Working paper No. 17

Training and Skills in Scotland:

Further Evidence

John Sutherland

Centre for Public Policy for Regions
University of Glasgow
Ivy Lodge
63 Gibson Street
Glasgow G12 8LR

Email: j.sutherland@lbss.gla.ac.uk

Training and Skills in Scotland: Further Evidence

ABSTRACT

Although past publicly funded investments in education and training have generated private returns to most of those individuals fortunate enough to have been able to take advantage of them, the expected economy wide benefits in terms of improvements in labour productivity have not materialised. Nevertheless, one of the principal objectives of the Scottish Government is to fund yet further investments in education and training, on the assumption that these investments will result in improvements in labour productivity and that, as a consequence, the principal economic target of increasing sustainable economic growth will more probably be met.

The aim of this paper is to contribute to the empirical literature of relevance to this policy debate. It does so by addressing three questions: how much training do individuals receive? How many are dissatisfied with the training they receive? and how well do the skills levels individuals possess match the skills levels they require to do their present job? The third question is examined in two ways. When individuals report that their skills levels are lower than those required to do their present job, this is assumed to be a manifestation of a 'skills gap': and when individuals report that their skills levels are higher than those required to do their present job, this is assumed to be a manifestation of 'skills under-utilisation'.

The empirical investigation makes use of a matched workplace-employee data set, which has its origins in two surveys associated with the cross section component of the 2004 Workplace Employment Relations Survey.

Although 8.42 percent of employees surveyed report that they received 10 days or more of training in the past 12 months, one in three employees received none. The amount of training an individual receives varies by his/her personal characteristics and the Standard Industrial Classification (SIC) of the workplace at which he/she is employed. For example, no training tends to be given to women, those in low waged

jobs, older workers and those with long tenure at the workplace. Conversely, training tends to be given to males, those in higher paid jobs, younger workers and those relatively new to the workplace.

One in four employees surveyed report dissatisfaction with the training received, although only one in three of those who received no training report dissatisfaction with this outcome. The incidence of dissatisfaction decreases with the amount of training received. Nonetheless, 10 percent of those who receive 10 days or more of training report dissatisfaction. The probability that an individual reports dissatisfaction with the training received is more likely when the individual holds relatively high academic qualifications (but not relatively high vocational/professional qualifications); is employed at a workplace which is part of a multi-plant enterprise; and is employed at a workplace which has experienced organisational change of sorts in the past two years.

4.20 percent of employees surveyed report that the skills levels they possess are less than those required to do their present jobs, a figure which is interpreted as constituting a relatively low incidence of skills gaps. There is little variation in the incidence of skills gaps by workplace size. However, the variation is more marked by SIC, where skills gaps are seen to be especially prevalent in Electricity, Gas and Water; Hotels and Restaurants; Financial Services; and Public Administration.

In contrast, more than half the number of employees surveyed report that the skills levels they possess are higher than those required to do their present jobs. Further, the incidence of skills under-utilisation tends to be greater in larger sized workplaces. The probability that an individual reports skills under-utilisation is more likely if he/she is disabled; possesses the highest level of vocational/professional qualification; and reports dissatisfaction with the training received. On the other hand, the probability that an individual reports skills under-utilisation is less likely if he/she has received training in the past 12 months.

Training and Skills in Scotland: Further Evidence [1]

1. CONTEXT AND MOTIVATION

"Scotland's greatest asset is our people……We can only build a Scotland that is wealthier and fairer, one that is healthier, safer, stronger and greener, if people are equipped with the skills, expertise and knowledge for success." (Fiona Hyslop, Cabinet Secretary for Education and Lifelong Learning in the Scottish Government, in her Foreword to 'Skills for Scotland' (Scottish Government , 2007a)).

"Scotland has real strength in the most vital factor for modern economies – the human capital offered by our greatest asset, Scotland's people. We need to build on this strength and, importantly, make more of it in broadening Scotland's comparative advantage in the global economy." (Alex Salmond, The First Minister of Scotland, in his Foreword to 'The Government Economic Strategy' (Scottish Government, 2007b)).

Previous regimes, the Labour-Liberal Democratic coalition of the Scottish Executive, the first devolved regime, and, prior to this, the most recent decentralised administrations of Conservative and Labour United Kingdom governments, broadly concurred with these policy relevant statements and made appropriate human capital investment policy decisions accordingly. As a consequence, investment in education in Scotland, per head, has been higher than the equivalent United Kingdom (UK) average [2]; the Scottish educational system has increased the qualification levels of the economically active population in Scotland, with disproportionate success in producing individuals with level 4 (i.e. degree) qualifications and above; and the skills

[1] The author acknowledges the (former) Department of Trade and Industry, the Economic and Social Research Council, the Advisory, Conciliation and Arbitration Service and the Policy Studies Institute as the originators of the 2004 Workplace Employment Relations Survey data, and the Data Archive at the University of Essex as the distributor of the data. The National Centre for Social Research was commissioned to conduct the field work on behalf of the sponsors. None of these organisations bears any responsibility for the author's analysis and interpretations of the data.

[2] Historically, however, expenditure on education in Scotland, per head of the population, has tended to be higher than that elsewhere in the UK, partly for reasons associated with the costs of operating the Scottish system of education and partly for reasons of the geographical distribution of the Scottish population (McLean and McMillan, 2005).

profile of Scottish workers has improved faster than that of others, resident elsewhere in the UK.[3] Moreover, on average, individuals in Scotland who have been able to take advantage of these education and training opportunities have benefited, unambiguously in terms of their employment prospects if more selectively in terms of their earnings from employment (Walker and Zhu, 2007). [4]

However, whereas the private returns accruing to individuals from this predominantly publicly funded investment have been considerable, the public/social returns accruing to the economy as a whole have been less discernible. Notably, labour productivity in Scotland continues to be less than that of the UK average, in itself a policy concern of recent UK governments.

The purpose of the Scottish National Party Scottish Government "is to increase sustainable economic growth" (Scottish Government, 2007b p. 1), a policy objective which, if achieved, would not only improve the economic welfare of the Scottish population, as conventionally defined and measured, but also reduce the opportunity costs associated with making second level policy trade-offs. A necessary condition for increasing the rate of growth of Gross Domestic Product is to increase labour productivity. Further, the conventional wisdom is that a necessary condition for increasing labour productivity is to increase workforce skills levels. From the perspective of the Scottish Government, this is reflected in 'Skills for Scotland' (Scottish Government, 2007a): "A skilled and educated workforce is essential to productivity and sustainable economic growth. Not only are more skilled workers potentially more productive in their own right, but the skill level of the workforce is

[3] In examining human resources, it is necessary to distinguish between 'stocks' and 'flows'. Stocks comprise of the existing members of the workforce, with their various abilities, attributes and skills. Flows consist of the new entrants to the workforce, from schools, colleges and universities (and overseas, in the form of in-migrants). The increase in the 'average' skills profile of the workforce in Scotland is largely due to the latter, because the qualifications and skills of the representative 'flow' worker are greater than those of his/her 'stock' counterpart. Indeed, one of the principal criticisms of policy is the extent to which resources are allocated in favour of school leavers and young people, often at the expense of the older worker, to the detriment of the latter in terms of their effective participation in the labour market (Fairley, 2004).

[4] Walker and Zhu's (2007) conclusions are that although qualifications improve the prospects of employment for all, only those with relatively higher qualification levels are rewarded in terms of wage premia. These conclusions are confirmed for Scotland by Gasteen and Houston (2007) and reflect findings for the UK produced by Dickerson (2005). However, a substantial part of the relatively low employment rate on the part of some individuals has little to do with the level of their qualifications (Little, 2008).

likely to impact significantly on the effectiveness of capital investment and the ability of employers to adopt innovative work practices" (p. 6).[5] [6] [7]

Human resource development is the process of increasing the knowledge, skills and capacities of individuals and its effective application within the economic system. Traditionally, policy related to this process of skill formation was subdivided into what may be referred to as 'schooling' (or education) policy and 'skills' (or training) policy. Although there is broad agreement that a 'schooling' policy and a 'skills policy' are not one and the same, increasingly policy in Scotland is recognising the need for some 'holistic' approach which encompasses family policy, schooling policy and skills policy (Ermisch and Wright, 2005, p. 8).

Schooling policy now addresses the needs of the labour market. For example, the Scottish Funding Council (2006) conceives of the education system as supporting the operation of the labour market by developing the individual's capabilities, by which is meant "not only knowledge, understanding and skills but also attitudes and behaviours" (p. 4). However, as Heckman and Masterov (2005) observe: "What schools can achieve largely depends on the quality of the students they work with. This in turn depends upon the quality of family life…." (p. 120). Notwithstanding the variable quality of their student intake, education establishments deliver individuals to

[5] The importance of the skills agenda was recognised also by the previous Scottish Executive (Ermisch and Wright, 2005).

[6] This skills agenda on the part of the Scottish Government, focussing as it does on the ultimate goal of increasing labour productivity, is compatible with what Fairlie (2004) identifies as "a quite remarkable consensus" about the efficacy of supply side active labour market policies (p. 104). This 'consensus' is well illustrated by the following quotation from the Leitch Review of Skills (2007): "To achieve world class prosperity and fairness in the new global economy, the UK must achieve world class skills……. where skills were once a key lever for prosperity and fairness, they are now *the* key driver. Achieving world class skills is *the* key to achieving economic success and social justice in the new global economy." (p. 9, italics in the original) Further: "Productivity is increasingly driven by skills. The ability of firms to succeed in the face of growing international competition depends increasingly on the skilled labour force they can draw from." (p. 8)

[7] Education and training are 'devolved issues' i.e. the responsibility of the Scottish Executive/Government, not 'reserved issues' i.e. the continuing prerogative of the UK government at Westminster (Ermisch and Wright, 2005). In fact, education in Scotland – like the church and the legal system - was never 'incorporated', subsequent to and consequent of the 1707 Act of Union, and the Scottish system remains distinct from that in England and Wales (McLean and McMillan, 2005: Whatley, 1994). Until 2007, vocational education and training policy has tended to have been UK led (Danson and McCarthy, 2004: Fairlie, 2004). For example, the Scottish Government previously subscribed to the system of employer-led Sector Skills Councils, and currently subscribes to their successor, the UK Commission for Employment and Skills. With the publication of 'Skills for Scotland', however, the Scottish Government now aspires to produce a more distinctively 'Scottish' strategy (Keep, 2007).

the labour market with ‘qualifications’. One issue is the extent to which these ‘qualifications’ equate with ‘skills’, for example the skills noted by the Scottish Funding Council. However, what constitutes ‘skills’ is problematical and several taxonomies may be identified. The Work Skills in Britain surveys distinguish between ‘broad’ skills and ‘generic’ skills (Felstead and Green, 2008). ‘Broad’ skills assess the abilities and capabilities of individuals, focusing on the requirements of the job undertaken, and are measured by the qualifications required to get the job; the qualifications required to do the job; the length of training given; and the time taken to learn how to do the job well. By way of contrast, ‘generic’ skills assess the importance of detailed activities carried out at work. Examples of these generic skills would include communication skills; IT skills; planning skills; and problem solving skills. The essential feature of these generic skills is that their usage may be transferred across industries and occupations.

However, there is the complication that for many employers ‘skills’ such as these are of secondary concern when recruiting and selecting future potential employees, often because they can be acquired expeditiously ‘on-the-job’ in a relative short period of time. Instead, some employers tend to focus more upon the personal characteristics of the candidates, seeking out those with the appropriate attitudes and behaviour (Oliver and Turton, 1982: Watson et al, 2006). Hence, Heckman and Masterov’s skills taxonomy seeks to differentiate between ‘cognitive’ skills (which one may assume accommodates both ‘broad’ and ‘generic’ skills) and ‘non cognitive’ skills (effectively, personal disposition, acquired – or not - principally through domestic socialisation processes, which justifies their argument for the need to incorporate ‘family’ policy into the skills formation process).

The process of human resource development continues at work, both formally and informally, as individuals, if to differing degrees, acquire, develop and enhance their skills. Work related training is conventionally associated with formal, usually off-the-job courses and programmes of both study and work. Sometimes, this training activity may be certificated. However, and typically so in smaller firms, much training is informal, on-the-job, and more embedded into the immediate context of work. Skills are acquired subconsciously, as it were, by a process of osmosis. Rarely – if ever - is this training certificated. The empirical issues here relate to the consequential

difficulties in measuring the training input as a whole, ascertaining its distribution across firms and individuals, and evaluating its impact, for example in terms of enhancing individual productivity and/or improving corporate performance.

Although some skills gaps may remain, generally one consequence of the increased flow of skilled labour into the labour market in Scotland is that skills shortages are no longer as prevalent as before. However, there is a new concern, articulated in Scotland and elsewhere in the UK, that best use is not being made of the skilled labour now available. Rather than employers identifying 'skills gaps', employees are reporting that their skills are 'under-utilised'. The empirical issues here relate both to measuring the extent of the skills gaps which remain and the prevalence of skills under-utilisation.

This paper contributes to the empirical investigations of training and skills in Scotland, making use of a matched workplace-employee data set which has its origins in the Workplace and Employment Relations Survey conducted in 2004 (WERS 2004).

The Survey of Employees – one of three elements in the cross section component of WERS 2004 – asks three questions of relevance to the issues relating to training and skills outlined above. The first asks: "Apart from health and safety training, how much training have you had during the last 12 months, either paid for or organised by your employer?" The second asks: How satisfied are you with….the training you receive?" And the third asks: "How well do the work skills you personally have match the skills you need to do your present job?" The analysis of the first question makes possible the identification of the principal determinants of training i.e. who receives training and which workplaces provide it, although it is accepted that it is more likely to be 'formal' training provision which is being investigated, given the wording of the question. To the extent that training is employer initiated principally, the analysis of the second question, especially for those who claim not to be 'satisfied' with the training received, will provide some evidence about the characteristics of individuals who perceive their training needs to be unmet and the characteristics of the workplaces at which these individuals are employed. Finally, the analysis of the third question will provide some measure of both the extent to which skills gaps remain

prevalent within workplaces located in Scotland and the extent to which skills are under-utilised, as well as revealing the characteristics of the individuals who make these claims and the structural characteristics of the workplaces – and their industrial sector - at which they are employed.

