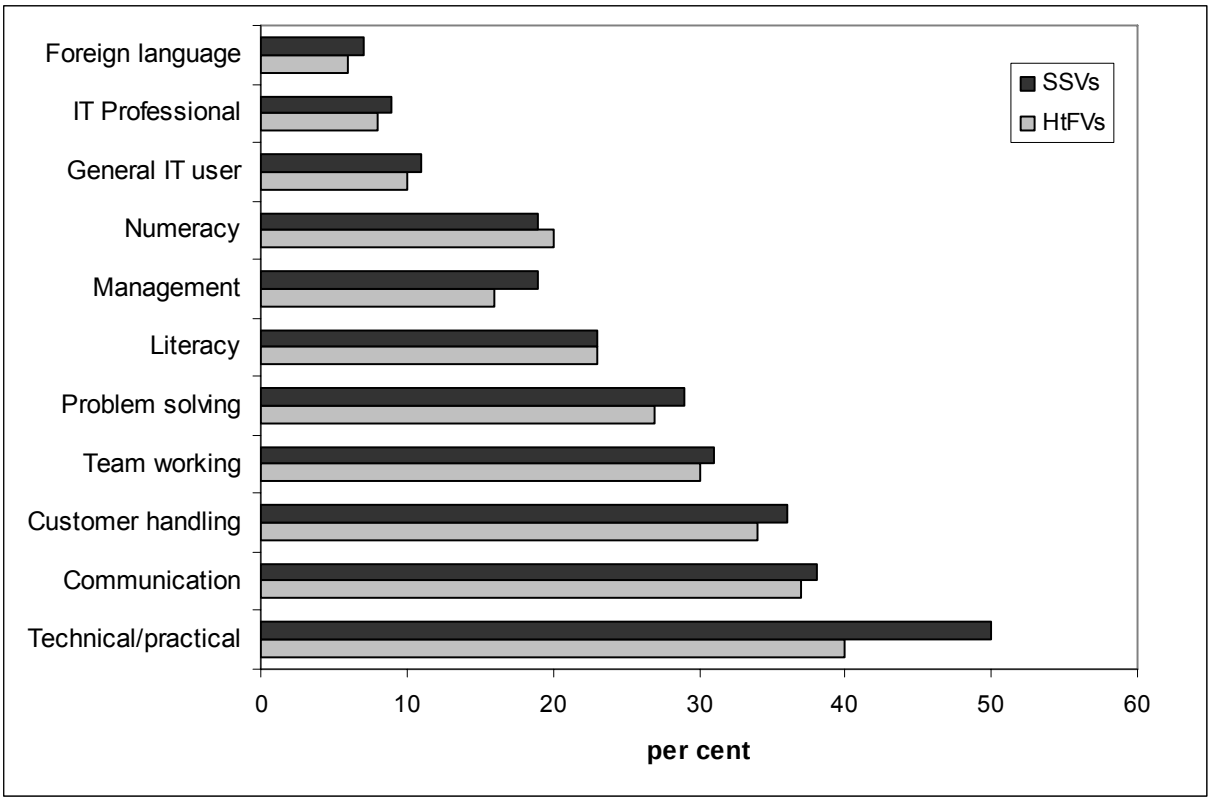
4.43 The remaining part of this chapter provides detailed findings from NESS 2003 – this is an edited version of the findings reported in *Skills in England 2003*.

4.44 Around 17 per cent of workplaces revealed that they had vacancies in 2003. In total there were 679,000 vacancies, higher than the 597,000 vacancies recorded for the three-month average ending in June 2003 by the Office of National Statistics (ONS) Vacancy Survey (the ONS Vacancy Survey excludes agriculture, forestry and fishing.). Where vacancies were reported, 40 per cent were reported as HtFVs and 20 per cent as SSVs (see Table 4.3). The evidence suggests that between 2001 and 2003 the absolute numbers of vacancies, HtFVs and SSVs, fell slightly over the period.

The main skill characteristic giving rise to recruitment problems was a shortage of applicants with the required technical or practical skills.

4.45 A key issue is to identify the underlying skill needs giving rise to recruitment problems and the sectors of the economy where they are arising. Figure 4.2 shows the percentage of HtFVs and SSVs arising from shortages of different types of skill. In relation to both HtFVs and SSVs, a difficulty in finding applicants with the required technical and practical skills was one of the main skill-based reasons leading to a recruitment problem. But it is also apparent that softer, more generic skills also gave rise to recruitment problems. Both communication and customer-handling skills were reported as being difficult to find in relation to a relatively high percentage of recruitment problems. It needs to be borne in mind that generic skills are important in nearly all jobs, but in certain types of job – such as those that involve dealing with people on a frequent basis – skills related to communication and customer handling are all-important and can constitute the primary competency in a job.

Figure 4.2: Skills found difficult to recruit



Source: IFF and IER, *National Employers Skills Survey, 2003* (LSC 2004).
Base: All HtFVs or SSVs. Percentages do not sum to 100, since multiple responses were possible.

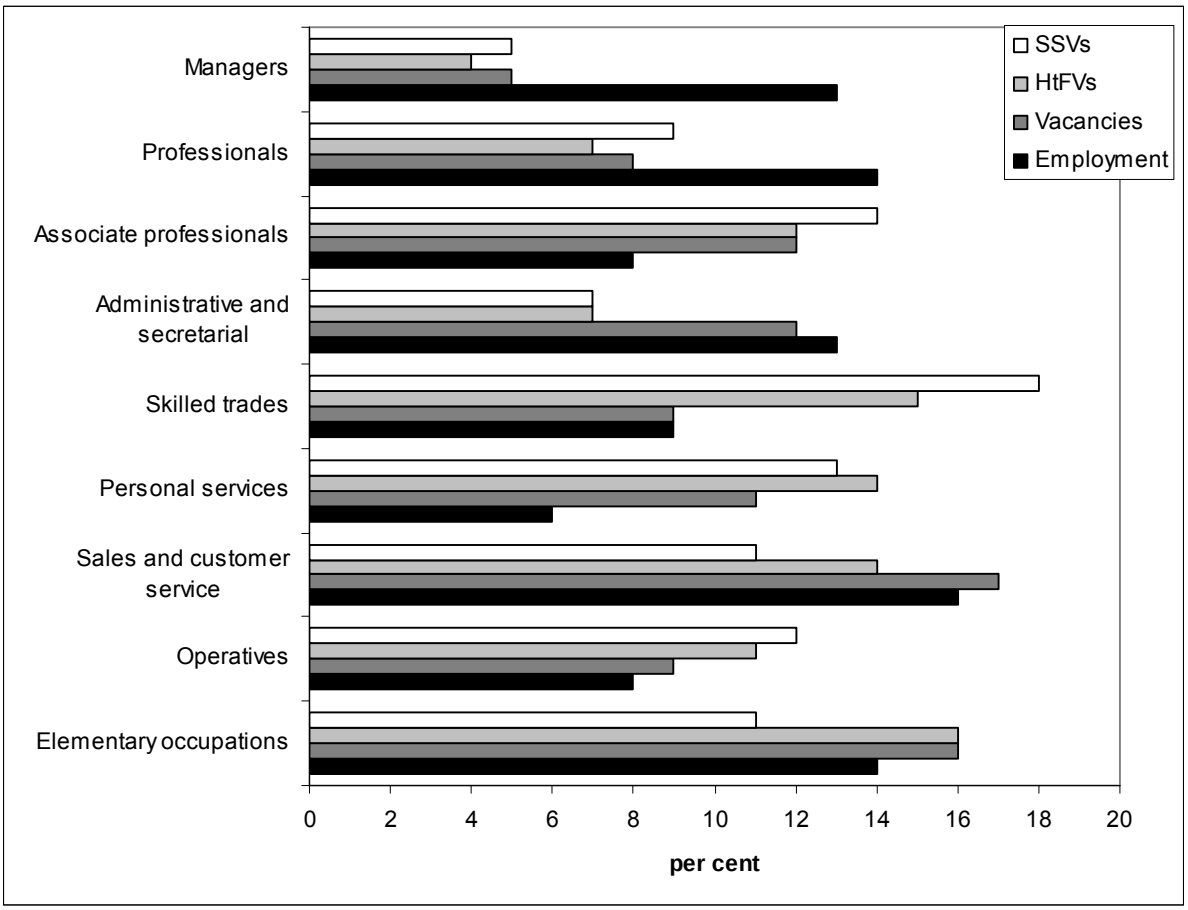
Occupational characteristics of recruitment problems

Skilled trades accounted for the highest disproportionate share of SSVs relative to its level of employment: 18 per cent of SSVs and 9 per cent of employment.

4.46 Figure 4.3 shows how employment, vacancies and recruitment problems are distributed across occupations. The data reveal that elementary occupations, skilled trades and personal service occupations recorded the highest proportion of HtFVs (16, 15 and 14 per cent of all HtFVs, respectively). What is perhaps most important to show is the extent to which recruitment problems are disproportionately high compared with the share of employment in a particular sector. Viewed in this way there are some quite striking features in Figure 4.3. The occupation that reveals the highest disproportionate share of SSVs is skilled trades; it accounted for 18 per cent of all SSVs but comprised just 9 per cent of total employment. The other occupations that reveal disproportionately high shares of SSVs are associate professionals and personal service workers. While associate professionals is a relatively highly skilled occupation, this cannot be said for personal service where the level of skill required is much more modest. But personal services is an occupation that reveals a disproportionately high share of SSVs (13 per cent of all SSVs and just 6 per cent of total employment).

4.47 If one looks at two occupations that are usually associated with higher levels of skill – managers and professionals respectively – then it is apparent that SSVs amongst these two occupations are disproportionately low. The primary explanation of this is in relation to vacancies: for both of these occupations the share of vacancies relative to employment was low. One might speculate why the proportion of vacancies was low in these occupations. Evidence suggests that employers in relation to certain types of skill and occupation are much more likely to use informal methods of recruitment because these are seen as much more effective in finding the right person in a tight labour market. As a consequence, a vacancy might never be formally designated or reported as such in the sense of a job description being written, advertisements being placed, interview short-lists being drawn up, etc.

Figure 4.3: Share of employment, vacancies and recruitment problems by occupations



Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: All employment, vacancies, hard-to-fill vacancies and skills-shortage vacancies.

4.48 Table 4.4 provides further information about the density of recruitment problems by occupation. The data reveal that the percentage of vacancies in skilled trades classified as hard to fill is higher than for any other occupation. Similarly, for this occupation, a relatively high share of vacancies were classified as SSVs.

Table 4.4: Density of recruitment problems by occupation

	Vacancies	Vacancies as % employment in occupation	HtFVs as % of all vacancies	SSVs as % of all vacancies
Managers	35,237	1.3	34.5	18.2
Professionals	51,835	1.7	37.1	24.3
Associate professionals	81,142	4.4	38.8	23.6
Administrative and secretarial	84,010	2.9	23.2	11.1
Skilled trades	63,391	3.3	62.5	39.0
Personal services	74,169	6.1	51.4	23.7
Sales and customer service	116,662	3.4	32.0	12.4
Operatives	57,740	3.4	50.3	27.0
Elementary occupations	107,393	3.5	40.3	14.0
All occupations	679,072	3.1	40.0	19.9

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

Recruitment problems and size of establishment

4.49 Approximately 64 per cent of establishments with 500 or more employees reported some vacancies compared with just 12 per cent of those with 1 to 4 employees. The propensity to report HtFVs is also related to size of establishment. Approximately 21 per cent of establishments with 500 or more employees reported some HtFVs, but only a small proportion (6 per cent) of establishments with 1 to 4 employees reported them. The corresponding figures for SSVs were 13 per cent and 3 per cent respectively.

Larger workplaces are much more likely to report some recruitment problems. But most vacancies are accounted for by smaller establishments because there are so many of these establishments.

4.50 The simple measure of the share of vacancies provides no information about the relative importance of that vacancy to the establishment. Though larger establishments typically reported a higher number of vacancies, these will, in general, constitute a small proportion of the workforce. In contrast, just one or two HtFVs in an establishment employing a small number of people will constitute a sizeable proportion of the workforce and make a crucial difference. To deal with this problem, it is useful to present measures of density (that is, the number of vacancies expressed as a proportion of total employment). It is apparent that for smaller establishments vacancies can comprise a substantial proportion of the workforce. The problem is particularly acute for establishments employing a very small number of people. These establishments were less likely to report a skill-shortage vacancy; but when one occurs, the evidence shows that where recruitment problems existed they comprised a large proportion of total employment in small establishments, therefore potentially making their impact that much greater (see Table 4.5). Around 35 per cent of all SSVs occurred in establishments with 1 to 4 employees, yet only account for 12 per cent of employment.

Table 4.5: Recruitment problems by size of establishment

Size of establishment	Vacancies	Vacancies as % of employment	HtFVs as % vacancies	SSVs as % vacancies	Shares of totals (column %) employment	vacancies	HtFVs	SSVs
1 to 4	180,921	7.1	49.1	26.4	11.7	26.6	32.7	35.3
5 to 24	191,697	4.0	42.1	21.6	21.9	28.2	29.7	30.6
25 to 99	146,937	2.6	38.2	17.9	25.7	21.6	20.7	19.5
100 to 199	48,209	2.0	31.7	13.7	11.2	7.1	5.6	4.9
200 to 499	61,590	1.9	23.4	10.8	15.1	9.1	5.3	4.9
500+	49,717	1.6	32.5	13.3	14.4	7.3	6.0	4.9
Total	679,072	3.1	40.0	19.9	100.0	100.0	100.0	100.0

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: All employment, vacancies, hard-to-fill vacancies and skills-shortage vacancies.

