

**The Long Tail of Low Skills in Wales and the UK –  
A Review of the Evidence**

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## CONTENTS

	<b>Page</b>
Executive Summary	i
1. Introduction	1
2. Low Skills in Wales and the UK	10
3. International Evidence	37
4. Multivariate Analysis of Regional Low Pay	63
5. Conclusions	79
References	85

## EXECUTIVE SUMMARY

### 1. INTRODUCTION

1.1 The report considers the claim that the skills distribution in the UK is unusual insofar as there is a long tail of individuals with relatively few or no qualifications. A more specific issue is that the UK has a high proportion of its working population with poor basic skills of numeracy and literacy. Wales suffers from these aspects even more than the UK as a whole. Is this simply a consequence of industrial structure or are more fundamental forces at work? What are the consequences for productivity and growth? Can particular policy interventions remedy the problem? We define low skills to mean that the UK is not an outlier with respect to other countries with regard to the proportion of the working population with low skills. As we do not analyse higher skills this report is narrower than the Leitch Review and consequently our findings do not necessarily conflict with the general thrust of that report.

1.2 These issues are addressed in the *Skills and Employment Action Plan for Wales* (SEAP) 2005, *A Winning Wales* and *Wales: A Vibrant Economy* which all support a strategy of raising the quality of jobs and seemingly accept the notion of a low skills/low quality equilibrium, which we do not accept as a valid interpretation of the situation in the UK.

### 2. LOW SKILLS IN WALES AND THE UK

2.1 Skill is a multi-dimensional concept which encompasses a whole range of abilities and attitudes that can be combined in different proportions in different jobs. Hence, there are a number of ways of measuring skill including basic skills, qualifications, (elementary) occupations or low pay and each can give

quite different indications of skills deficits. Thus basic skills and qualifications are not limited to those in work, whereas occupational structure and low pay are, thus, excluding people not in work.

2.2 The disparity is greatest in Wales in relation to basic skills with a quarter of the population being deficient in terms of literacy and a half in terms of numeracy. However, little is known about how this impacts on productivity as individuals will self-select into the labour market according to their comparative advantage. Some evidence supports the view that training in basic skills can raise earnings, but the evidence is less clear cut in relation to employability. The evidence suggests that early intervention is the most appropriate policy response to this problem.

2.3 Taking the long tail to refer to unskilled (Group 9) and semi-skilled (Group 8) occupations it appears the tail is not much longer in Wales compared to other regions with the exception of London and the South-East. Only a minority of workers in these occupations, however, have no qualifications. Apart from Northern Ireland, Wales does have the highest proportion of its workforce lacking in qualifications (18 per cent as opposed to 15 per cent in the UK as a whole). Wales has over a quarter of its workforce categorised as low-paid, compared to about 21 per cent in the UK as a whole.

### **3. INTERNATIONAL EVIDENCE**

3.1 International comparisons of basic skills should be treated with a degree of caution. The evidence on whether the problem in the UK is worse than elsewhere is conflicting. Data on the proportion of workers in low skilled jobs suggest that the UK is not much out of line with other countries. The UK does

appear to have a more acute low pay problem, but this is partly because high skilled workers do relatively well.

#### **4. MULTI-VARIATE ANALYSIS OF LOW PAY BY REGION**

4.1 Low pay incidence declines with the age of the worker, the level of educational attainment and establishment size and is concentrated in certain low skilled jobs and industries. When allowance is made for regional cost of living and housing cost differentials, Wales does not seem out of line with other regions and such differences as exist are not linked to industrial structure.

#### **5. CONCLUSIONS**

5.1 The UK does not suffer unduly from a long tail of low skills when compared to other industrialised countries and the situation in Wales is only marginally worse than in the rest of the UK. This suggests that a broad strategy of encouraging the acquisition of skills and qualifications and particularly of basic skills is appropriate in the light of likely further increases in the demand for them. Specific measures directed at the low skilled do not appear to be necessary or appropriate. However, it would be prudent to monitor the balance of supply and demand in the low skilled labour market.

## **1. INTRODUCTION**

**1.1** It has been suggested that the skills distribution in the UK is unusual in so far as there is a long tail of individuals with relatively few or no qualifications. In addition, the UK has a high proportion of its working age population with poor basic skills of literacy and numeracy. Wales possesses a longer tail in both respects than the rest of the UK combined and this requires some explanation. Is it simply a consequence of industrial structure or are more fundamental forces at work? Further, what are the economic consequences in terms of productivity and growth? Finally, are there particular forms of policy intervention which can change this situation? It is on these features that this report concentrates.

**1.2** The remit of the research was to consider whether Wales and the UK possessed a long tail of low skills. Thus, we do not in this report consider the role of high skills in determining for example, the future growth of the economy. Analysis of that issue is contained in the recently published Leitch Review <sup>1</sup> where it is suggested that there is a skills problem which needs to be remedied by radical change across the whole skills spectrum. That is not the focus of this report. What is meant by a ‘long tail’ is a matter of judgement. We take it to imply that Wales and the UK are outliers in the sense that they stand out from the generality of countries either on their own or perhaps with a limited number of other countries. The Leitch Review finds that the UK lies 17<sup>th</sup> in ‘low skills’ out of 30 OECD countries (page 10) which is held to be an unsatisfactory state of affairs, but this does not constitute a ‘long tail’ as we have defined it. Skills can be interpreted in a number of ways, but are

essentially capabilities and expertise in particular occupations or activities. As the Leitch Review notes skill also has a number of dimensions such as basic skills (i.e. numeracy and literacy), generic skills (e.g. communication and team work), specific skills which are non-transferable across firms or industries and general or transferable skills which can be used elsewhere. However, these dimensions are not always easy to measure, so that in this report we consider four alternatives - basic skills, qualifications, (which is the most common measure used in the literature), employment in elementary occupations (as these require less in the way of skills) and finally, low pay. The latter is often taken as a measure of productivity on the assumption that workers will receive pay equivalent to their marginal revenue product. This assumes that labour markets are competitive. In imperfect labour markets (monopsony) workers may receive less than the value of their marginal revenue product, so that using the wage as a measure of productivity may lead to an under-estimate of the latter.<sup>2</sup> Nonetheless, low pay is a useful means of comparing the position of workers across regions of a particular country or across countries. However, the main purpose of this report is to establish the facts. If there is a long tail then it may be necessary to adopt policies to reduce it. If the evidence does not support the proposition, then policy should focus elsewhere e.g. perhaps on raising the level of skills overall, which would be in line with the Leitch Review.

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<sup>1</sup> Leitch Review of Skills, Prosperity for All in the Global Economy – World Class Skills, Final Report, H.M. Treasury, December, 2006.

<sup>2</sup> In a recent paper Dearden et al. (2006) the impact of training on productivity was measured directly by using a panel of British industries over the period 1983 to 1996. It was found that a one percentage point increase in training was associated with an increase in value added per hour of about 0.6 per cent, but an increase in wages of only 0.3 per cent due to the monopoly power of the employer in the labour market. Hence in this case using wages to proxy productivity improvement would tend to lead to an underestimate of the latter.

**1.3** The overall skills problem was described as follows by Lord Leitch<sup>3</sup> in his forward to the interim report on the review of skills in 2005.

“We have considerable weaknesses. More than one-third of adults do not hold the equivalent of a basic school leaving qualification. Almost half of adults are not functionally numerate and one-sixth are not functionally literate. This is worse than our principal comparator nations. Improving our schools will not solve these problems. Today over 70 per cent of our 2020 workforce has already completed their compulsory education. Our intermediate and technical skills lag countries such as France and Germany.”

The Interim Report goes on to suggest that the UK’s low overall level of skills can explain as much as 20 per cent of gap in productivity relative to France and Germany. Further, skill levels have an important impact on levels of employment and social welfare. Thus, only half of those without qualifications are in work compared to 90 per cent of those with degree level qualifications. In the case of the disabled whose participation rates are only half that of the non-disabled, 40 per cent have no qualifications. Improving the skills of those out of work and in work can be seen as contributing to social inclusion. The Leitch Review noted that social mobility is low in the UK and has fallen in recent decades. Unless individuals are able to update and improve their skills they risk losing touch with the labour market, so that improving skills was seen as the most effective means of improving social mobility in the UK. Whilst it is true that there have been improvements over time in the UK’s skills profile due to better qualified young entrants to the labour market replacing less qualified older people as they retire,<sup>4</sup> there is need for further improvement. By 2020 the Report anticipates that there will be an additional

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<sup>3</sup> *Leitch Review of Skills in the UK; the Long Term Challenge*, Interim Report, H. M. Treasury, December, 2005.

<sup>4</sup> Over the last decade the proportion of the working age population educated to degree level rose from 20 per cent to over 25 per cent and the proportion without any qualifications fell from 20 per cent to 14 per cent.

3.5 million people in the working age population, with adults aged 50-65 years accounting for 60 per cent of this growth, so it is imperative to improve the skills of these older workers. In the final report (2006) upskilling for low skilled workers is recommended in order to provide them with more opportunity to gain full level 2 qualifications and basic skills in the workplace. Its targets include 95 per cent of adults achieving functional literacy and numeracy by 2020 and 90 per cent of the adult population qualified to at least NVQ Level 2, which implies a fall in the proportion of those with no qualifications from its current level to less than 10 per cent of the workforce.

**1.4** Within Wales there has been considerable focus on the ‘skills’ problem, which is detailed in the Skills and Employment Action Plan for Wales (SEAP, 2005)<sup>5</sup>. On the supply side, the plan notes that Wales has one of the lowest proportions of people with intermediate level skills in the UK and the UK figure is itself low (28 per cent) compared to France (51 per cent) and Germany (65 per cent). The report does not define what is meant by intermediate skills but we take it to mean NVQ levels 2 and 3. Just under one in five of working age adults in Wales have no qualifications, a higher figure than in England or Scotland. Within Wales some areas have severe problems. For example, in Blaenau Gwent 30 per cent do not have any qualifications compared to only 12 per cent in Monmouthshire. Finally, 24 per cent of the working age population in Wales lack Level 1 literacy skills and 53 per cent lack Level 1 numeracy skills.

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<sup>5</sup> *Skills and Employment Action Plan for Wales 2005*, NAW Circular No. 51, 2004, 11 January 2005.

SEAP notes that the overall pattern of job growth in the UK and Wales over the past decade has been towards significant growth at the top of the skills distribution, and suggests that there has been a decline in demand in the middle of the distribution and a small increase at the lower end. Yet, the evidence from the Labour Force Survey presented later in this report suggests that there have been substantial declines in both semi-skilled and unskilled jobs, and this trend is forecast to continue.

**1.5** In 2000 the Wales Skills Task Force identified NVQ Level 3 as the minimum level of qualifications that Wales needed to aspire to if it was to reach the ambitious targets set out in *A Winning Wales*<sup>6</sup>. The 14-19 Action plan was even bolder in having a target of 95 per cent of young people for high skilled employment or higher education by 2015<sup>7</sup>. This seems unrealistic and wholly out of line with forecast demand for semi- and unskilled labour. *Wales; A Vibrant Economy*<sup>8</sup> has a target of reducing the proportion of adults of working age without qualifications to less than 10 per cent in 2010 from a base of 21 per cent in 2001 and a figure in 2004 of 17 per cent.

**1.6** SEAP 2005 and other reports suggest there are significant market failures which constrain the demand for skills and hinder effective supply responses, but the basic skills problem implies rather that it is supply side constraints that

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<sup>6</sup> *A Winning Wales*; the National Economic Development Strategy of the Welsh Assembly Government, <http://www.wales.gov.uk/themes> budget and strategic/content/needs/a winning wales-0302-3.pdf.

<sup>7</sup> *Learning Country: Learning Pathways 14-10*; The Welsh Assembly Government's proposals for the development of proposals to meet the needs of young people. <http://www.wales.gov.uk/subeducation/training/content/consultation/learning/learning-country-e.htm>

<sup>8</sup> *Wales; A Vibrant Economy*: The Welsh Assembly Government's Strategic Framework for Economic Development, Consultation Document, November, 2005.

may be constraining labour demand. In line with the above report, however, *Future Skills Wales 2003*<sup>9</sup> suggests that many employers are unaware of the skills required to improve their business performance and some appear content to continue with a low-skill, low value-added strategy. There is also a difference in perceptions between employers who feel they have sufficient skills to meet their labour requirements and employees who over-estimate their own skills. *Wales; A Vibrant Economy* continues in this vein, stating that the priority is to raise the quality of jobs, so that average earnings increase to close the gap with the rest of the UK. This implies not only that the skill base should be improved, but more high value-added functions should be attracted to Wales.

**1.7** Finegold and Soskice (1988)<sup>10</sup> first popularised the notion of the low skills/low quality equilibrium. Training policy according to this thesis had concentrated solely on the supply of skills with little attention to the possibility of a lack of demand for skills. In their view a large number of UK employers did not want or need skilled workers. They argued that most managers' decisions to adopt a low skill form of work organisation could be seen as a rational response to the institutional conditions then prevailing; namely short-term financial markets, an adversarial industrial relations system, and a low supply of skills in the labour market in which they operated. It is questionable, however, how relevant these factors are today. Thus, they refer to Britain's failure to train, with firms offering a lower quality and quantity of

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<sup>9</sup> *Future Skills Wales 2003*; Generic Skills Survey Summary Report.

<sup>10</sup> Their paper seems to treat the concept of the low skills equilibrium as a self evident truth. There is no marshalling of the evidence let alone a proper econometric analysis of such data. While they admit

training than their counterparts on the continent. Second, they claim that Britain's failure to educate and train its workforce has contributed to its poor economic growth record and refer to the recurring problem of skill shortages. But none of these seems a true description of the current situation in Britain. If anything, there is more company training than in many other countries, our recent growth record is not poor relative to most of Europe and there is little evidence of a serious skills shortages problem. It is far from evident that there is a current market failure in the market for skill. Nonetheless, much attention has been paid to the possibility that the UK is trapped in a low skills equilibrium with an above average percentage of low specification companies than our major competitors. Such companies, it is claimed, compete mainly on the basis of price and low unit labour costs achieved by "designing the skills out of jobs". Thus, according to a DTI report (Wilson and Hogarth, 2003) a low skills equilibrium is a situation in which the economy has become trapped in a vicious circle of low value added, low skills and low wages. The main characteristics of such companies are production primarily or wholly for local or domestic markets with little threat from cheap imports, reliance on labour intensive production systems and production of goods and services with low margins. There is reason to be cautious about this interpretation. The DTI study was based on ten organisations in the food and drink sector and ten in the business hotel sector across the East and West Midlands, so that the conclusions may not apply to the economy as a whole. Further, the report suggests that these employers were acting rationally, and were profitable, so that exhortation by the Government for employers to raise skill levels was

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that not all firms would fall into this category, there is no attempt to estimate what proportion of firms

unlikely to be effective. Further, the distribution of skills in the UK, as a whole, does not appear to be much out of line with that in other countries, as we attempt to show in later chapters.

**1.8** Another concern has been that the UK has one of the lowest proportions of young people who participate in post-16 education among the industrialised nations.<sup>11</sup> It is estimated that over one million young people aged 16-24 are not in employment, education or training (NEET). About 80 per cent have no or low qualifications. They are five times as likely as those in education, employment or training to have a criminal record and three times as likely to suffer from mental health problems. According to the Welsh Assembly Government's Learning and Skills Assessment 2006-2009, May 2006 there were just over 50,000 people in the NEET category in Wales in 2003/04. These made up 12.5 per cent of the 16-18 age group and 16.4 per cent of the 19-24 age group in 2003/04. Those classified as unemployed have been declining and those classified as economically inactive have been increasing. This group should be added to those in employment with low skills.

**1.9** In addition, some allowance should be made for differences in activity rates for workers in Wales relative to the rest of the UK. In March-May 2004 the inactivity rate in Wales was 23.8 per cent compared to 21.2 per cent in the UK as a whole, giving a difference of 2.6 percentage points. If we assume that two-thirds of these have no qualifications this would increase those without

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might be so affected, though they claim it is a majority.

<sup>11</sup> The recent Government proposal to raise the school leaving age to 18 can be seen as an attempt to deal with this problem.

qualifications in Wales relative to the UK by another 1.7 percentage points i.e. from 18 per cent to 19.7 per cent of the working age population.

Gregory, Salverda and Bazen (2000) suggest that many countries are now confronting a growing gap between those who gain from technological change and those who do not. The latter are increasingly found in atypical work such as part-time or temporary employment with little job security. Such jobs tend to be filled by those with low educational attainments and few employment-related skills. In Europe, the earnings of the low-paid have held up reasonably well. Meanwhile, real earnings of the low-paid in the USA have fallen substantially, but this has allowed an expansion of jobs there, thus reducing the level of unemployment. The debate over whether skill biased technological change or cheap labour in developing countries is largely responsible for these trends seems to have been resolved in favour of the former, but whichever is the case seems to imply a movement from one equilibrium to another rather than a low skills equilibrium trap.

**1.10** As for future trends, projections undertaken for the Leitch Review suggest that managers and senior officials, professional associate professional and technical occupations will show the largest increases in shares of employment. As such groups have above average qualifications, a steady rise in the average skill level of the working population is predicted; but this will be offset by a large decline in numbers employed in elementary occupations. The overall effect by 2020 is such that 42 per cent of all jobs are likely to be held by those holding NVQ level 4 qualifications or above. Thus, even if the low skilled

equilibrium does not hold, there is a need to ensure that a higher proportion of the workforce gain qualifications.

## **2. LOW SKILLS IN WALES AND THE UK**

### **INTRODUCTION**

**2.1** We address in this section the extent to which the low part of the skill distribution in Wales is out of line with that in the UK. However, before doing this we must be clear about what one means by skill and how to measure it.