The remainder of the paper is structured as follows. Section 2 provides a 'problem'-'policy' context to the paper, often an amplification and elucidation of some of the issues introduced in the above paragraphs. Section 3 describes the data set and presents some descriptive statistics. Section 4 outlines the models and estimation strategies used to examine the data. Sections 5, 6 and 7 constitute the substantive sections of the paper, reporting and discussing the results of the analyses of the three questions identified in the previous paragraph. The final Section, 8, summarises the principal results and identifies and discusses some policy implications, given these results.

2. A 'PROBLEM', 'POLICY' CONTEXT

Gross Domestic Product (GDP) per head of the population is a conventional measure of the economic well-being of a territory, and the rate of growth of GDP is one measure of its overall economic performance. Over the last three decades, Scotland's annual rate of growth has been 1.8 percentage points below the UK average (of 2.3 percent), and below that of comparable small European countries such as Ireland, Iceland, Norway, Denmark and Finland (Futureskills Scotland, 2005: Scottish Government, 2007a). The purpose of the present Scottish National Party Scottish Government "is to increase sustainable economic growth" (Scottish Government, 2007b, p. 1), a policy objective which, if achieved, therefore, would improve the economic welfare of the Scottish population.[8] [9]

"The Government Economy Strategy" document (Scottish Government, 2007b) argues that there are three means by which the sustainable rate of economic growth in

[8] As Star (2002) has observed, policy-making in Scotland has become increasingly influenced by international benchmarking. Consequently, this single statement does little justice to the several absolute and relative targets (and aspirations) outlined in this document and the choice of nation states against which the performance of the Scottish economy will be compared.

[9] For a more comprehensive examination of the problematic concept of 'development' see Pike et al (2007).

Scotland may be accelerated in the long run: increasing the population base, and, thereby, the supply of potential workers; increasing the participation rate of those eligible to work; and increasing the level of labour productivity in and the competitiveness of establishments located in Scotland (p. 11).

Achieving this growth objective via the first means identified presents problems, for two reasons. First, Scotland's population is projected to decline, at rates greater than elsewhere in the UK and many other European countries. Moreover, its age structure is changing. By 2021, the proportion of the population aged under 16 is projected to decrease by 20 percent; and the proportion aged between 16 – 44, a core element in terms of future labour supply, is projected to decrease by 16.5 percent. By contrast, the proportion aged 60 and over is projected to increase by over 25 percent (Brown and Danson, 2003: Futureskills Scotland, 2006: Futureskills Scotland, 2007b: Lisenkova et al, 2008: McQuaid et al, 2008: Paterson et al, 2004). Secondly, for diverse reasons, many of which are associated with the lack of economic opportunity within Scotland, over long periods of time, the flow of out- migrants has tended to exceed the flow of in- migrants (Bell, 2002: Harper, 2003).[10] To compound this problem further, the probability of out-migration is greater among the younger, more skilled sectors of the population.

In the context of the second means identified, although it is necessary to increase the participation (or activity) rate – the percentage of those eligible to work who elect to enter the labour market – what is of more consequence is to increase the employment rate – the percentage of the working age population who are in employment. The activity rate in Scotland compares favourably. For example, it has increased over the last decade whereas the UK rate has remained unchanged. In contrast, however, the Scottish employment rate is only 98 percent of that of the UK average, and some way short of the top quartile of member nations of the OECD (Futureskills Scotland, 2005).

[10] Since 2000, however, net migration has been positive, associated mostly with (perhaps short term migration) on the part of individuals from the eight Accession states which joined the European Union in 2004 and, in the main, beneficial to the Scottish economy. Although this increased in in-migration is compatible, in part, with the Scottish Executive's 'Fresh Talent Initiative', launched in 2003, it should be noted that 'immigration' is a 'reserved power', and, as a consequence, the continuing prerogative of the UK government (which may hold an altogether different policy perspective from that of the Scottish Government) (Brown and Danson, 2008).

"The Government Economic Strategy" document (Scottish Government, 2007b) devotes proportionately more attention to the third means by which the rate of sustainable growth in Scotland may be increased, 'productivity and competitiveness', perhaps inferring in so doing that this means offers relatively more scope than the others to achieve the principal economic policy target. If so, this thinking accords both with most of the mainstream academic literature and the policy documentation produced by other governments and inter-governmental bodies, such as the OECD.

Productivity is measured as output per head of worker employed or per hour worked. Whereas the former is the easier to compute for reasons of data availability, the latter is the preferred measure because it takes cognisance of the changing composition of employment, such as the increasing prevalence of part time employment (Futureskills Scotland, 2005). The UK's productivity performance is poor when compared to that of comparable nations, although there have been important inter-sectoral differences in this comparative performance. For decades, irrespective of the method of measurement used, there have been significant, at times often growing, gaps between the performance of the UK and countries in (formerly Western) Europe and the United States (Broadberry and O'Mahony, 2004: 2007: Crafts and O'Mahony, 2001: Crafts and Toniolo, 1996). This relatively poor performance has been a particular policy concern of the post 1997 Labour administrations, not least because productivity is used as a measure of a nation's international competitiveness (HM Treasury, 2000). The productivity performance of the UK economy is 2.8 percentage points higher than that of Scotland (OECD and ONS statistics quoted in Scottish Government, 2007b, p. 12).

For reasons of expositional expediency, increasing the productivity growth of a nation state or a region within a nation state above some path dependency rate (or, phrased alternatively, improving its competitiveness), may be achieved by exogenous shocks and/or policy interventions which impact upon the principal drivers (or levers) of change. These drivers are of two sorts: supply side and demand side. In turn, supply side drivers are of two sorts: those that raise the quantity and quality of factor inputs and those that improve the efficiency of the manner in which existing factors are employed. Whereas an increase in net migration is an example of increasing the quantity of the labour input, enhancing the skills of the existing workforce is an

example of increasing its quality. Increased competition between firms, which brings about the destruction of jobs in less competitive enterprises; improvements in the operation of factor markets such as the labour market, which facilitates the more efficient transfer of workers from firms where jobs are being destroyed to firms where jobs are being created; and better management-employee relations within workplaces, improving firm performance in so doing, are typical illustrations of how existing factor allocation and utilisation may be improved. Conventionally the impacts of changing the components of demand within an economy, for example consequential of active aggregate demand management via monetary and fiscal policies, are (now) seen to be transitory. However, for regions and small, open economies such as Scotland, the export sector is an important component of demand. Long run changes within this component of demand can impact significantly upon GDP and productivity. The detrimental impact on the Scottish economy during the 20th century of the decline in export demand for its staple heavy industries of marine engineering, shipbuilding, steel and textiles is illustrative of this (Alexander et al, 2005: Ashcroft, 2002).

How these drivers of change fit together, however, is problematical, especially from the perspective of making adroit policy interventions.[11] Moreover, what has become increasingly appreciated is the manner in which supply may impact upon demand in a positive (or negative) manner; and the way in which demand may impact upon supply in a positive (or negative) manner, with both scenarios endogenously generating virtuous (or vicious) circles. For example, the manner in which a skilled workforce may influence the inflow of overseas investment on the part of multinational enterprises, thereby increasing GDP and, perhaps, productivity. Or the manner in which a buoyant economy may arrest out-migration (and may stimulate in-migration), again, *cet par*, increasing GDP and, perhaps, productivity growth (Krugman, 2005).

"The Government Economic Strategy" document (Scottish Government, 2007b) argues that: "There is compelling international evidence that higher levels of investment, skills, innovation and enterprise can generate improvements in

[11] So much so that Coyle et al argue (2005) that: "The old machine metaphor, of policy levers to change the economy's gear and getting the engine ticking over faster, has been abandoned to rust by the side of the road." (p. 2)

productivity" (p. 13). In diagnosing Scotland's relatively poor productivity performance, it acknowledges underperformance in three of these: investment, (research and development and) innovation, and enterprise. However, in terms of skills levels relative to other countries, Scotland's labour force ranks highly, most especially in terms of the proportions possessing intermediate qualifications and degrees (Futureskills Scotland, 2005). The policy problem in this respect has been that the "strong performance on skills and qualifications does not feed through effectively enough to productivity." (Scottish Government, 2007b, p. 14).[12]

Scotland's experience with respect to the poor returns in terms of enhanced productivity from human capital investments reflects that of the UK as a whole. Whereas there may have been some legitimacy in the argument made in the 1980s about the inadequacies of the vocational and educational system within the UK, and the consequence of this, *inter alia*, for productivity (Kemp and Mayhew, 1998), nonetheless, over the last two decades the supply of skills has been transformed. Skill shortages are now limited in their extent, as is the incidence of skills gaps; and there has been a massive expansion in higher education, where important 'conceptual' 'creative' 'research' and 'thinking skills' are developed, the key skills for any nation seeking to acquire a competitive advantage in what is referred to as the 'knowledge economy' (Keep et al, 2006: Warhurst, 2008).[13] Nonetheless, the impact upon productivity has been minimal, something which prompts Keep et al (2006) to ask rhetorically: "..where is the productivity miracle that this massive increase in workforce skills ought to have produced?" (p. 546)

There are two diverse reasons forwarded to explain this failure to translate increases in human capital investment into improvements in labour productivity. The first is that there is little by way of an evidence base to support the exclusively labour supply policies either implemented or advocated. Both in Scotland and the UK, there is a

[12] This observation repeats similar sentiments appearing in earlier documentation, ("Skills for Scotland: A Lifelong Skills Strategy"): "… Scottish investment in education, for at least the last 30 years, has been higher than in the rest of the United Kingdom and this has resulted in a well qualified population….Scotland's skills profile has also been improving faster than that of the rest of the UK….Scotland has not, however, matched the UK economic growth rate despite its positive skills profile" (Scottish Government, 2007a. p. 6).

[13] Reich (1993) had earlier referred to the polymath possessing this array of skills as the 'svmbolic analyst' (p. 178).

policy vision which sees education and training as central to creating the competitive advantages necessary for survival in the new, knowledge driven, economy where competitive pressures have been increased consequential of globalisation (HM Treasury, 2005: Humphries, 2006: Leitch, 2007).[14] Nonetheless, empirical investigations seeking to explain productivity gaps tend to attribute these to factors other than labour. Consequently, improving labour supply will have minimal effect, if any, on the changing magnitude of this gap over time. Moreover, there is no empirical evidence supporting a linear progression from human capital formation to improvements in productivity (Ashton and Green, 1996).[15] Therefore, the absence of any direct causal link, using either Scottish or UK data (or data of another nation state, for that matter), is not unexpected.

Although the early case study based research investigation associated with the National Institute for Economic Research (e.g. Jarvis and Prais, 1997: Steedman et al, 1991: Steedman and Wagner, 1989) did identify productivity gaps attributable to the absence of significant individuals possessing 'inter-mediate' skills, more recent explorations for the explanation of productivity gaps produce different conclusions. These more recent empirical investigations, however, have their origin in a different research methodology, associated with growth accounting studies.[16]

Growth accounting methodology estimates the extent to which factor inputs contribute to labour productivity. It entails estimating the contribution of changes in capital (i.e. increases to the capital input, capital intensity) and labour (i.e. increases to the quantity of labour and/or its productivity enhancing qualities) to the change in productivity growth over a period of time, and describing the unexplained residual as changes in 'total factor productivity' (TFP). Following Solow (1957), TFP is frequently assumed to reflect technical progress. More generically, it reflects the

[14] Green (2005) has argued that, as a consequence, "there has been a tendency to turn education into a branch of economic policy" (p. 5).
[15] Keep (2005) makes the same point: "… the thesis concerning the centrality of skills is open to serious question." (p. 216.) Years earlier, Keep and Mayhew (1988) had made the same observation this way: "…. despite the long-standing conviction that inadequacies in (vocational education and training) have hampered the UK's economic performance, evidence on the *precise* linkages is somewhat scanty" (p. iv) (italics in the original).
[16] The cited studies are for Great Britain. The assumption is that the essence of the findings are unlikely to differ for Scotland.

manner in which the capital and labour inputs are managed, from which outcomes such as technical progress may emerge (or not). When two countries are compared, what is estimated is the contributions of changes in capital, labour and TFP to the proportional labour productivity difference between the two countries in question. Recent empirical studies suggest that the principal explanations for the productivity gap between Britain and the USA are due to the contributions of capital and TFP, whereas the principal explanation for the productivity gap between Britain and Germany is due to capital. Rarely is the change in the labour input quantitatively important (Broadberry and O'Mahony, 2004: 2007).[17] Consequently, policies targeted at changing the labour input only, for example one which seeks to increase the proportion within the labour force possessing minimum skills levels, will be of little consequence.

The second reason forwarded to explain why recent increases in human capital investments have not been translated into improvements in labour productivity is that firms have failed to make effective and efficient use of past improvements in labour supply.

There is evidence for Scotland which suggests that best use is not made of the quality of labour available (Felstead, 2007: Felstead and Green, 2008).[18] This research has its origin in a pseudo balance sheet examination of labour supply and labour demand in the labour market, which compares and contrasts information on worker qualifications, extracted from Labour Force Surveys, with evidence about the extent to which employees make use of their skills in their current jobs, taken from a series of skills surveys. One important finding from this type of empirical investigation is that a sizeable percentage of the working population in Scotland feel that their skills are underutilised in their current jobs. Whereas the education and training systems in Scotland appear to have succeeded in equipping the workforce with higher skills, the Scottish economy has not expanded at a rate commensurate with making best use of this skilled labour. Although an over supply of skilled labour is one legitimate interpretation of this finding (e.g. Brynin, 2002: Dolton and Vignoles, 2000: Green

[17] Keep et al's (2006) conclusions from these studies is that ".. we could match our competitors on skills and still leave the bulk or our relative labour productivity gap untouched" (p. 542).
[18] Felstead and Green (2008), for example, find that almost two in five employees report that they are over-qualified for their current job.

and McIntosh, 2007: Sloane, 2003), the preferred interpretation is one of an inadequate demand for qualified labour leading to its under-utilisation.[19] [20]

The policy implication of this finding is that for labour supply policies to operate effectively a complementary labour demand policy is also required. Merely boosting qualification levels – the central policy recommendation of the Leitch Review of Skills, for example – will not result in the boost to productivity policy makers seek. "… putting the skills cart before the economic development horse may produce rather limited results. If enough public money is expended, we can have a skills revolution, without it necessarily producing much in the way of a productivity miracle" (Keep et al, 2006, p. 547).[21]

The conventional strategy advocated to increase labour demand for more highly skilled personnel is to change the product market strategies of companies towards more higher value added products, compatible with the requirements of a knowledge driven economy (Humphries, 2006).[22] It is as if the policy vision is to see everyone as a "knowledge worker and where high levels of skills and opportunity will be the norm" (Keep, 2007, p. 6). The principal policy instrument to this end is what Keep (2005) identifies as "universal upskilling" (p. 227).[23] The latent assumption is that this

[19] One manifestation of over supply would be a long run decrease in the returns to qualifications, and Walker and Zhu (2007) find no evidence of this.