Recruitment problems by industrial sector

Data are available on the extent of recruitment problems by industrial sector. Hotels and restaurants reported the highest density of vacancies. The highest share of HtFVs was in the manufacture of wool and paper. The highest share of SSVs was found in other business services.

4.51 Employment projections described elsewhere in this volume give estimates of replacement demand. Replacement demand refers to the demand for employees that arises owing to people leaving industries to work elsewhere, retirements, deaths, etc. An important point raised in relation to replacement demand is that industries in long-term decline still have a strong demand for labour as a consequence of labour turnover (retirements, etc.). Because an industry is in long-term decline this can act as a disincentive to people to enter that industry, resulting in recruitment problems. Of course, this is not the only cause of recruitment problems. At a time of near-full employment, relative wage rates and other terms and conditions of employment, as well as an excess demand for certain types of skill, can lead to vacancies being hard to fill. Figure 4.4 and Table 4.6 provide sectoral details.

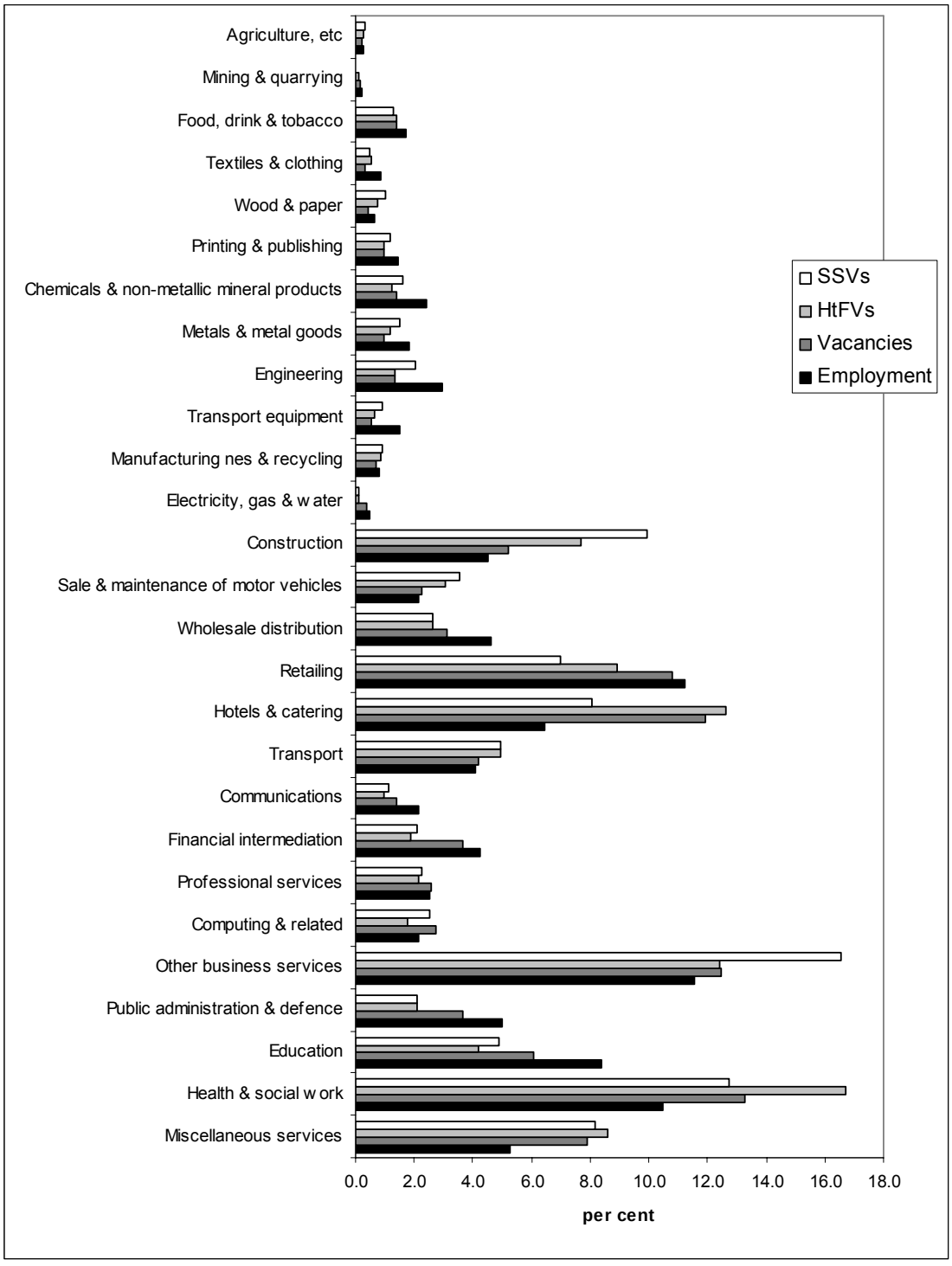
4.52 Results by industrial sector reveal a number of patterns (see Figure 4.4). Health and social work is the industry that accounts for the highest share of all vacancies (13.3 per cent) and HtFVs (16.7 per cent). These results are disproportionately high compared with the share of employment in this industry – 10.5 per cent. Other business services accounted for the highest share of SSVs (16.5 per cent).

4.53 Hotels and restaurants reported the highest density of vacancies (vacancies as a percentage of employment: 5.7 per cent). Manufacture of vehicles and transport equipment (1.1 per cent) and of textiles and clothing (1.3 per cent) recorded the two lowest densities, which might reflect the long-term decline in employment in these industries.

4.54 It is also necessary to look at the intensity of recruitment problems – the share of vacancies that are HtFVs or SSVs (see Table 4.6). The highest share of HtFVs was recorded in manufacture of wood and paper etc. (65.1 per cent of vacancies). The lowest share was recorded in electricity, gas and water (11.6 per cent).

4.55 As noted above, the highest share of all SSVs was found in other business services (16.5 per cent of all SSVs), but the highest intensity of SSVs was in the manufacture of wood and paper, where 46.2 per cent of all vacancies were SSVs. This was followed by construction, where 38.2 per cent of vacancies were SSVs.

Figure 4.4: Distribution of employment, vacancies and recruitment problems by industrial sector



Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

Table 4.6: Recruitment problems by industry

	Total number of vacancies	Vacancies as % employment	HtFVs as % vacancies	SSVs as % vacancies
Agriculture, etc	1,407	2.5	48.8	31.9
Mining & quarrying	939	2.2	35.2	9.0
Food, drink & tobacco	9,476	2.5	39.5	18.6
Textiles & clothing	2,351	1.3	59.3	28.8
Wood & paper	3,036	2.2	65.1	46.2
Printing & publishing	6,735	2.1	38.5	23.4
Chemicals, & non-metallic mineral products	9,393	1.8	35.8	23.3
Metals & metal goods	6,646	1.7	49.2	30.9
Engineering	9,098	1.4	40.4	30.0
Transport equipment	3,582	1.1	48.3	35.0
Manufacturing nes & recycling	4,615	2.5	51.2	26.5
Electricity, gas & water	2,472	2.2	11.6	6.9
Construction	35,238	3.6	59.2	38.2
Sale & maintenance of motor vehicles	15,414	3.3	54.1	30.9
Wholesale distribution	21,030	2.1	34.2	16.9
Retailing	73,311	3.0	33.1	12.9
Hotels & catering	80,856	5.7	42.4	13.5
Transport	28,588	3.2	47.0	23.4
Communications	9,508	2.0	27.4	16.3
Financial intermediation	24,884	2.7	20.7	11.4
Professional services	17,574	3.2	32.9	17.2
Computing & related	18,477	3.9	26.1	18.4
Other business services	84,749	3.4	39.7	26.4
Public administration & defence	24,811	2.3	22.9	11.4
Education	41,061	2.2	27.6	16.1
Health & social work	90,106	3.9	50.3	19.2
Miscellaneous services	53,716	4.7	43.4	20.5

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

Regional and local patterns of recruitment problems

4.56 Table 4.7 outlines the pattern of recruitment problems by region. The extent of variation is limited but there are a few notable features. First, the share of both HtFVs and SSVs is slightly greater in the West Midlands than the share of employment in this region would suggest. Otherwise the data are unremarkable. In part this stems from the heterogeneous characteristics of each region and the fact that they each encompass large parts of the English economy. Large regional variations in a country that is physically quite small would be unlikely, given the free movement of people.

Differences between regions are small. But there was substantial variation by local LSC area reflecting the diverse characteristics of these local labour markets.

Table 4.7: Vacancies and hard-to-fill vacancies as a proportion of employment by region, size and sector

		Vacancies as % of	HtFVs as %	SSVs as %	Shares of totals (column %)			
Region	Vacancies	employment	vacancies	vacancies	employment	vacancies	HtFVs	SSVs
West Midlands	70,483	3.1	43.1	24.0	10.5	10.4	11.2	12.5
East Midlands	53,094	3.1	42.3	21.6	7.9	7.8	8.3	8.5
Eastern	75,835	3.4	40.4	18.2	10.3	11.2	11.3	10.2
London	105,018	2.6	28.6	20.5	18.3	15.5	11.1	15.9
North East	25,845	2.7	41.3	21.3	4.4	3.8	3.9	4.1
North West	84,026	2.9	36.9	19.0	13.1	12.4	11.4	11.8
South East	125,862	3.5	42.5	18.7	16.6	18.5	19.7	17.4
South West	73,913	3.6	46.8	17.3	9.5	10.9	12.8	9.5
Yorkshire and the Humber	64,996	3.1	43.2	21.1	9.5	9.6	10.3	10.1
Total	679,672	3.1	40.0	19.9	100.0	100.0	100.0	100.0

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

4.57 One of the principal strengths of NESS 2003 is its capacity to provide statistically robust estimates at the level of local LSC areas. Previous Employers Skill Surveys were sampled on a regional basis and results at a local LSC level were subject to sampling bias. Table 4.8 provides estimates of recruitment problems for each local LSC area based on the 14-sector local weight.

Table 4.8: Recruitment problems by local LSC area

	Number of vacancies	Vacancies as % of employment	HtFVs as % of vacancies	SSVs as % of vacancies
Shropshire	6,714	3.7	55.4	36.0
Staffordshire	8,839	2.1	36.0	21.0
The Black Country	13,585	3.0	56.0	36.2
Birmingham and Solihull	17,318	3.0	43.5	20.3
Herefordshire and Worcestershire	10,363	3.5	43.9	19.9
Coventry and Warwickshire	12,909	3.5	34.5	15.8
Derbyshire	10,891	2.8	43.5	21.5
Nottinghamshire	13,166	3.1	43.0	18.2
Lincolnshire and Rutland	9,295	3.8	49.6	16.9
Leicestershire	11,975	3.1	42.1	28.5
Northamptonshire	8,313	2.9	42.3	21.5
Norfolk	9,886	3.2	38.9	15.2
Cambridgeshire	14,468	4.4	48.0	18.6
Suffolk	8,280	2.8	34.2	16.9
Bedfordshire and Luton	7,004	3.1	32.4	19.6
Hertfordshire	18,766	3.7	36.2	19.9
Essex	19,965	3.4	47.1	20.0
London North	9,753	3.0	30.1	15.9
London West	17,053	2.4	34.2	26.1
London Central	37,911	2.5	21.8	15.9
London East	28,217	2.8	22.3	15.8
London South	13,575	2.7	40.7	30.2
Northumberland	2,718	2.9	38.9	18.8
Tyne and Wear	12,746	2.8	30.9	19.2
County Durham	5,492	3.4	46.5	15.2
Tees Valley	4,347	1.7	41.7	28.2

(continued)

Table 4.8: Recruitment problems by local LSC area (continued)

	Number of vacancies	Vacancies as % of employment	HtFVs as % of vacancies	SSVs as % of vacancies
Cumbria	6,178	3.4	43.9	19.8
Lancashire	18,346	3.2	32.9	14.8
Greater Merseyside	14,731	2.6	31.0	17.0
Greater Manchester	33,754	3.0	40.1	22.9
Cheshire and Warrington	11,716	2.8	40.7	14.9
Milton Keynes, Oxfordshire and Buckinghamshire	21,091	3.2	33.2	16.3
Berkshire	17,054	3.7	37.9	16.6
Hampshire, Isle of Wight and Portsmouth	29,010	3.7	47.6	22.4
Surrey	18,029	3.6	46.1	19.3
Sussex	21,100	3.4	44.2	16.8
Kent and Medway	19,137	3.1	46.7	20.5
Devon and Cornwall	23,329	3.9	50.5	22.4
Somerset	6,826	3.6	49.7	16.9
Bournemouth, Dorset and Poole	10,221	3.8	47.7	14.1
West of England	16,101	3.3	37.7	16.3
Wiltshire and Swindon	9,234	3.2	45.6	17.5
Gloucestershire	8,376	3.5	44.8	19.9
North Yorkshire	11,783	3.6	46.8	21.3
West Yorkshire	30,099	3.3	45.3	20.2
South Yorkshire	13,306	2.7	36.2	19.8
Humberside	9,739	2.9	44.6	24.1

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.
Weight: Local 14-sector weight.

