Number 60 • 2001

INSTITUTE FOR EMPLOYMENT RESEARCH

BULLETIN

Projections of Occupations and Qualifications

This *Bulletin* is the summary of a report that has been prepared by the Warwick Institute for Employment Research (IER), in collaboration with Cambridge Econometrics (CE). It summarises the second in a series of projections prepared in response to recommendations by the National Skills Task Force (STF).

MACROECONOMIC CONTEXT

Economic activity

The macroeconomic scenario underlying the projections[1] is one of continuing steady growth, with only moderate rates of inflation. *Gross Domestic Product* (GDP) and *Gross Value Added* (GVA) are projected to display long-term growth rates of approximately 2-2.5 per cent per annum, following a brief slow down over the next two years.

Inflation, the sterling exchange rate and public expenditure

Continued low inflation among the major OECD countries is expected. After a short-term correction to the current low level of the euro and the high level of sterling, a stable value for sterling against the euro and the US dollar is assumed.

The outlook for inflation is therefore one of modest rates of increase in prices and wages.

The projections are based on a modest acceleration in public expenditure growth and a small further reduction in the main rate of income tax. The government is expected to be able to do this without major increases in public borrowing.

General labour market prospects

The key features of the projections as far as the labour market is concerned are as follows, (see figure 1):

- the *long-term rate of employment growth* is expected to lie in the range 0.5-1.0 per cent per annum;
- between 1999 and 2010 there are expected to be over 2 million *additional jobs*;
- around two-thirds of the additional jobs are expected to be taken by *women*;
- the *working age population* and the *labour force* are expected to undergo significant growth, with the economic activity rate reaching around 80 per cent by 2010;
- the level of *unemployment* is expected to remain stable at relatively low levels compared with recent historical experience. However, although for most people unemployment will be a transitory experience, a minority will continue to suffer long duration unemployment.

[1] The projections are part of a much larger programme of research funded by the DfEE. They aim to provide a sound statistical foundation for the deliberations of the Learning and Skills Council at both national and a more local level, as well as providing useful labour market information and intelligence for the Regional Development Agencies and other bodies.

The projections are based on the use of a *multi-sectoral, regional macroeconomic model*, combined with *occupational* and *qualifications* modules. The main projection period covered is 1999 to 2010. The present document focuses on results for the whole of the UK. Further results are available for the English Regional Development Areas and for the other individual countries with the UK.

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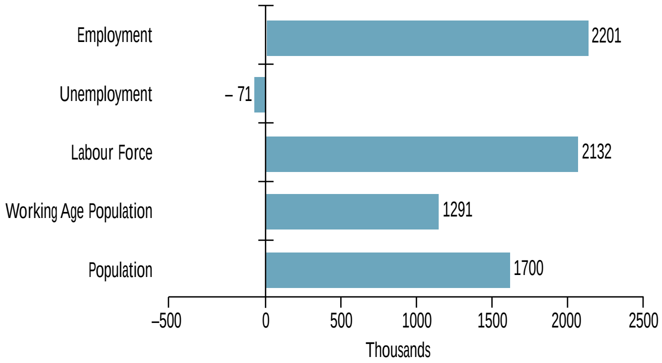
THE UNIVERSITY OF WARWICK

Figure 1, Unemployment, Employment and Labour Force, 1999-2010, UK



Source: Cambridge Econometrics/IER estimates, F02F9

SECTORAL EMPLOYMENT PROSPECTS

Projections of output by sector

The prospects for key sectors to 2010 are as follows:

- *mining, electricity, gas and water* are expected to display the weakest growth;
- *manufacturing* output growth is forecast to average 2.5 per cent per annum – underpinned by high growth in technology and R&D-related industries, while textiles, clothing & leather and metals are weaker performers;
- *transport & communications* output is forecast to grow by over 4 per cent per annum – with communications displaying the strongest growth of any services apart from computing;
- *financial & business services* are expected to grow by up to 4 per cent per annum over the longer term;
- *distribution, retailing, hotels and catering and other services* output is forecast to grow by around 2.0 per cent per annum.
- *public services* output is projected to increase by about 1.5-2.0 per cent per annum.
- *health and education* services is also expected to see rapid growth at around 4 per cent per annum.

Industrial employment prospects

Employment prospects to 2010 are intimately linked to output growth but also depend on how rapidly productivity rises in each sector.