[20] Another possible explanation for skills under-utilisation is mis-matches. However, it is to be expected that some proportion of under-utilisation due to mis-matches will disappear in time, as workers re-sort themselves into different firms. To the extent that skills under-utilisation due to mis-matches continues into the long run, this could be explained by constrained job choices, such as the existence of dependents limiting the job choices of some labour market participants, particularly women.

[21] Similar sentiments are expressed by Green (2005) who argues: "Skills policy should attempt to operate on both the supply and demand side of the labour market. Not only do (policy makers) have to maintain the supply of skilled workers via their investments in the education system, they should also aim to influence companies to try to persuade them to adopt high-spec strategies" (p. 11).

[22] Humphries (2006) argues as follows: "The UK cannot expect to compete with China or India, or indeed even Eastern Europe, as just another low skilled, low value added player. We must up our game, using advanced knowledge and innovation to add value, and gravitating rapidly to a high skills, high added value economy" (p. 6). The analysis follows Porter (1980) who identifies two core generic business strategies: cost leadership and differentiation. The former is one where the business strategy of the organisation is to provide a product or service at lower cost than that of its competitors. In contrast, the latter is where the strategy is aimed at adding value to the product/service of the business, where the pressures of costs are less. The argument is that the pursuit of business strategies based upon costs – and therefore low skills needs – on the part of Scottish/UK firms becomes increasingly problematic both with globalisation, which has seen multinational enterprises increasingly relocate to low cost economies, and the new entrants into the world economy cited by Humphries.

[23] Elsewhere, Keep et al (2006) describe this as "policies that begin and end with another international 'battleship building' race" (p. 552)

publicly funded increase in highly skilled labour will, of its own accord, prompt companies to change their product market and investment strategies, and make more use of the more highly skilled labour now available. And, as a consequence of this increased productivity, the end products will be both improved organisational competitiveness and enhanced national economic performance.

There are several problems with this policy rhetoric, in addition to the most obvious: viz. if recent transformations of the education and training systems to increase the supply of qualified labour to companies have not prompted companies to change their product market strategies in favour of higher value added goods and services, generating, in turn, improvements in labour productivity, it is doubtful whether further improvements in labour quality will produce an alternative, more positive, outcome.

The first of these additional problems is that some question the extent of the 'knowledge economy' and its impact upon labour demand (Warhurst, 2008: Warhurst and Thompson, 2006). Where there has been an expansion in the demand for qualified labour, the increased demand has been more for associate professionals undertaking knowledge handing and servicing tasks rather than for individuals who personify Reich's 'symbolic analyst'.[24]

[24] Skills under-utilisation on the part of the more highly qualified, therefore, may result from institutions of higher education producing 'symbolic analysts' who find, on graduation, that there is insufficient demand for their skills, merely job opportunities associated with knowledge handling and processing.

The second is that, simultaneous with this increase in demand for associate professionals, there has been an increase in demand for low-skilled/no skilled workers.[25] What is being observed is a polarisation within the employed workforce (Felstead, 2007: Felstead and Green, 2008: Warhurst, 2008).[26] [27] Although many of the jobs in the low skill sectors of the economy require few skills in the traditional interpretation of the word, given the inter-personal nature of some of the tasks undertaken what is at a premium is what Heckman and Masterov (2005) refer to as "non-cognitive skills" (p. 121), attitudes and behaviours more likely to be acquired during domestic socialisation processes prior to entering the labour market than on company based or labour market based training courses.[28] These jobs are often created to meet the leisure and lifestyle demands of the knowledge worker and the high opportunity costs of their non market work circumstances (e.g. undertaking domestic chores). The irony is, therefore, given the labour intensive nature of these sectors of the economy which are not open to international competition (and which do not lend themselves to capital substitution), labour demand in these low skilled/no

[25] Indeed, an argument of Webster (2000) is that this increase in demand for low skill/no skilled labour has been insufficient to compensate for job loss in certain industrial sectors of the Scottish economy (and certain locations within Scotland (Newlands, 2004: Turok and Bailey, 2004)) and is the principal explanation for its relatively low employment rate.

[26] Warhurst (2008) offers this insightful observation about the increasing numbers employed in these low skilled jobs: "When once Britain was regarded as a nation of shopkeepers, it is now perhaps a nation of shop workers" (p. 77).

[27] This pattern of growth within the labour market is not unique to the Scottish economy. Using data from the Labour Force Surveys, Goos and Manning (2003) find the same for the UK as a whole, as they seek to distinguish between MacJobs (the high skilled, well paid jobs) and McJobs (the low skilled, low paid jobs). Employment within McDonalds personifies the latter. One potential consequence of polarisation is an increase in the extent of over-education – and the scope this affords some employers to make use of 'credentials' to discriminate between job seekers. Another is increasing earnings inequality. However, these studies of 'polarisation' do not seek to examine the underlying labour market dynamics: the link between low skilled jobs with low pay and the probability of future spells of unemployment; and the link between unemployment and the probability of quitting the unemployment stock to accept job offers associated not only with low pay but also with job instability (Stewart, 2007: Stewart and Swaffield, 1999). And, of course, with labour market dynamics such as these, the possibility of labour market segmentation (and, ultimately, exclusion from the labour market) cannot be dismissed (Bradley et al, 2003). These studies of labour market dynamics ignore the potentially crucial role of 'place' in the process (cf. Green, 1997), as noted in the context of labour markets in Scotland, *inter alia*, by Danson (1982) and McGregor (1978).

[28] Warhurst and Nickson (2007) refer to this type of employment as 'aesthetic labour', where, in certain parts of the service sector, individuals supplying the service in question become part of the commodity being consumed. Its inter-war equivalent, especially for females, would have been domestic service (Routh, 1965). To the extent that the required 'attitudes and behaviours' are associated with the middle classes, however, currently, in many local labour markets, large numbers of these jobs are filled by 'full time' students, working 'part time'. Warhurst and Nickson's study of labour in the hospitality sector, however, may suffer from a problem of 'selectivity bias'. For example, in 'Garnethill', Mina's (1999) principal character frequents a "small and comfortably grubby café" which is "a genuine sixties throwback, when fifties décor had just reached Glasgow." (p. 67) "The surreal character of the café was enhanced by the depressed elderly waitress with a sore leg. When she brought them the wrong order for the second time they accepted it to save her walking all the way back to the kitchen again." (p. 68)

skills sectors of the economy may increase at a rate faster than labour demand in the high skilled sectors.[29]

3. THE DATA SET

The empirical investigation makes use of a matched workplace-employee data set which has its origin in two elements of the Cross Section component of the 2004 Workplace Employment Relations Survey (WERS 2004), the fifth in a series of equivalent surveys which map the contours of employment relations in Great Britain (Kersley et al, 2006).[30]

The initial unit of analysis in the survey is the workplace, defined as "the activities of a single employer at a single set of premises" employing at least five workers (Kersley et al, 2006, p. 3). Hence, although the terms 'workplace' and 'establishment' may be used interchangeably, the terms 'enterprise'/'firm'/'organisation' and 'workplace'/'establishment' may not, unless in the situation where the former is located at a single site. The population of workplaces sampled is drawn randomly from the International Departmental Business Register (IDBR) maintained by the Office for National Statistics. The sampling unit is the IDBR's 'local unit', which conforms to the definition of the workplace used. The population from which the sample is drawn constitutes 700,000 workplaces (33 percent of the Great Britain (GB) total) and 22.5 million employees (89 percent of the GB total). The sample selected is stratified by workplace size and industry, with workplaces being randomly selected from within size bands and industries. Larger workplaces and certain industries (e.g. utilities) are given a greater probability of being selected across the sample, to ensure comparability with smaller firms and other industries, respectively. Establishment and employment weights are applied to ensure that the final achieved sample is representative of the survey population from which it is drawn.

[29] Job satisfaction for those supplying 'aesthetic labour' apart, as Warhurst (2008) himself acknowledges "For many workers in these jobs this work will provide little more than a life of drudgery" (p. 79), often being associated with low job/no job 'churning' within the labour market, with no prospects of upward occupational mobility.

[30] The immediately subsequent paragraphs make extensive use of this reference.

The first element of WERS 2004 used is the 'Cross Section Survey of Managers', the questionnaire responses of the senior manager at the workplace responsible for employment relations on a day-to-day basis. This provides information, *inter alia*, on the structural characteristics of the workplace, such as the number of employees employed, the number of employees who are female, the number of employees who work part time, its corporate status, its Standard Industrial Classification, and the human resource management policies in operation there. In the original survey, this generates 2,295 observations.

86 percent of the workplaces which participated in the survey of managers agreed to distribute a self completion questionnaire to a random selection of up to 25 of their employees. This 'Survey of Employees' constitutes the second element of WERS 2004 used. This survey collects information, again *inter alia*, on employees' experiences at the workplace, such as the number of days of training received in the past 12 months; their work-related perceptions, such as the extent of their satisfaction with the training received and the extent to which their skill levels match the skill levels required to do their present jobs; and personal information relating to age, gender, pay, tenure etc.. In the original survey, this generates 22,451 observations.

All the four elements of the cross section survey are linked.[31] The data set used in this paper links the Cross Section Survey of Managers with the Survey of Employees. WERS 2004 is statistically representative only for the spatial area of 'Great Britain'. However, making use of two regional identifiers – the Government Office Region and the Standard Statistical Region – it is possible to disaggregate the data set geographically. Doing so for Scotland generates a workplace data set of 223 observations and a matched workplace-employee data set of 2,515 observations.[32] [33]

[31] The other two elements, not used in this investigation, are the Survey of Employee Representatives and the Financial Performance Questionnaire.
[32] The data set is analysed using Stata's 'svy set' facility, and the Scotland sub set is extracted and then analysed using the 'sub population' routines. (Stata Press, 2005)
[33] The number of observations ultimately analysed is less than this latter figure for two reasons. First, multiple responses and 'don't know' responses are reclassified as 'missing' observations. Secondly, observations with incomplete information across all the variables used in the estimations are dropped. There are 1,858 observations used in the multivariate analyses reported in Sections 5, 6 and 7. (There are 16,492 observations in the full data set from which this sub population is extracted.)

The population of workplaces with 5 or more employees is dominated by small workplaces (e.g. restaurants, small retail outlets, workshops etc.). The proportion of larger workplaces (e.g. hospitals, local government offices, manufacturing plants etc.) is correspondingly smaller. One consequence of this is that whereas the overall incidence of employment relations policies and practices (such as training) is heavily influenced by the smaller workplace, the character of the employment relationship for most employees within the sample is determined by the policies and practices of the larger workplaces. This may be seen from Table 1, which presents information on the percentage distribution of workplaces and employees by size of workplace, for both Great Britain and Scotland. For example, for Great Britain, whereas 12.11 percent of the workplace data set consists of workplaces employing 5 - 10, only 4.53 percent of the employees in employment covered by the workplace survey are employed at workplaces employing 5 - 10 (Kersley et al, 2006, Figure 2.1, p. 14).[34] The corresponding percentages for the workplaces located in Scotland sub set of the GB data set are 11.21 and 4.45, respectively.[35]

The aim of this paper is to analyse responses to three questions asked in the Survey of Employees, controlling, *inter alia*, for workplace related information provided in the Survey of Managers, examining only the responses of those employees surveyed employed in the sub set of workplaces located in Scotland. The first question relates to the quantity of training received; the second question relates to the extent of the individual's satisfaction with the training received; and the third question relates to the extent to which individuals feel that the skills they possess are higher/lower than those required to do their present jobs.

One in three employees surveyed received no training of the type described in the past 12 months (cf. Table 3). One in ten, received less than one day. By way of contrast,

[34] The information presented in Table 1 differs from that which appears in Kersley et al (2006) for two reasons. First, to maintain comparability with previous studies, Kersley et al do not report the analysis for workplaces employing less than 10 employees. This is reported in a separate publication viz. Forth et al (2006). Secondly, the workplace size bands used in this paper differ from those used by Kersley et al (2006).

[35] The seeming comparability between the two percentage distributions for Great Britain and Scotland should not be taken to infer that the Scottish samples are statistically representative. For example, the size distribution of workplaces in Great Britain is unlikely to be the same as that for Scotland. Table 2 presents a comparison between the percentage distribution of the employees surveyed in Scotland in the WERS Survey of Employees, by SIC, with the percentage distribution of employment in Scotland, by SIC.

8.42 percent received 10 days or more. Given the manner in which the question is worded, the training reported is more likely to be formal training, and, therefore, more in accord with the training policies to be found in larger workplaces (Keep, 2007). Further, because training tends to be provided more to those who already possess academic and/or vocational/professional qualifications (Green 1999), it is probable that the distribution of training will vary across individuals. These issues are addressed in detail in section 5 of the paper, which undertakes an analysis of the determinants of training received by individuals.[36]

Almost half of all employees surveyed in the Survey of Employees report that they are either 'satisfied' or 'very satisfied' with the training received (cf. Table 4). The question put, however, is somewhat ambiguous. 'Satisfied' with what? The quantity of training received? Its quality? The manner in which it was delivered, e.g. on-the-job? off-the-job? etc.. Almost one in four report that they are 'dissatisfied' or 'very dissatisfied' with the training received. Section 6 of the paper focuses upon this minority, examining the probability that an individual's perceived training needs have not been met, in some way or another.