4.58 Summarising the evidence from Table 4.8 is very difficult. To overcome this problem, Table 4.9 provides a short commentary for each local LSC area.

Extent of skills gaps

Skills gaps measure the extent to which an organisation's workforce is proficient to meet its performance goals. Skills gaps are more common than recruitment problems. The key skills in which employers viewed their employees lacking proficiency were generic ones.

4.59 The discussion so far has been in relation to external recruitment problems, but there is also a need to consider how well prepared an establishment's existing workforce are to meet organisational performance goals. Skills gaps are defined with respect to whether employers regard their staff as being fully proficient. It is a concept that is open to interpretation from employers. A company, for example, with a commitment to grow and develop new markets may be more demanding of its staff than one that is content with its current position. Indeed, previous evidence drawn from ESS 1999 revealed that it was companies engaged in a process of change and striving to capture higher value-added markets that were most likely to report skills gaps (Bosworth *et al*., 2000). Nevertheless, the measure of skills gaps gives an indication of the extent to which employees possess the skills required by their current employer. At an overall level 22 per cent of employers reported skills gaps within their workforce, with almost 2.4 million employees regarded as not being fully proficient in their current job (or 11 per cent of total employment in England). Information is not available about the extent to which staff lacked full proficiency, but it may be assumed that in most cases the gap between the employee's existing skills and those required to be fully proficient is quite modest. If an employee fell a long way short of the required standard it is difficult to envisage their continued employment in that job.

4.60 Skills gaps are more commonly reported than recruitment problems are. Results from NESS 2003 suggest that there were around 680,000 vacancies in England in total, of which some 270,000 (about 40 per cent) were HtFVs and 135,000 SSVs (about 20 per cent), compared with 2.4 million employees who were not fully proficient at the current job.

Skill characteristics of skills gaps

4.61 Employers who had experienced skills gaps were asked to define what skills they felt needed improving for an occupation where staff were considered not fully proficient (see Figure 4.5) (If an establishment had at least two occupations with skills gaps then the occupation was chosen at random. This was the same occupation that was asked about with regards to causes of skills gaps.) The key areas in which employees were viewed as lacking skills can be classified as generic ones, i.e. communication (61 per cent), customer handling (55 per cent), team working (52 per cent) and problem solving (47 per cent). That said, technical and practical skills were lacking from just over two in five (43 per cent) of the employees with skills gaps that were followed up.

Occupational characteristics of skills gaps

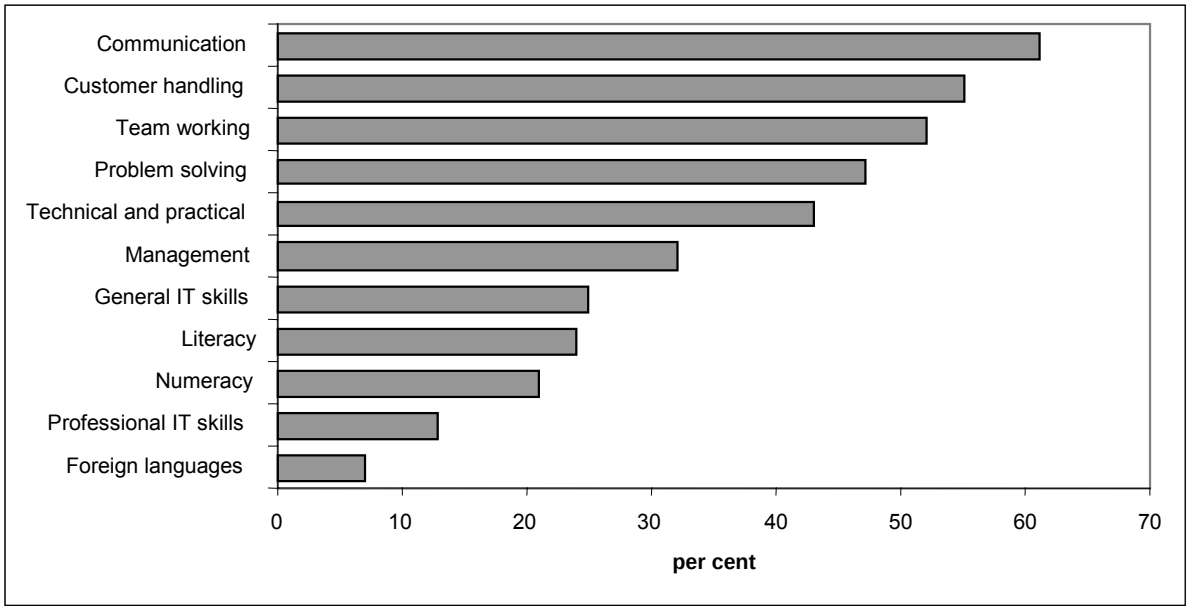
4.62 The occupations in which skills gaps occurred are outlined in Figure 4.6. The distribution of skills gaps by occupation is fairly close to the profile of employment as recorded by employers. Two occupational categories accounted for a larger share of skills gaps than their share of employment would lead one to expect:

- sales and customer service occupations (19 per cent of all skills gaps versus 16 per cent of total employment
- elementary occupations (16 per cent of all skills gaps versus 14 per cent of total employment).

4.63 These two occupations also accounted for the largest absolute number of skills gaps relative to other occupations. What is particularly interesting here is that two occupations that require a relatively modest level of skill are the ones that account for the highest incidence of skills gaps. By comparison, professional occupations stood out as having disproportionately few skills gaps relative to the proportion of people employed in this occupation (10 per cent of all skills gaps versus 14 per cent of all employment). The proportion of skills gaps in all other occupations differs only slightly from the proportion of people employed in each respective occupation.

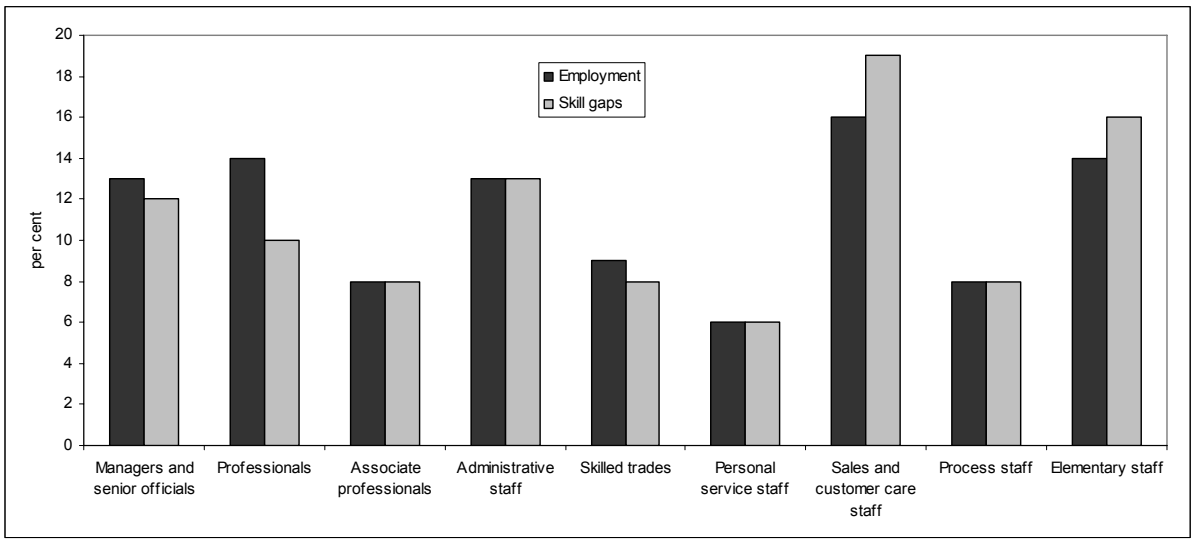
Sales and customer service staff and elementary occupations had a disproportionately large share of skills gaps relative to their share of employment.

Figure 4.5: Skills characteristics of skills gaps



Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted, all skills gaps followed up. Percentages do not sum to 100, since multiple responses were possible.

Figure 4.6: Distribution of skills gaps by occupation

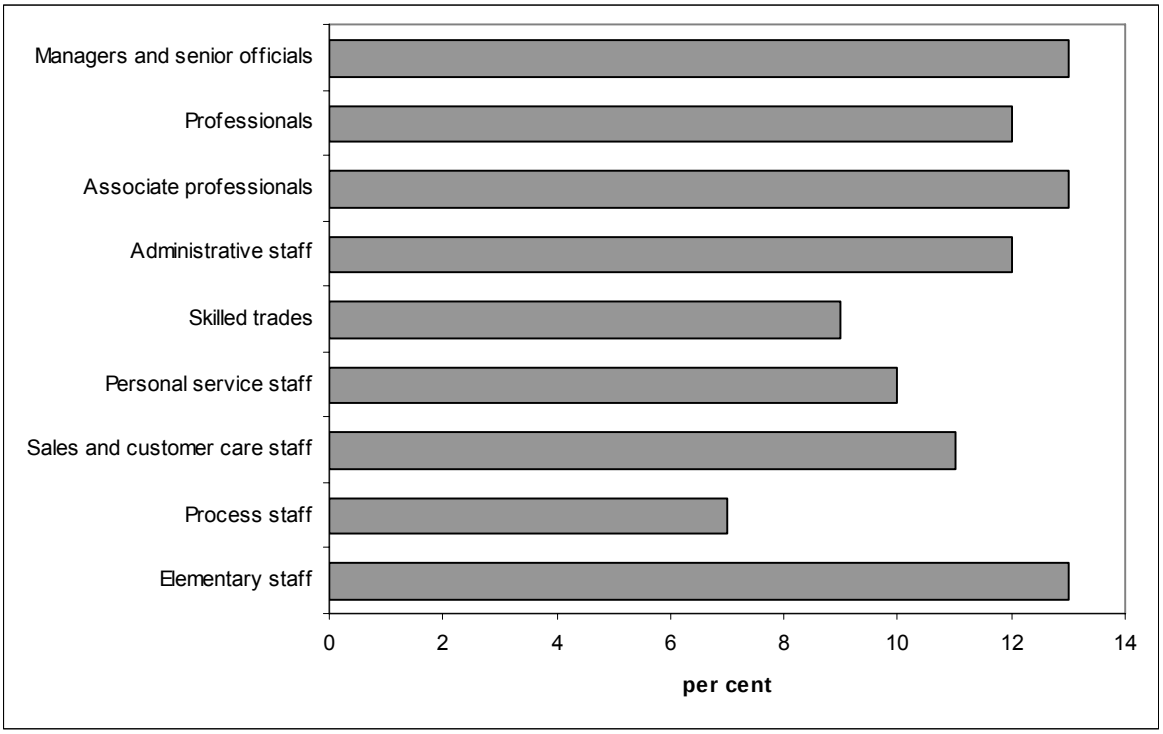


Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

4.64 Figure 4.7 illustrates the number of employees with skills gaps as a percentage of all employees in each occupational category (i.e. a measure of density). Looking at the data in this way confirms elementary occupations as the occupation in which skills gaps are most likely to be found (13 per cent of those employed in this occupation are not fully proficient). Managers, professionals, associate professionals and secretarial or administrative staff also rank highly on this measure on skills gaps.

4.65 It is often assumed that skills gaps are most likely to be found in highly skilled jobs since the range and depth of skills required is extensive. In fact, the research shows that skills gaps are just as likely to be found in elementary semi-skilled positions (this includes occupations such as labourers, porters, kitchen staff, waiters, bar staff, cleaners, domestics, refuse collectors, security guards, shelf fillers and farm workers) as in managerial or professional ones.

Figure 4.7: Skills gaps as a percentage of employment within each occupation (density of occupational skills gaps)



Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

4.66 Case study evidence concerned with latent skills gaps suggests that surveys may well underestimate the number of gaps amongst managerial and professional occupations (Hogarth and Wilson, 2001). Latent skills gaps are those that employers fail to recognise, and represent the difference in skill levels between high- and low-performing organisations that are otherwise comparable. Case study analysis of skills gaps reveals that it is often a lack of strategic vision amongst senior management that inhibits organisational performance. It is sometimes this type of skills gap, or latent skills gap, that surveys fail to capture for understandable reasons.

Skills gaps by size of establishment

Skills gaps are more commonly reported by larger establishments. Identification of skills gaps may be linked to formal human resources (HR) processes that are more commonly found in larger workplaces.

4.67 The likelihood of any skills gap existing increases with size of establishment, as there are more staff among whom skills gaps can be found. Among those with 1 to 4 staff, 14 per cent of establishments reported a skills gap. This increases to 35 per cent of those establishments with 5 to 24 staff, and approaches 3 in 5 among those with 100 plus staff (see Table 4.9).

4.68 In terms of the number of skills gaps expressed as a proportion of employment, a similar pattern exists although the differences are less stark, ranging from 8 per cent of employees lacking proficiency in the smallest establishments to 14 per cent in the largest ones.