### **HOW DO WE MEASURE SKILL?**

**2.2** The first approach is to focus on basic skills or the lack of them, which is concerned primarily with levels of literacy and numeracy. Second, we focus on the lack of qualifications. As Tampkin et al. (2004) suggest, “the traditional unit of skills measurement is some indicator of educational attainment but education, qualifications and training are all proxies for skills” (page 17). Using qualifications it is clear that the oldest members of the workforce are most likely to have few qualifications. Thus, nearly 20 per cent of those aged over 50 have no qualifications compared to less than 10 per cent of those aged between 25 and 50. There is also a substantial literature on over and under-education which suggests that a sizeable proportion of the workforce are not matched, in the sense that current job requirements imply a different level of qualifications than the job holder currently possesses. Given our focus, people who have qualifications, but who are in elementary occupations might be said to be over-qualified or over-educated, while those who are in higher grade occupations, but have no qualifications might be regarded as under-qualified or under-educated. This reinforces the point that there may be little commonality between low level jobs and lack of

qualifications. A third approach is to define skill in terms of occupational classification, so that the tail here refers to the proportion of the workforce found in elementary occupations. This will reflect the industrial structure of the local economy, but again many of those found in elementary occupations have educational qualifications even up to degree level. A fourth approach is to focus on low pay as this is a proxy measure of the value placed upon particular jobs or individuals by employers. A conventional definition of low pay is that level of pay which falls below two-thirds of the median level of hourly earnings for all employees. This produces a figure which is rather higher than the national minimum wage.

## **THE FACTS**

### **(a) Basic Skills**

**2.3** We begin first with this aspect of the long tail as it is in this area that the disparity between Wales and the rest of the UK appears to be greatest. This measure includes those who are out of work, but it only refers to literacy and numeracy skills and it is clear that these are not the only relevant skills in the labour market, though they may well be regarded as fundamental building blocks for many other skills. The Basic Skills Agency defines basic skills as “the ability to read, write and speak in English or Welsh and to use mathematics at a level necessary to function at work and in society in general”. Sir Claus Moser’s working group on Post-School Basic Skills<sup>12</sup> estimated that one in five adults were “functionally illiterate” and perhaps twice as many “functionally innumerate”. These terms imply that such adults

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<sup>12</sup> *A Fresh Start-Improving Literacy and Numeracy*, DFEE, 1999

cannot read or write, or use numbers at the level we would expect of an 11-year old. The recently published report on the *National Survey of Adult Basic Skills in Wales* gives a detailed picture, based on a sample of 2,500 adults of working age, of literacy and numeracy among the adult population of Wales. This suggests that 25 per cent of the adult population have literacy skills below Level 1 in the Moser classification, compared with 16 per cent in England. Literacy tends to be correlated with qualifications. 55 per cent of those with no qualifications were classified as entry level or below compared to 16 per cent of those with 2 or 3 A-levels. It is also correlated with occupations, with 42 per cent of those in routine occupations classified at entry level or below, compared to 8 per cent in Higher Management or Professional occupations.

- 2.4** The headline innumeracy level (i.e. below Level 1) in Wales is 53 per cent. Unlike the case with illiteracy this conceals a large gender divide, with 14 per cent of women in Wales classified at Level 2 or above compared to 30 per cent of men. Surprisingly, 27 per cent of those with A-C grades at GCSE or O-level Mathematics are assessed at Entry level. Equally surprisingly among this group, innumeracy declines with age, starting at 40 per cent for teenagers and declining to 22 per cent for 50-65 year olds. The occupational breakdown also reveals that 24 per cent of those in Routine occupations are classified at entry level, with the rate decreasing to 17 per cent for Higher Managerial and Professional occupations.

**2.5** We do not know the extent to which low basic skills lowers productivity, as we would expect workers with low basic skills, in so far as they gain employment, to end up in jobs where lack of such skills is less crucial. Further, literacy and numeracy are by no means the only basic skills which are relevant to employment. Future Skills Wales 2003 employers rated understanding customer needs, communication, ability to follow instructions, sharing initiative, team working, ability to learn and adaptability/flexibility skills more highly than numeracy and literacy. Surprisingly, the possession of IT skills was held to be less important than any of these. While we might argue that basic skills should improve over time as older, less qualified individuals retire to be replaced by younger, better qualified individuals, this assumes that younger people are better qualified and more numerate/literate than older people. This also ignores the problem of poor basic skills among ethnic minorities and recent immigrants. As for older individuals, the difficulties of acquiring basic skills later in life should not be underestimated. On a more positive note, one of the few studies to measure the impact of basic skills training on basic skills attainment<sup>13</sup> found statistically significant gains which were greater the more training that was given. However, there was no control group in this study and the attrition rate of those taking ‘the before’ test but not ‘the after’ test was high.

**2.6** Two studies have examined directly the economic benefits to the individual of basic skills acquisition. First, Denny et al. (2003), using International Adult Literacy Survey (IALS) data, show large impacts on earnings in 21 countries.

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<sup>13</sup> Brooks et al. (2000).

For Great Britain, moving a person from the 25th decile to the median of the basic skills distribution was found to be equivalent to an additional two years of schooling. Dearden et al. (2000) use the National Child Development Survey (NCDS) as well as IALS, and controlling for personal characteristics find in both cases that earnings are 11 per cent higher for those with Level 1 numeracy skills compared to those without. Different results are, however, obtained for literacy skills with an earnings premium of almost 18 per cent for IALS and 8.5 per cent for NCDS. In contrast, they find that the effects on employment are relatively small. Bynner et al. (2001) attempted to estimate the cost of basic skills deficits to the economy as a whole by calculating how much earnings and employment would rise if the Moser Report (1999)<sup>14</sup> targets for basic skills attainment were to be met. They estimate that UK employment would rise by over 100,000 and the wage bill by over £7 billion with a net saving to the Treasury approaching £2.5 billion if the numeracy target were to be met. If the literacy target were to be met, employment would rise by over 45,000, wages by £1 billion and savings to the Treasury would approach £0.45 billion. Wales's contribution to these totals, calculated on the basis of relative population size, would be a gain in employment of 5,000 and an increase in earnings of over £360 million if the numeracy target were to be met and a gain in employment of over 2,000 and of wages of £50 million if the literacy target were to be met. However, these calculations have a wide margin of error.

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<sup>14</sup> *A Fresh Start – Improving Literacy and Numeracy, DFEE, 1999.* An adult classified at entry Level 1 for literacy should be able to understand short texts with repeated language patterns on familiar topics and be able to obtain information from common signs and signals. An adult classified at the

**2.7** As far as Wales is concerned, the Basic Skills Agency (2001)<sup>15</sup> categorises regional variations into three categories, with relatively high levels of need in Blaenau Gwent, Merthyr Tydfil, Caerphilly, Torfaen, Rhondda Cynon Taff and Neath Port Talbot, average levels of need in Newport, Bridgend, Wrexham, Swansea, Carmarthenshire, Pembrokeshire, Cardiff and Gwynedd, and relatively low level of need in Conwy, Powys, Anglesey, Denbighshire, Ceredigion, Vale of Glamorgan and Monmouthshire. Further disaggregation is possible down to ward level. Analysis for ELWa (now DELLS) by BMG Research<sup>16</sup> suggests that while poor basic skills are associated with poverty, economic deprivation is not the complete explanation for differences between Unitary Authority areas at ward level. This same report suggests that employers seriously underestimate the degree of basic skills difficulties faced by their employees and their impact on business operations, particularly in small firms. However, there are no precise estimates of the effect of poor basic skills on productivity and growth at the enterprise level.

**2.8** As far as policy is concerned recent work, notably by James Heckman and colleagues (see Heckman, 1995, Carneiro and Heckman, 2003, Carneiro, Cunha and Heckman, 2003, Heckman, Stixrud and Urzua, 2006 and Cunha and Heckman, 2007) stresses the importance of early intervention and this applies a fortiori to improvements in basic skills. This work may be summarised as follows. The nature / nurture distinctions are obsolete because abilities are created and not solely inherited, as well as having different forms.

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corresponding level for numeracy should be able to understand information given by numbers and symbols in simple graphical, numerical and written material.

<sup>15</sup> *The Extent of the Problem – Basic Skills in Wales*, Basic Skills Agency, December, 2001.

Thus non-cognitive abilities such as perseverance, motivation and self-control are important as well as cognitive abilities. This does not mean that ability does not matter; it remains a powerful determinant of wages and other forms of success. However, it appears from a range of intervention studies that ability gaps in children can be reduced if attempted in early childhood and supplemented by improvements to the family environment, particularly by changing the resources available to disadvantaged children. There are critical stages in child development with IQ scores being stable by about the age of ten. The later the remediation is applied the less effective it is likely to be. Thus, public training programmes for the most disadvantaged, as well as being lower for less able individuals, tend to have a low economic return and produce poor outcomes for most individuals because they occur too late in an individual's development. Most of these findings seem to apply equally to the UK as to the US. Thus, Feinstein (2003) using National Child Development survey finds that there is a 13 percent difference in an index of cognitive development at age 22 months between British children from high and low social-economic group families but as children approach the age of 10 this difference widens to 28 percentile points. Further, the percentile rank at 22 months can predict quite well educational attainment at age 26, but high socio-economic group children with low scores are much more likely to improve than low socio-economic group children with low scores.

(b) **Elementary Occupations**

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<sup>16</sup> BMG Research, *Basic Skills Learning Insight*, prepared for Education & Learning Wales, May, 2005.

**2.9** Occupations exclude people who are out of work. Since low-skilled individuals are more likely to be unemployed or inactive, two countries could have very similar occupational structures, but one could have a more severe skill problem than another. However, since employment rates in the UK are high relative to other countries, this is unlikely to conceal the presence of a long tail in the UK. More problematical is the fact that we rely on the one digit classification of occupations, which is very broad, so that different levels of skill may be concealed within them. As the over-education literature makes clear the utilisation of skills may also vary. Finally, occupational classifications tend to be rigid over time and do not allow for skill upgrading within occupations.

For the purposes of this report we examine the lowest two occupations defined in terms of skill. First SOC 2000 occupation 9, Elementary Occupations, which according to the occupational breakdown guidelines are occupations where knowledge and experience are necessary to perform mainly routine tasks, usually involving use of simple hand held tools and in some cases physical effort. Most do not require formal educational qualifications. Such occupations include farm workers, cleaners, porters, security staff, bar staff, waiters, theme park attendants and dinner ladies. Second, SOC 2000 occupation 8, process, plant and machine operators, includes occupations where knowledge and experience are necessary to operate and monitor industrial and plant equipment or to assemble products. Most employees in this group will not have a particular standard of education, but will usually have formal experience-related training. Such workers are normally classified as semi-skilled.

**2.10** Overall, the occupational distribution of employment in Wales shows that Wales has lower levels of employment in those occupational groups requiring higher level skills and higher proportions of those requiring lower level skills than in the rest of the UK. In part this reflects the higher incidence of manufacturing employment in Wales. As shown in Table 2.1, 13 per cent of those employed in Wales are found in elementary occupations, only exceeded by Yorkshire and Humberside, though equalled in three other regions. This figure compares with 11 per cent for the UK as a whole. Wales also has 9 per cent in process occupations compared to 7 per cent for the UK as a whole. Combining these two groups, therefore, emphasises the long tail of low skills in Wales, but the Welsh figure of 22 per cent is exceeded by Yorkshire and Humberside and the East and West Midlands. However, only a minority of those employed in these occupations have no qualifications (Table 2.2). For elementary occupations this figure is 29.3 per cent, compared to a UK average of 26.9 per cent, but exceeded by the West Midlands at 32.1 per cent and Northern Ireland at 43.2 per cent. Similarly in Process occupations, the percentage with no qualifications in Wales is 21.8 per cent compared to a UK average of 20.0 per cent, and exceeded only in London (22.9 per cent) and Northern Ireland (41.0 per cent). It is clear that, though there is a positive relationship between occupational level and educational qualification, the relationship is not a close one. The relationship is shown for Wales in Table 2.3, which reveals a wide spread of educational qualifications in all occupational groups. Thus, 7 per cent of Managers and Senior Officials have no qualifications and 1 per cent of those in Elementary occupations have a

degree or equivalent. This may conceal the fact, however, that there may be jobs of different levels in each occupational group. Thus, a manager in a small establishment, say a shop, may require fewer qualifications than a manager in a very large one, say an engineering factory.

**2.11** Over time the qualifications level of all occupations has been rising. Thus, whilst in 1996 38 per cent of those in elementary occupations in the UK had no qualifications by 2005 this figure had fallen to 25 per cent. Likewise in Process Plant etc. occupations, the corresponding UK figures were 25 per cent and 18 per cent respectively. In Wales, the change was even more dramatic – 42 to 25 per cent in Elementary occupations and 28 to 18 per cent in Process Plant etc. Occupations, so that by 2005 Wales was very close to the average for the UK in these two occupations (Table 2.4).

**2.12** Tables 2.5 and 2.6 show changes in the occupational distribution in the UK and Wales over the last decade. Unfortunately, changes to the occupational classification in 2000 mean the figures are not directly comparable before and after this date. For Great Britain, the proportion employed in the managerial and professional groups has increased and that in manual occupations has declined, but the proportion in administrative and secretarial and sales and customer service occupations has remained fairly static. In Wales, a lower proportion of the working population is found in each of the non-manual occupations 1 to 4 and a higher proportion in each of the manual occupations 5 to 9 compared to Great Britain, but the trends are broadly similar and this is true of the elementary occupations. In group 8 there was a 1.2 percentage

points fall in Wales over the period 2001 to 2005 compared to a 0.9 percentage points fall in Great Britain. For occupation 9 the fall in Wales was 0.2 percentage points compared to 0.6 percentage points in Great Britain over the same period. Comparing Wales with other regions, the North-East has a higher proportion of its employees in occupations 8 and 9 than Wales and Yorkshire and Humberside has more in occupation 8 and the same number in occupation 9 compared to Wales, though with a more rapid improvement. The East and West Midlands have more in occupation 8, but fewer in occupation 9. Thus, apart from London and the South-East, the tail in Wales is not much longer than elsewhere.

(c) **Qualifications**

**2.13** This is a measure which does not require individuals to be employed. However, it does not take into account non-certificated skills and is, therefore, biased in favour of skills acquired from formal education rather than skills learned through experience on the job.

As shown in Table 2.7, apart from Northern Ireland, Wales has the highest proportion of working age population with no qualifications – 18 per cent compared to 15 per cent in the UK as a whole. Correspondingly it has fewer with a degree or equivalent – 15 per cent compared to 18 per cent in the UK as a whole and a lower ratio than in any other region apart from the North-East and Yorkshire and Humberside.

**2.14** Over time there has been a considerable increase in education attainment. For example, in 1996-1997 only 7.6 per cent held a degree or equivalent and by

2005-6 this had risen to 11.7 per cent. Conversely, the figure for those without any qualifications fell from 11.8 per cent to 8.8 per cent over this same period. Wales shared in this general improvement with the percentage holding a degree or equivalent rising from 5.6 to 9.4 per cent and those without any qualifications falling from 13.9 to 10.0 per cent.

It remains the case that it is worthwhile for individuals to invest in education at all levels. Thus, O'Leary and Sloane (2005) estimate the real rates of return to education (including housing costs) to be positive at all levels of education over the period 2001-2003 and returns in Wales are close to the British average at all levels for men and slightly above the British average for women. In 2003, the lower end of the qualifications distribution those obtaining other qualifications below 'O' levels received 6.0 per cent in the case of men and 7.2 per cent in the case of women compared to those with no qualifications in Great Britain as a whole. The corresponding figures for Wales were 10.7 per cent for men and 3.2 per cent for women. Therefore, in this sense there does not seem to be any evidence of market failure.

**2.15** The literature on over and under-education suggests that qualifications and experience may be substitutes in human capital terms, so that those who are 'under-qualified' for the job which they currently hold may offset this disadvantage by having longer experience or tenure on the job. Using the 1986 Social and Economic Life data, Sloane, Battu and Seaman (1999) found that 31 per cent of their sample of 6 British Labour Markets were over-educated and 17 per cent under-educated. Their results have been updated by

Felstead, Gallie and Green (2002), who report that over-qualification rose from 30 per cent in 1986 on their figures to 37 per cent in 2001 and was concentrated disproportionately among those with intermediate qualifications. Under-qualification showed no trend, but in 2001 about 10 per cent of workers in their twenties were under-qualified, compared to 23 per cent of those in their 50s. Unfortunately we do not have data on the extent of these phenomena in Wales. As Green, McIntosh and Vignoles (2002) suggest, there are two conclusions in relation to policy. First, there is a need for continued monitoring of the use of educational qualifications and the return from them to inform policymakers. Secondly, improving the utilisation of skills in the workforce should be a high priority objective. In the context of the long tail of low skills, however, interpretation of the consequences of this phenomenon is far from straightforward. One can only usefully refer to Goos and Manning's (2003) suggestion that there has been an increasing polarisation of jobs. During the period 1975 to 1999 they found that there were an increasing number of low paid service jobs. Routine tasks tend to be in the intermediate categories of occupations and these are the ones that can be mechanised. "Lovely" jobs such as professional and managerial jobs in finance and business services and "lousy" jobs such as in some low paying service occupations including non-routine activities cannot be easily mechanised as demand for them grows. An example they give is shelf-filling, which requires eye-hand coordination, which is easy for humans but difficult for machines. This polarisation or the hollowing out of intermediate jobs can explain why there has been a simultaneous rise in the returns to education and in the level of over-education.

(d) **Low Pay**

**2.16** We now turn to low paid work as another manifestation of lack of skill. Again this is a work based measure and takes into account both supply and demand side forces in the labour market, whereas the “long tail” phenomenon is more suggestive of just a supply side problem. As referred to elsewhere in the report low pay is not an accurate measure of productivity if there is monopsony in the labour market or if institutions influence wages. Further, comparisons among countries will be influenced by how narrow or wide is the distribution of earnings in each country. There are also considerations with respect to how one measures low pay.

First, there is a choice between absolute and relative measures of low pay. The former refers to a minimum acceptable standard of living or poverty level which is problematical in terms of international comparisons as one must allow for differences in purchasing power parities and standards of living. The latter focuses on the wage distribution or the dispersion of earnings. But should earnings be measured on an hourly, weekly, monthly or annual basis? Should the measure be limited to full-time, year round workers or include part-time or part-year workers? Where should the dividing line be drawn between low and high pay? Some have focused on the lowest quintile of the earnings distribution, others on the third decile or below and yet others on the so-called European decency threshold of 68 per cent of mean earnings. However, a majority have elected for two-thirds of median earnings and we have followed this example in terms of hourly earnings.