'Skills shortages' refer to a situation in an external labour market in which there is an inadequate supply of individuals with some particular skills profile to meet the demands of employers. 'Skills gaps' refer to situations in the internal labour markets of workplaces/firms, where employers report that the skills profiles of their existing employees – or some sub set of them – are inadequate to meet the skill demands of the jobs they do (Watson et al, 2006). Futureskills Scotland (2007) report that although skill shortages are now uncommon, skills gaps remain prevalent. However, Felstead (2007) and Felstead and Green (2008) also report the frequent under-utilisation of skills on the part of employed workers. Table 5 presents evidence which illustrates the limited extent of the skills gap, in that only 4.32 percent of respondents to the Survey of Employees report that the work skills they possess are either 'a bit lower' or 'much' lower than the skills needed to do their present job. In contrast, more than half of respondents report that the work skills they have are either 'much higher' or 'a bit higher' than the skills needed to do their present jobs, evidence of

[36] Unfortunately, the cross section nature of the data set does not make possible a testing of the hypothesis that training is more likely to be given to previous recipients of training.

considerable skills under-utilisation. Section 7 explores the separate issues of skills-gaps and skills under-utilisation in more detail, seeking to identify the determinants of both.

4. THE MODELS AND THE ESTIMATION STRATEGIES

An ordered logit model is used to estimate the determinants of the six amounts of training received and a binomial logit model is used to examine the determinants of three probabilities: that an individual reports dissatisfaction with the training received; that an individual reports that the skills levels he/she possesses are lower than the skills levels required to do his/her present job (thereby identifying a 'skills gap'); and that an individual reports that the skills levels he/she possesses are higher than those required to do his/her present job (thereby identifying 'skills under-utilisation').

An ordered logit model of the following generic type is used to estimate the determinants of the six training outcomes:

$$\mathbf{y^*_{iwm}} = \mathbf{X_{iw}}\boldsymbol{\beta} + \boldsymbol{\varepsilon_{iw}}$$

such that,

$y_{iw} = 1$ (i.e. 'none') if $\tau_0 = -\infty \leq y^*_i < \tau_1$

$y_{iw} = 2$ (i.e. 'less than 1 day') if $\tau_1 = \leq y^*_i < \tau_2$

$y_{iw} = 3$ (i.e. '1 to less than 2 days') if $\tau_2 = \leq y^*_i < \tau_3$

$y_{iw} = 4$ (i.e. '2 to less than 5 days') if $\tau_3 = \leq y^*_i < \tau_4$

$y_{iw} = 5$ (i.e. '5 to less than 10 days') if $\tau_4 = \leq y^*_i < \tau_5$

$y_{iw} = 6$ (i.e. 'more than 10 days') if $\tau_5 = \leq y^*_i < \tau_6 = \infty$

where $\mathbf{y_{iwm}}$ is the response of an individual (i) in a workplace (w) reporting the amount of training received (m); τ is some threshold point where, when crossed by the latent variable y*, the observed amount of training received category changes; and $\mathbf{X_{iw}}$ $\boldsymbol{\beta}$ and $\boldsymbol{\varepsilon_{iw}}$ are, respectively, a vector of independent variables, a set of

coefficients to be estimated, and an error term (cf. Baum, 2006; Long and Freese, 2006).

The binomial logit model used to estimate the three probabilities identified also conforms with convention and is as follows:

$$\mathbf{y_{iw}} = \mathbf{X_{iw}}\boldsymbol{\beta} + \boldsymbol{\varepsilon_{iw}}$$

where $\mathbf{y_{iw}}$ is the response of an individual (i) in a workplace (w); $\mathbf{X_{iw}}$ $\boldsymbol{\beta}$ and $\boldsymbol{\varepsilon_{iw}}$ are, again, respectively, a vector of independent variables, a set of coefficients to be estimated, and an error term (cf. Baum, 2006; Long and Freese, 2006). In these binomial estimations, $\mathbf{y_{iw}} = 1$, if the individual reports that he/she is dissatisfied with the training received (and = 0 otherwise); if the individual reports that he/she possesses skills lower than those required to do his/her present job (and = 0 otherwise); and if the individual reports that he/she possesses skills higher than those required to do his/her present job (and = 0 otherwise).

The independent variables in both the ordered logit and the three binomial logits are of three sorts, relating to individual work-related and non-work-related personal characteristics (such as tenure, contract type, age, and gender); the structural characteristics of the workplace at which the individual is employed (such as its size, the percentage of employees who are female/work part time and its corporate status); and the Standard Industrial Classification (SIC) of the workplace.[37] However, the detail of the independent variables differs across the four estimations undertaken. These details are reported in full in the tables and their footnotes associated with the results of each estimation.[38]

5. THE AMOUNT OF TRAINING RECEIVED

The extent to which individuals employed in the smallest workplace (i.e. employing 5 -10) receive less training than those employed in workplaces employing more than 10 is illustrated in Table 6, which presents information on the percentage distribution of training received, by workplace size category. 65 percent of those employed in the smallest sized workplace category receive no training of the type described, whereas the percentage of workers who receive no training in the larger workplace size categories is always less than 37 percent. Further, the percentage of workers in the smallest workplace size category who receive the different amounts of

[37] Workplace human resource management policies and practices (such as whether or not there is an equal opportunities policy in operation, the workplace is Investor of People accredited etc.) are not included, principally because of a problem of multicollinearity. The workplace size variable makes use of a series of dummy variables. Hence, dummy variable depicting human resource management policies such as these identified, invariably present in larger workplaces, proved collinear with the dummy variables of the larger workplace size categories. That said two dummy variables of this type are included, successfully. A dummy variable relating to whether the workplace states that it offers 'long term employment' on recruitment – a policy assumed to be central to the other workplace recruitment and training policies in operation. And a dummy variable relating to whether the workplace experienced 'change' over the last two years (such as a change in its pay systems, computerisation, working time arrangements, the organisation of work etc.), factors which may prompt the implementation of associated training policies on the part of management, indicators of what Keep (2007, p. 5) refers to as possible "drivers of training". Further in the context of the estimation, often similar high degrees of collinearity were found between the dummy variables reflecting the corporate status of the workplace and its SIC (e.g. between a workplace in the public sector and the SIC Health). Here, however, it was decided to retain both.

[38] Two points should be noted at this juncture, both relevant to the four estimations. First, no-one within the Scotland sub population reports having 'no' academic qualifications'. Similarly, no-one reports having 'no vocational/professional qualifications'. Hence dummy variables for these two qualifications categories do not appear in the list of independent variables. Second, the selection of SIC10 (Education) as the reference SIC category is not arbitrary. This SIC reports the lowest percentage change in employment for the period 2002 -2004, and is selected for this reason (cf. Table 2, column 4).

training identified is always lower than the corresponding percentages of those workplaces in the relatively larger size categories. However, it is not as if small workplaces *per se* provide no training. The percentages associated with the three other workplace size categories, employing 100 or fewer, equals – and sometimes betters – the percentages associated with the three largest workplace size categories, employing more than 100, across all sets of training days received. Moreover, more than three in 10 of the employees in the largest workplace size category receives no training.

More than half of those employees surveyed and employed in Manufacturing and Hotels and Restaurants report having received no training of the type described. Indeed, the performance of these two SICs in terms of training provision across the five sets of days of training received analysed is consistently inferior to that of the other SICs (cf. Table 7). In contrast, only one in five (approximately) in Financial Services, Public Administration and Health report having received no training (and the performance of these same three SICs is consistently superior to that of the other SICs, across the five sets of training days analysed).

Moving beyond these descriptive and somewhat restricted statistics to report the results of the ordered logit estimation, the quantity of training of the type described received by an individual during the last 12 months is seen to be a function of certain well defined personal characteristics and the SIC of the workplace. Generally, the characteristics of the workplace are of less consequence. The detail is reported in Table 8. Wald tests establish the joint significance of each of the three discrete sets of independent variables, however.[39]

Women – relative to the reference category of men – are more likely to receive no training and less likely to receive the larger quantums of training provided. For example, they are 9 percent more likely to receive no training; and 2 percent less likely to receive five to less than 10 days training. Training is more likely to be given to those aged 22 – 29 years, again relative to the reference category (viz. those aged 30 – 39). Those in this relatively younger age category are 10 percent less likely to

[39] Wald Test results: for the set of personal characteristics variables: F(28, 1618) = 7.79: prob > F = 0.0000: for the set of workplace characteristics variables: F(12, 1634) = 1.91: prob > F = 0.0288: and for the set of SIC variables: F(11, 1635) = 3.76: prob > F = 0.0000.

receive no training: and two percent more likely to receive 10 days or more of training. In contrast, training is less likely to be given to those earning between £4.51 and £5.00 per hour, again relative to the reference category (viz. individuals earning between £5.01 and £15.00 per hour). For example, those in this relatively low earnings category are 20 percent more likely to receive no training; and 4 percent less likely to receive five to less than 10 days training. Training tends to be given to those who supervise other workers, relative to the reference category of those who do not supervise others. They are 13 percent less likely to receive no training; and six percent more likely to receive two to less than five days of training. Training is less likely to be given to those with long tenure. Relative to the tenure reference category (of being at the workplace for more than one year, but less than two), those who have been at the workplace for five to less than 10 years, for example, are 14 percent more likely to receive no training. Similarly, those who have been at the workplace for over 10 years are two percent less likely to receive 10 days or more training.

Contrary to expectations, neither academic qualifications nor vocational/professional qualifications prove to be of any consequence. Perhaps the training for these categories of employees is more 'embedded' into their workplace situations? Perhaps employers of this type of labour assume that workers of this type require no training of the sort identified, subsequent to their recruitment into the workplace? On the other hand, training is provided to those working fixed term contracts, relative to the reference category of those working permanent contracts. For example, individuals working fixed term contracts are 13 per cent less likely to receive no training; and six percent more likely to receive two to less than five days training, outcomes perhaps explained by the particular terms of the engagement of this type of employee.

Very much in accord with the literature, therefore, training is less likely to be provided to: women; those in low waged jobs; older workers; and those with longer tenure. The point of discord with previous literature relates to the apparent irrelevance of qualifications.

In the context of the characteristics of the workplace at which the individual is employed, there is little statistically significant evidence that indicates that training is less likely to be provided in relatively smaller establishments, other than the smallest

workplace size category (i.e. employing 5 - 10). For example, relative to the reference workplace size category (viz. employing between 51 – 100 employees), individuals employed at workplaces in the smallest size category are 4 percent less likely to receive five to less than 10 days of training. Somewhat surprisingly (?), across all five categories of days of training received, training is less likely to be provided at public sector workplaces, relative to private sector workplaces, the reference category. Further, individuals employed in public sector workplaces are 14 percent more likely to report receiving no training, again relative to the same reference category.

Training is less likely to be provided to individuals working in establishments in three industries viz. Manufacturing, Hotels and Restaurants and Other Business Services, relative to individuals working in establishments in the reference SIC category of Education. For example, individuals employed within manufacturing plants are 31 percent more likely to receive no training. The corresponding percentages for those employed in Hotels and Restaurants and Other Business Services are 28 and 22, respectively. Further, individuals employed within manufacturing plants are six percent less likely to receive five to less than 10 days training and four percent less likely to receive more than 10 days of training. The corresponding percentages for the other two named industries are 5 and 3 and 4 and 3, respectively. These outcomes may reflect the generally low-skilled nature of most jobs within these industrial sectors (e.g. unskilled labour, machine operators etc. in Manufacturing; and barmen/women and waitresses in Hotels and Restaurants).

6. DISSATISFACTION WITH THE TRAINING RECEIVED

Almost 25 percent of individuals who completed the Survey of Employees questionnaire report that they are dissatisfied with the training received, where the training in question is of the type described (cf. Table 4).[40] Despite receiving no training, however, only one in three workers in this situation report dissatisfaction (cf. Table 9). The incidence of dissatisfaction with training received tends to decrease with the amount received, although one in 10 who received over 10 days of training

[40] Individuals are classified as being 'dissatisfied' with the training received if they report being 'dissatisfied' or 'very dissatisfied' in the response to the original question.

voice dissatisfaction with this.[41] With one exception, the incidence of dissatisfaction with the training received varies little by workplace size, ranging between 19.42 percent (in workplaces employing 51 – 100) and 26.58 (in workplaces employing over 501, the largest size category in the analysis) (cf. Table 10).[42] The exception is workplaces of the second largest size category in the analysis (viz. employing 201 – 500), where 35.07 percent report dissatisfaction with the training received. In contrast, the incidence of dissatisfaction with the training received varies considerably from the perspective of the SIC of the workplace (cf. Table 11). The SIC in which the incidence of dissatisfaction is at its lowest is Health, where approximately two in 10 report dissatisfaction. However, the incidence of dissatisfaction is double that ratio in Transport and Communication.

Employing the micro-econometric analysis outlined in Section 4, the probability that an individual is dissatisfied with the training received – however that is interpreted – is seen to be a function of his/her personal characteristics and the characteristics of the workplace at which he/she is employed. The SIC of the workplace is of no consequence. These general findings are confirmed by Wald tests which report the joint significance of the sets of variables associated with personal characteristics and workplace characteristics, but not the set of variables associated with SIC.[43] Furthermore, the signs on the coefficients are predominantly negative – indicating that the individual is *less* likely to report dissatisfaction – and there is little pattern to be observed in the results, presented in Table 12.

Reporting dissatisfaction with the training received is positively correlated with three variables viz. highest academic qualification, the multi-plant nature of the workplace and whether or not the workplace experienced 'change'. To illustrate, individuals whose highest qualification is 'Highers/A-levels' are 13 percent more likely to report dissatisfaction than individuals in the appropriate reference category, viz. possessing

[41] The dissatisfaction reported, however, may have little/nothing to do with the quantity of training and more to do with other matters related to the training received.
[42] Note: the 'incidence' of training here, and latterly in the context of the SIC of the workplace, is a product of cross tabulating the two sets of variables in question, and, therefore, makes no allowance for the effect of other factors.
[43] For the set of personal characteristics variables: $F(33, 1613) = 5.45$: prob > F = 0.0000. For the set of workplace characteristics variables: $F(12, 1634) = 5.27$: prob > F = 0.0000. And for the set of SIC variables: $F(11, 1635) = 1.67$: prob > F = 0.0741.