4.69 It is apparent that the highest share of skills gaps (by density) was found amongst the largest establishments. It is in these establishments that there are more likely to be formal processes in place to assess whether individuals are fully proficient or possess a formal training plan. They are therefore best placed to assess whether their employees are proficient. But this raises questions about the capacity of smaller organisations to assess more objectively whether staff are fully proficient, with the suspicion that skills gaps, in a formal sense, may be underestimated in the smallest establishments.

Table 4.9: Incidence of skills gaps and size of establishment

	% of establishment with skills gaps	Number of skills gaps	% share of all skills gaps	No of skills gaps as % of employment
Size				
1 to 4	14	199,375	8	8
5 to 24	35	483,363	20	10
25 to 99	48	583,773	24	10
100 to 199	59	268,691	11	11
200 to 499	63	414,977	17	13
500+	62	448,170	19	14
Total	22	2,398,349	100	11

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employer-weighted in column 1, otherwise employee-weighted.

Skills gaps by industrial sector

4.70 The proportion of establishments experiencing at least some skills gaps within their workforce also varied by industrial sector (see Table 4.10). The industries most prone to internal skills deficiencies were manufacturing of food, drink and tobacco (46 per cent of establishments), public administration (35 per cent), education (33 per cent), hotels and catering (31 per cent) and manufacture of machinery (30 per cent). Employers in business service sectors tended to be the least affected by skills gaps: e.g. computing and related services (13 per cent), professional services (17 per cent), miscellaneous services (18 per cent) and other business services (18 per cent). Employers in the construction industry were also relatively unaffected by skills gaps (18 per cent). It is notable that many sectors reporting a relatively low percentage of establishments with skills gaps employ a large proportion of people in higher- and intermediate-level skilled jobs.

Table 4.10: Incidence of skills gaps by industrial sector

	% of establishments with skills gaps	Number of skills gaps	% share of all skill gaps	No of skills gaps as % of employment
Agriculture, etc	24	5,391	0.2	10
Mining & quarrying	21	4,903	0.2	11
Food, drink & tobacco	46	52,827	2.2	14
Textiles & clothing	26	16,708	0.7	9
Wood & paper	30	15,434	0.6	11
Printing & publishing	20	25,904	1.1	8
Chemicals, & non-metallic mineral products	28	67,767	2.8	13
Metals & metal goods	25	42,030	1.8	11
Engineering	30	68,204	2.8	11
Transport equipment	25	43,956	1.8	13
Manufacturing nes & recycling	21	17,348	0.7	10
Electricity, gas & water	25	9,985	0.4	9
Construction	18	86,038	3.6	9
Sale & maintenance of motor vehicles	24	47,959	2.0	10
Wholesale distribution	19	103,330	4.3	10
Retailing	26	310,742	13.0	13
Hotels & catering	31	195,847	8.2	14
Transport	20	93,577	3.9	10
Communications	23	69,309	2.9	15
Financial intermediation	27	115,095	4.8	12
Professional services	17	48,446	2.0	9
Computing & related	13	37,684	1.6	8
Other business services	18	276,996	11.5	11
Public administration & defence	35	127,158	5.3	12
Education	33	138,671	5.8	8
Health & social work	28	265,792	11.1	12
Miscellaneous services	18	111,245	4.6	10
Total	22	2,398,349	100.0	11

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

4.71 Reporting data on skills gaps on an establishment base gives little indication about the number of people who are not fully proficient. Skills gaps as a proportion of employment varied from 8 per cent for the education, printing and publishing, and computing industry sectors, to 15 per cent for the communications sector (see Table 4.10). For most sectors there is a relationship between the incidence of establishments reporting skills gaps and the actual number of skills gaps reported, although this is not always the case. Employers in the education sector, for example, are one of the most likely groups to report skills gaps, yet the sector has the lowest numbers of gaps as a proportion of employment. Skills gaps in the education sector will be concentrated in quite small numbers of staff at each establishment that reports a skills gap.

Local and regional patterns of skills gaps

4.72 The proportion of employers reporting skills gaps within their workforce varied quite considerably by region, ranging from 16 per cent of employers in London to 29 per cent of employers in Yorkshire and the Humber (compared against the national figure of 22 per cent) (see Table 4.11).

4.73 In terms of the total number of skills gaps expressed as a percentage of employment there was less variation. For all except two of the regions, the proportion of skills gaps to employment was between 10 and 11 per cent of employment. Only in the West Midlands and in Yorkshire and the Humber did skills gaps represent a higher proportion of employment, at 15 per cent and 13 per cent respectively.

Table 4.11: Incidence of skills gaps by region

	% of establishments with skills gaps	Number of skills gaps	Column percentages	No. of skills gaps as % of employment
West Midlands	24	348,534	14.5	15
East Midlands	25	184,948	7.7	11
Eastern	21	238,764	10.0	11
London	16	406,312	16.9	10
North East	26	92,481	3.9	10
North West	22	290,050	12.1	10
South East	22	376,562	15.7	10
South West	23	198,034	8.3	10
Yorkshire and the Humber	29	262,663	11.0	13
Total	22	2,398,349	100	11

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.

4.74 Overall there was only modest variation between regions in the density of skills gaps, which given their size and heterogeneity is what might be expected. Data at a local LSC area level provide the opportunity to look at the incidence of skills gaps in areas that are more homogeneous (see Table 4.12).

4.75 Table 4.12 provides information about the density of skills gaps by local LSC area. Skills gaps as a percentage of employment were highest in the Black Country (18.7 per cent of employment) and Birmingham and Solihull (17.5 per cent). The areas with the lowest density of skills gaps were Tyne and Wear (7.9 per cent), West of England (8.2 per cent) and Kent and Medway (8.2 per cent).

4.76 Again it is important not just to look at standardised measures but also to identify where the highest number of skills gaps occurred. The data indicate that it was in London Central (6.8 per cent of all skills gaps) and Greater Manchester (5.1 per cent) where the largest concentrations of skills gaps were found. But these concentrations were more or less in line with their share of total employment.

Table 4.12: Incidence of skills gaps by local LSC area

	% of establishments with skills gaps	Number of skills gaps	No. of skills gaps as % of employment
Shropshire	20.3	24,088	13.4
Staffordshire	23.5	50,027	12.1
The Black Country	23.7	85,916	18.7
Birmingham and Solihull	23.7	101,489	17.5
Herefordshire and Worcestershire	21.6	33,271	11.2
Coventry and Warwickshire	25.6	46,945	12.8
Derbyshire	26.6	45,785	11.7
Nottinghamshire	23.5	46,902	11.0
Lincolnshire and Rutland	21.2	21,583	8.8
Leicestershire	25.2	36,225	9.3
Northamptonshire	27.7	34,421	11.9
Norfolk	21.8	27,094	8.9
Cambridgeshire	24.7	37,193	11.2
Suffolk	24.4	26,410	9.1
Bedfordshire and Luton	22.7	24,183	10.7
Hertfordshire	21.0	53,926	10.7
Essex	18.3	50,152	8.5
London North	17.1	27,130	8.4
London West	16.5	63,606	9.0
London Central	14.4	151,531	10.2
London East	17.8	132,104	13.3
London South	17.5	47,637	9.4
Northumberland	19.7	12,917	13.8
Tyne and Wear	24.5	36,330	7.9
County Durham	27.0	18,030	11.0
Tees Valley	25.9	29,294	11.7
Cumbria	20.2	19,682	10.8

(continued)

Table 4.12: Incidence of skills gaps by local LSC area (continued)

	% of establishments with skills gaps	Number of skills gaps	No. of skills gaps as % of employment
Lancashire	23.9	52,402	9.0
Greater Merseyside	21.8	56,933	10.0
Greater Manchester	23.9	117,998	10.5
Cheshire and Warrington	20.8	36,457	8.8
Milton Keynes, Oxfordshire and Buckinghamshire	20.0	69,644	10.7
Berkshire	20.7	42,966	9.4
Hampshire, Isle of Wight and Portsmouth	22.4	82,316	10.5
Surrey	20.2	59,094	11.7
Sussex	23.5	69,340	11.1
Kent and Medway	22.1	63,652	10.4
Devon and Cornwall	24.0	56,417	9.5
Somerset	23.8	17,550	9.1
Bournemouth, Dorset and Poole	21.8	30,516	11.3
West of England	23.0	39,938	8.2
Wiltshire and Swindon	21.7	26,083	8.9
Gloucestershire	20.0	20,582	8.6
North Yorkshire	27.5	38,614	11.7
West Yorkshire	28.8	133,133	14.4
South Yorkshire	31.5	55,771	11.4
Humberside	24.4	38,447	11.6

Source: IFF/IER *National Employers Skills Survey, 2003* (LSC 2004).
Base: Employee-weighted.
Weight: Local 14-sector weight.

4.77 The local LSC data relating to skills gaps indicates that the highest densities were found in areas that have been dependent upon traditional manufacturing that has been in long-term decline (the Black Country and Birmingham and Solihull). This begs the question about the relationship between the incidence of skills gaps and industries in decline. For instance, are skills gaps more likely to emerge here because well skilled and qualified employees voluntarily quit employment they regard as insecure for more permanent employment elsewhere?

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Chapter 5: Skills in Most Demand

Overview and Summary

5.1 The key skills expected to be most in demand over the coming decade can be divided into three broad categories:

- management skills
- technical skills, in particular IT skills
- communication and customer handling skills.

The changing economic and societal context has resulted in major shifts in the nature and mix of skills being demanded by employers, focusing on these three areas.

Major changes in the economy and society have resulted in shifts in the nature and mix of skills demanded. Improved management skills and competencies – which are not restricted to management occupations – are essential to higher levels of performance. New evidence suggest that the impact of IT, IS and ICTs on enterprise performance will result in increased demands for IT-related skills.

5.2 **Management skills.** In many respects, management skills are the most important of all – unless resources (including all other skills) are managed properly, their value will never be maximised. The present chapter explores what the key management skills are and how they are changing over time. It examines what types of management skills are most in demand and why they are important. It also addresses the question of who needs management skills, recognising that management skills are also required by people who are not designated as managers. The discussion covers the supply of management skills, and concludes with a summary of the evidence about management skill deficiencies.

5.3 **Technical skills.** There has been an enormous growth in the demand for information technology (IT), information systems (IS) and information communication technology (ICT) skills. There is growing evidence that IT-related skills are fundamentally linked to organisational changes that, in turn, make significant contributions to improvements in enterprise performance. The current stock of such skills are considered against this background of an explosion in demand, and evidence of skill deficiencies.

5.4 **Soft skills, including communication and customer handling skills.** So-called 'soft' skills are increasingly being employed across all parts of the economy. There are many reasons why such skills have become so important to modern organisations. Certain key 'soft' skills play a crucial role in management. Social skills and social capital are becoming increasingly important to enterprise performance, including new business start-ups. Key 'soft' skills, such as communication and customer handling skills, are also becoming more important across a wide range of occupations and sectors.

Changes to the economy have given rise to new skill needs, often involving 'soft', transferable skills, especially those concerned with communication and customer handling. Changes in the nature of skill demands raise important policy issues. Skill demands are

5.5 This review of the skills that are most in demand suggests some important policy implications, resulting from the change in focus from the formal, less transferable to the informal and more often transferable skills. Several issues are touched upon, including the extent to which 'soft' skills are innate, the degree to which such skills can be improved through training and who should finance it.

Skill demands are strongly driven by changes in the mix of products demanded, as well as technological and organisational changes. Changing product demands have favoured growth in management, professional and semi-professional employment.

Identification of Skills in Most Demand

Determinants of changing skill needs

5.6 The demands for particular qualifications and skills are driven by the demand for the products that they help to produce, and are reflected in changing occupational demands. Thus, the demand for management occupations (as with other occupations) is strongly influenced by:

- structural changes affecting the industrial pattern of goods and services produced in the economy (driven in part by the changing pattern of demand for goods and services, as well as the geographical location of their production)
- technological and organisational changes, affecting the way in which labour is used to produce and distribute these goods and services, including the growth of subcontracting.

5.7 Trends in occupational employment structure are broadly consistent across most industries, but at any given point in time there are significant differences in the occupational mix across sectors. Thus, changes in the patterns of demand for products and services have profound implications for the demand for different occupations and, insofar as particular sectors are concentrated in particular geographical areas, there are also major spatial implications. The continuing decline in primary and manufacturing industries, for example, has resulted in a significant reduction in the need for many skills associated with production in these industries. The growth of the service sector, on the other hand, has led to an increase in employment in many occupations. The growth of non-marketed, public service employment, for example, has stimulated substantial additional jobs for: professional, managerial and associate professional workers in public administration; doctors and nurses in health services; and teachers in education services.

Changing technology, and job and organisational restructuring have resulted in major shifts in skill demands, particularly favouring IT-related, professional, semi-professional, and management skills. Globalisation has caused major shifts in the location of production and in the strategies of remaining UK companies. New technologies will continue to boost demand for managerial, professional and associate professional occupations.

5.8 These developments have taken place against a background of important changes in the nature of many jobs, including major restructuring of the way that work is organised. These changes have been influenced by new technologies, amongst other factors, which themselves will have influenced the patterns of demand as well as supply in the economy. In recent years, the application of IT, IS and ICT has been particularly important. Such technologies have changed the ways in which existing products and services are sold, opened up many new areas where information services can be provided, and altered the locations from which inputs are sourced. Overall, the effect has been to create many more jobs of a professional, associate professional and managerial nature.