**2.17** An early study of low pay in Britain by Woodward and McNabb (1978) pointed to an association between low pay and technological and industrial characteristics such as the degree of industrial concentration (negatively) and regional performance (negatively in relation to areas of high economic activity). The proportions of unskilled young and female workers were all found to be significantly related to low pay. The incidence of low pay varies across different sectors of the economy. Thus, Ryan (1990) noted that two industrial sectors – the distributive trades and miscellaneous services – together accounted for one-third of all low-paid men and women, twice their contribution to employment. Across occupations, selling and catering have substantial proportions of low paid men and women, which in part may reflect the fact that small firms tend to offer lower wages than large firms. Other personal characteristics such as age, education and experience of unemployment also appear to be correlated with low pay. More recent studies have concentrated on the dynamics of low pay (e.g. Asplund, Sloane and Theodossiou, 1998, Stewart and Swaffield, 1999 and Sloane and Theodossiou, 2000). One can summarise this literature as suggesting that the longer workers remain in low paid jobs then the more difficult it becomes to escape from them (low pay persistence). This scarring effect of low pay can arise as a consequence of the characteristics of individuals themselves (heterogeneity) or the carry-over of the experience of low pay from one point to another (structural dependence). It seems from the evidence that the latter is more important than the former. As well as having a high probability of remaining low paid, this group is also more likely to move out of employment (the low-

pay, no-pay cycle). That is, there does not seem to be much support for the proposition that low paid jobs act as stepping stones to higher paid jobs. Thus, some workers appear to be trapped in low paid jobs. Low pay also seems to be associated with long-run earnings inequality insofar as the number of low paid workers appears to increase as the earnings distribution becomes more unequal. To some extent institutional arrangements such as trade union membership and collective bargaining coverage or a national minimum wage (NMW) can moderate these effects by compressing the lower tail of the earnings distribution. It should be noted that our definition of low pay occurs at a higher point in the earnings distribution than the minimum wage, and there is evidence that a substantial number move out of low payment at the NMW to higher paid jobs relatively rapidly (Jones, Jones, Murphy and Sloane, 2005).

**2.18** One might expect to see the introduction of the NMW having differential effects on wages across regions and also to narrow the wage gap by varying degrees according to the proportion of low paid workers and the degree of over-representation of women amongst the low paid. Further effects would follow if there were spillover effects for workers just above the minimum. However, Dickens and Manning (2004) found that the introduction of the NMW had virtually no impact on the wages of workers not directly influenced by it. Robinson (2005), using difference-in-differences estimation, found that the gender pay gap appeared to have moved by 1 or 2 percentage points more in regions where women comprised a relatively large share of the low paid and/or where the average distance between the NMW and the hourly rate prior

to its introduction was larger. However, not all of these results were statistically significant and this applies to Wales where the gender pay gap is smaller than in many regions. Wales had the highest proportion of workers paid below the NMW in 1998, apart from the North East. Further, research is required on the effects of later upratings of the NMW as these have been greater than the increase in average earnings, but we have not considered in any detail the issue of the NMW in this report.

**2.19** We define low pay as two thirds of median hourly pay, which is a conventional definition and at the relevant date covered all those earning less than £5.77 per hour. Table 2.8 shows that according to this definition 23.5 per cent of employees in Wales who have reported hourly earnings information were low paid in 2004/5 compared to 20.9 per cent in the UK as a whole. Clearly Wales has a higher proportion of its workers in low paid jobs than the rest of the UK. In both Wales and the UK as a whole, Sales and Service occupations have the highest incidence of low pay (57.1 and 54.4 per cent respectively) followed by Elementary occupations (54.8 and 52.4 respectively). Thus, the incidence of low pay is concentrated in certain occupations.

**2.20** To what extent are those without qualifications or those employed in elementary occupations low paid? To make explicit the distinctiveness of the three measures, we can consider those individuals in Wales who are in elementary occupations, have no qualifications and who are also in receipt of low pay. These amount to some 12,795 individuals compared to the 193,339

who just lack qualifications, the 212,066 who are in elementary occupations and the 158,610 who are in receipt of low pay. This again serves to emphasise the fact that different definitions of low skills can produce different answers in relation to the particular employees who are captured by the definition.

**2.21** Table 2.9 shows that the incidence of low pay in the UK was fairly stable over the period 1996 to 2005 at around 22 per cent. In contrast, in Wales there was a reduction from just over 29 per cent in 1996 to just under 24 per cent in 2005.

## **2.4 CONCLUSIONS**

**2.22** In general it does appear that the incidence of low skills is higher in Wales than in the UK as a whole, but not dramatically so. However, there are differences in those employees who fall into this category dependent on whether low skill is defined according to employment in elementary occupations, according to lack of qualifications or according to whether the individual is low paid. Indeed, only a minority of those in elementary occupations have no qualifications and a lack of qualifications does not necessarily debar workers from entering higher occupations, apart from professional occupations.

**Table 2.1  
Occupations by Region, Winter 2004-5**

	All		Managers and Senior Officials		Professional occupations		Associate Professional and Technical		Administrative and Secretarial	
	number	%	number	%	number	%	number	%	number	%
<b>North East</b>	1100114	100	130,120	12	104,307	9	148,415	13	140,406	13
<b>North West (inc Merseyside)</b>	3121403	100	440,143	14	361,663	12	401,931	13	428,406	14
<b>Yorkshire and Humberside</b>	2336847	100	314,064	13	257,627	11	292,538	13	268,936	12
<b>East Midlands</b>	2037880	100	311,916	15	223,800	11	239,440	12	227,111	11
<b>West Midlands</b>	2480951	100	330,289	13	282,172	11	315,047	13	302,130	12
<b>Eastern</b>	2717467	100	437,850	16	345,164	13	386,768	14	337,964	12
<b>London</b>	3438493	100	621,580	18	551,671	16	643,190	19	452,995	13
<b>South East</b>	4057491	100	690,997	17	564,196	14	608,690	15	536,465	13
<b>South West</b>	2437593	100	361,499	15	282,782	12	328,098	13	309,844	13
<b>Wales</b>	1305646	100	179,091	14	138,773	11	156,896	12	156,925	12
<b>Scotland</b>	2413595	100	302,317	13	303,954	13	326,598	14	304,754	13
<b>Northern Ireland</b>	738,169	100	75,307	10	91,210	12	78,922	11	104,968	14
<b>UK</b>	28185649	100	4195173	15	3507319	12	3926533	14	3570904	13

	Skilled Trades Occupations		Personal Service Occupations		Sales and Customer Service Occupations		Process, Plant and Machine Operatives		Elementary Occupations	
	number	%	number	%	number	%	number	%	number	%
<b>North East</b>	135,019	12	92,201	8	108,029	10	103,939	9	137,678	13
<b>North West (inc Merseyside)</b>	344,148	11	256,826	8	279,696	9	261,490	8	347,100	11
<b>Yorkshire and Humberside</b>	281,623	12	186,332	8	205,589	9	213,640	9	316,498	14
<b>East Midlands</b>	263,496	13	161,336	8	153,901	8	196,838	10	260,042	13
<b>West Midlands</b>	312,902	13	194,877	8	185,962	7	239,098	10	318,474	13
<b>Eastern</b>	311,487	11	202,171	7	188,317	7	188,426	7	319,320	12
<b>London</b>	285,130	8	225,005	7	203,704	6	153,154	4	302,064	9
<b>South East</b>	435,392	11	301,774	7	314,956	8	200,998	5	404,023	10
<b>South West</b>	300,839	12	194,015	8	214,542	9	160,828	7	285,146	12
<b>Wales</b>	168,420	13	100,821	8	114,315	9	115,268	9	175,137	13
<b>Scotland</b>	284,057	12	198,372	8	225,101	9	182,635	8	285,807	12
<b>Northern Ireland</b>	128,619	17	57,929	8	56,430	8	65,562	9	79,222	11
<b>UK</b>	3251132	12	2171659	8	2250542	8	2081876	7	3230511	11

Source: Data Archive, Quarterly Labour Force Survey Analysis, December 2004 - February 2005

**Table 2.2**  
**Occupations with No Qualifications by Region, Winter 2004-5**

	Elementary Occupations			Process, Plant and Machine Operatives		
	Number with No Qualifications	Percentage Across Regions	Percentage Across Qualifications	Number with No Qualifications	Percentage Across Regions	Percentage Across Qualifications
<b>North East</b>	34,623	4.0	25.1	13,705	3.3	13.2
<b>North West (inc Merseyside)</b>	96,744	11.1	27.9	53,968	13.0	20.6
<b>Yorkshire and Humberside</b>	75,160	8.6	23.7	43,023	10.3	20.1
<b>East Midlands</b>	66,923	7.7	25.7	40,218	9.7	20.4
<b>West Midlands</b>	102,195	11.7	32.1	46,113	11.1	19.3
<b>Eastern</b>	91,193	10.5	28.6	32,644	7.8	17.3
<b>London</b>	73,297	8.4	24.3	35,127	8.4	22.9
<b>South East</b>	108,753	12.5	26.9	35,125	8.4	17.5
<b>South West</b>	65,675	7.5	23.1	29,114	7.0	18.1
<b>Wales</b>	51,253	5.9	29.3	25,091	6.0	21.8
<b>Scotland</b>	69,855	8.0	24.4	35,733	8.6	19.6
<b>Northern Ireland</b>	34,247	3.9	43.2	26,871	6.4	41.0
<b>UK</b>	869,918	100.0	26.9	416,732	100.0	20.0

*Source:* Data Archive, Quarterly Labour Force Survey Analysis, December 2004 - February 2005

**Table 2.3**  
**Occupations in Wales by Qualification Level (Academic-Based Classification), Winter 2004-5**

	Base	Degree or equivalent	Higher education	GCE A Level or equiv	GCSE grades A-C or equiv	Other qualifications	No qualifications
Managers and Senior Officials	179,091	41,983	26,834	50,283	34,928	11,730	12,467
Professional occupations	138,773	105,622	19,920	7,259	4,707	1,265	0
Associate Professional and Technical	156,896	43,732	37,470	38,029	26,295	6,834	3,578
Administrative and Secretarial	156,925	15,632	17,302	36,110	66,475	11,088	7,718
Skilled Trades Occupations	168,420	2,182	6,963	75,697	30,974	19,483	29,124
Personal Service Occupations	100,821	6,453	8,236	20,693	36,017	12,620	16,280
Sales and Customer Service Occupations	114,315	7,665	3,725	25,766	44,752	11,353	21,054
Process, Plant and Machine Operatives	115,268	3,356	5,393	17,954	31,673	29,410	25,091
Elementary Occupations	175,137	2,938	1,999	27,849	58,751	29,568	51,253
All	1,305,646	229,563	127,842	99,640	334,572	133,351	166,565

	Base	Degree or equivalent	Higher education	GCE A Level or equiv	GCSE grades A-C or equiv	Other qualifications	No qualifications
Managers and Senior Officials	100	23	15	28	20	7	7
Professional occupations	100	76	14	5	3	1	0
Associate Professional and Technical	100	28	24	24	17	4	2
Administrative and Secretarial	100	10	11	23	42	7	5
Skilled Trades Occupations	100	1	4	45	18	12	17
Personal Service Occupations	100	6	8	21	36	13	16
Sales and Customer Service Occupations	100	7	3	23	39	10	18
Process, Plant and Machine Operatives	100	3	5	16	27	26	22
Elementary Occupations	100	2	1	16	34	17	29
All	100	18	10	8	26	10	13

Source: Data Archive, Quarterly Labour Force Survey Analysis, December 2004 - February 2005

**Table 2.4**  
**Occupations with No Qualifications by Region**

	Elementary Occupations									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
North East	41.1	41.4	35.7	39.5	33.4	25.6	32.8	25.2	25.1	23.2
North West (inc Merseyside)	35.3	39.9	35.4	33.3	35.0	31.7	30.8	27.7	27.9	27.3
Yorkshire and Humberside	40.6	39.2	36.2	33.0	32.4	31.8	31.4	25.2	23.7	24.2
East Midlands	39.5	40.1	35.6	34.6	36.7	30.8	24.2	27.2	25.7	22.4
West Midlands	42.7	41.8	39.2	35.5	37.3	31.4	30.9	29.6	32.1	28.6
Eastern	36.9	34.5	35.1	36.2	34.5	27.9	26.6	25.9	28.6	27.6
London	40.0	40.0	35.9	33.7	32.6	25.9	23.6	28.4	24.3	24.8
South East	33.2	35.8	32.7	32.7	30.3	26.4	24.7	26.5	26.9	20.3
South West	32.7	32.4	34.8	32.0	28.7	23.1	21.8	21.3	23.1	21.9
Wales	41.5	34.6	37.6	35.8	31.3	32.0	25.9	27.9	29.3	25.1
Scotland	36.4	34.0	34.0	37.2	34.0	31.8	32.0	29.0	24.4	24.6
Northern Ireland	49.8	48.4	43.2	44.2	52.0	35.5	40.4	38.8	43.2	44.8
UK	37.8	37.8	35.6	34.7	33.6	29.0	27.8	27.1	26.9	25.0
	Process Plant and Machine Operatives									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
North East	21.9	18.9	22.2	16.4	20.3	20.6	20.4	12.8	13.2	10.7
North West (inc Merseyside)	22.4	21.0	21.1	20.5	23.0	27.2	22.6	22.9	20.6	20.4
Yorkshire and Humberside	23.3	25.6	24.4	21.8	25.2	21.7	20.9	18.2	20.1	15.5
East Midlands	25.9	21.9	23.2	20.4	25.7	22.1	23.5	24.5	20.4	17.2
West Midlands	30.2	29.6	26.9	27.0	23.5	26.8	23.5	24.8	19.3	21.0
Eastern	23.0	21.8	20.9	23.1	21.6	16.6	16.5	19.2	17.3	17.6
London	28.3	27.3	21.9	24.2	24.4	24.8	22.8	23.3	22.9	19.2
South East	24.0	20.1	22.5	16.7	19.7	19.8	15.4	17.1	17.5	15.1
South West	20.5	21.4	20.5	18.4	18.3	14.5	15.2	16.3	18.1	10.4
Wales	28.0	27.4	23.6	22.4	19.8	25.5	18.5	18.2	21.8	17.9
Scotland	24.0	20.0	19.3	23.1	20.9	20.6	20.5	24.2	19.6	20.6
Northern Ireland	35.2	31.2	35.3	37.1	37.2	34.1	33.7	34.4	41.0	38.3
UK	25.0	23.3	22.9	21.9	22.6	22.4	20.7	21.0	20.0	18.0

Source: Data Archive, Quarterly Labour Force Survey Analysis, Winter Quarter

**Table 2.5**  
**Changes in the Occupation Distribution: Great Britain – 1995-2005**

Date	all employed as managers and senior officials as % of all in employment		all employed in professional occupations as % of all in employment		all employed in associate professional & technical as % of all in employment		all employed in administrative and secretarial occs as % of all in employment		all employed in skilled trades occupations as % of all in employment	
	Number	value	number	value	number	value	number	value	number	value
Jun 1994-May 1995	3,995,000	15.3	2,525,000	9.7	2,318,000	8.9	3,797,000	14.5	3,179,000	12.2
Jun 1995-May 1996	3,994,000	15.1	2,633,000	10.0	2,370,000	9.0	3,778,000	14.3	3,105,000	11.8
Jun 1996-May 1997	4,041,000	15.2	2,620,000	9.8	2,536,000	9.5	3,864,000	14.5	3,132,000	11.7
Jun 1997-May 1998	4,125,000	15.3	2,628,000	9.7	2,626,000	9.7	3,900,000	14.4	3,127,000	11.6
Jun 1998-May 1999	4,127,000	15.1	2,796,000	10.2	2,664,000	9.7	3,958,000	14.5	3,116,000	11.4
Jun 1999-May 2000	4,230,000	15.3	2,858,000	10.4	2,739,000	9.9	3,987,000	14.4	3,061,000	11.1
Jun 2000-May 2001	-	-	-	-	-	-	-	-	-	-
Jun 2001-May 2002	3,749,000	14.0	3,087,000	11.5	3,681,000	13.7	3,598,000	13.4	3,129,000	11.6
Jun 2002-May 2003	3,903,000	14.4	3,198,000	11.8	3,675,000	13.6	3,568,000	13.2	3,099,000	11.5
Jun 2003-May 2004	3,983,000	14.6	3,342,000	12.2	3,764,000	13.8	3,471,000	12.7	3,110,000	11.4
Jun 2004-May 2005	4,101,000	14.9	3,403,000	12.4	3,812,000	13.9	3,461,000	12.6	3,116,000	11.3
	all employed in personal service occupations as % of all in employment		all employed in sales and customer services occs as % of all in employment		all employed in process plant & machine operatives as % of all in employment		all employed in elementary occupations as % of all in employment			
Jun 1994-May 1995	2,563,000	9.8	1,945,000	7.4	2,381,000	9.1	3,419,000		13.1	
Jun 1995-May 1996	2,705,000	10.3	2,002,000	7.6	2,415,000	9.2	3,372,000		12.8	
Jun 1996-May 1997	2,740,000	10.3	2,075,000	7.8	2,377,000	8.9	3,271,000		12.3	
Jun 1997-May 1998	2,802,000	10.4	2,070,000	7.7	2,436,000	9.0	3,296,000		12.2	
Jun 1998-May 1999	2,863,000	10.5	2,126,000	7.8	2,392,000	8.7	3,251,000		11.9	
Jun 1999-May 2000	2,921,000	10.6	2,199,000	8.0	2,349,000	8.5	3,260,000		11.8	
Jun 2000-May 2001	-	-	-	-	-	-	-		-	
Jun 2001-May 2002	1,927,000	7.2	2,120,000	7.9	2,232,000	8.3	3,284,000		12.2	
Jun 2002-May 2003	1,979,000	7.3	2,151,000	8.0	2,174,000	8.0	3,261,000		12.1	
Jun 2003-May 2004	2,088,000	7.7	2,191,000	8.0	2,077,000	7.6	3,205,000		11.7	
Jun 2004-May 2005	2,099,000	7.6	2,181,000	7.9	2,039,000	7.4	3,185,000		11.6	

Source: Labour Force Survey – quarterly: four quarter averages  
classification of respondents' occupations pre spring 2001 is based on the Standard Occupational Classification (SOC) 1990;  
classification of respondents' occupations post spring 2001 is based on the Standard Occupational Classification (SOC) 2000;  
- these figures are missing.

**Table 2.6**  
**Changes in the Occupational Distribution: Wales 1995-2005**

Source: labour force survey - quarterly: four quarter averages

Classification of respondents' occupations pre spring 2001 is based on the Standard Occupational Classification (SOC) 90.

Classification of respondents' occupations post spring 2001 is based on the Standard Occupational Classification (SOC) 2000.