SCEs/GCSEs as their highest qualification. The sign on the dummy variable indicating possessing a degree as the highest qualification is also positive, but the coefficient is not statistically significant. Paradoxically, the signs on the dummy variables depicting highest vocational/professional qualification held are generally negative, if not statistically significant.[44] Individuals employed at workplaces which are part of a multi-plant organisation are 11 percent more likely to report dissatisfaction, again relative to the reference category of someone employed in a single plant organisation.[45] Individuals employed at workplaces which experience 'change' of the sorts identified are 10 percent more likely to report dissatisfaction with the training received than those employed in workplaces where no such change occurred, the reference category.[46]

By way of contrast, females are 5 percent less likely than males to report dissatisfaction with the training received. Individuals who receive training, relative to those who had not, the reference category, are less likely to report dissatisfaction with the training received, perhaps not unexpectedly, but to quite sizeable degrees. For example, those who receive five to less than 10 days training are 19 percent less likely to report dissatisfaction. And those employed at workplaces which are in the public sector are 11 percent less likely to report dissatisfaction with the training received than those employed in private sector establishments, the reference category. Although individuals employed at public sector workplaces are less likely to receive training, they are less likely to be dissatisfied with the training they receive.

As will become apparent in the subsequent section, the dummy variable associated with reporting dissatisfaction with the training received has an important impact in the context of the analysis of both skills gaps and skills under-utilisation.

---

[44] Why there should be the different outcome between academic qualifications and vocational/professional qualifications is not immediately apparent, other than the differences in the processes by which these qualifications have been acquired and the different perspectives about what constitutes a quality training experience these different processes may have produced?

[45] Again what explains this outcome is difficult to establish, although it may be seen to be compatible with other literature which identifies differences in management styles between single plant establishments – perhaps owner-managed – and workplaces part of multi-plant organisations (cf. Harris et al, 2004a: 2004b). The inference would be that managers in single plant enterprise are more cognisant of the training needs of their employees and implement more appropriate training programmes.

[46] This may be attributable to failings on the part of management to acknowledge/recognise employee training needs consequent of the 'change' implemented.

7. SKILLS GAPS AND SKILLS UNDER-UTILISATION [47]

At 4.20 percent of those surveyed, the incidence of skills-gaps is relatively low, and much lower than those reported in Felstead (2007) and Felstead and Green, 2008) (cf. Table 5).[48] As may be seen from Table 13, it varies little by workplace size. The variation by SIC is relatively greater, even after the exclusion of the SIC with the lowest incidence (Wholesale and Retail) and the SIC with the highest (Gas, Electricity and Water) (cf. Table 14).[49]

In the detailed statistical analysis, the probability of an individual reporting that the skills levels he/she possessed are lower than those required to do his/her present job is explained more by personal characteristics than either workplace characteristics or the SIC of the workplace (cf. Table 15).[50] Further, the magnitudes of the values of the marginal effects for the individual's personal characteristics – statistically significant or otherwise – are generally small. The only result of consequence is, perhaps surprisingly (and somewhat inexplicably), the positive correlation between the probability of reporting that skills levels possessed are less than those required to do the present job and reporting dissatisfaction with the training received. Those reporting dissatisfaction with the training received are three percent more likely to report a skills gap on their part, relative to those who are satisfied with the training received, the reference category.[51]

In passing, it is noted that four SICs (viz. Electricity, Gas and Water, Hotels and Restaurants, Financial Services and Public Administration) are associated with skills gaps, manifest in the positive sign on each coefficient. Only in the context of

[47] Dummy variables depicting NVQ/SVQ level 4, NVQ/SVQ level 5, and SIC 12 (Other Community Services) are not included in the estimation of the probability that an individual's skills levels are less than those required to do his/her current job, because, in earlier estimations, each of these dummy variables explained 'failure' perfectly, circumstances perhaps attributable to the relatively low incidences of 'outcome = 1'.

[48] A 'skills gap' is deemed to exist when an individual responds that his/her skills levels are either 'much lower' or 'a bit lower' than those required to do his/her present job.

[49] Note, again, that 'incidence' is a product of the appropriate cross tabulations only.

[50] This is evidenced in the results for the three Wald tests for the three sets of independent variables in question. For the set of dummy variables depicting personal characteristics: F (32, 1614) = 5.63: prob > F = 0.0000: for the set of dummy variables depicting the characteristics of the workplace at which the individual is employed: F(12, 1634) = 1.12: prob F > = 0.3413: and for the set of dummy variables associated with the SIC of the workplace: F(10, 1636) = 1.67: prob > F = 0.0818.

[51] This may be interpreted as a failure on the part of management to identify the individual's training needs appropriately.

Electricity, Gas and Water is the value of the marginal effect (relative to the reference SIC category of Education) sizeable. However, none of the dummy variables in question is statistically significant.

In marked contrast to these findings on the incidence of skills gaps, more than half the number of individuals surveyed report that they consider the skills levels they possess to be higher than those required to do their present job i.e. skills under-utilisation in the terms of this paper (cf. Table 5).[52] [53] Furthermore, the incidence of skills under-utilisation almost increases with workplace size (cf. Table 16). For example, whereas the incidence of skills under-utilisation is 46.25 in workplaces employing 5 -10, in workplaces employing 201 – 500, it is 57.82. In terms of the SIC of the workplace, skills under-utilisation is least prevalent in Manufacturing (where the incidence is 44.03 percent) and most prevalent in Other Community Services (where the incidence is 22.64 percentage points higher, at 66.67 percent) (cf. Table 17).[54]

In terms of the micro-econometric analysis of the phenomenon of skills under-utilisation, the probability that an individual reports that the skills levels he/she possesses is higher than those required to do his/her present job is explained by a combination of the three sets of independent variables, personal characteristics, workplace characteristics and the SIC of the workplace in question (cf. Table 18).[55]

That an individual finds himself/herself at a workplace at which his/her skills are not fully utilised may be explained by labour market mis-matches. *A priori*, a mis-match may be attributable to supply constraints on the part of the individual, for example having a dependent child/children; having caring responsibilities; and having a disability which may/may not impact upon the individual's capacity to participate fully in the labour market. However, of the variables relevant to these personal circumstances, only having some disability is both positively signed and statistically

[52] Skills under-utilisation is deemed to exist when an individual reports that the skills levels he/she possesses is either 'much higher' or a 'bit higher' than those required to do his/her present job.
[53] The incidence of skills under-utilisation, therefore, is greater than that reported in Felstead (2007) and Felstead and Green (2008).
[54] Again note that 'incidence' is a product of cross tabulation only.
[55] This is evidenced by the results of the Wald tests. For the set of dummy variables depicting personal characteristics: F (36, 1610) = 3.68: Prob > F = 0.0000. For the set of dummy variables depicting workplace characteristics: F(12, 1634) = 2.30: Prob > F = 0.0067. For the set of dummy variables associated with the SIC of the workplace: F(11, 1635) = 3.66: prob > F = 0.0000.

significant.[56] Notwithstanding mis-matches attributable to labour supply constraints, mis-matches can arise for reasons of imperfect information, on the part of either or both parties to the job offer and acceptance processes. However, in instances such as these, the worker can quit the firm. And it is notable that although the sign on the dummy variable of being at the workplace for less than one year is positive, the signs on all the other tenure dummy variables are negative. Although none of the outcomes in question is statistically significant, these outcomes are compatible with an hypothesis which explains skills under-utilisation as a product of a mismatch (where all these results are relative to the appropriate reference tenure category viz. being employed at the workplace for longer than one year, but for less than two years).

An individual on a fixed term contract is 22 percent less likely to feel that his/her skills levels are under-utilised, relative to the reference category of being on a permanent contract of employment. However, being on a temporary contract is positively signed, if not statistically significant. These different outcomes may be attributable, once again, to the different nature of these contingent contracts, with those on fixed term contracts employed to meet more specific circumstances within workplaces. Individuals who receive one day or more of training are less likely to feel that their skills are under-utilised. For example, those who receive 10 days or more of training are 16 percent less likely to feel that the skills they possess are higher than those required to do their present jobs. Paradoxically, however, those who report dissatisfaction with the training they receive are 14 percent more likely to feel that their skills are under-utilised, relative to the reference category of being satisfied with the training received.[57] There is some evidence that those possessing higher qualifications are more likely to feel that the skills levels they possess are higher than those required to do their present job. For example, both dummy variables associated with the highest academic qualification held are positive, relative to the reference category of having only SCEs/GSCEs (although neither is statistically significant). Individuals who hold NVQ/SVQ level 5 – the highest level – are 34 percent more

[56] Interacting the female dummy variable with dummy variables related to both having a dependent child and caring responsibilities does not generate outcomes in accord with the *a priori* expectations. Indeed, the signs on both interacted variables are negative (and not statistically significant).

[57] One possible interpretation of this latter result – and one which also offers an additional perspective on the reasons why an individual may report dissatisfaction with the training received – is that the training received is deemed to be irrelevant/redundant/unnecessary, given the skills requirements associated with the present job.

likely to feel that their skills are underutilised, relative to the reference category of holding only NVQ/SVQ level 1. (However, the signs on the coefficients for the dummy variables levels 3 and 4 are negative, although neither is statistically significant).

The probability that an individual considers that the skills levels he/she possesses are higher than those required to do his/her present job takes on a particular form in the context of the size of the workplace at which the individual is employed. Whereas individuals employed at workplaces in size categories smaller than the reference category (i.e. employing between 50 – 100) are less likely to consider that their skills are under-utilised, those employed at workplaces in size categories larger than this reference category are more likely to consider that their skills are under-utilised. However, few of these results are statistically significant.

With the exception of Other Community Services, relative to the reference SIC category (Education) the signs on all the other SIC dummy variables are negative, reflecting that individuals employed in these sectors are less likely to feel that the skills levels they possess are higher than those required to do their present jobs. For example, those employed within Manufacturing are 26 percent less likely to feel this, relative to the noted reference category, and those employed within Construction are 20 percent less likely to feel so, again relative to the reference category. That the SIC dummy variables are predominantly negatively signed, whether or not employment change over the period 2002-2004 has been positive or negative (cf. Table 2) would tend to reject the argument that the phenomenon of skills under-utilisation tends to be more prevalent in workplaces in those sectors of the economy which are expanding, where recruiters may have used job seekers' credentials to select between competing candidates.[58]

[58] Of course, this does not eliminate the argument about the use of credentials being used at the level of the expanding workplace (Warhurst, 2008: Wolf, 2004).

8. CONCLUSIONS AND POLICY IMPLICATIONS

The dominant economic objective of the Scottish National Party Scottish Government is to increase sustainable economic growth, an objective best achieved, it is argued, by increasing labour productivity. Accordingly, the principal policy instruments of relevance to this objective are designed to enhance further the quality of labour supply by increasing workforce skills levels, on the assumption that "Not only are more skilled workers potentially more productive in their own right, but the skill level of the workforce is likely to impact significantly on the effectiveness of capital investment and the ability of employers to adopt innovative work practices" (Scottish Government, 2007a, p. 6). However, not only have past increases in human capital investment not resulted in the expected increases in labour productivity, survey evidence suggests that a large proportion of the employed population in Scotland consider that full use is not being made of their available skills.

The aim of this paper was to make a contribution to the empirical literature on training and skills in Scotland. Making use of a matched workplace-employee data set which had its origins in two of the surveys associated with the cross section component of the 2004 Workplace and Employment Relations Survey, it addressed three questions of relevance to the policy debate: How much training had individuals received in the past 12 months? How dissatisfied were individuals with this training? And how well did the skills levels individuals possessed match the skills levels required to do their present job?

One in three employees surveyed reported that they had received no training, and one in 10 that they had received less than one day. In contrast, 8.42 percent had received 10 days or more. 65 percent of individuals employed at workplaces employing between five and 10 workers (the smallest workplace size category investigated) had received no training. More than three in 10 of the employees in the largest workplace size category investigated (employing more than 501 workers) had received no training. However, in the micro-econometric analysis undertaken there was no statistically significant evidence to the effect that the size of the workplace at which the individual was employed was an important determinant of the amount of training that an individual received. Rather, the amount of training an individual received was

explained best by his/her personal characteristics and the industrial sector of the workplace at which he/she was employed. Training was more likely to be given to males, those in higher paid jobs, younger workers, those relatively new to the workplace and those employed on fixed term contracts. No training was more likely to be given to women, those in low waged jobs, older workers, and those with long tenure. Further, training was less likely to be given to individuals employed at workplaces in the Manufacturing, Hotels and Restaurants and Other Business Services sectors of the economy

One in four employees surveyed reported that they were dissatisfied with the training received (although only one in three of those who had received no training reported dissatisfaction with this outcome). The incidence of dissatisfaction decreased with the amount of training received. Nonetheless, 10 percent of those who received 10 days or more training reported dissatisfaction. The incidence of dissatisfaction with training received varied little by workplace size, however differences by SIC were noticeable, with most dissatisfaction being recorded by individuals employed in workplaces in the Transport and Communications sector. In the micro-econometric analysis, three variables were of especial consequence. Dissatisfaction was more likely to be reported by those possessing relatively high academic qualifications (but not vocational/professional qualifications); those employed in workplaces which were part of multi-plant organisations; and those employed at workplaces which had experienced work-related changes (such as computerisation, the re-organisation of work etc.) within the past two years.

The third question, which addressed the issue of the match between an individual's skills levels and those required to do his/her present job, was examined in two ways. When an individual reported that his/her skills levels were lower than those required to do his/her present job this was identified as a 'skills gap'. And, conversely, when an individual reported that his/her skills levels were higher than those required to do his/her present job, this was identified as 'skills under-utilisation'.

4.20 percent of employees surveyed reported that their skills levels were lower than those required to do their present jobs, a figure which was interpreted as constituting a relatively low incidence of skills gaps within workplaces located in Scotland. There

was little variation in the incidence of skills gaps by workplace size. The variation in the incidence was greater by SIC, however, with skills gaps being particularly evident in Electricity, Gas and Water; Hotels and Restaurants; Financial Services; and Public Administration. In terms of the micro-econometric analysis undertaken, perhaps the most important result was the positive correlation between an individual reporting that his/her skills levels were lower than those required to do his/her current job and an individual reporting dissatisfaction with the training received.