5.9 Job losses, of course, have occurred because of international competition, with more advanced companies taking over markets from those failing to keep up with the latest developments. In addition, the drive for efficiency and lower costs in response to global competition have caused some sectors to experience major migration of production to lower-cost countries, in some cases through the auspices of spatial relocation within a multinational company. The increasing concentration of the world's manufacturing activity in the Asian Pacific and, in particular, in China is perhaps the most obvious example. Other UK companies have adopted alternative strategies that have placed increased emphasis on customer service and product quality, and related changes in production methods and management of human resources. Even so, such companies have not always survived the pressures of globalisation and have needed to restructure in a variety of ways – in a number of cases moving to higher quality, but more niche markets.

5.10 Basically the same forces are expected to operate over the next decade as in the recent past, resulting in changes to the industrial structure of employment that favour the service sector and increase demand for white-collar, non-manual occupations. Continued contraction of manufacturing and primary industries will cause further job losses amongst many manual blue-collar occupations. The management and operation of new technologies, however, will require greater shares in employment for managerial, professional and associate professional occupations, including technicians of various kinds.

Competencies comprise a collection of skills and abilities that allow the individual to successfully fulfil their role in the organisation. There is currently no definition or agreed taxonomy of 'soft' skills. Competencies comprise a rich mix of skills.

Competencies, 'hard' and 'soft' skills

5.11 To set the scene for the remainder of the discussion, it is useful to outline what is meant by competencies, and how these involve both 'hard' and 'soft' skills. Competencies comprise the set of skills that enable individuals to successfully and effectively fulfill their roles throughout the organisation.

5.12 At this point in time, there are no hard-and-fast rules for distinguishing between 'hard' and 'soft' skills. One possible distinction is between cognitive and non-cognitive skills. Some researchers perceive 'soft' skills as 'people' skills, for example, as distinct from 'business' and 'professional/technical skills'. Note, however, that competence in, say, communicating with other employees may involve both 'hard' skills (i.e. intimate technical knowledge of what is to be communicated) and 'soft' skills (i.e. the ability to disseminate the information in a meaningful way).

5.13 Examples of 'soft' skills include:

- communication
- team working
- negotiation
- persuasion
- facilitation
- interpersonal
- leadership.

Table 5.1 tries to emphasise some of the 'softer' elements of key competencies, but even here competence may require some complementary 'hard' skills. Thus, competencies include a mix of skill, experience and personal attributes that enable someone to successfully fulfil a particular set of roles.

5.14 For each of these competencies it is possible to define the nature and level of 'soft' skills required – depending on the occupation, function and tasks of the individual. Table 5.2, for example, sets out the communication skills often requested in job advertisements. Whether the skills needed are verbal, written or presentational again depends upon the precise role of the individual. Where customer empathy is important, then listening skills come to the fore; where persuasiveness is crucial then verbal and/or writing skills are likely to be central.

Table 5.1: Examples of key competencies: definitions

1	Willingness to learn	Able to grasp new ways of approaching and resolving issues and problems and sees opportunities.
2	Customer/client empathy	Has a sound understanding of internal or external customers' needs and takes full account of this perspective when performing roles and tasks.
3	Self initiation	Able to identify issues, problems and opportunities, and takes or initiates appropriate actions unprompted.
4	Collaborative	Works in harmony with colleagues and external parties, and readily contributes and learns from others. Creates a climate of sharing and trust.
5	Intellectual linking	Able to identify patterns, linkages, concepts and options from diverse sources of information and knowledge.
6	Receptiveness	Recognises own strengths and limitations, works on the assumption that there can always be a better way and better solutions, and able to discard and replace own long-held views in the light of new evidence and information.
7	Solution focused	Is able to identify and resolve problems and seeks to use the experience gained to improve performance of self and others.
8	Information literacy	Able to understand, evaluate and analyse information and knowledge from a variety of sources and in a variety of formats and manipulate the information to gain and impart insights to others.
9	Technology aware	Understands the range of information and communications technology available, its role in information and knowledge management, and appreciates its actual or potential value to the business.
10	Persuasive	Able to win support from people of all levels of seniority through a variety of techniques.
11	Resourceful	Able to meet targets and achieve outcomes within the constraints imposed by the organisational environment or limit on resources.
12	Ability to see the big picture	Understands the broad context of the organisation and the fit between knowledge management (KM) and information management (IM) strategies and projects, other critical success factors and business value.

Source: TFPL (1999).

Table 5.2: Key competencies – communication skills

1	Willingness to learn	Listening, questioning, debating.
2	Customer/client empathy	Listening, ability to communicate verbally and in writing in appropriate manner.
3	Self initiation	Ability to communicate ideas and actions verbally and in writing.
4	Collaborative	Listening, debating, ability to communicate verbally and in writing in appropriate manner, willingness to communicate regularly and openly.
5	Intellectual linking	Listening, questioning, debating, ability to communicate verbally and in writing in appropriate manner.
6	Receptiveness	Listening, questioning, debating.
7	Solution focused	Listening, debating, ability to present options clearly in an appropriate manner.
8	Information literacy	Listening, ability to communicate verbally and in writing in appropriate manner.
9	Technology aware	Listening and questioning.
10	Persuasive	Listening, ability to communicate verbally and in writing in appropriate manner.
11	Resourceful	Listening, ability to communicate verbally and in writing in appropriate manner, ability to present arguments and options clearly and appropriately.
12	Ability to see the big picture	Listening, questioning, debating.

Source: TFPL (1999).

5.15 The changing nature of management from 'confrontational' to 'participational' has given rise to a need for quite different management skills, often referred to as 'social skills'. In addition, the change from 'mechanistic' to more 'strategic' management gives rise to other needs, including entrepreneurship and leadership. More broadly, the growth of services and decline of manufacturing has resulted in an increased need for interpersonal skills, including customer-handling skills. Such changes have been accentuated by the changing mechanisms for the delivery of services, for example, by telephone and the Internet, where different forms of communication skills may be required. In addition to a new emphasis on 'softer' skills, the greater pace of change, with more frequent changes in employment, multiple job holding, etc., has placed more value on skills 'agility' and 'transferability'.

The nature of many jobs has changed significantly in recent years – today managers and other employees need higher social skills, including communication and customer-handling skills. Greater flexibility both within and in moving between jobs, requires a move to life-long learning. Whilst 'soft', generally transferable skills have come to the fore, 'hard', formal skills are still important.

5.16 Firm- or even sector-specific skills were of greater value to individuals when they were guaranteed a 'job for life'. When faced by an uncertain future, however, an individual may develop quite different priorities in terms of the skills they develop. In addition, it becomes important to undertake life-long learning, rather than just prior to entry to a particular job. Employers are also likely to value this greater degree of flexibility amongst existing workers. However, the new emphasis on 'soft' and generally transferable skills raises major new questions about the extent, nature and funding of education and training that enhance such skills.

5.17 In emphasizing 'soft' skills, it is important not to lose sight of the fact that many jobs still require 'hard' skills. Key occupations and sectors still need high levels of formal qualifications, for example, amongst professional, semi-professional and craft occupations. It is also important to recognise that, while the mix of 'soft' and 'hard' skills required will differ across occupations and functions, each individual needs to be capable of both, if to differing degrees. A clear example is the case of management skills. Such issues have been highlighted in employer dissatisfaction with certain 'qualities' amongst potential graduate recruits, including their lack of practical work experience and commercial understanding.

Management Skills

Central role of management

Managers take key decisions with both short- and long-term implications for performance. International differences in management style are manifest. Management capacity constrains the ability to innovate and grow. In 2002, there were about 4.3 million managers and senior officials, the majority of whom were corporate managers.

5.18 The emphasis on the role played by management in determining enterprise performance has waxed and waned. It is not that economists and others did not realise the centrality of management, but other apparently more important issues of the day took precedence. Writing in the 1960s, Farmer and Richman (1964, p.57) argued that:

> 'A country can have endless resources of all sorts but unless management is applied to these factors, the productivity of the system will be close to zero. Moreover, the better the management, the greater the output will be. Management effectiveness is the critical factor in the economic system.'

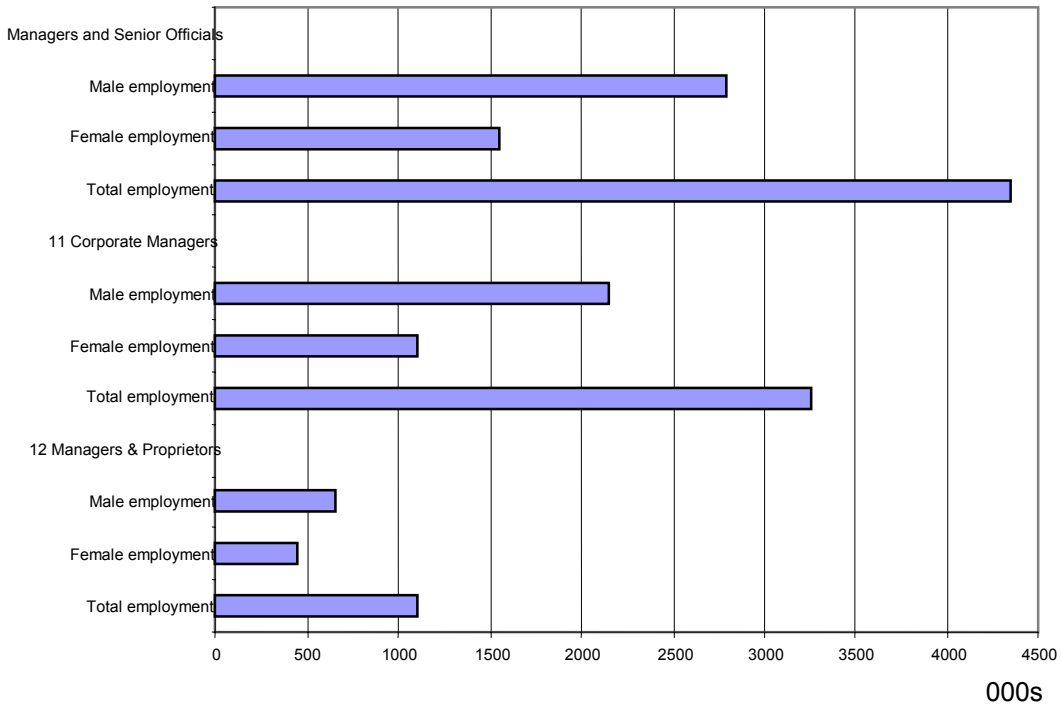
5.19 The revitalised interest in the role of management in recent years was stimulated in part by the realisation of international differences in management characteristics and styles, as well as differences in management processes. In the late 1970s and early 1980s, for example, the confrontational approach of management in the UK was contrasted with the more participative nature of management in Germany and the more worker-oriented approach adopted in Sweden.

5.20 The resource-based theories of the firm began to argue that the attributes of managers define the 'capacity' of particular individuals and the management team to take effective decisions that improve the likelihood of success of the enterprise. 'Capacity', in this sense, is not just a 'volume' measure, but also reflects the 'quality' of the managers and the management team. The number of managers, however, is easier to pin down than their quality.

Growth in managers

5.21 Figure 5.1 shows the numbers of managers in 2002, broken down by sub-major group (i.e. corporate managers, SOC 11, and managers and proprietors, SOC 12) and by gender. There were just over 4.3 million individuals designated as managers and senior officials in 2002, of which 74.5 per cent were corporate managers and 25.5 per cent were managers and proprietors. While women comprised about 35.5 per cent of all managers, the proportion was lower amongst corporate managers (34 per cent) and higher amongst managers and proprietors (40.5 per cent).