- The *primary sector* (including *agriculture, mining* and *utilities*) is expected to continue to experience significant job losses in the next few years but losses are projected to slow thereafter;
- long-term decline in employment in *manufacturing* is expected to continue, with a loss of just over 700 thousand jobs between 1999 and 2010:
  - ◇ *engineering* is the largest contributor to job loss, as employment declines by over 300 thousand jobs;
  - ◇ *metals & mineral products* and *textiles & clothing* display the largest percentage job losses, with approximately one third of jobs being lost over the period to 2010;
- *construction* is projected to experience little change in the total level of employment between 1999 and 2010;
- employment in the distribution and transport sector is expected to increase by over 600 thousand jobs between 1999 and 2010 – with most of the growth accounted for by jobs in distribution, hotels & catering;
- employment in *business & miscellaneous services* is forecast to increase by almost 1.8 million by 2010, with all industry groups within the sector contributing to growth:
  - ◇ an increase of almost 50 per cent is projected for the number of jobs in *professional services*;
  - ◇ *banking & business services* and *other services* are forecast to see a more modest 17 per cent growth in jobs, this despite significant reorganisation and job losses in certain areas;
- despite a projected increase in jobs in *non-marketed services*, the share of all jobs in this sector is not expected to change significantly between 1999 and 2010:
  - ◇ all of the projected employment growth is accounted for by *health & education services*; while
  - ◇ *public administration & defence* is forecast to see small declines in employment.

Figure 2 opposite summarises sectoral changes from 1999 to 2010 within the UK.

Changing patterns of employment by status and gender

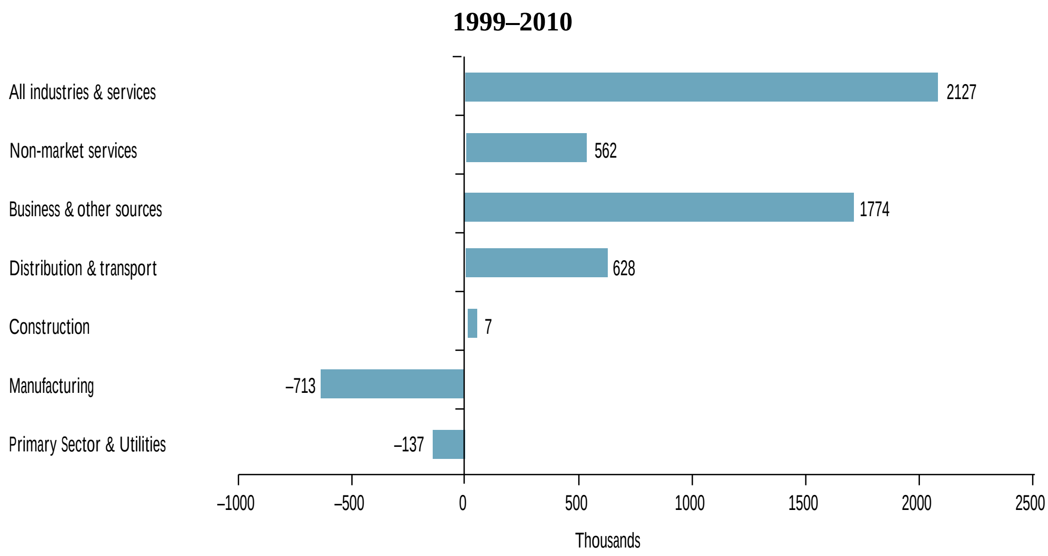
Changes in the industrial composition of employment have significant implications for various other aspects of employment structure. In particular:

- the decline of employment in manufacturing and primary sectors over the last few decades has resulted in the loss of many full-time jobs, traditionally held by men;
- the growth of jobs in the service sector has created more opportunities for women, particularly those willing to work part-time.

Female employment is expected to grow by around 1.5 million over the period to 2010, while *male* employment is projected to increase by only half this amount.

Part-time employment is expected to account for almost all of the increase in total employment although there is some recovery in the number of full-time jobs.

Figure 2, Sectoral Employment Changes, 1999-2010, UK



Source: Cambridge Econometrics/IER estimates F02F9

The share of *self-employment* is expected to decline over the next decade. This is primarily attributable to changes in the construction sector, and in transport & distribution. The overall numbers of self-employed are expected to rise slightly.

CHANGES IN OCCUPATIONAL STRUCTURE

The projections (summarised in Figure 3) use the new SOC 2000 occupational classification which will be the standard system for all official data, including the 2001 Census of Population.