In marked contrast to these findings on skills gaps, more than half of employees surveyed reported that the skills levels they possessed were higher than those required to do their present job. Further, the incidence of skills under-utilisation tended to be more prevalent in larger workplaces. Also, it tended to vary across industries, being especially prevalent in Other Community Services. In the micro-econometric analysis, the probability that an individual reported skills under-utilisation was more likely when the individual was disabled; possessed the highest vocational/professional qualification; and had reported dissatisfaction with the training received. On the other hand, the probability that an individual reported skills under-utilisation was less likely when the individual had received training of varying amounts. However, perhaps the most interesting result is associated with relationship between skills under-utilisation and workplace size, with the probability of skills under-utilisation being less likely in relatively smaller establishments and more likely in relatively larger establishments (although not all the results are statistically significant).

A number of policy implications follow from these findings, some of which are of central relevance to the immediate policy agenda of the Scottish Government, others which are of more relevance to alternative labour market policy agendas.

It would be facile to prescribe optimum training targets, for the individual, the establishment/enterprise or the economy as a whole. Nevertheless, there must be some dismay among policy makers that so many employees in Scotland appear to receive no training of the type described. That training tended not to be given to women and older workers may be a (further) manifestation of unequal treatment at the workplace: and that training was less likely to be given to those with long tenure is contrary to the policy objective of increasing the skills levels of all members of the workforce, not

necessarily only those who are new entrants to the labour market (and, of course, the policy perspective of 'lifelong learning').

Taken at face value, it is as if nothing has happened at the workplaces at which individuals who have received no training are employed – for example by way of changes in product or process – to necessitate worker re-training or up-skilling. Or, more possibly, if change of sorts has featured in the recent history of the workplace, then management has failed to consider the training implications of this, with unknown consequences to the performance of the workplace, it must be said. Indeed, there is some circumstantial evidence of this possibility of management failure, given the positive correlation found between an individual's dissatisfaction with the training received and a recent history of change at the workplace, of the sorts identified.

That training was unlikely to be given to those in the low-waged sectors of the economy is a by-product, typical of the polarisation (or segmentation?) which has taken – and continues to take - place within the labour market. Product or process change – or other changes of that ilk – are unlikely to feature in these sectors of the economy. Indeed, the most probable change is to the composition of the workplaces' workforces, as individuals quit, voluntarily and involuntarily. In a period during which the policy focus has been upon the long term unemployed – or moving those who have quit the labour market back into the labour market – individuals whose labour market experience is one of frequent movement from one low paid job to another, often via intervening short spells of unemployment, have been ignored by policy makers. However, rather than presenting 'no problem' from the policy perspective, these individuals present a different type of problem, often an important contributory factor both to failures in the domestic socialisation process, of the nature alluded to, *inter alia*, by Heckman and Masterov (2005), and the absence of upward economic and social mobility within contemporary society. Although the policy vision of the 'knowledge economy' is that everyone will become a 'knowledge worker', the reality will be somewhat different. The 'holistic policy' to which the Scottish Government refers needs to take more cognisance of this sector of the workforce, where the private costs of 'flexible labour markets' are being met, assisted only by a somewhat impotent array of 'in work benefits'.

Policy makers may take some comfort from the absence of skills gaps within Scottish based workplaces, no doubt attributable to past policy successes in enhancing the skills profiles of, most especially, new entrants to the labour market. Moreover, such is their apparent diffusion throughout workplaces, even would-be manpower planners would have difficulty formulating policies to target and then address them. Perhaps it is better to assume their inevitable (transitory?) presence within some workplaces, at some points in time, equivalent to a 'natural' level of unemployment?

Of more concern, however, must be the extent to which employees consider that their skills levels are not fully utilised by workplace/enterprise management, because the analysis suggests that, other than because of disability, the origin of skills under-utilisation is not to be found in circumstances which may circumscribe an individual's labour market participation. Furthermore, there are important workplace size and sectoral dimensions to the incidence of skills under-utilisation which cannot be ignored.

In addition to the possibility of management failure, effectively implied in the previous paragraph, the incidence across the economy of skills under-utilisation may be partially attributable to past policy decisions to continue to expand further and higher education, although the absence of a statistically significant positive correlation between an individual reporting that his/her skills levels were higher than those required by his/her present job and possessing relatively high academic and/or vocational/professional qualifications does not lend much support this argument. However, few would advocate reductions in the number of places within higher education, not the least because it is from institutions in this sector that individuals who are more likely to establish new businesses and grow existing businesses – whether or not they employ 'symbolic analysts' – are more likely to emerge.

How to unleash this untapped potential is the policy problem. And un-tapping this potential will be more likely to happen not by increasing further the supply of skilled labour, but by focussing more upon what have been described "economic pull' factors (Scottish Government (2007b, p. 5): effectively, increasing the demand for labour, for example by changing the economic parameters within which managers – and would be managers/entrepreneurs - think about their business models and the relative

opportunity costs of the resources they have at their disposal. To paraphrase Keep (2007, p. 6), the trick must be to ensure that the 'economic development horse' precedes the 'skills cart'.

REFERENCES

Alexander, W., Armstrong, J., Ashcroft, B., Coyle, D. and McLaren, J. (2005) The Political Economy of Scotland, Past and Present. In Coyle, D., Alexander, W. and Ashcroft, B. (eds.) *New Wealth for Old Nations: Scotland's Economic Prospects*. Princeton, New Jersey, USA: Princeton University Press.

Ashcroft, B. (2002) The Scottish Economy. In Hood, N., Peat, J., Peters, E. and Young, S. (eds.) *Scotland in a Global Economy*. Basingstoke: Palgrave Macmillan.

Ashton, D. and Green, F. (1996) *Education, Training and the Global Economy.* Cheltenham: Edward Elgar.

Baum, C.F. (2006) *An Introduction to modern econometrics using Stata.* College Station, Texas, USA: The Stata Press.

Bell, D. (2002) The Labour Market. In Hood, N., Peat, J., Peters, E. and Young, S. (eds.) *Scotland in a Global Economy*. Basingstoke: Palgrave Macmillan.

Bradley, S., Crouchley, R. and Oskrochi, R. (2003) Social Exclusion and Labour Market Transitions: A Multi-state Multi-spell Analysis Using the BHPS. *Labour Economics*, Vol. 10, No. 3, pp 659 -679.

Broadberry, S. and O'Mahony, M. (2004) Britain's Productivity Gap with the United States and Europe: a historical perspective. *National Institute Economic Review*. 189, pp 72 -86

Broadberry, S. and O'Mahony, M. (2007) Britain's Productivity Performance. In Crafts, N., Gazeley, I. and Newell, A. (eds.) *Work and Pay in 20th Century Britain*. Oxford: Oxford University Press.

Brown, R. and Danson, M. (2002) 'Going Grey': Demographic Change and the Changing Labour market in Scotland. *Local Economy*, Vol. 18, No. 4, pp 291 -305.

Brown, R. and Danson, M. (2008) Fresh Talent or Cheap Labour? Accession State Migrant Labour in the Scottish Economy. *Scottish Affairs*, No. 64 (summer) pp 37 -52.

Brynin, M. (2002) Overqualification in Employment. *Work, Employment and Society*, Vol. 16, No. 4, pp 637 -654

Coyle, D., Alexander, W. and Ashcroft, B. (2005) Introduction. In Coyle, D., Alexander, W. and Ashcroft, B. (eds.) *New Wealth for Old Nations: Scotland's Economic Prospects*. Princeton, New Jersey, USA: Princeton University Press.

Crafts, N. and O'Mahony, M. (2001) A Perspective on the UK's Productivity Performance. *Fiscal Studies*, Vol. 22 No. 3, pp 271 -306.

Crafts, N.F.R. and Toniolo, G. (1996) Postwar Growth: An Overview. In Crafts, N.F.R. and Toniolo, G. (eds.) *Economic Growth in Europe Since 1945*. Cambridge: Cambridge University Press.

Crafts, N. and O'Mahony, M. (2001) A Perspective on the UK's Productivity Performance. *Fiscal Studies*, Vol. 22 No. 3, pp 271 -306.

Danson, M. (1982) The Industrial Structure and Labour Market Segmentation: Urban and Regional Implications. *Regional Studies*, Vol. 16, No. 4, pp 255 -265.

Danson, M. and McCarthy, J. (2004) Policy Implications. In Newlands, D., Danson, M. and McCarthy, J. (eds.) *Divided Scotland? The Nature, Causes and Consequences of Economic Disparities within Scotland.* Aldershot: Ashgate.

Dickerson, A.(2005) *A Study on Rates of Return to Investment in Level 3 and Higher Qualifications.* London: Department for Trade and Industry.

Dolton, P. & Vignoles, A. (2000) The incidence and effects of over-education in the graduate labour market, *Economics of Education Review*, Vol. 19, No. 2, pp 179 -198.

Ermisch, J.F. and Wright, R.E. (2005) Devolution, Policy and Evidence. In Ermisch, J.F. and Wright, R.E. (eds.) *Changing Scotland: Evidence from the British Household Panel Survey.* Bristol: The Policy Press.

Fairley, J. (2004) Vocational Education and Training. In Newlands, D., Danson, M. and McCarthy, J. (eds.) *Divided Scotland? The Nature, Causes and Consequences of Economic Disparities within Scotland.* Aldershot: Ashgate.

Felstead, A. (2007) *How 'Smart' Are Scottish Jobs? Summary Evidence from the Skills Surveys, 1997 -2006.* Glasgow, Futureskills Scotland.

Felstead, A. and Green, F. (2008) *Work Skills in Scotland: The Workers' View*. Glasgow, Futureskills Scotland.

Forth, J. Bewley, H. and Bryson, A. (2006) *Employment Relations in SMEs: Findings from the 2004 Workplace Employment Relations Survey*. London: Department of Trade and Industry.

Futureskills Scotland (2005) *International Comparisons of Labour Market and Skills Performance*. Glasgow: Futureskills Scotland.

Futureskills Scotland (2006) *The Scottish Labour Market 2006*. Glasgow: Futureskills Scotland.

Futureskills Scotland (2007a) *Skills in Scotland 2006*. Glasgow: Futureskills Scotland.

Futureskills Scotland (2007b) *Labour Market Projections 2007 -2017*. Glasgow: Futureskills Scotland.

Gasteen, A. and Houston, J. (2007) Employability and Earnings Returns to Qualifications in Scotland. *Regional Studies*, Vol. 41, No. 4, pp 443 -451.

Goos, M. and Manning, A. (2003) McJobs and MacJobs: The Growing Polarisation of Jobs in the UK. In Dickens, R., Gregg, P. and Wadsworth, J. (eds.) *The Labour Market Under New Labour: The State of Working Britain.* Basingstoke: Palgrave Macmillan.

Green, F. (1999) Training the Workers. In Gregg, P. and Wadsworth, J. (eds.) *The State of Working Britain*. Manchester: Manchester University Press.

Green, F. (2005) *The Demand for and Use of Skills in the Modern Economy*. Glasgow, Futureskills Scotland.

Harper, M. (2003) *Adventurers and Exiles: The Great Scottish Exodus*. London: Profile Books.

Harris, R., McAdam, R. and Reid, R. (2004a) Employee involvement in family and non-family-owned businesses in Great Britain. *International Journal of Entrepreneurial Behaviour & Research,* vol. 10: 1-2, pp. 49-58.

Harris, R., McAdam, R. and Reid, R. (2004b) Consultation and communication in family businesses in Great Britain. *International Journal of Human Resource Management*, 15: 8, pp. 1424-1444.

Heckman, J.J. and Masterov, D.V. (2005) Skill Policies for Scotland. In Coyle, D., Alexander, W. and Ashcroft, B. (eds.) *New Wealth for Old Nations: Scotland's Economic Prospects*. Princeton, New Jersey, USA: Princeton University Press.

HM Treasury (2000) *Productivity in the UK: The Evidence and the Government's Approach*. London: HM Treasury.

HM Treasury (2005) *Globalisation and the UK: Strength and Opportunity to Meet the Economic Challenge*. London: HM Treasury.

Humphries, C. (2006) *Skills in a Global Economy*. Glasgow, Futureskills Scotland.

Jarvis, V. and Prais, S.J. (1997) The Quality of Manufactured products in Britain and Germany. *International Review of Applied Economics*, Vol. 11, No. 3, pp 421 -438.

Keep, E. (2005) Skills, Training and the Quest for the Holy Grail of Influence and Status. In Bach, S. (ed.) *Managing Human Resources: Personnel Management in Transition*, Oxford: Blackwell Publishing.

Keep, E. (2007) *Key Future Labour Market and Skills Issues in Scotland (and Beyond).* Glasgow, Futureskills Scotland.

Keep, E. and Mayhew, K. (1988) The Assessment: Education, Training and Economic Performance. *Oxford Review of Economic Policy*, Vol. 4, No. 3, pp i - xv.

Keep, E., Mayhew, K. and Payne, J. (2006) From Skills Revolution to Productivity Miracle- Not as Easy as it Sounds. *Oxford Review of Economic Policy*, Vol. 22, No. 4, pp 539 -559.

Kersley, B., Alpin, C., Forth, J., Bryson, A., Bewley, H., Dix, G. and Oxenbridge, S. (2006) *Inside the Workplace: Findings from the 2004 Workplace Employment Relations Survey*. London: Routledge.

Krugman, P. (2005) Second Wind for Industrial Regions. In Coyle, D., Alexander, W. and Ashcroft, B. (eds.) *New Wealth for Old Nations: Scotland's Economic Prospects*. Princeton, New Jersey, USA: Princeton University Press.

Leitch Review of Skills (2006) Prosperity for All in the Global Economy: World Class Skills. Final Report. London: HM Treasury.

Lindsay, C. (2004) Labour Productivity. *Labour Market Trends*, November, pp 447 - 454.

Lisenkova, K., Mosca, I. and Wright, R.E. (2008) Ireland and Scotland: Converging or Diverging Demography? *Scottish Affairs*, No. 64 (summer), pp 18 -36.

Little, A. (2008) Explaining the Employment Gap Between High and Low Education Attainers. Paper presented at Work and Pensions Economic Group, University of Sheffield, July, 2008.

Long, J.S. and Freese, J. (2006) *Regression Models for Categorical Dependent Variables Using Stata, (2nd edition).* College Station, Texas, USA: The Stata Press.

McGregor, A. (1978) Unemployment Duration and Re-employment Probability. *Economic Journal*, Vol. 88, pp 693 -706.

McLean, I. and McMillan, A. (2005) *State of the Union: Unionism and the Alternatives in the United Kingdom since 1707*. Oxford: Oxford University Press.