Figure 5.1: Numbers of managers by sub-major group and gender, 2002

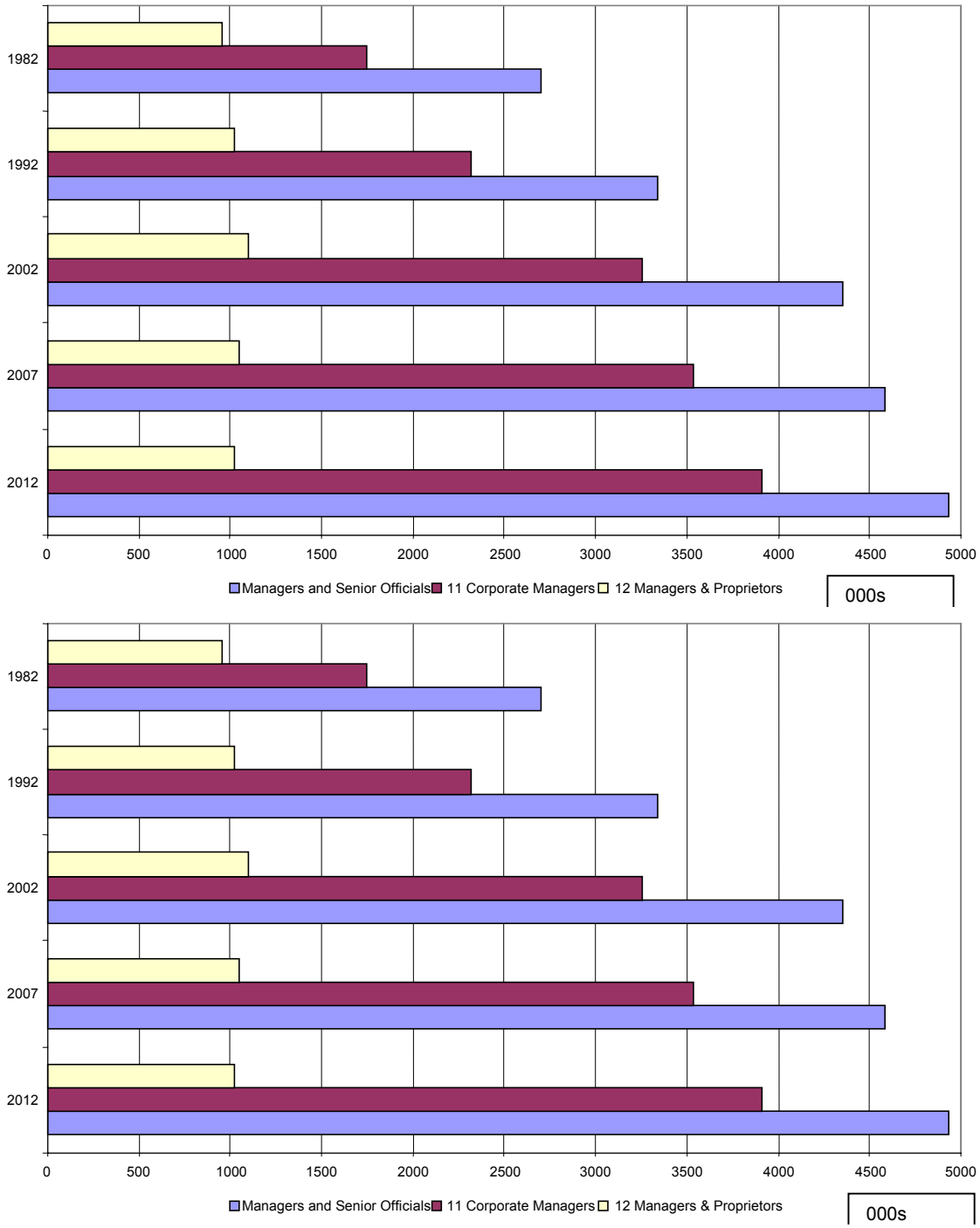


Source: CE and IER estimates, based on *Working Futures*, Wilson et al. (2004).

5.22 The recent strong growth in management occupations as a whole seems set to continue, with an overall predicted rise of about 13 per cent between 2002 and 2012, amounting to a net increase of almost 600,000 over the 10-year period as a whole (see Figure 5.2). But the growth expectations of the two sub-major groups are very different. The corporate managers group is anticipated to grow by over 20 per cent (662,000) and the managers and proprietors group is expected to decline by 7 per cent (77,000) over the period 2002 to 2012. The rates of growth are much faster for women than for men in both groups, at around 40 per cent, compared with 10 per cent amongst corporate managers and no change compared with a 12 per cent decline amongst managers and proprietors. Over all managers, employment amongst women is projected to grow by almost 30 per cent compared with 5 per cent for men.

Employment in management occupations is predicted to rise by about 13 per cent from 2002 to 2012, although the managers and proprietors group is forecast to decline. Net increases in managers hide the true scale of change and training required, caused by the turnover of managers.

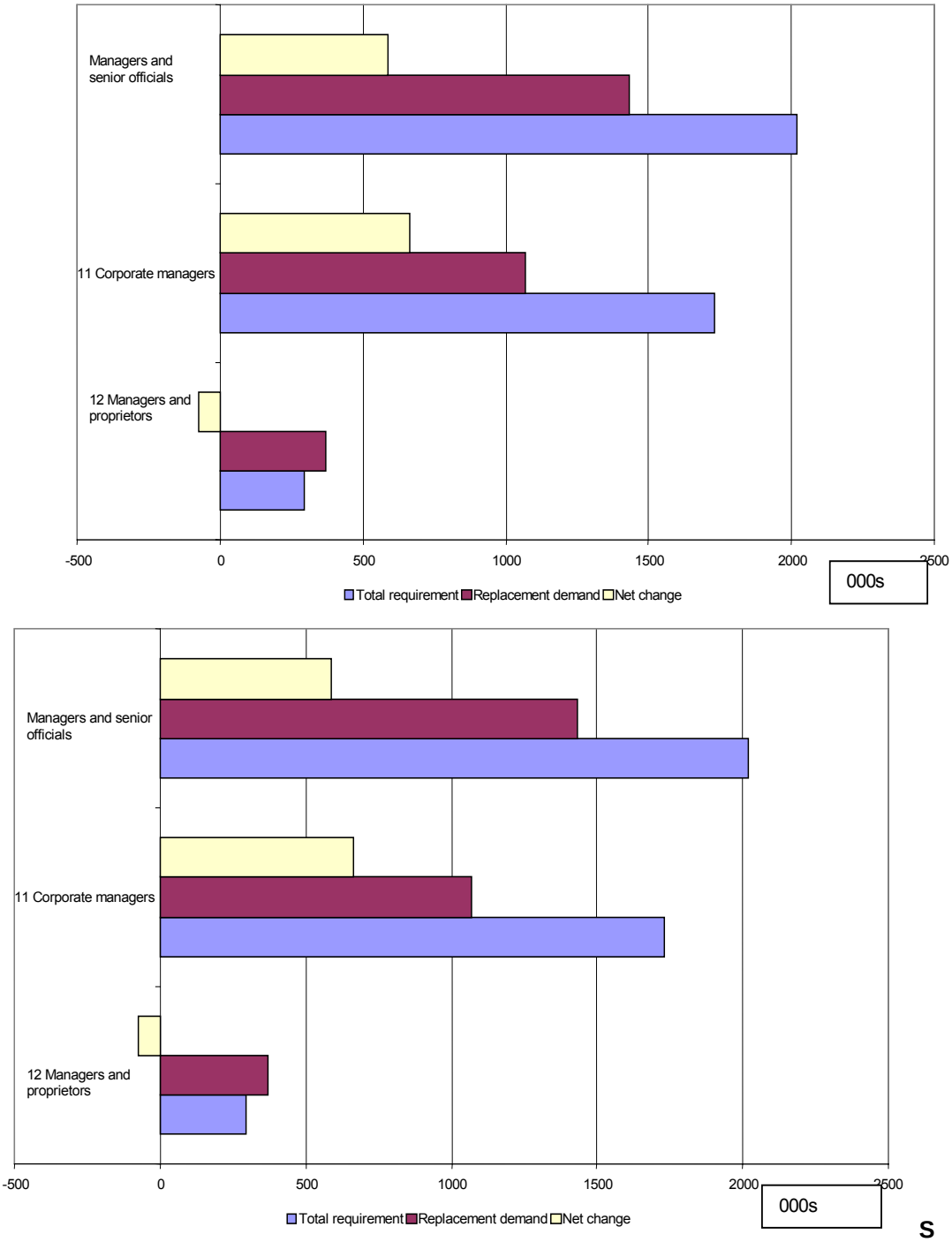
Figure 5.2: Growth in employment of managers by sub-major group



Source: CE and IER estimates, based on *Working Futures*, Wilson *et al.* (2004).

5.23 What these earlier figures fail to reveal, however, is the potential extent of the effects of replacing individuals that leave management occupations. This is illustrated in Figure 5.3, where the net growth in the number of managers is shown by the first row for each of the management categories (i.e. the major and two sub-major groups). The replacement demands form about 33 per cent of the 2002 stock in all cases, which compares with the much smaller net changes (i.e. just 1.3 per cent of 2002 stock for all managers, 1.7 per cent for corporate managers and -0.4 per cent for managers and proprietors).

Figure 5.3: Forecast net, replacement and total demands for managers, 2002–2012



Source: CE and IER estimates, based on *Working Futures*, Wilson *et al.* (2004).

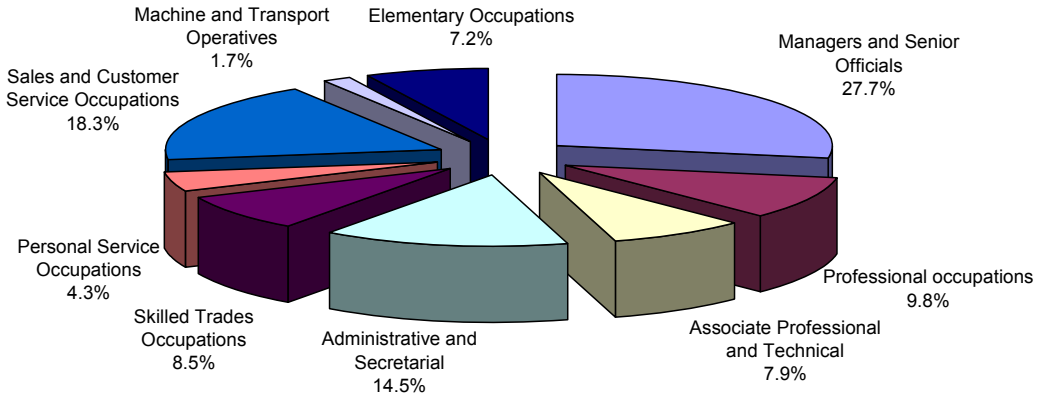
5.24 The resulting estimates of the total requirements are particularly important in the context of the possible training needs of managers. For example, if a certain proportion of new managers requires training in order to fulfil their new roles satisfactorily, then the projected net growth gives a considerable underestimate of the size of the training commitment. If 20 per cent of managers need training, then the net figures suggest that around 110,000 need this training to fulfil their tasks, while the total requirement indicates that the figure is more like 400,000.

Actual training needs for managers are likely to be about four times that suggested by the net growth in managers. The scale of the management skills problem is further enhanced by the need for management skills amongst non-management occupations.

Management skills in other occupations

5.25 It is important to realise that management skills are not solely the domain of those in management occupations. It is clear that everyone is involved in management activities of some kind and, thereby, exercises management skills. NESS 2003 provides some indication of the scale of this amongst management and other occupations. Figure 5.4 shows the distribution of establishments where management skills need improving, broken down by the occupation in which those management skills are required. It can be seen that, while managers form the largest single occupational category where such skill improvements are required (28 per cent), the majority of establishments report management skill problems amongst other occupational groups.

Figure 5.4: Occupations in which management skills need improving



Source: IER estimates, based on NESS 2003.
Note: Proportion of establishments reporting occupations in which management skills need improving.

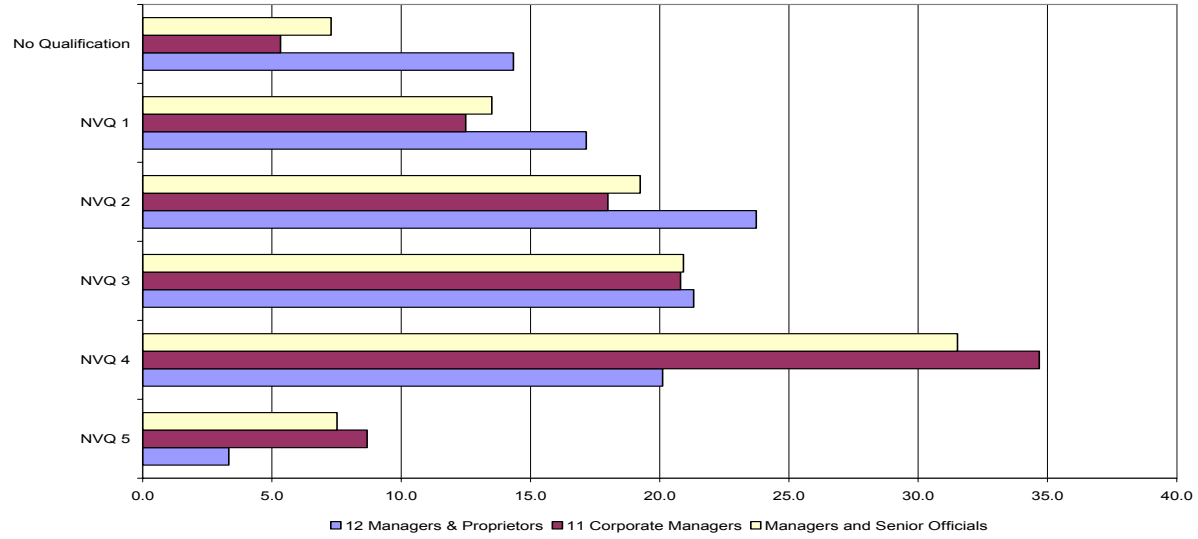
Formal qualifications of managers in management occupations

The majority of managers have qualifications at NVQ Level 3 or lower. Corporate managers tend to be more highly qualified than managers and proprietors.

5.26 While qualifications are a highly imperfect proxy for management quality, they do form a fairly readily available measure. In addition, there is evidence of a direct link between qualifications and enterprise performance. These qualifications are likely to be linked to the ability to innovate successfully, as well as to introduce and utilise high performance work practices.