Occupational projections to 2010

Underlying trends, which have been apparent over the previous two decades, are expected to continue, with significant increases in employment over the period from 1999 to 2010 expected for:

- *professional occupations* – around 900 thousand extra jobs: all sub-groups are projected to have employment increases, but the highest growth is expected for *business & public service professionals* – particularly *financial specialists*;
- *associate professional & technical occupations* – about 800 thousand additional jobs: most sub-groups are expected to see strong employment growth, with especially strong growth for associate professionals working in *computers* and for those in *business & finance;*
- *personal service occupations* – around 650 thousand more jobs: women are the main beneficiaries – most of the very high growth in this group is focused on *caring personal services occupations* – particularly those associated with healthcare and childcare.

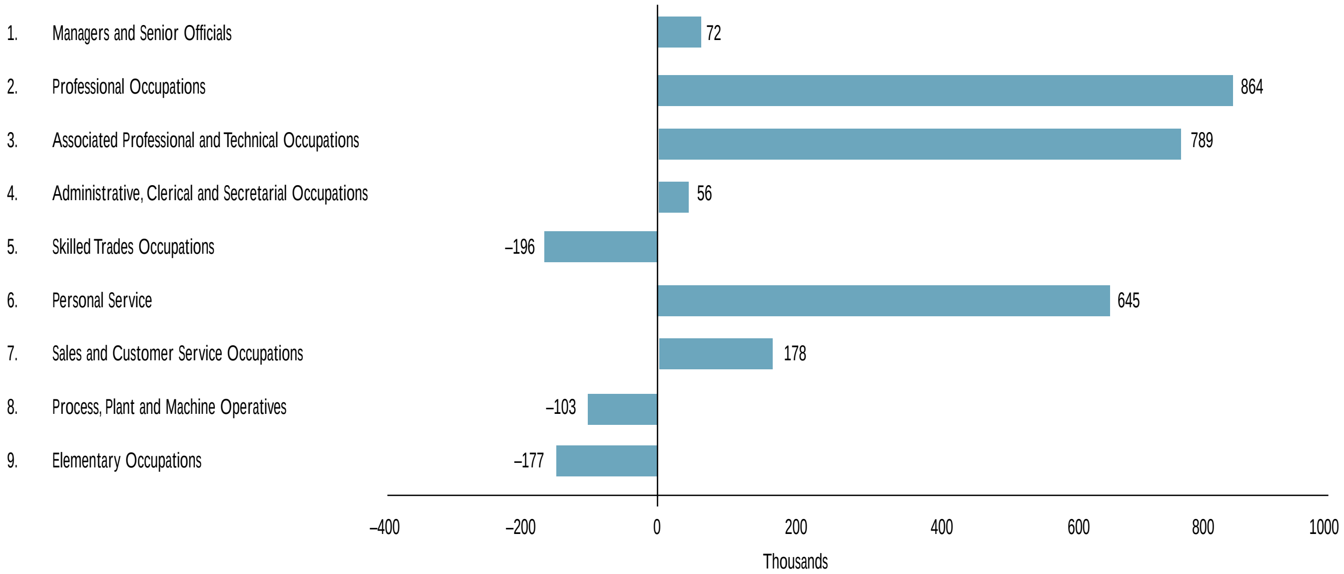
Smaller increases of around 180 thousand jobs are projected for the *sales occupations* group and for *managers & senior officials* of around 70 thousand. In the case of the latter, revisions to the SOC 2000 system of classification compared to SOC 1990 and the now latest LFS data suggest more modest growth than projected previously. Within this group employment growth is expected to be strongest for *corporate administrators:* most notably, *specialist managers* working in private commercial organisations.

Modest increases are also projected for *administrative, clerical & secretarial occupations* – where the impact of IT leads to the cessation of previously strong growth and results in an increase of around 50 thousand jobs.

Job Losses are expected in a number of areas:

- *skilled trades occupations* – about 200 thousand jobs: almost all occupations are projected to have declining employment over the decade, with largest job losses in *skilled metal & electrical trades*;
- *process, plant & machine operatives* – around 100 thousand jobs: here the most significant employment reductions are expected for *plant & machine operators* who work in factories and on construction sites;
- *elementary occupations* – almost 200 thousand jobs: this final SOC 2000 major group is expected to see job reduction concentrated primarily in those unskilled occupations which are linked to the primary & manufacturing sectors of the economy.