McQuaid, R., Brown, R. and Newlands (2008) Demographic Change and Economic Challenge: What Future for Scotland and Other Small Countries? *Scottish Affairs*, No. 64 (summer), pp 3 -17.

Mina, D. (1999) *Garnethill*. London: Bantam Books.

Newlands, D. (2004) The Changing Nature of Economic Disparities within Scotland. In Newlands, D., Danson, M. and McCarthy, J. (eds.) *Divided Scotland? The Nature, Causes and Consequences of Economic Disparities within Scotland*: Aldershot: Ashgate.

Oliver, J. and Turton, J. (1982) Is There a Shortage of Skilled Labour? *British Journal of Industrial Relations*, Vol. 20, No. 1, pp 195 -200.

Paterson, L., Bechhofer, F. and McCrone, D. (2004) *Living in Scotland: Social and Economic Change Since 1980*. Edinburgh: Edinburgh University Press.

Pike, A., Rodriguez-Pose, A. and Tomaney, J. (2007) What Kind of Local and Regional Development and for Whom? *Regional Studies*, Vol. 41, No. 9, pp 1253 -1269.

Porter, M. (1980) *Competitive Strategy*. New York, USA: Free Press.

Reich, R. (1993) *The Work of Nations*. London: Simon and Schuster.

Routh, G. (1965) *Occupation and Pay in Great Britain, 1906 -1979.* Cambridge: Cambridge University Press for the National Institute of Economic and Social Research.

Scottish Funding Council (2006) *The Labour Market, The Learning Market: Influencing Change.* Edinburgh, Scottish Funding Council.

Scottish Government (2007a) *Skills for Scotland: A Lifelong Skills Strategy*. Edinburgh, The Scottish Government.

Scottish Government (2007b) *The Government Economic Strategy*. Edinburgh, The Scottish Government.

Sloane, P.J. (2003) Much Ado about Nothing; What Does the Over-education Literature Really Tell Us? In Buchel, F., de Grip, A. & Mertens (eds*.), Over Education in Europe: current issues in theory and policy*, Cheltenham, Edward Elgar.

Solow, R. (1957) Technical Change and the Aggregate Production Function. *Review of Economics and Statistics*, Vol. 39, no. 2, pp 312 -320.

Star, J. (2002) Scotland's Economy and Benchmarks. In Hood, N., Peat, J., Peters, E. and Young, S. (eds.) *Scotland in a Global Economy*. Basingstoke: Palgrave Macmillan.

Stata (2005) *Stata Survey Data Reference Manual, Release 9*. College Station, Texas, USA: Stata Press.

Steedman, H., Mason, G. and Wagner, K. (1991) Intermediate Skills in the Workplace: Deployment, Standards and Supply in Britain, France and Germany. *National Institute Economic Review*, Vol. 136, No. 1, pp 60 -76.

Steedman, H. and Wagner, K. (1989) Productivity, Machinery and Skills: Clothing Manufacture in Britain and Germany. *National Institute Economic Review*, Vol. 128, No. 1, pp 40 -57.

Stewart, M.B. (2007) The Interrelated Dynamics of Unemployment and Low-wage Employment. *Journal of Applied Econometrics*, Vol. 22, No. 3, pp 511 -531.

Stewart, M.B. and Swaffield, J. (1999) Low Pay Dynamics and Transition Probabilities. *Economica*, Vol. 66, No. 1, pp 23 -42.

Turok, I. and Bailey, N. (2004) Glasgow's Recent Trajectory: Partial Recovery and its Consequences. In Newlands, D., Danson, M. and McCarthy, J. (eds.) *Divided Scotland? The Nature, Causes and Consequences of Economic Disparities within Scotland.* Aldershot: Ashgate.

Walker, I. and Zhu, Y. (2007) *The Labour Market Effects of Qualifications*. Glasgow, Futureskills Scotland.

Warhurst, C. (2008) The Knowledge Economy, Skills and Government Labour Market Intervention. *Policy Studies*, Vol. 29, No. 1, pp 71 -86.

Warhurst, C. and Nickson, D. (2007) Employee Experience of Aesthetic Labour in Retail and Hospitality. *Work, Employment and Society*, Vol. 21, No. 1, pp 103 -120.

Warhurst, C. and Thompson, P. (2006) Mapping Knowledge in Work: Proxies or Practices? *Work, Employment and Society*, Vol. 24, No. 4, pp 787 -800.

Whatley, C.A. (1994) *Bought and Sold for English Gold? Explaining the Union of 1707*. East Linton, East Lothian: Tuckwell Press.

Watson, D., Johnson, S. and Webb, R. (2006) Employer Perceptions of Skills Deficiencies in the UK Labour Market: A Subregional Analysis. *Environment and Planning A*, Vol. 38, pp 1753 -1771.

Webster, D. (2000) Scotland's Social Inclusion Policy: A Critical Assessment. *Scottish Affairs*, 30, pp 30 -50.

Wolf, A. (2004) Education and Economic Policy: Simplistic Theories and their Policy Consequences. *Oxford Review of Economic Policy*, Vol. 20, N0. 2, pp 315 - 333.

Table 1. The Percentage Distribution of Workplaces and Employees, by Size of Workplace, Great Britain and Scotland (WERS 2004)

Size Categories	*Great Britain*		*Scotland*	
	Workplaces	*Employees*	*Workplaces*	*Employees*
Between 5 -10 employees	12.11	4.53	11.21	4.45
Between 11 – 25 employees	16.91	12.65	18.39	12.37
Between 26 – 50 employees	14.38	15.84	16.14	16.62
Between 51 – 100 employees	13.12	15.78	11.66	15.23
Between 101 – 200 employees	12.20	16.13	15.25	20.16
Between 201 – 500 employees	13.25	16.22	8.52	10.54
Over 500 employees	18.04	18.85	18.83	20.64
Number of Observations	2,295	22,451	223	2,515

Table 2. Some Standard Industrial Classification (SIC 2002) Statistics, Scotland

SIC [1]	*Percentage Distribution in Sample Survey* [2]	*Percentage Distribution 2004 (December)* [3]	*Percentage Change 2002 – 2004* [3]
Manufacturing	15.89	10.38	-16.52
Electricity, Gas and Water	2.09	0.66	-26.67
Construction	4.70	5.59	10.23
Wholesale and Retail	10.00	16.29	1.08
Hotels and Restaurants	2.60	7.53	-2.93
Transport and Communication	6.66	5.63	-0.78
Financial Services	5.82	4.97	9.75
Other Business Services	11.52	13.20	5.00
Public Administration	7.97	6.91	-3.18
Education	10.55	8.27	-0.53
Health	16.21	14.96	22.94
Other Community Services	5.98	5.59	0.78
Number of Observations	2,515	2,272,000	0.66

Footnotes to Table 2.

1. Mining is excluded, because it is not included in the workplaces surveyed in WERS 2004.
2. Extracted from WERS 2004 Survey of Employees data
3. Extracted from Labour Force Survey data, obtained from (various issues of) *Labour Market Trends*

Table 3. Question B4: "Apart from health and safety training, how much training have you had during the last 12 months, either paid for or organised by your employer?" Percentage Distribution of Responses (Scotland).

Days of Training Received	*Percentage*
None	32.33
Less than 1 day	9.95
1 to less than 2 days	15.16
2 to less than 5 days	22.74
5 to less than 10 days	11.39
10 days or more	8.42
Number of Observations	2,493

Table 4. Question A8d: "How satisfied are you with the following aspects of your job? – The training you receive?" Percentage Distribution of Responses (Scotland).

Response	*Percentage*
Very satisfied	8.60
Satisfied	40.09
Neither satisfied nor dissatisfied	27.09
Dissatisfied	16.67
Very Dissatisfied	7.55
Number of Observations	2,477

Table 5. Question B5. "How well do the work skills you personally have match the skills you need to do your present job?" Percentage Distribution of Responses (Scotland).

Response: My Own Skills Are	*Percentage*
Much higher	19.14
A bit higher	34.15
About the same	42.39
A bit lower	3.48
Much lower	0.84
Number of Observations	2,498

Table 6. The Percentage Distribution of Training Received, by Workplace Size

Size Category	*None*	*Less than 1 day*	*1 to less than 2 days*	*2 to less than 5 days*	*5 to less than 10 days*	*10 days or more*	*Number of Observations*
Employing 10 or fewer	65.00	6.25	11.25	8.75	6.25	2.50	80
Employing 11 – 25	30.33	8.06	14.69	24.17	15.17	7.58	211
Employing 26 – 50	34.11	8.36	16.72	23.41	12.37	5.02	299
Employing 51 -100	35.61	12.95	12.59	20.14	10.07	8.63	278
Employing 101-200	24.48	9.11	15.36	26.82	13.80	10.42	384
Employing 201 -500	36.49	10.90	14.69	24.17	7.11	6.64	211
Employing more than 501	31.39	10.13	13.92	25.57	10.38	8.61	395

Table 7. The Percentage Distribution of Training Received, by Standard Industrial Classification of the Workplace

SIC	*None*	*Less than 1 day*	*1 to less than 2 days*	*2 to less than 5 days*	*5 to less than 10 days*	*10 days or more*	*Number of Observations*
Manufacturing	61.94	6.72	9.70	12.69	3.73	5.22	134
Electricity, Gas and Water	29.31	6.90	15.52	20.69	20.69	6.90	58
Construction	47.77	7.64	15.29	12.10	8.28	8.92	157
Wholesale and Retail	41.78	14.38	9.59	20.55	6.16	7.53	146
Hotels and Restaurants	57.14	14.29	14.29	10.20	4.08	0	49
Transport and Communication	41.41	14.14	11.11	19.19	10.10	4.04	99
Financial Services	21.93	8.56	16.58	25.67	18.18	9.09	187
Other Business Services	42.33	11.04	15.34	21.47	6.13	3.36	163
Public Administration	20.90	6.21	10.17	36.16	14.12	12.43	177
Education	23.58	8.94	21.54	32.52	8.13	5.28	246
Health	20.33	10.99	15.66	26.37	16.21	10.44	364
Other Community Services	35.81	8.97	10.26	17.95	15.38	11.54	78

Table 8. Ordered Logit: The Six Categories of Days of Training Received Outcomes

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effects*					
			Outcome 1 (None)	Outcome 2 (Less than 1 day)	Outcome 3 (1 to less than 2 days)	Outcome 4 (2 to less than 5 days)	Outcome 5 (5 to less than 10 days)	Outcome 6 (10 days or more)
Personal Characteristics								
Female	-.3867	.1490	.09 *	.01 **	-.01 *	-.04 *	-.02 **	-.01 **
Aged 16 – 21	-.0147	.3417	.00	.00	-.00	-.00	-.00	-.00
Aged 22 – 29	.4638	.1763	-.10 **	-.01	.01 *	.05 **	.03 *	.02 *
Aged 40 – 49	-.1282	.1567	.03	.00	-.00	-.01	-.00	-.00
Aged 50 and over	-.2678	.1633	.06	.00	-.00	-.03	-.01	-.01
Highers/A levels	.1312	.1241	-.03	-.00	.00	.01	.00	.00
Degree or higher degree	.3402	.1831	-.07	-.00	.00	.03	.02	.01
NVQ/SVQ Level 2	-.0326	.2040	.00	.00	-.00	-.00	-.00	-.00
NVQ/SVQ Level 3	-.4315	.3708	.10	.00	-.01	-.04	-.02	-.01
NVQ/SVQ Level 4	-.2287	.5317	.05	.00	-.00	-.02	-.01	-.00
NVQ/SVQ Level 5	.2534	.8539	-.05	-.00	.00	.02	.01	.01
Earning £4.50 or less per hour	-.4454	.3701	.10	.00	-.01	-.05	-.02	-.01
Earning £4.51 -£5.00 per hour	-.8359	.1667	.20 **	-.00	-.04 **	-.09 **	-.04 **	-.02 **
Earning £15.00 or more per hour	.2857	.1919	-.06	-.00	.00	.03	.01	.01
Supervising other employees	.5664	.1445	-.13 **	-.01 *	.01 **	.06 **	.03 **	.02 **
Tenure: less than 1 year	-.3079	.2328	.07	.00	-.01	-.03	-.01	-.01
Tenure: 2 to less than 5 years	-.5042	.2210	.05 *	.00	-.01	-.05 *	-.02 *	-.02 *
Tenure: 5 to less than 10 years	-.5851	.2017	.14 **	.00	-.02 *	-.06 *	-.03 **	-.02 **
Tenure: 10 years or more	-.6618	.2070	.16 **	.00	-.02 *	-.07 *	-.03 **	-.02 **
On temporary contract	-.4500	.2411	.16	.00	-.01	-.05	-.02 *	-.01 *
On fixed term contract	.6038	.2622	-.13 *	-.01	.00	.06 **	.04	.03

Table 8. Cont.

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effects*					
			Outcome 1 (None)	Outcome 2 (Less than 1day)	Outcome 3 (1 to less than 2 days)	Outcome 4 (2 to less than 5 days)	Outcome 5 (5 to less than 10 days)	Outcome 6 (10 days or more)
Workplace Characteristics								
Employing 5 -10	-.8661	.5383	.21	-.00	-.04	-.09	-.04 *	-.02 *
Employing 11 – 25	.2786	.3063	-.06	-.00	.00	.03	.01	.01
Employing 26 – 50	.3748	.3050	-.08	-.00	.00	.04	.02	.01
Employing 101 -200	.3943	.2937	-.08	-.00	.01 *	.04	.02	.02
Employing 201 -500	-.0510	.3245	.01	.00	-.00	-.00	-.00	-.00
Employing more than 500	-.0794	.2595	.01	.00	-.00	-.00	-.00	-.00
Public sector	-.5799	.2583	.14 *	-.00	-.02	-.06 *	-.03 *	-.02 **
Voluntary/not for profit sector	-.0616	.2728	.01	.00	-.00	-.00	-.00	-.00
Multi-plant establishment	.1006	.2363	-.02	-.00	.00	.01	.00	.00
Single plant of overseas owned mne	.3159	.3716	-.07	-.00	.00	.03	.02	.01

Table 8. Cont.