Date	all employed as managers and senior officials as % of all in employment		all employed in professional occupations as % of all in employment		all employed in associate professional & technical as % of all in employment		all employed in administrative and secretarial occs as % of all in employment		all employed in skilled trades occupations as % of all in employment	
	number	value	number	value	number	value	number	value	number	value
Jun 1994-May 1995	167,000	13.5	120,000	9.7	100,000	8.1	162,000	13.1	155,000	12.5
Jun 1995-May 1996	171,000	13.7	110,000	8.8	104,000	8.4	147,000	11.8	156,000	12.5
Jun 1996-May 1997	177,000	14.0	111,000	8.8	104,000	8.2	154,000	12.2	151,000	11.9
Jun 1997-May 1998	167,000	13.3	117,000	9.3	105,000	8.4	150,000	12.0	156,000	12.4
Jun 1998-May 1999	162,000	12.8	120,000	9.5	114,000	9.0	150,000	11.9	159,000	12.6
Jun 1999-May 2000	162,000	12.7	123,000	9.6	119,000	9.3	154,000	12.0	163,000	12.7
Jun 2000-May 2001	-	-	-	-	-	-	-	-	-	-
Jun 2001-May 2002	139,000	11.3	136,000	11.1	145,000	11.8	145,000	11.8	170,000	13.9
Jun 2002-May 2003	147,000	11.5	155,000	12.2	167,000	13.1	146,000	11.5	171,000	13.4
Jun 2003-May 2004	155,000	11.8	149,000	11.4	165,000	12.6	155,000	11.8	174,000	13.3
Jun 2004-May 2005	176,000	13.5	140,000	10.8	156,000	12.0	156,000	12.0	166,000	12.8

Date	all employed in personal service occupations as % of all in employment		all employed in sales and customer services occs as % of all in employment		all employed in process plant & machine operatives as % of all in employment		all employed in elementary occupations as % of all in employment	
	number	value	number	value	number	value	number	value
Jun 1994-May 1995	129,000	10.4	85,000	6.8	132,000	10.6	191,000	15.4
Jun 1995-May 1996	140,000	11.2	97,000	7.8	138,000	11.1	182,000	14.6
Jun 1996-May 1997	143,000	11.3	106,000	8.4	136,000	10.7	185,000	14.6
Jun 1997-May 1998	145,000	11.6	105,000	8.4	134,000	10.7	176,000	14.0
Jun 1998-May 1999	142,000	11.2	100,000	7.9	140,000	11.1	178,000	14.1
Jun 1999-May 2000	148,000	11.6	103,000	8.0	135,000	10.5	173,000	13.5
Jun 2000-May 2001	-	-	-	-	-	-	-	-
Jun 2001-May 2002	93,000	7.6	106,000	8.7	123,000	10.0	168,000	13.7
Jun 2002-May 2003	106,000	8.3	108,000	8.5	118,000	9.3	157,000	12.3
Jun 2003-May 2004	107,000	8.2	120,000	9.2	121,000	9.2	163,000	12.5
Jun 2004-May 2005	102,000	7.8	114,000	8.8	115,000	8.8	176,000	13.5

- These figures are missing.

**Table 2.7**  
**Qualifications by Region, Winter 2004-5**

	Base		Degree or equivalent		Higher education		GCE A Level or equiv		GCSE grades A-C or equiv		Other qualifications		No qualification	
	number	%	number	%	number	%	number	%	number	%	number	%	number	%
<b>North East</b>	1548721	100	197,179	13	124,824	8	373,990	24	395,199	26	204,008	13	249,187	16
<b>North West (inc Merseyside)</b>	4206400	100	629,127	15	367,730	9	1033845	25	1045349	25	427,507	10	675,027	16
<b>Yorkshire and Humberside</b>	3102745	100	438,459	14	244,326	8	768,528	25	739,676	24	422,283	14	475,837	15
<b>East Midlands</b>	2656713	100	399,909	15	222,303	8	644,428	24	623,002	23	337,305	13	406,720	15
<b>West Midlands</b>	3287017	100	482,641	15	276,153	8	734,545	22	790,506	24	404,592	12	569,259	17
<b>Eastern</b>	3431565	100	589,883	17	276,945	8	787,945	23	884,435	26	424,204	12	454,341	13
<b>London</b>	4908474	100	1273548	26	294,319	6	872,336	18	819,401	17	926,260	19	680,642	14
<b>South East</b>	5121262	100	1030947	20	448,936	9	1230857	24	1230672	24	593,288	12	551,536	11
<b>South West</b>	3067325	100	519,743	17	275,499	9	775,305	25	772,786	25	383,443	13	322,654	11
<b>Wales</b>	1796924	100	267,332	15	151,654	8	393,632	22	451,540	25	194,036	11	321,832	18
<b>Scotland</b>	3201902	100	566,328	18	414,560	13	930,335	29	556,349	17	269,511	8	450,836	14
<b>Northern Ireland</b>	1068562	100	157,916	15	84,037	8	252,545	24	228,573	21	64,030	6	274,156	26
<b>UK</b>	37397610	100	6553012	18	3181286	9	8798291	24	8537488	23	4650467	12	5432027	15

*Source:* Data Archive, Quarterly Labour Force Survey Analysis, December 2004 - February 2005

**Table 2.8**  
**Incidence of Low Pay across Occupations in the UK and Wales 2004/05**

	<b>Total in Occupation</b>	<b>Total with Low Pay</b>	<b>Percentage</b>
Managers and Senior Officials	2,162,150	101,369	4.69
Professional Occupations	1,902,432	43,629	2.29
Associate Professional and Technical	2,126,115	94,013	4.42
Administrative and Secretarial	2,064,128	301,685	14.62
Skilled trades Occupations	1,238,668	234,778	18.95
Personal Service Occupations	1,237,553	455,378	36.8
Sales and Service Occupations	1,288,144	701,157	54.43
Process, Plant and Machine Operatives	1,126,192	233,912	20.77
Elementary Occupations	1,848,269	969,271	52.44
<b>Total for the UK</b>	<b>14,993,651</b>	<b>3,135,192</b>	<b>20.91</b>
<b>Wales</b>			
Managers and Senior Officials	74,656	3,781	5.06
Professional Occupations	77,326	1,411	1.82
Associate Professional and Technical	85,750	3,688	4.3
Administrative and Secretarial	89,155	11,952	13.41
Skilled trades Occupations	60,644	12,824	21.15
Personal Service Occupations	64,289	23,164	36.03
Sales and Service Occupations	62,292	35,543	57.06
Process, Plant and Machine Operatives	67,923	14,480	21.32
Elementary Occupations	94,450	51,767	54.81
<b>Total for Wales</b>	<b>676,485</b>	<b>158,610</b>	<b>23.45</b>

*Source:* Labour Force Survey Data (aggregate of four quarters from Winter 04 to Autumn 05).

*Notes:* Population weights used. Definition of Low Pay is £5.77, which is two-thirds of the median hourly pay. Numbers reported in table based on individuals with reported information on hourly earnings.

**Table 2.9**  
**Incidence of Low Pay Across Occupations in the UK – 1996-2005**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Managers and Senior Officials	6.45	5.51	4.97	5.01	5.67	5.10	4.55	4.39	5.00	5.75
Professional occupations	2.77	2.56	2.92	2.91	2.46	2.27	1.95	2.62	2.49	2.53
Associate Professional and Technical	5.61	6.21	5.60	4.79	5.14	5.30	4.34	4.47	4.78	4.72
Administrative and Secretarial	16.33	18.01	15.98	15.53	17.33	15.04	14.26	14.27	14.63	15.78
Skilled Trades Occupations	18.57	19.64	19.54	16.89	16.24	17.36	17.99	18.61	20.43	19.68
Personal Service Occupations	43.78	41.14	44.07	41.12	41.45	41.16	39.98	40.70	37.30	38.24
Sales and Customer Service Occupations	50.59	49.20	51.48	47.98	52.58	54.91	55.09	55.20	53.60	55.57
Process, Plant and Machine Operatives	24.81	23.48	23.75	23.30	23.49	23.77	23.54	25.48	22.58	23.83
Elementary Occupations	51.32	55.13	55.60	53.04	55.56	55.18	53.44	52.65	53.08	56.50
All	22.47	22.59	22.77	21.42	21.99	21.90	21.60	21.42	21.13	21.56

**Incidence of Low Pay Across Occupations in Wales**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Managers and Senior Officials	2.40	8.60	2.00	5.61	8.48	5.18	7.69	5.06	8.69	9.85
Professional occupations	2.70	1.22	6.54	2.17	6.39	2.38	2.11	2.12	3.06	---
Associate Professional and Technical	4.18	3.69	5.70	2.64	2.92	1.00	5.75	8.07	8.13	1.98
Administrative and Secretarial	28.03	21.76	21.18	12.49	23.17	19.78	21.08	14.77	20.74	22.20
Skilled Trades Occupations	24.88	18.33	24.46	18.40	16.96	25.83	26.92	19.05	20.25	25.20
Personal Service Occupations	45.19	39.65	49.05	45.22	39.22	36.21	37.00	35.36	34.81	42.39
Sales and Customer Service Occupations	59.84	48.78	57.25	47.64	48.77	67.91	62.28	53.89	44.35	55.27
Process, Plant and Machine Operatives	25.45	22.92	35.39	26.23	15.16	28.83	27.45	34.20	32.25	10.28
Elementary Occupations	59.83	51.34	52.60	64.44	66.06	60.25	62.49	65.88	59.93	56.70
All	29.14	24.12	28.28	23.77	24.73	25.77	27.56	24.71	24.16	23.80

*Source:* Data Archive, Quarterly Labour Force Survey Analysis, Winter Quarters

*Notes:* population weights used;

low pay is calculated as two thirds of the median hourly pay for that corresponding year;

numbers are based on individuals with reported information on hourly earnings;

classification of respondents' occupations pre spring 2001 is based on the Standard Occupational Classification (SOC) 1990;

classification of respondents' occupations post spring 2001 is based on the Standard Occupational Classification (SOC) 2000.

### **3. INTERNATIONAL EVIDENCE**

#### **3.1 Basic Skills**

International comparisons of basic skills competence are extensively documented. Official publications primarily concentrate upon comparative analyses of average literacy and numeracy test scores. One particular example is the International Adult Literacy Survey (IALS), as described in McIntosh and Vignoles (2001). This survey, undertaken in 1995, examines adult literacy standards in 12 countries (including Belgium, Canada, Germany, Ireland, the Netherlands, New Zealand, Poland, Sweden, Switzerland, USA) and analyses Great Britain and Northern Ireland separately. The results suggest that Britain achieves a relatively poor standard rate of literacy, with 21.7% considered to be suffering from a low skill level. This is compared to a figure of only 7.5% for Sweden. The comparison of numeracy skills suggests a more alarming state of affairs: 51.1% suffer from low skills in this area. Only Ireland and Poland achieve inferior results.

**3.2** Superficially, these results appear significant and are commonly used as a justification for any relative deficiency in economic performance, in terms of both the probability of low pay and of unemployment spells.<sup>17</sup> For example, Layard, McIntosh and Vignoles (2001) utilise IALS data to explain the connection of Britain's low skills to its poor productivity history. Estimating that British productivity per hour worked is 20% lower than in Germany, they offer both less human capital and less physical capital per hour worked as explanations. Further analysis can then focus on low skill levels on the grounds that it is arguably human capital constraints that deter physical capital

investment. However, the validity of this reasoning is undermined by the United States' superior productivity record. Keep *et al.* (2002, p. 35) demonstrate this neatly:

“...when they turn to consider America, they admit that, “there is no clear overall difference in skills”, and are forced to put the USA's superior productivity down to “the exceptional quality of the research in leading universities in the US”. Despite these rather inconsistent findings, they nevertheless ultimately conclude that, “if Britain wants its productivity to reach levels found in other countries, it will have to catch up with their skills. For where the skills are, there will the world's capital go”— a curious belief given the USA's success to date in attracting capital to service its huge trade deficit with the rest of the world.”

International comparisons of literacy tests should be treated with some caution. For example, Blum and Guerin-Pace (2000) reveal that individual country responses are dependent on linguistic issues: the translation of questions into the required languages may bias the results. Therefore, numeracy comparisons are more transparent as, opposed to all other schooling skills, these measurements minimise the difficulties generated by cross-country cultural differences. Table 3.1, for example, demonstrates England's low position in the Third International Maths and Science Study (TIMSS 1995). However, there are other sources of bias. The same Table reveals that these international comparisons are made despite variations in the age of respondents. These differences occur because of national dissimilitude in education systems. For example, England allocates student levels purely according to age whilst others have yearly assessments and retake years. The difficulties associated with these studies should not be ignored, especially when simple sampling consistency is sufficient to call the validity of results into question.

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<sup>17</sup> See McIntosh and Vignoles (2001) for an empirical analysis into the magnitude of the wage effects.

Gorard (2001, p. 288) explores this issue further and queries the willingness with which it is ‘critically’ accepted that Britain’s education system is a relative failure:

“Much of the so-called evidence which has been used to show that standards in Britain are falling, *or that they are poor in international terms*, can be dealt with very quickly. Much is hearsay, misinterpretation or ‘academic Chinese whispers’.”

**3.4** In support of this statistical scepticism, a review of the literature does confirm the existence of wide ranging findings. Some interpretations actually suggest that Britain does relatively well. This is illustrated by the 2000 Programme for International Student Assessment (PISA) of 15-year olds, represented by Tables 3.2 to 3.4.<sup>18</sup> While recognising that these respondents have not yet entered the labour market this study implies that the UK results actually surpass the OECD average. For example, compared to the OECD total of 498, Table 3.3 shows the UK mean score is 529 on the PISA mathematical literacy scale. A similar above-average performance is achieved on the PISA scientific literacy score (Table 3.4). This could be indicative of an improving UK performance, given the less impressive conclusions found in the earlier TIMSS results. Further analysis of PISA also suggests a lower spread of assessment scores in the UK, results that are inconsistent with the ‘long tail’ argument.<sup>19</sup> For example, Table 3.2 provides a breakdown of reading proficiency. Defining the lowest level as 407 or below on the reading literacy scale, 12.8 per cent of British youngsters only achieve this level. Percentages elsewhere are much higher, with the OECD country average being 18.3 per

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<sup>18</sup> It can be difficult to directly compare PISA results with other studies of ability levels, given it specifically focuses on 15 year olds (rather than the skills of 16 to 64 year olds as with IALS).

cent. This ranks the UK in the lowest 8th position.<sup>20</sup> Table 3.3 and 3.4, by breaking down how students perform at different percentiles in each country, provide an opportunity to compare the variation in student performance. The distributions of student performance show a relatively large gap between the 5th and 25th percentiles for most countries. For example, the gap is between 75 and 131 score points in the mathematics literacy analysis. The UK's gap of 95 is surpassed by a number of countries: Italy, Czech Republic, Norway, United States, Austria, Japan, Sweden, Poland, New Zealand, Luxembourg, Germany, Switzerland, Greece and Belgium

**3.5** Accounting for these oscillations in basic skills findings has ignited a methodological debate amongst academics. Some suggest that Britain's overall higher performances in these assessments are in fact illusionary. Prais (2003), for example, focuses on potential methodological flaws in the PISA survey. However, his views have met a fierce rebuttal from Adams (2003):

“Prais's criticisms are due to an incomplete understanding and knowledge of the methodology of international studies, and of PISA in particular.”

**3.6** Previous studies do largely support the stance of a lower average British score, compared to the Far East and much of Europe, with also a greater dispersion of performance. However, Adams provides convincing examples to demonstrate a more varied picture. For example, England scored relatively

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<sup>19</sup> PISA is repeated in 2003, but these results cannot be used for reliable international comparisons as the UK fell short of the requirements for initial response rates.

<sup>20</sup> The UK figures consist of observations from England and Scotland. Wales did not participate. Only 7 countries in Table 3.2 (Korea, Finland, Canada Japan, Ireland, Australia and New Zealand have a lower percentage at level 1 and below. These results are confirmed with the comparison of youth mathematics scores. The UK performs relatively well, with only 8% scoring at the low end of the scale (i.e. less than 400 points). This compares with the OECD average of 16%.

well in the 2001 PIRLS assessment of reading literacy at fourth grade, ranking third out of the 15 participating OECD countries and third out of 35 participating education systems.

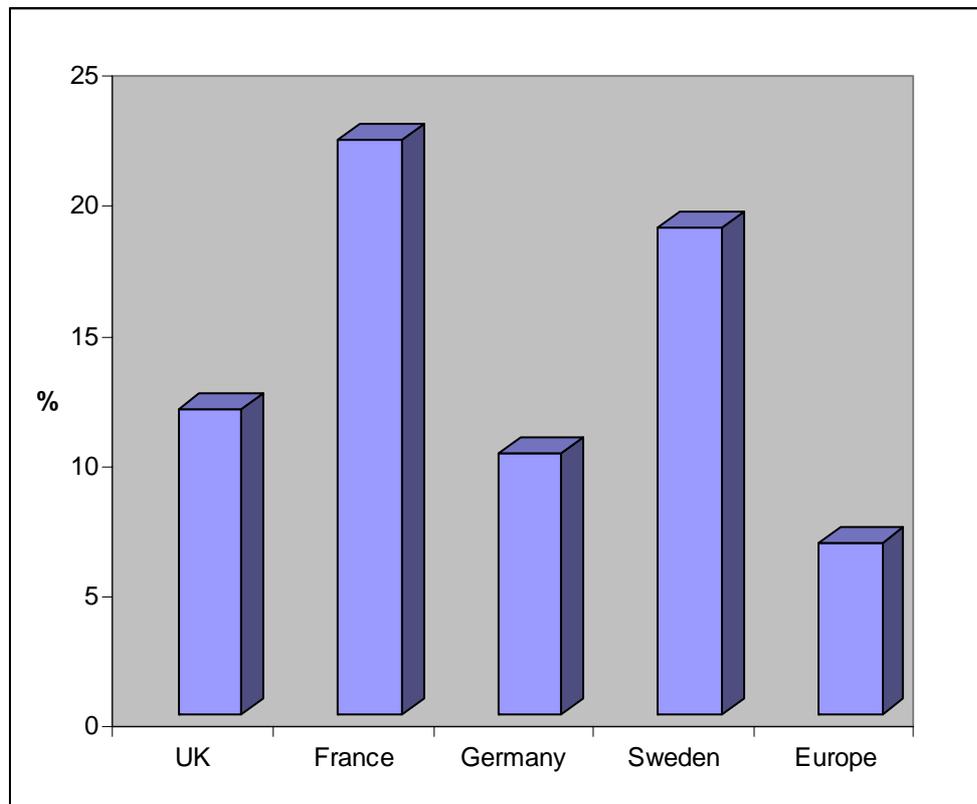
### **Elementary Occupations**

- 3.7** Whilst it is common for empirical studies to rely on occupational structure to control for heterogeneous skill levels, there are major problems in comparing data on employment by occupation across countries.<sup>21</sup> Individual countries apply different systems of occupational classification and the source of variation in the reported occupational structure could merely refer to differences in coding rules and procedures. Given these problems, occupation structure comparisons should focus on aggregated groups that minimise these classification problems. Table 3.5 provides a breakdown of the labour force according to these occupation groups. It shows that, whilst some classification problems do remain, these are restricted to the definition of a manager. The high percentage of British employees reported to be managers should therefore be ignored.
- 3.8** The comparison of elementary occupations is less likely to suffer from such consistency bias. Using this occupation to estimate low skill employment, Figure 3.1 suggests that Britain is in line with other countries. Whilst the figures are perhaps too aggregated and include agriculture and fisheries workers, there is only weak evidence to suggest a skewing of employment towards elementary occupations.