Figure 3, Occupational Change, 1999-2010, UK



Source: Cambridge Econometrics/IER estimates F02F9

Replacement Demand

Definitions

The projections described above relate to *expansion demand* arising from net growth (or decline) in occupational employment. Estimates of expansion demand provide a useful indication of likely 'gainers' and 'losers' from employment change.

However, employers will need to *replace* those workers who leave – due to retirement, career moves, mortality or related reasons. Replacement demand can easily outweigh any changes resulting from expected employment decline.

Measuring replacement demand

It is possible to identify three components of replacement demand:

- *losses due to retirement and mortality* – which require positive replacement;
- *net occupational mobility* – outward mobility adds to replacement demand, while inward mobility reduces replacement demand;
- *geographical mobility* – outward migration adds to replacement demand, while inward migration reduces replacement demand.

Total replacement demand is the sum of these components.

The extent of replacement demand

For all occupations together, replacement demand in total is about five times larger than expansion demand. Between 1999 and 2010 there is expected to be a net requirement of about 13.5 million job openings. This includes some job openings created by people transferring from one occupation to another (some of which will be filled by similar means). However retirements are the principal component in this estimate.

Expansion and replacement demand – exemplar patterns by occupational group

Two broad groups of occupations with different patterns of expansion and replacement demand are identifiable. For some groups, positive replacement demand outweighs negative expansion demand. This applies, for example, to managers & proprietors in agriculture and in service industries; secretarial & related occupations; skilled metal & electrical trades; process, plant and machine operatives; and elementary clerical occupations

For many others expected retirements will add to expansion demand to create high net requirements for new entrants. This applies, for example, to corporate managers; teaching and research professionals; health and social welfare associate professionals; business and public service associate professionals; administrative and clerical workers; caring personal services; and sales occupations

PROJECTIONS OF THE DEMAND FOR AND SUPPLY OF QUALIFICATIONS

Projecting the demand for and supply of qualifications

New models were developed in the previous round of projections for projecting the demand for and supply of higher level qualifications. These have now been extended to include projections of employment for all qualification levels, including those with no formal qualifications and to cover the individual regions and countries within the UK.

At higher level:

- The, so-called, *demand model* links the employment of qualified people to projections of occupational change. It focuses on qualification penetration rates for NVQ levels 4 and 5.
- Projections of the *supply* of qualifications are based on extrapolations of proportions of people obtaining qualifications by level and discipline applied to demographic projections from the Office of National Statistics. The resulting flow of newly qualified entrants is translated into a measure of overall supply via a simple stock flow model and assumptions about activity rates.

For intermediate and lower levels and for developing results at a regional level, a simpler approach has been adopted, reflecting limitations of the available data.

Table 1, Employment by Qualification, Great Britain

	1999		2010 Balance demand scenario	
	000s	%	000s	%
Postgraduates	1207	4.5	1577	5.5
First degree graduates	3172	11.8	4719	16.3
All graduates	4379	16.3	6296	21.8
Other highly qualified	2549	9.5	2900	10.0
All highly qualified	6928	25.8	9196	31.8
Not qualified at NVQ level 4 or 5	19913	74.2	19729	68.2
All levels	26841	100.0	28924	100.0

Source: IER estimates based on Census and LFS data.
Notes: Data relate to Great Britain.

Recent trends

The *demand* for highly qualified persons has risen rapidly since the 1970s. There have been two key drivers:

- shifts in occupational structure have favoured those groups employing large proportions of qualified people (especially those employing high proportions of those with higher level qualifications),
- shares of employment of those holding formal qualifications (especially higher level qualifications) have risen within all occupations; these are referred to as qualification penetration rates.

Total *supply* has risen equally rapidly. The key driving force has been increasing proportions of young people staying on in full-time education and obtaining formal qualifications as well as greater educational participation by mature adults.

Projected demand for higher level qualifications

Assuming a continuation of longer-term historical trends over the 1980s and 1990s, an additional 2 million jobs for highly qualified persons (*NVQ levels 4 and 5*) are expected over the period from 1999 to 2010. However, there is some uncertainty about this and a range of possible outcomes is presented. Table 1 shows the 'balance' demand scenario in which demand is projected to continue to rise in line with supply side trends.

Projected supply of qualifications

The supply of qualifications is projected to increase rapidly, as the recent increases in educational participation rates fuel an increase in the stock of economically active individuals qualified at degree level or above (NVQ levels 4 and 5). This is expected to grow by 2.3 million between 1999 and 2010.