5.27 Figure 5.5 demonstrates the distribution of qualifications, which differ significantly between the two sub-major groups, with corporate managers exhibiting a greater probability of being more highly qualified. What is perhaps disturbing, however, is the fact that 61 per cent of all managers have qualifications of NVQ Level 3 or lower. While this proportion is lower amongst corporate managers (56.5 per cent) it is much higher amongst managers and proprietors (76.5 per cent).

Figure 5.5: Qualifications of managers, 2003



Source: IER estimates based on Labour Force Survey.
Note: Based on % share of total employment.

Key 'soft' skills: leadership and entrepreneurship

5.28 While there is evidence that certain management qualities, such as entrepreneurship and leadership, are likely to be paramount in less routine decision-making situations, to date little or no quantitative evidence exists about this, though there are some indications of how important entrepreneurship is likely to be given the huge turnover of small and medium-sized enterprises (SMEs) each year. Entrepreneurship is particularly linked to new start-ups, although it is often recognised that entrepreneurial activity is likely to be important in large enterprises – this is sometimes referred to as 'intrepreneurship'.

Entrepreneurship and leadership skills are important – the need for entrepreneurship is particularly linked to the major turnover of SMEs each year. Invention and entrepreneurship lie at the heart of national advantage. What measures there are suggest that the UK is not as conducive to entrepreneurship as many of its main competitor nations.

5.29 Wennekers, *et al*. (1997, p.39) argue that:

'culture and the legal or institutional framework together make up the entrepreneurial climate. This entrepreneurial climate should not be viewed in an isolated manner. Open-mindedness for instance can be conducive for both entrepreneurship and a more general cultural vitality, which often go hand in hand. The same complementarity holds for innovation and invention.'

This view is consistent with Porter, who pulls most of the above together in a theory of national advantage (Porter, 1990, p.125), arguing that:

'Invention and entrepreneurship are at the heart of national advantage.'

5.30 There are some measures about cultural attitudes to entrepreneurship, such as the Global Entrepreneurship Monitor (GEM), which ask questions such as 'would you approve if your child started a business?' Using these measures it is possible to rank the UK's attitudes *vis-à-vis* those in other countries. The GEM 'entrepreneurship index' suggests the existence of more favourable attitudes to entrepreneurship in the US than in continental Europe, with attitudes in the latter more favourable than in the UK. The Department for Trade and Industry (DTI) (2000, p.50) conclude that:

'...it does not appear that the UK has achieved "best practice" in terms of attitudes to entrepreneurship in society...The importance of cultural attitudes is supported by evidence suggesting the most favourable cultural climate can be found in the US, a country which also scores highly on the other indicators of entrepreneurship'.

Key skills, such as management, require the development – and, more particularly, the adoption – of standards and best practice. IT competencies have become crucial to organisational performance. Today IT-related technologies impinge on the majority of jobs, and the extent of IT use is still growing. The scale of IT skills deficiencies in the UK is extremely large

5.31 What evidence there is about the quality of UK managers at present is not reassuring nor, in the main, are the characteristics of management training (Mabey and Ramiraz, 2004). In *Raising our Game* the Council for Excellence in Management and Leadership said:

'our considered view is that we are facing a pervasive problem with inadequacies on both the demand and the supply side which is impeding our ability to be more efficient, more responsive to stakeholder demands and more productive as a nation.'

Initiatives are required to improve formal qualifications, social skills, and management practices. It seems essential to introduce some comprehensive system of education and training of managers, perhaps linked to best-practice management systems and high performance work practices, such as ISO 9000 and 14000.

Technical and information tecnology skills

Importance of information technology skills and extent of information technology skill deficiencies

5.32 There are certain skills that every employee should possess. These include 'hard' skills (i.e. mathematics and writing), 'soft' skills (i.e. the ability to work in groups) and skills necessary to use computer equipment (i.e. IT, IS and ICT skills). Amongst these, computer skills have become increasingly important.

5.33 e-skills UK, the Sector Skills Council for IT, Telecoms and Contact Centres report:

- in 2001 72 per cent of all jobs involved computers, equivalent to 17 million workers in England alone, compared with just 53 per cent in 1992
- more than 90 per cent of new jobs require IT skills
- 48 per cent of adults consider computer skills to be essential to their work, which equates to 11.4 million adults of economically active adults aged 18 and over in England.

5.34 The evidence also points to the need to increase IT-related skills across employees. ICT training is crucial because most employees within organisations do not have the level of competence to make full and effective use of the technology that is already on their desktops.

5.35 The size of the task, however, is daunting. e-skills UK reports that:

- fewer than 1 in 10 of all adults (aged 16 to 65) have Level 2 or above practical IT skills. This means that 29 million people in England alone are below Level 2 – the level that employers are now requiring as a minimum from their IT-using workforce
- 3.1 million people who use computers at work recognise that additional computing skills would make their job performance much better
- 53 per cent of employers identified basic computing skills as a future skills need over the next 2 to 3 years, whilst 47 per cent identified advanced IT skills
- 75 per cent of British companies claim that employee time is still being wasted due to inadequate computing skills
- DfES figures for IT user skills indicate that 53 per cent of 16 to 65 year olds have below Level 1 practical ICT skills, equivalent to 17 million people in England.

Fewer than 1 in 10 people in England have the minimum standard of practical IT skills now demanded by employers. Evidence of a link between computing skills and earnings is mixed. Computing skills bring benefits specific to the employing organisation – evidence exists that investment in IT, IS and ICT improve organisational performance.

Links between information technology skills, wages and organisational performance

5.36 The empirical results of early studies suggested that computer users earned significantly higher wages than non-users. Subsequent messages from the empirical results have been less clear cut and the conclusions more complicated. In particular, a number of authors argued that other specific skills are required to raise productivity using a computer. These skills were not always observable, but were responsible for the computer wage premium. Yet other studies, which have controlled for a wider range of influences, have been unable to locate a differential associated with computer skills (note this does not imply there is no premium attached for formal computer qualifications).

5.37 This rather negative result should not be interpreted as an indication that computer skills are unimportant. There is clear evidence in the literature of a link between computer adoption, productivity growth and other measures of enterprise performance. A number of statistical studies, using large-scale, company-level data, have used either market valuation or productivity as measures of performance. Such studies control for many other influences on performance, including research and development activity. They commonly report that the market places a very large and highly significant value on each dollar of installed computer capital.

5.38 Thus, the equivocal evidence of a link with wage differentials may simply mean that the enterprise captures most of the benefits from computer skills, rather than the individual. This might be because the IT skills developed are more enterprise-specific (i.e. the skills are less transferable in nature than writing or mathematics skills). A more fundamental force is probably at work. The explanations for the size of the effects of IS or IT on enterprise performance lie, in part, in the unmeasured effects of software, but, more importantly, in the organisational changes that IT systems bring.

5.39 There is evidence that IS or IT systems are central to organisational change, suggesting that organisations require professionals with a combination of IS or IT knowledge, management skills, leadership experience and high motivation. Thus, at this higher skill level, business qualifications and skills become essential to ensuring that the IS or IT system fulfils this core role.

Computing skills have their principal effect through investment in IS or IT and the associated reorganisation of the information systems and management processes and procedures. Organisations require a combination of IT-related skills alongside other key competencies. There is urgent and large-scale need for IT-related skills training. Initial training in IT-related skills is highly beneficial to employees, but a combination of initial and ongoing training not only increases performance, but improves employee attitudes to further training.

Training of information technology-related skills

5.40 Given the extent of the use of computers and the low levels of skills of employees, it is hardly surprising therefore that:

‘the most widely perceived trend today is the increased need for computer skills training. As information technology becomes an integral part of more jobs, more employees need the skills to use information technology effectively’ (American Society for Training and Development (ASTD), 1998).

5.41 A detailed study of a US corporation by Danziger and Wang (2000) provides some insights about the effects and effectiveness of ICT training within the company. In practice, the company places greater emphasis on initial than ongoing training. The findings suggest that, while initial training is vital in building users’ skills with key systems, it is the ongoing training that appears to have the most significant benefits for users. This ongoing training helps to bolster employee confidence in their system skills and raises their willingness to share system knowledge. In addition, those employees who receive ‘complete training’ (i.e. both initial and ongoing) are more positive about further training than those who receive just one of these two – the least positive are those that receive no training. Such training seems crucially important in IT-related technologies, where both hardware and software continue to change rapidly.

'Softer', Generally Transferable Skills

'Softer', often transferable skills, have become increasingly important in the modern, customer-oriented society. Social competences appear of crucial importance in entrepreneurial activities, but are likely to be important in most occupations and functions. Social competencies and social capital play significant roles in determining enterprise performance. Social competencies particularly impact on the success of face-to-face interactions both within and outside of the organisation.

5.42 While not losing sight of the role of task-specific, occupational or industry skills, the skills literature has increasingly focused on 'softer' skills which, in general, are also more transferable across different employment contexts. Sometimes these skills are discussed in a particular situation, for example, social skills have often been discussed with regard to entrepreneurs, although there are many examples of other areas where they are important, such as interactive services. In the main, however, such discussions carry across beyond management to most other occupations and activities.

Social skills

5.43 One extremely important piece of the jigsaw is emerging with respect to managers, although, again, it appears likely to be just as important for other occupations and functional areas. Key characteristics of entrepreneurs are thought to influence their actions, behaviour and, thereby, the performance of the company or organisation. Such research addresses the question, 'Why are some entrepreneurs but not others successful in converting opportunities, business concepts, or perceived opportunities into profitable companies?' (Baron and Brush, 1999).

5.44 The results are of considerable importance, suggesting that social competencies and social capital (see below) play significant roles in determining enterprise performance. Baron and Brush (1999 p1) argue that:

'...one aspect of entrepreneurs' behaviour that may well influence their success is their *social competence* – the extent to which they possess and employ discrete *social skills* that enhance their ability to interact effectively with others (e.g. venture capitalists, potential partners, employees, customers).'

5.45 This work goes on to highlight five dimensions of evidence linking social skills and competencies to performance (*op cit*.):

- An extensive body of research suggests that social skills strongly influence the outcomes in a range of settings, including business. Proficiency in impression management, social perception and persuasiveness have been shown to influence the outcomes of job interviews, yearly performance reviews, negotiations, etc.
- The literature on multi-entrepreneur start-ups suggests that the existence of a 'team' results in more internal checks and a greater range of ideas and abilities. In addition, teamwork requires a high degree of social competence to facilitate face-to-face interaction within the team that also helps the development of the business.
- A high social proficiency enables entrepreneurs to successfully interact with individuals and organisations outside of the company, including partner networks and strategic alliances. Thus, it helps in raising finance, recruiting employees, negotiating with buyers and suppliers, etc.
- Higher levels of social competence lead to greater articulation, better communication and greater personal contact throughout the company – helping to build the internal organisation and culture of the company.
- Social proficiency is a crucial influence on the extent to which entrepreneurs impress and, thereby, their success in start-up activities with venture capitalists – an extensive body of research suggests that the social skills of the entrepreneur positively influence the performance of the business.

Social competencies comprise skills such as social perception, impression management, expression management, persuasiveness and social adaptability. Evidence is only just emerging about which social competencies can be effectively trained. A recent study considered the effectiveness with which four main skill sets – structuring, motivating, assessing and/or rewarding and leading – could be trained.

5.46 There is also evidence that suggests a range of social skills are important determinants of success in various business settings:

- *social perception* – reflects the accuracy with which traits, intentions, motives, etc. are perceived
- *impression management* – refers to a variety of techniques that an individual can use to induce a positive reaction amongst others
- *expressiveness* – relates to the ability to express emotions and feelings and, in doing so, generate enthusiasm amongst other people
- *persuasiveness* – indicates the ability to change other peoples' views or behaviour
- *social adaptability* – refers to the ability to feel comfortable in or to quickly adapt to a wide range of social situations.

5.47 Whether individuals can be trained in these 'soft skills' is the subject of ongoing research. A recent study by Hunt and Baruch (2003) has considered the impact of training in interpersonal skills on top managers at a leading business school. The evaluation of the training was based on the feedback of five subordinates for each of the 252 executives from 48 organisations.

5.48 Surveys were conducted before and six months after the training programme took place. Respondents were asked to record their level of satisfaction with their managers' interpersonal skills. There were 29 questions that reflected four main skill sets:

- *structuring* – envisioning, target setting, prioritising
- *motivating* – enthusing individuals, team building, innovating
- *assessing and/or rewarding* – giving positive and negative feedback, coaching, encouraging development
- *leading* – giving direction, sensitizing, focusing, information searching, scanning, differentiating.

5.49 The results indicate a significant impact of the training on some, although by no means all, of the competencies and skills. Two skills which were particularly difficult to change related to decision making and giving one-to-one feedback.

Some social skills appear to be more easily imparted than others...But these are early days – new understanding and more effective training methods will emerge. Social competencies form the building blocks from which individuals and the organisation build social capital.

5.50 It might be concluded that these are inherently innate (and perhaps untrainable) abilities. Such a conclusion would be premature, at least until more extensive research has been carried out using consistent and comparable methodologies. While it seems likely that certain skills will be more amenable to training than others, it is also likely that new pedagogical methods will emerge to make such training more effective.