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<sup>21</sup> The strengths and weaknesses associated with using occupation figures in official skill shortage analysis are discussed at length in Elias and McKnight (2001)

**Figure 3.1: International Comparison of the Share of the Economically Active Population in Elementary Occupations in 2004 (Includes Agriculture and Fisheries Workers)**



### **Qualifications**

**3.9** Education inputs are the most common proxy used to measure inter-country differences in human capital differences. Again there is significant imperfection in these international comparisons, flaws that are sufficient to lead to some variation in findings. There is no international uniformity applied to the certification of education and training courses. What is certified in one country is uncertified in another, and even where certification does exist there can be discrepancies in the interpretation of equivalencies between different systems. Compounding this inconsistency, there is also the additional issue of how far formal qualifications can be substituted by informal ‘on-the-job’ training. For example, Hart and Shipman (1991) utilise a case study approach

to compare British and German firms, concentrated in the electronic, electrical and mechanical engineering sectors, all experiencing skill shortages. Their conclusion reads:

“British firms can often sustain the output of sophisticated products, in spite of a largely unqualified workforce, by optimising the allocation of qualified labour between tasks and by relying on uncertified skills acquired through experience.”

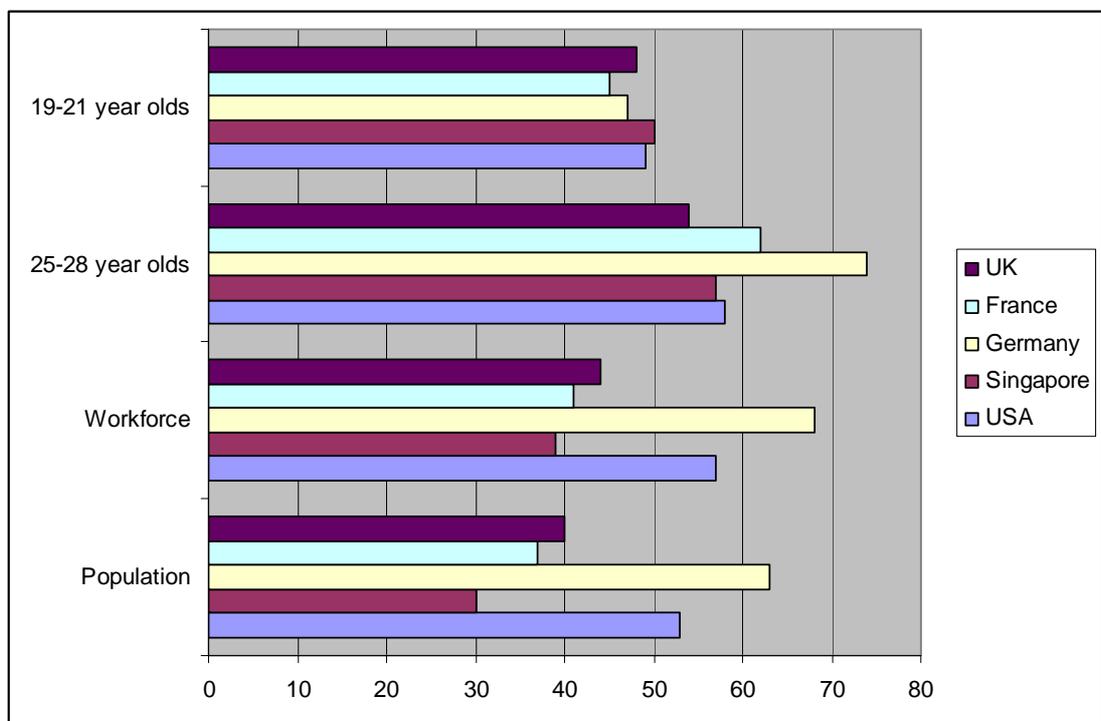
**3.10** The most rehearsed international comparative measure is that of ‘average years of education’. As Table 3.6 shows, this measure suggests Britain outperforms the OECD average. The disadvantage is that these comparisons only consider levels of attendance and, given the possible variance in the quality of education systems, could well be poor measures of attainment. More disaggregated measures are therefore needed. The results of studies using such measures typically suggest a significant British skills shortfall. Characteristic examples include O’Mahony (1999) and Layard, McIntosh and Vignoles (2001), papers which are used to suggest that at least one-half of the UK-German productivity gaps can be explained by variation in skill levels.

**3.11** The International Standard Classification of Education (ISCED) provides a common education-based method to compare skills and it provides an integrated and consistent statistical framework for the collection and reporting of a workforce’s education levels. Low skills can be defined according to categories based on the level of education completed. For example, ISCED (0-2) is scaled to mean education up to the lower secondary level. This cut-off point for low-skilled definitions is preferred, as it allows for the impact of socio-political influences. To define ‘low skilled’ as those with no education

or incomplete secondary education immediately shifts the measurement towards older age groups, whose education preceded the impact of reform on compulsory education. Murray and Steedman (1998) suggest that, of the 1996 working age population, 52% achieved ISCED 2 or less. Comparing the UK with France (43%), Germany (22%), Netherlands (41%), Portugal (77%) and Sweden (28%), it is only Portugal which has a larger problem.

**3.12** The Skills Audit Update, using the UK National Qualifications Framework (NQF), compares qualifications in the UK, France, Germany and the US. The overall population comparison in Figure 3.2 demonstrates that Britain's population generally underperforms at Level 3 and above.

**Figure 3.2: 2002/2003 International Comparison of Qualifications Achieved at NQF Level 3 and Above**



Source: Steedman, McIntosh Green (2004)

This overall picture perhaps does not fully demonstrate the differences in education level achievements across countries. In terms of tertiary education, Britain's education achievement amongst its youth is respectable. Overall the UK's education participation performance is, at worst, moderate. Whilst inferior to countries such as Canada, France, Japan and Korea, the proportion of young adults who have participated in tertiary education has been higher than a number of countries (including Germany, Italy, the Netherlands and Switzerland). However, once we consider the percentage of the population achieving intermediate levels of education (i.e. Levels 2 and 3), we have to consider that fewer people in the UK secure the vocational qualifications that are achieved in countries such as France and Germany.

**3.13** International time series evidence into the supply of low skills is also enlightening. Murray and Steedman (1998) use Labour Force Survey data between the years 1985 and 1997 to track changes in the proportions of the workforce at different ISCED levels. It is revealed that the UK performs at a similar level to France and the Netherlands, with approximately one half at or below ISCED 2. Outperforming these countries are Germany and Sweden, who achieve a proportion at approximately one-quarter of their working age population. The changes over time are arguably most illuminating. Proportions are falling in all countries. Whilst Sweden achieved the highest annual average reduction in the proportion of the population with low skills, there is evidence of increasingly rapid change in Britain. Murray and Steedman (1998) report *'much faster progress in reducing low skills'* between 1990 and 1998 than over the longer period of 1985-1998. By 2010 they predict that proportions in

France, the Netherlands and the UK will be down to somewhere between one quarter and one third of the population of working age.

O'Mahony *et al.* (2004), as described by Broadberry and O'Mahoney (2007), divide workforce skills into three categories: high skilled (qualifications at degree or above), intermediate skilled (secondary school qualifications at age 18 and vocational qualifications above high school but below degree) and low skilled (no certificated qualifications). The international comparison is constrained by data issues, but it does allow comparison of the UK against the US, Germany and France. Their findings, summarised by Table 3.7, suggest that Britain has a long term skill composition problem. Britain is found to have a relatively large percentage of workers with high skills and with low skills. The squeeze is in terms of the proportion of the workforce with intermediate skills. Skills Task Force Report (2002) concludes:

“The UK has fewer workers with vocational qualifications than its European competitors, and often provides young people with a less diverse academic education than does the US. This potentially reduces the flexibility of the UK workforce and reduces adaptability to economic change.”

**3.14** This squeeze in intermediate skills is used to support the premise that a ‘low-skill bad-job’ trap affects the UK. In particular, the literature focuses on the perceived success of the German model of apprenticeship and its ability to produce a majority of the workforce with certifiable intermediate skills.

Steedman, Gospel and Ryan (1998) write:

“In studies carried out at the National Institute of Economic and Social Research (NIESR) researchers found that the great difference between Britain and Germany in terms of qualifications held lay not in the quality or standard of the awards in the two countries but in the far greater numbers gaining vocational qualifications in Germany compared to Britain. Britain was not found to suffer any grave deficiency in university graduates - except, perhaps, in engineering. The striking deficiency was in those qualified to the vital skilled craft, technician and junior professional skill levels (commonly known

as Level 3 - NVQ3, GNVQ3 and A Level). A recent comparison shows Britain having only a quarter of the population of working age holding qualifications at this level, compared to...two thirds in Germany.”

Whilst using international comparisons to provide an insight into skill formation is demanding and requires a multidisciplinary approach, analysis tends to focus on the weaknesses in the UK model of ‘stockholder capitalism’. For example, Culpepper (1999) summarises the general anti-UK stance with the following:

“The relative preponderance of bank-based finance in Germany, accompanied by extensive cross-shareholding and regulation that discouraged hostile takeovers, enabled these companies to take a longer view than companies operating in equity-based systems such as the UK and the USA (Finegold, 1991; Albert, 1993). Such a long-term view is essential for the establishment of apprenticeship training, which only yields returns to a company over the long term.”

However, given the current economic conditions in Germany it is difficult to maintain it as an example of a ‘high-skill, high-wage’ equilibrium success story. Former proponents of this storyline have now lost confidence in the viability of the high skill result (Streeck 1997; Herrigel and Sabel, 1999). Culpepper (1999) reviews the causes of the apparent crisis, including the globalisation in financial markets, changes in union influence and the economic strains imposed by the unification with the former German Democratic Republic. An important factor is the nature of deindustrialisation, with the service sector now the engine of job growth across the OECD countries (see, for example, Hall, 1998). With changes in the organisation of production, the German ‘high skill, high wage’ case study is inapplicable to current real world complexity and the nature of the British economy. One possible test of the relevance of the low skills equilibrium concept is the

international comparison of product quality differences. This analysis is largely non-existent.<sup>22</sup>

**3.15** The situation regarding workforce training is more positive. The National Skills Taskforce (2000) refers to the Continuing Vocational Training Survey that finds much higher average training incidence in Britain. Only Denmark and Germany achieve higher workforce training participation rates, and the inclusion of these non-academic forms of training imply the narrowing of any skills gaps. However, there are still reasons why these results should also be treated with caution. The National Skills Taskforce refers to variable length training courses, and this lack of specificity / generality ensures that the UK still ranks lower in terms of training volume. Data consistency issues must also be considered, given non-job-specific training such as health and safety is included in British figures. Moreover, inequitable training is common (e.g. National Skills Taskforce find that 8% of employees qualified below Level 2 receive training, as opposed to 19% of those qualified at Level 4 (degree level and above). McIntosh (1999), comparing the UK to 5 other European countries using the 1995 European Labour Force Survey, confirms this result. The UK achieves the second highest training rate. However, whilst in Germany and France it is the low skilled that are most likely to receive training, in Britain that training is aimed at established well-educated high-skill groups. With reference to the mechanisms that other countries have put in place for training, McIntosh suggests that Britain continues to suffer from an inadequate provision of appropriate training initiatives for the low skilled.

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<sup>22</sup> Bosworth (2004) refers to the limited evidence in support, mainly on specific issues such as R&D

It should also be noted that the analysis into skill deficiencies is not simply restricted to employees. Research has also ventured into productivity gaps and measured the extent that Britain's underperformance reflects problems with UK management capabilities.<sup>23</sup> Bosworth (1999), for example, finds that UK managers are relatively deficient in formal qualifications. According to this literature, any concerns about skill levels should be directed at the limitations of management. Moreover, it could actually negatively impact on managerial ability to construct and follow optimal skills formation policies.

### **Low Pay**

**3.16** The criterion for low wages is arbitrary: commonly adopted thresholds are calculated at two-thirds of median earnings. Cross-country studies will reflect differences in wage distributions, with 'low paid' in one country potentially earning more than those defined as 'high paid' in another. These cross-country studies, however, do suggest that Britain faces a more acute low pay problem compared to most other developed countries. A benchmark paper is Keese, Puyroyen and Swaim (1998) which undertakes a comparison of low pay in OECD countries. The paper finds the incidence of low pay in mid-1990s UK is comparatively high, with only the US, Canada, Korea and Hungary with a greater prevalence.

**3.17** A problem with any international comparison of low pay is the degree of data comparability, given variations in both data coverage and earnings definitions. Two European datasets attempt to avoid these problems: The European

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and patent data.

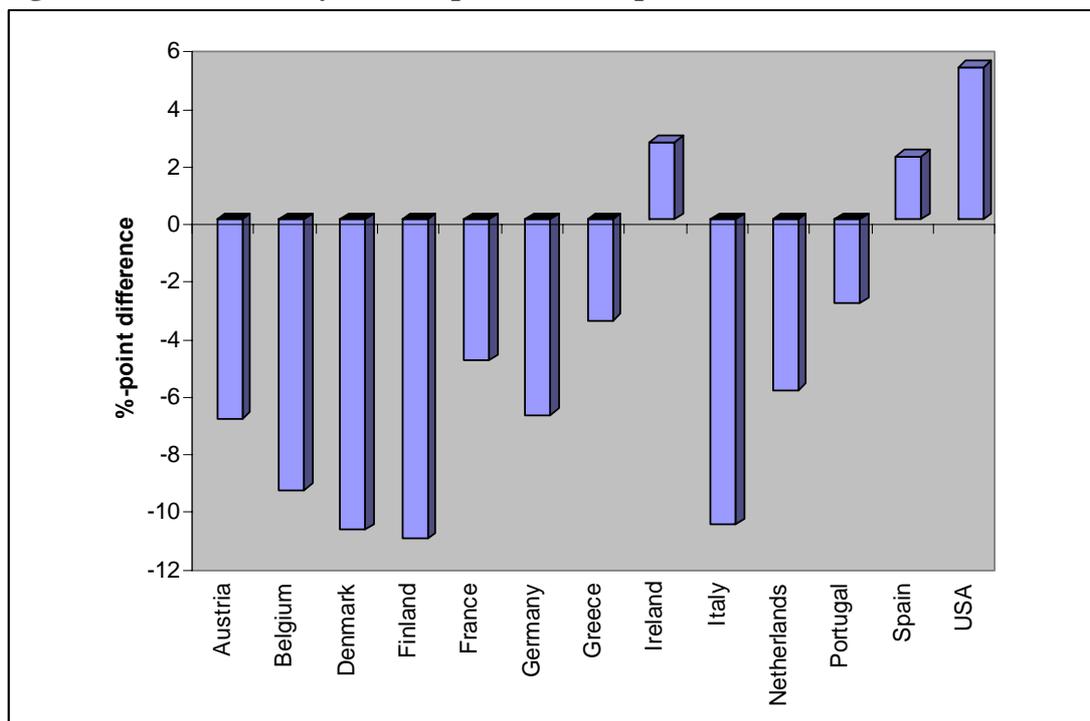
Community Household Panel (ECHP) and the European Structure of Earnings Survey (ESES). There are limitations with both datasets, with ECHP missing short hour's job information and the ESES missing entire industrial sectors and small enterprise employment. Nevertheless, the availability of these data has enabled more detailed international comparisons and analysis into the robustness of previous work. For example, whilst estimated British low pay is relatively unaffected by the choice of data source, Lucifora *et al.* (2005, p.264) do show that it can produce “*substantial variation*” in cross-country comparisons. Despite these problems, Figure 3.3 strengthens the opinion that the UK has a comparatively high incidence of low pay. Although we must be wary of specific percentage differentials in low pay levels, Britain's above-average incidence is unmistakable. Only the USA, Spain and Ireland have higher incidence of low pay. It should be noted that differences in low pay rates, rather than reflecting differences in the distribution of labour skills, can reflect institutional differences that impact on the nature of labour markets. For example, collective bargaining and minimum wage legislation can compress wage distributions and reduce low pay rates.<sup>24</sup>

**3.18** Cross-sectional comparisons provide valuable snapshots into the nature of wage distributions. However, they may disguise trends over time. Keese *et al.* (1998) do show that between 1975 and 1996 there is an upward drift in the incidence of low pay. General studies into economic inequality indicate that this may have since reached a plateau with inequalities remaining roughly constant since the 1990s (e.g. Smeeding, 2005).

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<sup>23</sup> See Tamkin, Mabey and Beech (2006) for a review of the literature.

**Figure 3.3: UK Low Pay: A Comparative Perspective**



Notes: All comparisons use ECHP data, except for the US, Germany and Netherlands which use OECD data.

Source: Lucifora et al. (2005)

**3.19** International evidence into composition of the low paid enables further analysis into the validity of equating low pay to low skill, for a recent example see Salverda *et al.* (2001) . Table 3.8 demonstrates that the overlap between low pay and low skill is far from perfect. Defining low skills according to highest qualification achieved and setting it to ISCED (0-2), the table shows that (compared to the UK) the low skilled in the US have a much higher incidence of low pay. Salverda *et al.* (2001, p. 105) also conclude that the British high skilled “*are consistently more often low paid and less often high paid, than in other leading European countries*”.

We must therefore avoid the straight-forward translation of low pay to describe low skill.