Comparing the demand and supply of qualifications

A simplistic comparison of supply and demand based on a continuation of trends suggests that most people qualified at higher levels will find suitable employment. Evidence from other sources on changing earnings patterns, suggests that demand may have outpaced supply in recent years.

Nevertheless, it seems likely that many more highly qualified individuals will have to find jobs outside the 'traditional' areas of graduate employment, many of which are now approaching saturation point, in terms of graduate penetration rates. This may often be at the expense of less well qualified people, who may be displaced into less attractive jobs.

Results for lower level qualifications

Detailed results are presented for intermediate and lower level qualifications. These suggest a continued decline in the numbers in employment with no formal qualifications. However, because of the large numbers of (especially older) adults who do not posses any qualifications, a large rump of unqualified persons is expected to remain, despite rising educational participation rates and rates of acquisition of qualifications by young people.

Modest increases are expected in the numbers in employment with NVQ level 1 and 3 qualifications, however a small fall in those with NVQ level 2 as their highest qualification is anticipated. This reflects the fact that the focus is on highest qualification held. The numbers acquiring such qualifications are all expected to increase over the next decade. However many of these individuals will go on to acquire even higher qualifications. The net effect on numbers in employment is therefore modest. The main growth is focussed on NVQ levels 4 and 5.

A summary of results for the regions is also presented. A more extensive discussion of these is provided in the complementary regional volume (Green and Wilson, 2001).

THE CHANGING DEMAND FOR KEY/GENERIC SKILLS

Defining key/generic skills

Key or Generic skills are general skills which are transferable across different occupations. They encompass basic communication, numeracy, information technology (IT) skills, the ability to work with others, problem solving, improving own learning and performance, reasoning skills for work planning and work process management skills.

Additionally, so-called *softer skills* are often cited in the context of generic skills. These include team leadership, negotiation, facilitation and social skills.

Measuring generic skills

It is difficult to measure skills – particularly generic skills. While there is a linkage between occupational status and skills, neither qualification nor job status is a reliable measure of skill use in the workplace.

The present analysis is based on the use of a detailed Skills Survey undertaken by Ashton *et al.* (1999) which asked employees what skills they need to carry out their existing job and obtain information from employers.

Projecting skill requirements

Projections of skill requirements were derived by using:

- projections of employment change by occupation
- information on the relative importance of generic skills within each occupation from the Skills Survey.

Expected changes in occupational structure suggest that, between 1999 and 2010, there will be modest but significant increases in most skill requirements, apart from manual skills. Moreover, an analysis of changing skill needs within occupations suggests a strong increase in the need for many generic skills. As a consequence, the need for most key and generic skills is expected to intensify over the next decade.

Further Information

Further details of the projections including regional results are presented in *Projections of Occupations and Qualifications 2000/2001* and the companion *Regional Results* volume. These are available from the DfES Skillsbase website: www.skillsbase.dfee.gov.uk or free of charge from the IER publications office, University of Warwick, Coventry CV4 7AL, Tel.: 024 7652 4127, Email: ier@warwick.ac.uk

Other recent Publications

Brown, A. (2001). 'Reflections on the processes of becoming skilled in England, Germany and the Netherlands'. *Vocational identity, flexibility and mobility in the European labour Market.* Ed. G. Laske. ITB Working Paper 27. Bremen: ITB, University of Bremen, 165-196. [ISSN 1615-3138]

Green, A.E., M. Maguire and A. Canny (2001). *Keeping track: Mapping and tracking vulnerable young people*. Bristol: The Policy Press and the Joseph Rowntree Foundation. 58pp. [ISBN 1-86134-324-8]

Lindley, R.M. (2000). 'Knowledge-Based Economies: The European Employment Debate in a New Context'. *Reports Prepared for the Portuguese Presidency of the European Union. Co-ordinated by Maria Joao Rodrigues. Action Line: Employment, Economic Reforms and Social Cohesion – For a Europe of Innovation and Knowledge.* Lisbon: Gabinete do Primeiro Ministro, 33-83. [A Pdf version is available from www.warwick.ac.uk/ier/rml]

Wilson, R.A. (2001). 'Forecasting Skill Requirements at National and Company Levels'. *Background Report to the Second Report on Vocational Training Research in Europe 2000.* CEDEFOP. Luxembourg: Office for Official Publications of the European Communities. 557-605. [ISBN 92-896-0036-5]

ISSN: 0954-7932

Published by IER, University of Warwick