Social capital

Social capital denotes all of the social structures and networks by which an individual can lever resources in pursuit of success. Social capital can also be thought of at the organisational level – which may be greater than or less than the sum of the individual social capital of the employees of the organisation.

5.51 A second major and related concept to social competencies has emerged – that of social capital – which has been widely explored in recent years. Social capital has been argued to be non-economic knowledge that has a direct impact on economic behaviour. It emerges from individual social structures and results in social norms and networks – which tend to reinforce economic behaviour. It includes all forms of relationships, such as family, race, ethnic and political.

5.52 Social capital is argued to be the sum of resources potentially available to individuals from their relationships with others. In essence, higher social capital results in improved access to other resources, such as information, financial capital, venture capital funding and lower prices for assets and equipment. Higher social capital can also increase the degree of access, cooperation and trust amongst individuals and organisations that the entrepreneur deals with, including customers and suppliers. All of these factors help to create a network that not only improves the profitability of the enterprise, but also the compensation of managers and chief executive officers.

5.53 While social capital has developed as an individual effect – what any individual can bring to bear through networks and relationships – it can also be thought of as operating at the organisational level. The social capital of the organisation will be different from the simple sum of the individual social capital of employees. There will be conflicts and synergies that either make the organisational social capital less than or greater than the sum of the component parts. For example, where individual employees' relationships overlap and they send out consistent positive messages about the company, synergies may develop that make the overall organisational social capital greater than the simple sum of the individual parts.

Customer handling and other 'soft' skills

5.54 The role of various 'soft' skills has been highlighted in many surveys of employers, including the Skills Surveys discussed in more detail in Chapter 2. Of these, customer-handling skills stand out as particularly important, as illustrated in the Employers Skill Survey, 2002, Skills for Scotland, 2002: the Employers' View and Future Skills Wales, 2002. Such skills have been brought to the fore by the shift to a service-based economy and the growing market and customer orientation of organisations. There is, however, a lack of precise understanding amongst employers with regard to the meaning of the various skills and, as a consequence, there is a tendency to use terms such as 'communication skills' and 'customer handling skills' as if they are identical and the associated terms interchangeable.

Increased emphasis on the market and greater consumer orientation of organisations have brought greater recognition of the importance of communication and customer handling skills. Evidence indicates the existence of skill deficiencies with respect to customer handling skills. Similar evidence can be found in reports for Scotland and Wales – so the problem is UK-wide. A picture is beginning to emerge in the management and marketing literatures about what comprises high quality customer handling skills.

5.55 The Department for Education and Skills, Employers Skill Survey, 2002, for example, reports that:

- approximately 25 per cent of employers with skill shortage vacancies indicated that generic skills – particularly communications, customer handling and team working – were in short supply
- even where employers cited shortages of technical or practical skills, they often wanted these in combination with generic skills such as customer handling
- communications, customer handling, team working and problem solving were the main areas of skill deficiency amongst existing staff (and there has been an important growth in the demand for customer handling skills)
- the demand for communication, customer handling, team working and management skills were expected to increase in the future.

5.56 Likewise, the publication of Skills for Scotland, 2002 by Future Skills Scotland concludes that:

- the skills that job applicants most frequently lack are the 'soft' skills such as customer handling, oral communication, team working and problem solving
- skills gaps among existing employees are also generally linked to 'soft' skills, for example, customer service is seen as the highest skills gap, at 56 per cent, followed by planning and organising and team working skills – just 1 per cent of employers with a skill gap reported technical or practical skill deficiencies associated with doing the job proficiently.

5.57 Future Skills Wales, 2002 reports that:

- 'soft' skills such as communication and understanding customer needs were ranked most highly by Welsh employers
- similarly, business-focused skills such as understanding customer needs and product knowledge were considered much more important for the future than job-specific skills and formal qualifications.

5.58 There is an emerging literature on the nature of and the mechanisms that can be used to develop customer handling skills. For example, a recent study of 460 service providers by Russ-Eft (from 32 different organisations in North America and 26 in Asia and Europe) argues that five major factors are crucial to customer handling:

- understanding the 'big picture', in other words, knowing how customer service fits into the overall activities of the organisation
- establishing an authentic human connection with each customer
- ensuring that the service provided is timely, accurate and thorough
- valuing and responding to the unique needs of each customer
- repairing and strengthening relationships with customers that are upset or angry.

Changes in 'soft' skills

5.59 It is difficult to obtain hard evidence on how 'softer' skill levels are changing in the UK. One piece of evidence comes from a survey by the Chartered Institute of Management. These relate to the proportion of managers that report the listed generic skills amongst graduate recruits to be 'good' or 'poor'. It can be seen from Table 5.3 that, while computer and IT skills are rated highly, other skills are regarded in a much poorer light. It is perhaps asking too much of the data, but the change in perceptions from 2002 and 2003 are mostly downward, which may reflect the increasing expectations of employers for these skills, rather than a decline in the supply.

While managers rate graduates highly in terms of IT skills, the same is not true of other skills and demands for these other skills appear to be rising.

Table 5.3: Graduates' grasp of key skills, 2002 and 2003

	2002		2003	
Key skills	**Good**	**Poor**	**Good**	**Poor**
	%	%	%	%
Computer/IT literacy	75	5	72	5
Basic skills (literacy/numeracy)	42	14	30	18
Communications skills	30	23	13	37
Team working/ interpersonal skills	25	33	12	47
Creativity/innovation	24	26	30	30
Presentation skills	23	26	-	-
Reasoning/ comprehension	23	23	25	18
Problem solving/ analytical thinking	20	32	24	24
Commercial awareness	9	55	10	44

Source: Chartered Institute of Management (2003).

Conclusions

5.60 The present chapter has highlighted three major areas of increasing skill demands against a background of inadequate skill levels, those of management, IT and communication and customer-handling skills. A common theme about all three of these high skill demand areas was the importance of 'soft' skills. Even in the case of high-level 'hard' IT skills, other competencies are required in order for them to be translated into higher performance.

5.61 The increases in demand for all three skills have been driven by pervasive trends in the economy and society. Amongst others, these include shifts in demand for products and services, changes in the global location of production activities and the rapid and extensive adoption of IT technologies. At the same time, consumers have become more sophisticated in their demands. These pervasive trends are expected to continue for the foreseeable future.

Even high-level formal skills need to be complemented with 'soft' skills for individuals to maximise their effectiveness. Skill demands have been driven by a wide range of pervasive forces that are expected to continue for a significant period of time. Management skills are not only crucial to economic performance, but are required throughout all occupations, not just people designated as managers. The forecast growth in total number of new managers (i.e. replacement demand plus net growth) is large and poses significant questions about the provision of training.

Management skills

5.62 Management skills have become a key focus because of the central role that management decisions play in deciding economic performance, both in the short term and, through various investment decisions, into the long term. The types of economic and social change outlined above have meant that management skills are now required by all occupations and not just by those designated as managers. The evidence showed that although managers were the single largest occupation where management skills need improving, this was much smaller than the total need for management skills amongst all other occupations.

5.63 The recent growth in demand for managers looks set to continue, if at a slightly slower rate. There are two features of this growth which have implications for education and training needs. First, the net growth predicted over the next 10 years looks very different for the corporate managers' sub-major group and the corresponding category of managers and proprietors. Second, the forecast growth in total demand (i.e. including replacement demand arising from deaths, retirements, occupational change, etc.) is significantly larger than the net growth. This implies that there will continue to be job opportunities even in the managers and proprietors category. In addition, it means that the scale of the education and training problem for managers is much larger than the net figures suggest.

5.64 The scale of the management education and training problem seems large for a number of reasons, some of which the discussion has already touched upon:

- managers are a large occupational category, comprising around 4.3 million individuals
- it is a group that is expected not only to show net growth, but to exhibit even faster growth in total demand (including replacement needs)
- qualification levels are currently low for such a crucially important group.

The scale of the management training problem is accentuated by the relatively low levels of formal qualifications of the management stock. It can be argued that it is not only important to raise formal qualifications but also the level of 'softer' skills. IT-related technologies have fundamentally affected all aspects of employment. The speed of diffusion of IT along with continuing developments in hardware and software have placed heavy demands on skill formation.

5.65 The discussion above indicates that formal qualifications are only likely to form a small part of each manager's skills armoury. The literature makes it abundantly clear that other 'softer' skills are required of managers, particularly, although not exclusively, those setting up new businesses or in charge of key strategic decision-making roles. There are few quantitative measures of the extent or quality of entrepreneurial or leadership skills. Those which are available (i.e. relating to perceptions of entrepreneurship) do not rank the UK very highly compared with the US or continental Europe.

Technical and information technology skills

5.66 Of all technologies, IT has been amongst the most fundamental and pervasive in its impact on employment, job content, products and services, etc. IT rivals steam power, electricity and the introduction of mass production methods in the extent to which it has been a force for change. IT itself has changed the nature of the goods demanded, the production and distribution mechanisms, as well as the ways in which companies and other institutions are structured and organised. It is no surprise therefore that the present chapter should focus on IT skills.

5.67 The speed with which computers and related electronic equipment have diffused across the UK economy has placed heavy demands on the need to develop IT skills amongst the workforce. While software packages have become increasingly user-friendly, they nevertheless require considerable learning on the part of the users before they can be effectively and fully utilised. In addition, new generations of software have replaced old, as computing power has increased dramatically. Thus, not only are computing skills now utilised throughout the economy, there is a continual requirement to update and upgrade such skills.

5.68 The evidence suggests that there is a relatively low IT skills base in the UK and that there is a very significant task to upgrade the skills to meet employer needs. The evidence suggests that individuals not only require initial training in IT skills on entry to a particular job, but require ongoing training to reaffirm their knowledge of the software and systems. It also suggests that even individuals with strong IT qualifications require other competencies in order to utilise their computer skills effectively.

The current IT skills base in the UK appears to be low vis-à-vis what employers need, and the size of the training task is extremely large. 'Soft', often transferable, skills have assumed increased importance across a wide range of occupations and functions. Case study evidence shows the importance of 'soft' skills to enterprise performance. The need for improvements in the levels of 'soft' skills raise some fundamental policy questions, such as whether they can be trained, who should provide the training and which group should fund it.

'Soft' skills – communication and customer-handling skills

5.69 The growth in importance of SMEs, the generally flatter organisational structures and the increased emphasis on customers and the market, have required all levels of organisations to acquire a variety of social skills, such as team working, customer-handling, etc. As a consequence, the degree of importance that employers attach to 'soft', generally transferable skills appears to have increased significantly in recent years. Today, many of these skills are required across the whole workforce, from the top managers downwards.

5.70 There is relatively little quantitative information about such skills, although a growing volume of case study evidence exists. The evidence reviewed was mainly about social skills and social capital amongst managers (although the findings are likely to apply to other groups as well) and communication and customer handling skills. The accumulated case study evidence paints a convincing picture that such skills are crucial to organisational performance.

5.71 There are real question marks about the extent to which such skills can be trained (or are innate) and, where they are amenable to training, what methods should be used to train them efficiently and effectively. There is an urgent need to evaluate the success of different training methods. While it is clear that educational institutions have become involved in training them (i.e. universities), it is not clear who are the best providers for different ages, for different groups and even different skills. The latter question is not independent of the question of who should fund them – the individual, the employer or the State.

Who should pay?

5.72 The increasing emphasis on 'soft' skills raises some important issues about who should pay for training. In the main, such skills appear to be transferable from one employer to another and even between sectors and functions, which implies that, unless employment with a single employer is of considerable duration (and some form of joint investment takes place), the benefits of increased skill levels are probably going to be reflected in higher wages, rather than increased profits. Increased labour market flexibility appears to militate against sufficiently high levels of investment by employers in these skills.

5.73 The willingness to 'cross-invest' (i.e. individuals in firm-specific training and firms in general training) depends on the likely length of time the employee will stay with a single employer and the mechanisms devised to share the benefits of such cross-investment between the two. The recent trends in increased labour market flexibility, with higher employee turnover, temporary and part-time employment, also seems likely to have undermined the rationale for joint investment in education and training.

5.74 While employers may find it advantageous to offer some training in generic and transferable skills, this is likely to be limited, as the skills can be used anywhere and other employers will be willing to pay higher wages for such employees, without having to incur the training costs. Unless employees can be induced to stay for longer periods, it seems likely that the bulk of the costs of such investment will fall on the individuals (who receive higher wages) or on the Government (because there are net social benefits to improving these skills). The extent to which individuals can be effectively and efficiently educated and trained in such skills remains a largely unanswered question to date.

5.75 There are therefore important issues regarding how these skill development needs are to be provided and, in particular, financed. What employers (or sector agencies) can be expected to provide is training to make existing generic skills of relevance to their particular needs (or those of their sector), which produce a positive net return on the investment. On the other hand individuals may need to bear the burden of investment in generic and other transferable skills that raise their wages. The Government may need to support investments that bridge the gap between the private and social (net) returns to such investments. Mason (2000), amongst others, suggests new mechanisms for helping to bridge this gap.

Generic skills are, in good part, transferable. Hence the increased labour market flexibility puts the onus on the individual and the Government to fund training in such skills. The ability of firms to capture some share of the benefits from training has been reduced by increased labour market flexibility. This raises funding issues, with increasing flexibility of employment patterns having significant implications for how training should be provided and funded.

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