<sup>24</sup> See, for example, Blau and Kahn (1996)

**3.20** Changes to wage inequality levels have also been used to support a ‘low-skill bad-job’ trap. Snower (1996), examining wage inequality across OECD countries, refers to the importance of the ‘low-skill bad-job’ trap. Countries with high levels of wage inequality are characterised as low-skill economies, with no incentive for either employers or employees to invest in skill formation.<sup>25</sup> However, Pötter with Behr (2006) in a recent paper wrote:

“...wages in the UK exhibit the highest degree of inequality across the ten countries under analysis. This high inequality in the UK is due mainly to the outstanding steepness of the UK returns-to skill function. Highly paid employees do relatively much better in the UK compared to the lesser paid. The effect of differences in individual characteristics attributes surprisingly little to the observed wage differences.”

To provide an understanding of international variation in low pay the analysis should not be restricted to perceived differences in worker characteristics. It requires an empirical exercise into the returns to basic human capital characteristics.

### **Summary**

**3.21** This section’s review of the international evidence focuses on four common methods to measure the prevalence of low skills: basic skill tests, the concentration of employment in elementary occupations, the levels and dispersion in qualifications and, finally, the frequency and determinants of low pay. Whilst there is no actual consensus in the literature, there is ample

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<sup>25</sup> The incentive argument is further complicated by the low correlation between firm productivity and profitability. For example, Mason, Keltner and Wagner (1999) show that, whilst the German banking workforce is far more highly qualified and trained than its UK or USA counterparts, the banks achieved the lowest level of profitability. There are non-skills issues here though. For example, Webb and Watson (2003) describe the Germany’s over-banking where banks fail to satisfactorily rationalize their provision and maintain too high staff and branch levels.

evidence to reject the hypothesis that Britain's economic performance, compared to other countries, is inhibited by a longer tail of low skills.

**3.22** Our analysis into basic skill levels finds substantial variation in the results. Whilst previous literacy and numeracy tests have encouraged a consensus that Britain's education system is a relative failure, this view is not supported by the more recent evidence available. Overall the evidence should be judged as inconclusive. The PISA data are perhaps insufficient to dismiss the relatively negative findings by studies such as the IALS. However, with its focus on 15 year old school children, it does suggest the problem of a 'long tail' of low skills may be on the decline. Furthermore, one can refer to the labour market's occupational structure and the similar skill structures used across countries. Britain's employment levels in elementary occupations are not supportive of a higher focus on lower skill occupations. However, this again should be treated with caution as the occupational measure ignores those out of work and therefore does not control for unemployment due to low skills.

**3.23** Analysis into both qualifications and low pay is ostensibly more negative. Lower incidence of vocational qualifications and higher incidence of low pay may be used to suggest that Britain is ensnared in a relatively 'low skill-low wage' equilibrium. Whilst pertinent cross-country comparisons to support this view do exist (e.g. 2003 comparisons by Steedman et al., 2004), international comparisons from previous decades which have limited relevance for today's economy, should be ignored. Given changes to the distribution of qualification achievements, the analysis which suggests Britain is somehow exceptional in

terms of low skill provision may well become out-of-date. Low pay analysis is also likely to alter given the changes in the institutional framework, such as the introduction and upratings in the national minimum wage.

**Table 3.1**  
**Performance and Mean Age of Countries in TIMSS**

	Mathematics Score	Mean Age
Singapore	643	14.5
Korea	607	14.2
Japan	605	14.4
Hong Kong	588	14.2
Belgium	565	14.1
Czechoslovakia	564	14.4
Slovenia	547	14.3
Switzerland	545	14.2
France	538	14.3
Hungary	537	14.3
Russia	535	14.0
Ireland	527	14.4
Canada	527	14.1
Sweden	519	13.9
New Zealand	508	14.0
England	506	14.0
Norway	503	13.9
United States	500	14.2
Latvia	493	14.3
Spain	487	14.3
Iceland	487	13.6
Lithuania	477	14.3
Cyprus	474	13.7

*Source:* Beaton et al. (1996), Gorard (2001).

**Table 3.2**  
**Percentage of 15-Year-Olds at Each Level of Proficiency on the PISA Reading Literacy Scale**

	Proficiency levels in Score Points											
	Below Level 1 (less than 335)		Level 1 (from 335 to 407)		Level 2 (from 408 to 480)		Level 3 (from 481 to 552)		Level 4 (from 553 to 625)		Level 5 (above 625)	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Australia	3.3	(0.5)	9.1	(0.8)	19.0	(1.1)	25.7	(1.1)	25.3	(0.9)	17.6	(1.2)
Austria	4.4	(0.4)	10.2	(0.6)	21.7	(0.9)	29.9	(1.2)	24.9	(1.0)	8.8	(0.8)
Belgium	7.7	(1.0)	11.3	(0.7)	16.8	(0.7)	25.8	(0.9)	26.3	(0.9)	12.0	(0.7)
Canada	2.4	(0.3)	7.2	(0.3)	18.0	(0.4)	28.0	(0.5)	27.7	(0.6)	16.8	(0.5)
Denmark	5.9	(0.6)	12.0	(0.7)	22.5	(0.9)	29.5	(1.0)	22.0	(0.9)	8.1	(0.5)
Finland	1.7	(0.5)	5.2	(0.4)	14.3	(0.7)	28.7	(0.8)	31.6	(0.9)	18.5	(0.9)
France	4.2	(0.6)	11.0	(0.8)	22.0	(0.8)	30.6	(1.0)	23.7	(0.9)	8.5	(0.6)
Germany	9.9	(0.7)	12.7	(0.6)	22.3	(0.8)	26.8	(1.0)	19.4	(1.0)	8.8	(0.5)
Greece	8.7	(1.2)	15.7	(1.4)	25.9	(1.4)	28.1	(1.7)	16.7	(1.4)	5.0	(0.7)
Iceland	4.0	(0.3)	10.5	(0.6)	22.0	(0.8)	30.8	(0.9)	23.6	(1.1)	9.1	(0.7)
Ireland	3.1	(0.5)	7.9	(0.8)	17.9	(0.9)	29.7	(1.1)	27.1	(1.1)	14.2	(0.8)
Italy	5.4	(0.9)	13.5	(0.9)	25.6	(1.0)	30.6	(1.0)	19.5	(1.1)	5.3	(0.5)
Japan	2.7	(0.6)	7.3	(1.1)	18.0	(1.3)	33.3	(1.3)	28.8	(1.7)	9.9	(1.1)
Korea	0.9	(0.2)	4.8	(0.6)	18.6	(0.9)	38.8	(1.1)	31.1	(1.2)	5.7	(0.6)
Mexico	16.1	(1.2)	28.1	(1.4)	30.3	(1.1)	18.8	(1.2)	6.0	(0.7)	0.9	(0.2)
New Zealand	4.8	(0.5)	8.9	(0.5)	17.2	(0.9)	24.6	(1.1)	25.8	(1.1)	18.7	(1.0)
Norway	6.3	(0.6)	11.2	(0.8)	19.5	(0.8)	28.1	(0.8)	23.7	(0.9)	11.2	(0.7)
Poland	8.7	(1.0)	14.6	(1.0)	24.1	(1.4)	28.2	(1.3)	18.6	(1.3)	5.9	(1.0)
Portugal	9.6	(1.0)	16.7	(1.2)	25.3	(1.0)	27.5	(1.2)	16.8	(1.1)	4.2	(0.5)
Spain	4.1	(0.5)	12.2	(0.9)	25.7	(0.7)	32.8	(1.0)	21.1	(0.9)	4.2	(0.5)
Sweden	3.3	(0.4)	9.3	(0.6)	20.3	(0.7)	30.4	(1.0)	25.6	(1.0)	11.2	(0.7)
Switzerland	7.0	(0.7)	13.3	(0.9)	21.4	(1.0)	28.0	(1.0)	21.0	(1.0)	9.2	(1.0)
United Kingdom	3.6	(0.4)	9.2	(0.5)	19.6	(0.7)	27.5	(0.9)	24.4	(0.9)	15.6	(1.0)
United States	6.4	(1.2)	11.5	(1.2)	21.0	(1.2)	27.4	(1.3)	21.5	(1.4)	12.2	(1.4)
<b>OECD total</b>	<b>6.2</b>	<b>(0.4)</b>	<b>12.1</b>	<b>(0.4)</b>	<b>21.8</b>	<b>(0.4)</b>	<b>28.6</b>	<b>(0.4)</b>	<b>21.8</b>	<b>(0.4)</b>	<b>9.4</b>	<b>(0.4)</b>

Source: OECD PISA database, 2001.

**Table 3.3**  
**Performance of 15-Year-Olds on the PISA Mathematical Literacy Scale by Percentile**

	Percentiles													
	Mean		5th		10th		25th		75th		90th		95th	
	Mean score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.
<b>Australia</b>	533	(3.5)	380	(6.4)	418	(6.4)	474	(4.4)	594	(4.5)	647	(5.7)	679	(5.8)
<b>Austria</b>	515	(2.5)	355	(5.3)	392	(4.6)	455	(3.5)	581	(3.8)	631	(3.6)	661	(5.2)
<b>Belgium</b>	520	(3.9)	322	(11.0)	367	(8.6)	453	(6.5)	597	(3.0)	646	(3.9)	672	(3.5)
<b>Canada</b>	533	(1.4)	390	(3.2)	423	(2.5)	477	(2.0)	592	(1.7)	640	(1.9)	668	(2.6)
<b>Denmark</b>	514	(2.4)	366	(6.1)	401	(5.1)	458	(3.1)	575	(3.1)	621	(3.7)	649	(4.6)
<b>Finland</b>	536	(2.2)	400	(6.5)	433	(3.6)	484	(4.1)	592	(2.5)	637	(3.2)	664	(3.5)
<b>France</b>	517	(2.7)	364	(6.4)	399	(5.4)	457	(4.7)	581	(3.1)	629	(3.2)	656	(4.6)
<b>Germany</b>	490	(2.5)	311	(7.9)	349	(6.9)	423	(3.9)	563	(2.7)	619	(3.6)	649	(3.9)
<b>Greece</b>	447	(5.6)	260	(9.0)	303	(8.1)	375	(8.1)	524	(6.7)	586	(7.8)	617	(8.6)
<b>Iceland</b>	514	(2.3)	372	(5.7)	407	(4.7)	459	(3.5)	572	(3.0)	622	(3.1)	649	(5.5)
<b>Ireland</b>	503	(2.7)	357	(6.4)	394	(4.7)	449	(4.1)	561	(3.6)	606	(4.3)	630	(5.0)
<b>Italy</b>	457	(2.9)	301	(8.4)	338	(5.5)	398	(3.5)	520	(3.5)	570	(4.4)	600	(6.1)
<b>Japan</b>	557	(5.5)	402	(11.2)	440	(9.1)	504	(7.4)	617	(5.2)	662	(4.9)	688	(6.1)
<b>Korea</b>	547	(2.8)	400	(6.1)	438	(5.0)	493	(4.2)	606	(3.4)	650	(4.3)	676	(5.3)
<b>Mexico</b>	387	(3.4)	254	(5.5)	281	(3.6)	329	(4.1)	445	(5.2)	496	(5.6)	527	(6.6)
<b>New Zealand</b>	537	(3.1)	364	(6.1)	405	(5.4)	472	(3.9)	607	(4.0)	659	(4.2)	689	(5.2)
<b>Norway</b>	499	(2.8)	340	(7.0)	379	(5.2)	439	(4.0)	565	(3.9)	613	(4.5)	643	(4.5)
<b>Poland</b>	470	(5.5)	296	(12.2)	335	(9.2)	402	(7.0)	542	(6.8)	599	(7.7)	632	(8.5)
<b>Portugal</b>	454	(4.1)	297	(7.3)	332	(6.1)	392	(5.7)	520	(4.3)	570	(4.3)	596	(5.0)
<b>Spain</b>	476	(3.1)	323	(5.8)	358	(4.3)	416	(5.3)	540	(4.0)	592	(3.9)	621	(3.1)
<b>Sweden</b>	510	(2.5)	347	(5.8)	386	(4.0)	450	(3.3)	574	(2.6)	626	(3.3)	656	(5.5)
<b>Switzerland</b>	529	(4.4)	353	(9.1)	398	(6.0)	466	(4.8)	601	(5.2)	653	(5.8)	682	(4.8)
<b>United Kingdom</b>	529	(2.5)	374	(5.9)	412	(3.6)	470	(3.2)	592	(3.2)	646	(4.3)	676	(5.9)
<b>United States</b>	493	(7.6)	327	(11.7)	361	(9.6)	427	(9.7)	562	(7.5)	620	(7.7)	652	(7.9)
<b>OECD total</b>	498	(2.1)	318	(3.1)	358	(3.4)	429	(3.0)	572	(2.1)	628	(1.9)	658	(2.1)
<b>Country mean</b>	500	(0.7)	326	(1.5)	367	(1.4)	435	(1.1)	571	(0.8)	625	(0.9)	655	(1.1)

Source: OECD PISA database, 2001.

**Table 3.4**  
**Performance of 15-Year-Olds on the PISA Scientific Literacy Scale by Percentile**

	Percentiles													
	Mean		5th		10th		25th		75th		90th		95th	
	Mean score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.
<b>Australia</b>	528	(3.5)	368	(5.1)	402	(4.7)	463	(4.6)	596	(4.8)	646	(5.1)	675	(4.8)
<b>Austria</b>	519	(2.6)	363	(5.7)	398	(4.0)	456	(3.8)	584	(3.5)	633	(4.1)	659	(4.3)
<b>Belgium</b>	496	(4.3)	292	(13.5)	346	(10.2)	424	(6.6)	577	(3.5)	630	(2.6)	656	(3.0)
<b>Canada</b>	529	(1.6)	380	(3.7)	412	(3.4)	469	(2.2)	592	(1.8)	641	(2.2)	670	(3.0)
<b>Denmark</b>	481	(2.8)	310	(6.0)	347	(5.3)	410	(4.8)	554	(3.5)	613	(4.4)	645	(4.7)
<b>Finland</b>	538	(2.5)	391	(5.2)	425	(4.2)	481	(3.5)	598	(3.0)	645	(4.3)	674	(4.3)
<b>France</b>	500	(3.2)	329	(6.1)	363	(5.4)	429	(5.3)	575	(4.0)	631	(4.2)	663	(4.9)
<b>Germany</b>	487	(2.4)	314	(9.5)	350	(6.0)	417	(4.9)	560	(3.3)	618	(3.5)	649	(4.7)
<b>Greece</b>	461	(4.9)	300	(9.3)	334	(8.3)	393	(7.0)	530	(5.3)	585	(5.3)	616	(5.8)
<b>Iceland</b>	496	(2.2)	351	(7.0)	381	(4.3)	436	(3.7)	558	(3.1)	607	(4.1)	635	(4.8)
<b>Ireland</b>	513	(3.2)	361	(6.5)	394	(5.7)	450	(4.4)	578	(3.4)	630	(4.6)	661	(5.4)
<b>Italy</b>	478	(3.1)	315	(7.1)	349	(6.2)	411	(4.4)	547	(3.5)	602	(4.0)	633	(4.4)
<b>Japan</b>	550	(5.5)	391	(11.3)	430	(9.9)	495	(7.2)	612	(5.0)	659	(4.7)	688	(5.7)
<b>Korea</b>	552	(2.7)	411	(5.3)	442	(5.3)	499	(4.0)	610	(3.4)	652	(3.9)	674	(5.7)
<b>Mexico</b>	422	(3.2)	303	(4.8)	325	(4.6)	368	(3.1)	472	(4.7)	525	(5.5)	554	(7.0)
<b>New Zealand</b>	528	(2.4)	357	(5.6)	392	(5.2)	459	(3.8)	600	(3.4)	653	(5.0)	683	(5.1)
<b>Norway</b>	500	(2.8)	338	(7.3)	377	(6.6)	437	(4.0)	569	(3.5)	619	(3.9)	649	(6.2)
<b>Poland</b>	483	(5.1)	326	(9.2)	359	(5.8)	415	(5.5)	553	(7.3)	610	(7.6)	639	(7.5)
<b>Portugal</b>	459	(4.0)	317	(5.0)	343	(5.1)	397	(5.2)	521	(4.7)	575	(5.0)	604	(5.3)
<b>Spain</b>	491	(3.0)	333	(5.1)	367	(4.3)	425	(4.4)	558	(3.5)	613	(3.9)	643	(5.5)
<b>Sweden</b>	512	(2.5)	357	(5.7)	390	(4.6)	446	(4.1)	578	(3.0)	630	(3.4)	660	(4.5)
<b>Switzerland</b>	496	(4.4)	332	(5.8)	366	(5.4)	427	(5.1)	567	(6.4)	626	(6.4)	656	(9.0)
<b>United Kingdom</b>	532	(2.7)	366	(6.8)	401	(6.0)	466	(3.8)	602	(3.9)	656	(4.7)	687	(5.0)
<b>United States</b>	499	(7.3)	330	(11.7)	368	(10.0)	430	(9.6)	571	(8.0)	628	(7.0)	658	(8.4)
<b>OECD total</b>	502	(2.0)	332	(3.3)	368	(3.1)	431	(2.8)	576	(2.1)	631	(1.9)	662	(2.3)
<b>Country mean</b>	500	(0.7)	332	(1.5)	368	(1.0)	431	(1.0)	572	(0.8)	627	(0.8)	657	(1.2)

Source: OECD PISA database, 2001.

**Table 3.5**  
**Occupational Distribution by Country and Year**

	Manager		Physical science professionals		Life Science and health professionals		Teaching professionals		Other Professionals	
	1995	2002	1995	2002	1995	2002	1995	2002	1995	2002
<b>Austria</b>	7.4	7.4	8.2	11.4	0.4	0.3	0.5	0.1	3.4	3.8
<b>Belgium</b>	6.2	7.3	13.6	16.0	0.7	0.6	0.0	0.1	5.2	6.1
<b>Denmark</b>	6.4	6.7	9.3	13.6	0.5	0.4	0.1	-	7.6	10.3
<b>Germany</b>	5.6	-	13.1	-	0.4	-	0.2	-	6.6	-
<b>France</b>	4.5	4.6	14.4	15.5	0.9	0.9	0.1	0.1	6.6	6.4
<b>Ireland</b>	12.0	12.1	6.6	9.5	0.3	0.6	0.1	0.4	4.2	4.9
<b>Italy</b>	0.7	3.9	5.3	5.6	0.6	0.9	0.1	0.1	4.5	8.1
<b>Netherlands</b>	11.9	11.8	8.6	9.3	1.1	0.7	0.4	0.1	8.6	10.8
<b>Spain</b>	5.6	5.9	4.5	5.9	0.5	0.6	0.1	0.0	6.5	8.2
<b>Sweden</b>	-	5.0	-	14.2	-	0.5	-	0.1	-	10.8
<b>United Kingdom</b>	14.9	16.6	8.7	10.5	0.4	0.5	0.2	0.3	5.8	7.6

	Clerks		Service and sales workers		Elementary service occupations		Craft and related trade workers	
	1995	2002	1995	2002	1995	2002	1995	2002
<b>Austria</b>	11.5	10.5	3.8	3.9	3.7	2.5	60.5	60.0
<b>Belgium</b>	11.4	11.4	4.6	4.2	7.1	6.2	51.0	47.9
<b>Denmark</b>	9.3	7.6	6.2	4.4	5.0	7.1	53.1	49.1
<b>Germany</b>	10.8	-	5.1	-	2.1	-	53.0	-
<b>France</b>	8.3	7.7	6.1	5.5	2.7	2.8	54.7	55.8
<b>Ireland</b>	10.4	9.8	4.1	5.8	3.8	1.1	55.9	55.1
<b>Italy</b>	13.9	12.9	3.6	4.7	2.9	2.9	68.4	60.9
<b>Netherlands</b>	10.7	9.8	8.3	6.6	5.1	8.4	43.6	38.8
<b>Spain</b>	8.3	6.8	4.8	4.9	2.2	2.2	70.5	65.7
<b>Sweden</b>	-	8.0	-	4.1	-	2.1	-	54.7
<b>United Kingdom</b>	11.1	8.9	4.5	4.0	2.2	4.7	52.0	46.2

Source: EU Labour Force Survey, 1995, 2002.

**Table 3.6**  
**2002/3 Average Number of Years in Formal Education (Ages 25-64)**

	Total	Males	Females
<b>Australia</b>	12.9	13.0	12.8
<b>Austria</b>	11.8	12.1	11.5
<b>Belgium</b>	11.3	11.3	11.2
<b>Canada</b>	13.1	13.0	13.1
<b>Czech Republic</b>	12.4	12.5	12.3
<b>Denmark</b>	13.6	13.6	13.7
<b>Finland</b>	12.1	11.9	12.2
<b>France</b>	11.5	11.7	11.4
<b>Germany</b>	13.4	13.7	13.1
<b>Greece</b>	10.5	10.7	10.3
<b>Hungary</b>	11.7	11.8	11.5
<b>Iceland</b>	13.3	13.7	12.9
<b>Ireland</b>	12.9	12.8	13.1
<b>Italy</b>	10.0	10.2	9.9
<b>Japan</b>	12.4	12.6	12.1
<b>Korea</b>	11.9	12.4	11.3
<b>Luxembourg</b>	13.4	13.7	13.2
<b>Mexico</b>	8.7	8.9	8.5
<b>Netherlands</b>	12.9	13.1	12.7
<b>New Zealand</b>	12.6	12.5	12.7
<b>Norway</b>	13.8	13.8	13.9
<b>Poland</b>	11.6	11.5	11.8
<b>Portugal</b>	8.2	8.1	8.4
<b>Slovak Republic</b>	12.4	12.5	12.3
<b>Spain</b>	10.5	10.6	10.4
<b>Sweden</b>	12.5	12.3	12.6
<b>Switzerland</b>	12.8	13.4	12.3
<b>Turkey</b>	9.6	9.9	9.3
<b>United Kingdom</b>	12.7	12.8	12.6
<b>United States</b>	13.8	13.8	13.9
<b>Country mean</b>	12.0	12.1	11.9

*Source:* OECD (2005, Education at a Glance)

**Table 3.7**  
**Skill Distribution of the Workforce by Highest Level of Education Attained**

	<b>Low Skill</b>	<b>Intermediate Skill</b>	<b>High Skill</b>
<b>1979</b>			
UK	63.5	28.2	8.3
France	39.5	54.9	5.6
Germany	34.6	61.2	4.2
United States	63.9	17.4	18.7
<b>1989</b>			
UK	53.9	35.3	10.8
France	30.7	61.1	8.2
Germany	27.0	67.0	6.0
United States	54.9	21.4	23.7
<b>2000</b>			
UK	44.4	37.0	18.6
France	21.0	67.3	11.7
Germany	20.1	71.7	8.2
United States	47.1	25.3	27.6

*Source:* O'Mahony et al. (2004).

*Notes:* High skills are those with degree qualifications or above. Intermediate skills are those with vocational qualifications above high school but below degree.

**Table 3.8**  
**Incidence of Low Pay (% of Employees in Each Category Falling Below the National Threshold)**

<b>Category</b>	<b>United States</b>	<b>France</b>	<b>Germany</b>	<b>Netherlands</b>	<b>United Kingdom</b>
<b>Overall</b>	25.5	8.9	12.6	14.4	22.7
<b>Full time men</b>	18.2	6.5	6.8	8.2	15.6
<b>Women</b>	31.4	12.0	20.4	23.2	31.6
<b>Full time women</b>	27.0	10.1	15.5	23.0	26.8
<b>Part time employees</b>	59.1	19.1	24.8	25.4	42.0
<b>Youth &lt;25 years</b>	61.3	43.7	37.2	61.3	57.6
<b>Low skilled</b>	59.5	12.9	19.2	22.6	32.2
<b>Shop work</b>	45.0	35.7	27.9	32.2	54.0
<b>Unskilled manual</b>	50.5	22.0	43.1	36.1	54.9
<b>Tenure ≤2 year</b>	41.4	21.9	26.0	32.1	29.8
<b>Retail</b>	45.4	17.6	25.8	40.0	46.3
<b>Hotels and catering</b>	60.5	35.2	52.3	34.4	69.6
<b>Size 1-9</b>		18.4		29.5	38.6
<b>Non-permanent contract</b>			26.9	46.2	31.8

*Source:* Salverda et al. (2001)

## **4. MULTI-VARIATE ANALYSIS OF REGIONAL LOW PAY**

### **INTRODUCTION**

- 4.1** In this section the extent to which the distribution of low pay in Wales is out of line with that across other Government Office Regions is assessed. Regression analysis is used to conduct this analysis using micro data from the Labour Force Survey (LFS) pooled over twelve quarters between Spring 2003 to Winter 2005. While the focus is upon only one element of the long tail issue (namely low pay), the related aspects of educational and occupational attainment are nevertheless controlled for in the multivariate analysis. In particular, we are interested in assessing the extent to which differences in occupational and industrial structures between Wales and other regions are drivers behind the regional distribution of low pay.

### **THE REGIONAL INCIDENCE OF LOW PAY**

- 4.2** Low pay is defined as an hourly wage rate (in constant prices) below two thirds of median earnings. In the sample drawn from the LFS 2003-2005 used here, this means a figure of £5.61 per hour (in Jan 2004 prices). Given this definition, the regional incidence of low pay for male and female employees is shown in Table 4.1. For males (column 1), the incidence of low pay ranges from a low of 9.34% in London to a high of 18.78% in the North East. At 17.49%, the incidence of low pay in Wales is marginally below that of the North East but above the remaining regions, particularly so the South East (11.44%) and the Eastern region (11.38%). Indeed, the incidence of low pay in these latter two regions is comparable to that found in London and collectively these three regions stand apart from the other regions in Great Britain.

**4.3** For females (Table 4.1, column 2), a similar regional pattern is evident, even if the incidence of low pay in itself is more apparent for women than it is for men. Again, low pay is most prominent in the North East (33.97%) and least prominent in London (12.44%), with the incidence of low pay in London, the South East and the Eastern region being far lower than elsewhere. At 32.22%, low pay in Wales is far more prevalent than in the majority of other regions.

#### **A MULTI-VARIATE INVESTIGATION**

**4.4** Regional differences in workforce composition may be one of the factors that explain the pattern of low pay incidence noted above. Given, for example, regional asymmetries in the industrial base, this may (at least partly) explain why some regions have a higher or lower incidence of low pay if low pay is more prevalent in some industries than in others. To address this issue, a logit model was constructed to relate the incidence of individual low pay to a range of personal and job characteristics. The results from such a modelling exercise are shown separately for males and females in Table 4.2, which details the marginal effects of all explanatory variables (having controlled for all other included variables) and their associated z-statistics.<sup>26</sup>

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<sup>26</sup> Marginal effects will measure the extent to which the probability of an individual reporting low pay is influenced by a specific variable. As such, a negative coefficient in Table 4.2 will indicate that low pay is *less* likely and a positive coefficient will indicate an *increase* in the likelihood of low pay. Given that the dependent variable is defined as a 0/1 binary indicator, a reported marginal effect of -0.0622 for example, would mean that low pay would be 6.22% less likely. Meanwhile, z-statistics show the statistical significance with which the marginal effects may be interpreted. Thus, an absolute z-statistic of 1.96 or greater would mean that we would be 95% confident that a reported marginal effect was indeed different than zero (either above or below). This would relate to a conventionally acceptable level of significance.

**4.5** The results of Table 4.2 would generally accord with our *a priori* expectations about the determinants of low pay for both men and women. As such, the probability of low pay declines with age measured relative to those aged 16-24 and with establishment size when measured relative to smaller establishments with 1-10 employees. Conversely, the probability of being in low-paid employment increases as educational attainment falls, as it does for those who are single and for those who are not owner occupiers with a mortgage.<sup>27</sup> Likewise, working part-time, being non-white, having a health problem or having dependent children in the household also increase the probability of being low-paid.

**4.6** There is also substantial variation across occupational and industrial dimensions, with employment in elementary occupations being associated with the greatest likelihood of receiving low pay for both men and women. Meanwhile, employment within the financial industry or in public administration imparts the greatest likelihood of avoiding low pay for males while employment in the hotels & restaurants industry increases the likelihood. Although working in the wholesale, retail & motor trade industry is coupled with the greatest likelihood of low-paid employment for women, more generally a similar industrial pattern as for males is observed.

#### **THE INFLUENCE OF REGION ON LOW PAY**

**4.7** With regard to the influence of region of residence, the results presented in Table 4.2 are measured relative to Wales. Thus, for example, the marginal

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<sup>27</sup> Controls for housing status are included to capture worker mobility and the effect that this would have upon job search and subsequently earnings. Although it might be suggested that the causality

effect of -0.0461 for males in London may be interpreted as signifying that living in London, *as opposed to Wales*, reduces the likelihood of low-paid employment by 4.61% when all other factors included in the model are taken into consideration. The associated z-statistic (in absolute terms, 16.05) would also imply that this is a statistically significant reduction in the likelihood of low pay. Likewise, there are also statistically significant reductions in the probability of male low-paid employment (relative to Wales) in the South East (-3.04%), the Eastern region (-2.53%) and the South West (-1.34%). In none of the regions are men as likely to experience low pay as in Wales.

- 4.8** As with males, when all other factors are taken into account, there are no statistically significant marginal effects for females in the majority of regions in comparison to Wales. However, London (-11.33%), the South East (-5.91%) and the Eastern region (-5.02%) are again all associated with a reduced possibility of low pay. It is also the case that in the North East (+3.10%) the possibility of female low pay is increased.

## **THE ROLE OF REGIONAL PRICES**

- 4.9** The regional distribution of real earnings looks very different from that of nominal earnings. Using regional price data published by the Office for National Statistics, it is possible to deflate nominal earnings to arrive at a real earnings series.<sup>28</sup> This index is presented in Table 4.3. Regions with a lower

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between low pay and housing status may also operate in the reverse direction, there is no evidence to suggest that these controls are in any way driving regional differences in the incidence of low pay.

<sup>28</sup> ONS produces two regional price series, one which excludes housing price differentials and the other which includes them. In the current analysis, it is the regional deflator which includes housing cost differences that is used to construct real earnings. As a consistent series is not available for all years in

cost-of-living measured relative to the UK average will have real earnings in excess of nominal earnings and vice versa. Thus, real earnings are lower than nominal earnings in the Eastern region, the South West, the South East and London and higher in the remaining regions. In particular, Wales is seen as the region with the lowest cost of living and this will have obvious implications for the incidence of low pay. As such, Table 4.4 presents the regional incidence of *real* low pay for male and female employees. Using the same definition of low pay as before, this establishes the level of *real* low pay at £5.66 per hour.

**4.10** While an examination of real earnings will not affect the overall incidence of low pay, it will affect regional relativities. For males, the North East (16.46%) still has the highest regional representation and the South East (13.44%), London (12.78%) and the Eastern region (12.05%) still occupy the most favourable positions. However, the spread across regions has been reduced dramatically, falling from 9.44 percentage points when comparing nominal earnings to 4.41 percentage points with real earnings. The position of Wales has also improved considerably, with the incidence of low pay falling from 17.49% (second only to the North East) to 14.77% (only fifth highest of eleven regions).

**4.11** A similar pattern emerges for females as for males, with regions in the south east of England performing well and the North East and the Midlands performing relatively poorly. Interestingly, the higher than average cost-of-

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our pooled sample, figures for 2004 are used to deflate nominal earnings in all years. For information

living in the South West now identifies this region as the one with the highest low pay incidence, where nearly one third of female employees (32.32%) fall into this category. Meanwhile, the relative position of Wales improves, moving from third to seventh in the regional order, some 6 percentage points lower than the figure in the South West.

#### **THE INFLUENCE OF REGION ON REAL LOW PAY**

**4.12** Table 4.5 presents the marginal effects of region in a logit equation specified as previously but with low pay now defined in real terms. For males, it is only those living in London who have a significantly lower probability of low pay (-1.71%) than someone comparable living in Wales. There is also some evidence that men living in the North East (+1.43%) and the South West (+1.24%) have an increased probability of low-paid employment.<sup>29</sup> For females, though, there are no regions with a *ceteris paribus* lower probability of real low pay than Wales. Indeed, a number of regions, the East Midlands (+3.61%), the South East (+4.28%), the North East (+4.94%), the North West (+5.41%), the West Midlands (+6.38%) and the South West (+7.58%), are associated with an increased likelihood of female low pay.

#### **THE CONTRIBUTION OF INDIVIDUAL CHARACTERISTICS**

**4.13** While differences in the likelihood of real low pay, having controlled for individual characteristics, have been identified across regions, the contribution that characteristics such as industry or occupation have in explaining these differences has not been quantified. So, for example, of the 9.52 percentage

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on how the regional price series is constructed see Wingfield, Fenwick and Smith (2005).  
<sup>29</sup> These marginal probabilities are statistically significant at the 90% confidence limit.

point higher incidence of real low pay for females in Wales in comparison to London (see Table 4.4), how much of this is due to a divergent industrial base between the two regions? Or how much of it is due to a differing representation of ethnic minorities between the two regions? Tables 4.6 and 4.7 provide the answers for males and females respectively, where the difference in the incidence of real low pay between Wales and the other regions (row 1) is attributed to one of two separate components: a *characteristics* component (row 2), which attributes incidence differences to differences in the distribution of characteristics between regions; and a *coefficients* component (row 3) which accounts for the fact that individual characteristics may be rewarded differently across regional labour markets. The *characteristics* component may also be further disaggregated to provide answers to the question that was earlier posed and quantify the extent to which characteristic differences between regions account for differences in the incidence of real low pay. These results are shown in the bottom halves of Tables 4.6 and 4.7.

- 4.14** For males, the largest incidence differential exists between Wales and the Eastern region (of 2.72 percentage points), but more generally any differentials that do exist are modest. Of the individual characteristics shown in the bottom half of Table 4.6, it is only occupation that consistently emerges with anything other than a negligible contributory influence. However, it is only in the comparisons with the West Midlands (3.36 percentage points), the Eastern region (1.49 percentage points) and the South East (1.48 percentage

points) that there is any real evidence of a sizeable contribution.<sup>30</sup> Differences in the remaining characteristics, such as the industrial base, have no impact upon low pay differentials. Similarly, it is only occupational differences that contribute in any sizeable way to the observed incidence differential for females (Table 4.7). Such a contribution is largest in London (6.20 percentage points), the South East (4.06 percentage points) and the Eastern region (2.82 percentage points).

## CONCLUSIONS

- 4.15** While there are sizeable differences in the incidence of low pay between Wales and the majority of other regions, such differences are dramatically reduced once regional cost-of-living differences are controlled for. Indeed, accounting for the lower cost-of-living in Wales than in other regions suggests that the incidence of low pay is lower here than in a number of other regions. This is particularly true for females. Concentrating upon such a measure of real low pay, there is little evidence to suggest that regional asymmetries in the distribution of worker and job types substantially account for any systematic variation in regional low pay.

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<sup>30</sup> Even though the contribution of occupational differences between Wales and the East Midlands would appear to be much greater than elsewhere, this result seems to be somewhat spurious and driven by a small incidence differential.

**Table 4.1**  
**Regional Incidence of Low Pay (Nominal Earnings - £5.61 PPH)**

	<b>Males</b>	<b>Females</b>
NE	18.78	33.97
YH	16.68	32.99
EM	15.97	30.77
E	11.38	23.54
L	9.34	12.44
SE	11.44	22.05
SW	14.76	30.55
WM	14.77	31.95
NW	16.34	30.19
W	17.49	32.22
S	15.73	28.09

**Table 4.2**  
**Marginal Effects from Estimated Logit Model**

	<b>Males</b>		<b>Females</b>	
	<b>ME</b>	<b>z-stat</b>	<b>ME</b>	<b>z-stat</b>
<i>Age</i>				
16-24	(E)	(E)	(E)	(E)
25-39	-0.0622	-19.97	-0.1264	-20.27
40-49	-0.0591	-20.57	-0.1096	-17.74
50-59/64	-0.0450	-14.39	-0.0878	-13.27
<i>Non-white</i>	0.0394	6.36	-0.0058	-0.65
<i>Health problem</i>	0.0317	7.20	0.0384	5.13
<i>Marital status</i>				
Married or co-habiting	(E)	(E)	(E)	(E)
Single	0.0447	10.41	0.0121	1.87
Widowed/divorced/separated	-0.0041	-0.96	-0.0063	-1.04
<i>Qualifications</i>				
Degree or equivalent	(E)	(E)	(E)	(E)
A-level or equivalent	0.0215	5.55	0.0750	9.93
O-level or equivalent	0.0479	8.45	0.0832	11.00
Other	0.0508	8.29	0.1373	13.53
None	0.0795	10.39	0.1850	16.07
<i>Family composition</i>				
0 children	(E)	(E)	(E)	(E)
1 child	0.0097	2.82	0.0213	3.56
2 children	0.0022	0.58	0.0484	6.78
3 or more children	0.0233	3.59	0.0597	5.32
Young child	-0.0032	-0.84	-0.0160	-2.49
<i>Housing tenure</i>				
Owner with mortgage	(E)	(E)	(E)	(E)
Owned outright	0.0197	5.38	0.0215	3.35
Subsidised housing	0.0408	8.78	0.0545	7.50
Other	0.0203	4.92	0.0262	3.42
<i>Region of residence</i>				
North East	0.0094	1.37	0.0310	2.30
Yorkshire & Humberside	-0.0040	-0.76	0.0075	0.69
East Midlands	-0.0063	-1.21	-0.0049	-0.45
Eastern	-0.0253	-6.27	-0.0502	-5.78
London	-0.0461	-16.05	-0.1133	-18.36
South East	-0.0304	-8.09	-0.0591	-7.33
South West	-0.0134	-2.81	-0.0073	-0.70
West Midlands	-0.0096	-1.95	0.0136	1.19
North West	-0.0067	-1.35	0.0145	1.31
Wales	(E)	(E)	(E)	(E)
Scotland	-0.0049	-0.95	-0.0122	-1.22
<i>Part-time employment</i>	0.0686	11.19	0.0716	14.99
<i>Industry</i>				
Agriculture, fishing, mining	(E)	(E)	(E)	(E)
Manufacturing	-0.0294	-5.47	-0.0243	-1.05
Energy & water supply	-0.0488	-11.61	-0.0989	-4.82

Construction	-0.0356	-8.55	-0.0545	-2.56
Wholesale, retail & motor trade	0.0058	0.78	0.1118	3.30
Hotels & restaurants	0.0463	3.59	0.0898	2.54
Transport & communications	-0.0325	-7.24	-0.0610	-3.29
Financial	-0.0448	-10.97	-0.0990	-7.05
Real estate & property	-0.0151	-2.48	-0.0487	-2.38
Public administration & defence	-0.0415	-9.41	-0.1008	-6.95
Education	-0.0131	-1.70	0.0053	0.20
Health & social work	-0.0104	-1.46	-0.0288	-1.24
Other	-0.0018	-0.24	0.0397	1.31
<i>Occupation</i>				
Managers & senior officials	(E)	(E)	(E)	(E)
Professional	-0.0217	-3.94	-0.0799	-7.36
Associate professional & technical	-0.0062	-1.11	-0.0181	-1.59
Administrative & secretarial	0.0518	5.09	0.1072	8.62
Skilled trades	0.0786	9.54	0.4327	16.52
Personal service	0.1365	7.62	0.3583	20.57
Sales & customer service	0.1406	9.74	0.3353	19.14
Process, plant & machine operatives	0.1292	11.94	0.4736	19.85
Elementary	0.1795	14.48	0.5024	30.35
<i>Establishment size</i>				
1-10 employees	(E)	(E)	(E)	(E)
11-24 employees	-0.0215	-8.45	-0.0295	-5.35
25+ employees	-0.0542	-14.72	-0.0895	-15.66
<i>Year</i>				
2003	(E)	(E)	(E)	(E)
2004	-0.0049	-1.98	-0.0167	-3.53
2005	-0.0249	-10.40	-0.0540	-11.91
2006	-0.0246	-7.09	-0.0658	-10.22
<i>Sample Size</i>		38,556		40,741

Note: (E) denotes and excluded category

**Table 4.3**  
**Average Regional Prices Relative to National Average Price (UK=100)**

	<b>Index Including Housing Costs</b>
North East	94.2
Yorks/Humber	94.2
East Midlands	97.4
Eastern	101.1
London	109.7
South East	105.3
South West	101.3
West Midlands	97.8
North West	96.9
Wales	93.1
Scotland	94.5

*Source:* Wingfield, Fenwick and Smith (2005)

**Table 4.4**  
**Regional Incidence of Low Pay (Real Earnings - £5.66 PPH)**

	<b>Males</b>	<b>Females</b>
NE	16.46	30.27
YH	13.81	28.13
EM	15.22	29.19
E	12.05	25.05
L	12.78	17.76
SE	13.44	26.30
SW	15.98	32.32
WM	13.77	30.87
NW	14.96	28.40
W	14.77	27.28
S	13.32	24.47

**Table 4.5**  
**Marginal Effects of Region Relative to Wales on Real Low Pay**

	<b>Males</b>		<b>Females</b>	
	<b>ME</b>	<b>z-stat</b>	<b>ME</b>	<b>z-stat</b>
NE	0.0143	1.88	0.0494	3.36
YH	-0.0054	-1.00	0.0115	1.02
EM	0.0067	1.05	0.0361	2.81
E	-0.0065	-1.18	0.0169	1.41
L	-0.0171	-3.51	-0.0175	-1.55
SE	-0.0013	-0.24	0.0428	3.63
SW	0.0124	1.84	0.0758	5.39
WM	0.0007	0.13	0.0638	4.63
NW	0.0019	0.33	0.0541	4.22
S	-0.0042	-0.76	0.0005	0.04

**Table 4.6**  
**Regional Decomposition Relative to Wales of Real Low Pay Incidence for Males**

	<b>NE</b>	<b>YH</b>	<b>EM</b>	<b>E</b>	<b>L</b>	<b>SE</b>	<b>SW</b>	<b>WM</b>	<b>NW</b>	<b>S</b>
Differential	-0.0168	0.0096	-0.0045	0.0272	0.0199	0.0133	-0.0120	0.0100	-0.0019	0.0145
Characteristics (%)	0.0034 (-20.15)	0.0027 (27.91)	0.0050 (-112.66)	0.0187 (68.58)	0.0049 (24.72)	0.0109 (81.81)	0.0046 (-38.23)	0.0100 (100.27)	0.0010 (-49.76)	0.0071 (48.74)
Coefficients (%)	-0.0202 (120.15)	0.0069 (72.09)	-0.0095 (212.66)	0.0086 (31.42)	0.0150 (75.28)	0.0024 (18.19)	-0.0166 (138.23)	-0.0000 (-0.27)	-0.0029 (149.76)	0.0074 (51.26)
<b>Breakdown of characteristics component</b>										
Age	0.0011	0.0002	0.0552	0.0003	0.0003	-0.0004	-0.0003	0.0052	-0.0011	-0.0009
Ethnicity	-0.0001	0.0023	-0.0589	-0.0008	-0.0033	-0.0008	-0.0001	-0.0401	-0.0044	0.0002
Marital status	0.0006	0.0000	-0.0207	-0.0008	-0.0012	-0.0009	0.0000	-0.0077	-0.0051	-0.0012
Health	0.0010	0.0002	-0.0100	0.0004	0.0002	0.0000	-0.0001	0.0033	-0.0003	0.0000
Qualifications	-0.0033	-0.0034	0.0408	0.0015	0.0017	0.0031	0.0015	0.0024	0.0043	0.0031
Part-time work	0.0004	0.0001	0.0348	0.0005	-0.0001	-0.0002	-0.0002	0.0121	0.0009	0.0000
Occupation	0.0044	-0.0001	0.1887	0.0149	0.0071	0.0148	0.0062	0.0336	0.0128	0.0047
Industry	-0.0030	0.0004	-0.2734	0.0027	0.0018	-0.0029	0.0001	-0.0003	-0.0033	0.0005
Establishment size	-0.0033	-0.0024	0.1198	0.0007	0.0010	-0.0003	-0.0005	0.0117	0.0043	0.0006
Job tenure	0.0022	0.0027	-0.0434	0.0002	-0.0014	-0.0016	-0.0001	0.0052	-0.0031	0.0002
Housing tenure	0.0043	0.0023	-0.0595	-0.0003	-0.0015	-0.0003	-0.0010	-0.0116	-0.0018	-0.0011
Family composition	-0.0011	-0.0005	-0.0110	0.0004	0.0004	0.0001	-0.0001	-0.0001	0.0010	0.0012
Year	0.0001	0.0009	0.0427	-0.0010	-0.0002	0.0000	-0.0009	-0.0037	-0.0031	-0.0003

**Table 4.7**  
**Regional Decomposition Relative to Wales of Real Low Pay Incidence for Females**

	<b>NE</b>	<b>YH</b>	<b>EM</b>	<b>E</b>	<b>L</b>	<b>SE</b>	<b>SW</b>	<b>WM</b>	<b>NW</b>	<b>S</b>
Differential	-0.0299	-0.0085	-0.0192	0.0223	0.0952	0.0097	-0.0504	-0.0359	-0.0112	0.0281
Characteristics (%)	0.0106 (-35.33)	-0.0014 (-16.60)	0.0094 (-49.00)	0.0343 (153.79)	0.0858 (90.11)	0.0442 (453.76)	0.0026 (-5.24)	0.0154 (-42.72)	0.0320 (-284.77)	0.0255 (90.86)
Coefficients (%)	-0.0405 (135.33)	-0.0071 (83.40)	-0.0286 (149.00)	-0.0120 (-53.79)	0.0094 (9.89)	-0.0344 (-353.76)	-0.0531 (105.24)	-0.0513 (142.72)	-0.0432 (384.77)	0.0026 (9.14)
<b>Breakdown of characteristics component</b>										
Age	0.0020	0.0002	0.0039	0.0019	0.0063	0.0026	-0.0004	0.0047	0.0035	0.0024
Ethnicity	0.0002	-0.0001	0.0008	0.0001	0.0067	0.0008	-0.0004	-0.0009	0.0004	-0.0024
Marital status	0.0003	0.0000	0.0004	0.0004	-0.0010	0.0004	-0.0002	0.0013	0.0001	-0.0008
Health	0.0002	0.0000	-0.0003	0.0005	0.0002	0.0004	0.0000	-0.0001	0.0000	0.0002
Qualifications	-0.0034	-0.0005	-0.0057	-0.0007	0.0078	0.0042	-0.0006	-0.0065	0.0002	0.0040
Part-time work	0.0005	-0.0002	-0.0018	-0.0015	0.0090	-0.0013	0.0027	0.0012	0.0023	0.0012
Occupation	0.0033	0.0000	0.0128	0.0282	0.0620	0.0406	-0.0067	0.0157	0.0204	0.0143
Industry	-0.0022	-0.0009	-0.0110	0.0049	-0.0077	-0.0037	0.0034	-0.0059	-0.0057	0.0021
Establishment size	0.0049	0.0004	0.0053	0.0041	0.0082	0.0026	-0.0002	0.0046	0.0054	0.0014
Job tenure	0.0071	-0.0001	0.0027	0.0000	-0.0043	-0.0031	0.0018	0.0043	0.0062	0.0059
Housing tenure	-0.0020	-0.0001	0.0008	-0.0007	-0.0058	0.0011	0.0007	0.0000	0.0016	-0.0010
Family composition	0.0017	0.0000	-0.0002	-0.0009	0.0053	0.0001	0.0010	0.0002	0.0010	0.0003
Year	-0.0020	-0.0002	0.0016	-0.0019	-0.0009	-0.0005	0.0016	-0.0033	-0.0035	-0.0021

## **5. CONCLUSIONS**

**5.1.1** The focus of this report is on the long tail of low skills and we do not consider higher skills. Consequently, what is said here does not necessarily conflict with what is contained in the Leitch Review, which is concerned with the overall level of skills. As that report states there is a strong relationship between human capital and the rate of economic growth, so that it can be argued that raising the overall level of skill in the economy will be beneficial for the economy, especially given the fact that rates of return to education are high by international standards. Expansion should take place where the potential returns are greatest, an issue that is not considered here as we focus only on the lowest levels of skill, but evidence suggests that returns are higher for those at the upper end of the skills distribution.

**5.2** The term ‘long tail of low skills’ is subject to a number of interpretations. It could be taken to mean a lack of basic skills and in this respect there is a longer tail in Wales than elsewhere in the UK with 25 per cent being deficient in literacy skills compared to 16 per cent in England, but with a much more serious problem in numeracy with over 50 per cent deficient in Wales in this respect. However, we do not know the precise effect this will have on job performance as we would expect some self-selection into jobs where these skills are less critical. Some evidence suggests that these deficiencies can be remedied through training, with significant effects on earnings, but less certain effects on employment. Potentially, there appear to be worthwhile benefits to Wales from focusing training on those lacking in basic skills, particularly in areas of high needs such as the Valleys, though it is difficult to put a precise

figure on the likely rate of return to such a programme. Evidence<sup>31</sup> suggests that early intervention is called for as performance tests on children less than two years of age are good predictors of eventual educational attainment and children who perform badly in such tests and who are in poor households find it difficult to improve later.

**5.3** A second interpretation is to consider the proportion of those employed in elementary occupations (socio-economic Group 9) or employed as process machine or plant operatives (Group 8) who are basically semi-skilled. Wales has the second highest proportion of its workforce in elementary occupations relative to other regions and the 4th highest in Group 8. However, there is no close relationship between occupations and qualifications, with less than 30 per cent of those in elementary occupations in Wales lacking qualifications and less than 22 per cent in Group 8. Further, levels of qualifications are rising across all occupations over time. Apart from London and the South East the tail in Wales is not much longer than elsewhere.

**5.4** A third interpretation of the long tail of low skills is to consider simply the absence of qualifications among part of the workforce. Apart from Northern Ireland, Wales has the highest proportion of the workforce without qualifications in the UK (18 per cent compared to an average of 15 per cent), but this proportion is declining in Wales as elsewhere and the pay-off to investing in qualifications in Wales compares not unfavourably with that in other regions, especially for women. Consideration, however, needs to be

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<sup>31</sup> See, for instance, Feinstein, (2003).

given to the precise nature of further investment in education and skill formation, given evidence of over-education and over-skilling across the occupational distribution. Wales is lacking in statistics on both of these phenomena, so that in policy terms it seems necessary to monitor the use of both education qualifications and skills and to seek generally to improve the utilisation of skills in the workplace.

**5.5** A fourth interpretation is to consider low skills as implying low pay, given the relationship between investment in human capital and pay. Over a quarter of the workforce in Wales is low paid (using less than two-thirds of the median as an appropriate definition) compared to less than 22 per cent for the UK as a whole. The problem of low pay is concentrated in occupations such as sales and services and elementary occupations. The introduction of the national minimum wage, which through significant upratings is now beginning to influence the low paid sector of the labour market, should have some influence on the proportion of low paid workers, especially in Wales. There is a need to monitor its effects not only in relation to those on the minimum, but also on the workers further up the earnings distribution.

In Wales, 155,000 are in receipt of the NMW, compared to 212,000 in elementary occupations and 193,000 who lack any qualifications. But there is not much overlap between each of these as revealed by the sample statistic that only 13,000 are captured by all three definitions.

**5.6** The international evidence paints a somewhat confused picture of the UK's relative position with regard to skills. As regards basic skills, the International

Literacy Survey of 1995 implies that the UK compares unfavourably with many other countries; but why then does the US, which is much the same as the UK, have such a productivity advantage over other countries in the survey? International comparisons of literacy tests in particular should be treated with a degree of caution, however, because of cross-country cultural differences, inconsistencies in the ages of respondents in the surveys and differences in educational systems. In fact, some studies suggest that the UK does relatively well. Thus, the 2000 PISA study of 15 year olds suggests that the UK ranks above the OECD average and has a lower spread in performance which is inconsistent, at least, with the belief that the long tail will continue to be a long term problem.

**5.7** International comparisons of the occupational distribution suffer from lack of consistency in occupational classifications, but this should be less problematic for elementary occupations and here the figures suggest that Britain is in line with other countries. Similarly, with regard to qualifications, data on average years of education place Britain above the OECD average. While ISCED data suggested that the UK had an above average proportion of its population at or below ISCED level 2 in 2003, more recent data suggest that Britain is improving at a rapid rate. If there is a problem it appears to be more at the intermediate skill level, especially when comparisons are made with Germany, but it may be doubted whether that country still serves as an appropriate role model. Workforce participation in training is relatively high in the UK, but its composition as well as quality needs to be considered. In particular, it tends to be focused on those individuals who are relatively highly skilled. Finally,

comparisons of low pay across countries are affected by variations in the wage distribution across countries. Here, the UK does appear to have a more acute problem than in many countries. However, the overlap between low pay and low skill is far from complete and the UK's position appears worse because its returns to skill function is steeper than in many countries. Again, there is a need to examine more recent data.

**5.8** The logit model of low pay incidence in chapter 4 shows that low pay declines with age, educational qualifications and establishment size and it is more common in certain occupations and industries. Making comparisons in terms of real pay leads to a four percentage point reduction in its incidence in Wales, and suggests that Wales has the fifth highest incidence among 11 regions rather than having the second highest. Its particular occupational and industrial distribution of jobs does not seem to explain the relatively high incidence of low pay.

**5.9** Therefore, in terms of the three questions raised in the introduction, the long tail of low skill in Wales, in so far as it exists, is not simply a consequence of industrial structure or other characteristics, but represents a more fundamental difference. A second question raised was what are the economic consequences in terms of productivity and growth? It has been claimed that the overall level of skills explains 20 per cent of the productivity gap relative to France and Germany, but this is based on somewhat dated data. More pertinent are future projections of the demand for skills which suggest that further increases in skills and qualifications are necessary if the UK and Wales are to remain

competitive. The final question is whether there are forms of policy intervention that can change the situation. Training opportunities tend to be focused on those who already have relatively high skills and qualifications. Focusing on those with lower skills and on improving the skills of older workers may be more challenging. Likewise, those aged between 16 and 24 who are not in employment, education and training (amounting to some 50,000 individuals in Wales) pose a particular challenge. The implications of the proposed raising of the school leaving age needs to be considered in relation to its effect on this group. Wales also has a basic skills problem, but aspirations should be realistic. Is it possible to achieve the target of having 95 per cent of young people in highly skilled employment or higher education by 2015? However, there is a role for Government in assisting the general process of skills improvement through the Sector Skills Councils. More specific and large scale intervention focused on those lacking skills does not appear to be necessary, however, given the fact that the long tail of low skills is not very substantial and is moderating over time.

- 5.10** The proportion of low skilled jobs is forecast to decline so that there is a danger that workers lacking in skills will find it more difficult to obtain employment unless they acquire skills. If, on the other hand, there is a shortage of people prepared to undertake unskilled work this might be met by increases in migration. This points to the need to monitor the balance between supply and demand in this segment of the labour market.

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