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effects*					
			Outcome 1 (None)	Outcome 2 (Less than 1 day)	Outcome 3 (1 to less than 2 days)	Outcome 4 (2 to less than 5 days)	Outcome 5 (5 to less than 10 days)	Outcome 6 (10 days or more)
Standard Industrial Classification								
Manufacturing	-1.2918	.4675	.31 **	-.01	-.06 *	-.13 **	-.06 **	-.04 **
Electricity, Gas and Water	-.1463	.4069	.03	.00	-.00	-.01	-.00	-.00
Construction	-.4608	.3495	.11	.00	-.01	-.05	-.02	-.01
Wholesale and Retail	-.1121	.4101	.02	.00	-.00	-.01	-.00	-.00
Hotels and Restaurants	-1.1817	.5480	.28 *	-.01	-.06	-.11 **	-.05 **	-.03 **
Transport and Communication	-.5907	.3182	.14	-.00	-.02	-.06	-.03 *	-.02 *
Financial Services	.0075	.4185	-.00	-.00	.00	.00	.00	.00
Other Business Services	-.9330	.3825	.22 *	-.00	-.04	-.10 **	-.04 **	-.03 *
Public Administration	.3035	.3057	-.06	-.00	.00	.03	.02	.01
Health	.3719	.2398	-.08	-.00	.01 *	.04	.02	.01
Other Community Services	.0526	.9301	-.01	-.00	.00	.00	.00	.00

Table 8. Cont.

	Coefficient	*Linearized Std. Err.*
/cut 1	.1976	.8508
/cut 2	.6764	.8532
/cut 3	1.3880	.8521
/cut 4	2.6543	.8540
/cut 5	3.6896	.8635

Number of Observations: 16,492
Number of PSUs: 1,646
Number of Observations in Sub Population (Scotland) : 1,858
F (53, 1,593) : 9.15
Prob > F : 0.0000

Footnotes to Table 8.
1. Additional variables included in the estimation: colour; whether or not the individual has a dependent child/dependent children; whether or not the individual has 'caring' responsibilities; whether or not the individual has a long term disability; the log of the number of hours usually worked; whether the individual was a member of a union/staff association, had been in the past, or had never been one; whether or not the workplace offered 'long term' employment to potential recruits; and whether or not the workplaces had experienced 'change' of the sorts identified.
2. The reference categories of the variables identified in the table are: male; aged 30 – 39; having GCSE/SCE as the highest academic qualification; having NVQ/SVQ level 1 as the highest vocational/professional qualification; earning between £5.01 and £14.99 per hour; not supervising any workers; employed at the workplace for between 1 but less than 2 years; with a permanent contract of employment; employed at a workplace employing between 51 and 100 employees; employed at a workplace which is in the private sector; employed at a single plant establishment; and employed at a workplace which is in SIC 10 (Education).
3. The marginal effects reported are for a discrete change of the dummy variable from 0 to 1.
4. * and ** statistically significant at 0.05 and 0.01, respectively.

Table 9. The Percentage Distribution of Dissatisfaction with Training Received, by the Number of Days of Training Received

Days of Training Received	*Dissatisfied (%)*	*Number of Observations*
None	34.48	612
Less than 1 day	31.49	181
1 to less than 2 days	27.04	270
2 to less than 5 days	18.00	439
5 to less than 10 days	8.53	211
10 days or more	10.34	145

Table 10. The Percentage Distribution of Dissatisfaction with Training Received, by Workplace Size

Size Category	*Dissatisfied (%)*	*Number of Observations*
Employing 5 -10	21.25	80
Employing 11 – 25	21.80	211
Employing 26 – 50	21.74	299
Employing 51 -100	19.42	278
Employing 101-200	23.96	384
Employing 201 -500	35.07	211
Employing more than 501	26.58	395

Table 11. The Percentage Distribution of Dissatisfaction with Training Received, by Standard Industrial Classification of the Workplace

SIC	*Dissatisfied (%)*	*Number of Observations*
Manufacturing	32.84	134
Electricity, Gas and Water	24.14	58
Construction	19.11	157
Wholesale and Retail	26.03	146
Hotels and Restaurants	18.37	49
Transport and Communication	42.42	99
Financial Services	31.02	187
Other Business Services	23.31	163
Public Administration	24.29	177
Education	21.54	246
Health	18.13	364
Other Community Services	24.38	78

Table 12. Binomial Logit: The Probability Of Responding 'Not Satisfied' With The Training Received

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effect*
Personal Characteristics			
Female	-.3871	.1936	-.05 *
Aged 16 – 21	-.2530	.3446	-.03
Aged 22 – 29	-.3311	.2666	-.04
Aged 40 – 49	.4049	.1886	.06 *
Aged 50 and over	-.1476	.2269	-.02
With a dependent child	-.3160	.1678	-.04
With caring responsibilities	.3680	.1803	.06
Highers/A-Levels	.7752	.1976	.13 **
Degree or higher degree	.5525	.4005	.09
NVQ/SVQ Level 2	.0450	.1773	.00
NVQ/SVQ Level 3	-.5360	.3398	-.07
NVQ/SVQ Level 4	-1.4050	.9117	-.13 **
NVQ/SVQ Level 5	-.2538	.8860	-.03
Earning £4.50 or less per hour	-.6252	.3743	-.08 *
Earning £4.51 -£5.00 per hour	-.4746	.3732	-.06
Earning £15.00 or more per hour	-.7784	.2399	-.10 **
Supervising other employees	.0305	.1542	.00
Tenure: less than 1 year	-1.0373	.3442	-.12 **
Tenure: 2 to less than 5 years	-.3040	.2147	-.04
Tenure: 5 to less than 10 years	-.4065	.2901	-.05
Tenure: 10 years or more	-.8246	.2734	-.11 **
On temporary contract	.4363	.3415	.07
On fixed term contract	.3473	.3535	.05
Received less than 1 days training	-.1629	.2388	-.02
Received 1 to less than 2 days training	-.8560	.2076	-.10 **
Received 2 to less than 5 days training	-1.1449	.1778	-.14 **
Received 5 to less than 10 days training	-2.2240	.3346	-.19 **
Received 10 days of more training	-2.0044	.3683	-.18 **
Workplace Characteristics			
Employing 5 - 10	-.6847	.4222	-.08 *
Employing 11 – 25	.1389	.2671	.02
Employing 26 – 50	.4190	.3246	.07
Employing 101 -200	.2452	.2542	.04
Employing 201 -500	.3715	.2675	.06
Employing more than 500	-.0784	.2311	-.01
Public sector	-.9409	.2916	-.11 **
Voluntary/not for profit sector	-.3171	.2775	-.04
Multi-plant establishment	.8045	.2710	.11 **
Single plant of overseas owned mne	.2332	.3682	.03
Plant experienced 'change'	.8627	.4140	.10 **

Table 12. Cont.

Variable	*Coefficient*	*Linearized Std Err*	*Marginal Effect*
Standard Industrial Classification			
Manufacturing	-.0335	.4324	-.00
Electricity, Gas and Water	-.2509	.5529	-.03
Construction	-.6304	.5067	-.08
Wholesale and Retail	.0500	.4425	.00
Hotels and Restaurants	.0974	.4979	.01
Transport and Communication	.6073	.4102	.10
Financial Services	.3467	.4204	.05
Other Business Services	-.6217	.4384	-.08
Public Administration	.1255	.3041	.02
Health	.0080	.2912	.00
Other Community Services	.1216	.3307	.01

Number of Observations: 16,492
Number of PSUs: 1,646
Number of Observations in Sub Population (Scotland) : 1,858
F (58, 1,588) : 6.92
Prob > F : 0.0000

Footnotes to Table 12:
1. Additional variables included in the estimation: colour; whether or not the individual has a long term disability; the log of the number of hours usually worked; whether the individual was a member of a union/staff association, had been in the past, or had never been one; and whether or not the workplace offered 'long term' employment to potential recruits.
2. The reference categories of the variables identified in the table are: male; aged 30 – 39; having GCSE/SCE as the highest academic qualification; having NVQ/SVQ level 1 as the highest vocational/professional qualification; earning between £5.01 and £14.99 per hour; not supervising any workers; employed at the workplace for between 1 but less than 2 years; with a permanent contract of employment; receiving no training; employed at a workplace employing between 51 and 100 employees; employed at a workplace which is in the private sector; employed at a single plant establishment; and employed at a workplace which is in SIC 10 (Education).
3. The marginal effects reported are for a discrete change of the dummy variable from 0 to 1.
4. * and ** statistically significant at 0.05 and 0.01, respectively.

Table 13. The Percentage Distribution of Skills Gaps (i.e. individuals reporting that their the skill levels possessed are lower than those required to do their present job), by Workplace Size

Size Category	*Reporting 'Skills Gaps' (%)*	*Number of Observations*
Employing 5 -10	3.75	80
Employing 11 – 25	3.79	211
Employing 26 – 50	3.34	299
Employing 51 -100	4.68	278
Employing 101-200	3.91	384
Employing 201 -500	6.16	211
Employing more than 501	4.05	395

Table 14. The Percentage Distribution of Skills Gaps (i.e. individuals reporting that their the skill levels possessed are lower than those required to do their present job), by Standard Industrial Classification of the Workplace

SIC	*Reporting 'Skills Gaps' (%)*	*Number of Observations*
Manufacturing	7.46	134
Electricity, Gas and Water	17.24	58
Construction	3.18	157
Wholesale and Retail	0.68	146
Hotels and Restaurants	6.12	49
Transport and Communication	4.04	99
Financial Services	5.35	187
Other Business Services	3.68	163
Public Administration	5.08	177
Education	2.44	246
Health	3.85	364
Other Community Services	4.20	78

Table 15. Binomial Logit: The Probability Of Responding That The Levels Of Skills Possessed Are Lower Than Those Required To Do The Present Job

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effect*
Personal Characteristics			
Female	-.4621	.3370	-.00
Aged 16 – 21	.5626	.6376	.01
Aged 22 – 29	-.1415	.4677	-.00
Aged 40 – 49	-.8000	.5280	-.01
Aged 50 and over	-.0614	.4110	-.00
With dependent child/children	-.2146	.3038	-.00
With caring responsibilities	-1.0912	.5360	-.01 *
Highers/A levels	.1900	.3853	.00
Degree or higher	.4623	.5188	.00
NVQ/SVQ Level 2	-.1603	.4372	-.00
NVQ/SVQ Level 3	.6683	.6974	.01
Earning £4.50 or less per hour	-.8870	.8926	-.01
Earning £4.51 -£5.00 per hour	-.1495	.5574	-.00
Earning £15.00 or more per hour	.6679	.4562	.01
Supervising other employees	-.3500	.4188	-.00
Tenure: less than 1 year	.5322	.5912	.01
Tenure: 2 to less than 5 years	-.0788	.5212	-.00
Tenure: 5 to less than 10 years	-.1638	.5561	-.00
Tenure: 10 years or more	.1616	.5939	.00
On temporary contract	-1.4858	.6468	-.01 **
On fixed term contract	1.3606	.4201	.04
Received less than 1 days training	-2.4259	1.1214	-.01 **
Received 1 to less than 2 days training	.5672	.3559	.01
Received 2 to less than 5 days training	-.2935	.4597	-.00
Received 5 to less than 10 days training	-.0453	.5605	-.00
Received 10 days or more training	.2300	.5711	.00
Dissatisfied with training received	1.3461	.3404	.03 **
Workplace Characteristics			
Employing 5 - 10	.0266	.9709	.00
Employing 11 – 25	.2430	.6164	.00
Employing 26 – 50	-.5181	.6882	-.00
Employing 101 -200	-.7631	.4616	-.00
Employing 201 -500	.0963	.5938	.00
Employing more than 500	-.6400	.5619	-.00
Public sector	-.7895	.6098	-.00
Voluntary/not for profit sector	-.3046	.4032	-.00
Multi-plant establishment	.2977	.6146	.00
Single plant of overseas owned mne	1.1417	.7269	.03
Plant experienced ‘change’	-.0069	.6026	-.00

Table 15 cont.

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effect*
Standard Industrial Classification			
Manufacturing	.4949	.6585	.00
Electricity, Gas and Water	1.7340	.7900	.07
Construction	.2804	.8261	.00
Wholesale and Retail	-1.2489	1.0794	-.01
Hotels and Restaurants	1.0493	.8067	.02
Transport and Communication	.1042	.8433	.00
Financial Services	1.1244	.6507	.03
Other Business Services	-.1101	.6981	-.00
Public Administration	.8919	.5210	.02
Health	.7649	.6498	.01

Number of Observations: 16,492
Number of PSUs: 1,646
Number of Observations in Sub Population (Scotland) : 1,858
F (56, 1,590) : 6.30
Prob > F : 0.0000

Footnotes to Table 15:
1. Additional variables included in the estimation: colour; whether or not the individual has a long term disability; the log of the number of hours usually worked; whether the individual was a member of a union/staff association, had been in the past, or had never been one; and whether or not the workplace offered 'long term' employment to potential recruits.
2. The reference categories of the variables identified in the table are: male; aged 30 – 39; having GCSE/SCE as the highest academic qualification; having NVQ/SVQ level 1 as the highest vocational/professional qualification; earning between £5.01 and £14.99 per hour; not supervising any workers; employed at the workplace for between 1 but less than 2 years; with a permanent contract of employment; receiving no training; satisfied with the training received; employed at a workplace employing between 51 and 100 employees; employed at a workplace which is in the private sector; employed at a single plant establishment; and employed at a workplace which is in SIC 10 (Education).
3. The marginal effects reported are for a discrete change of the dummy variable from 0 to 1.
4. * and ** statistically significant at 0.05 and 0.01, respectively.

Table 16. The Percentage Distribution of Skills Underutilisation (i.e. individuals reporting that their the skill levels possessed are higher than those required to do their present job), by Workplace Size

Size Category	*Reporting 'Skills Under-utilisation' (%)*	*Number of Observations*
Employing 5 - 10	46.25	80
Employing 11 – 25	46.45	211
Employing 26 – 50	50.17	299
Employing 51 -100	52.88	278
Employing 101-200	55.99	384
Employing 201 -500	57.82	211
Employing more than 501	54.94	395

Table 17. The Percentage Distribution of Skills Under-utilisation (i.e. individuals reporting that their the skill levels possessed are higher than those required to do their present job), by Standard Industrial Classification of the Workplace

SIC	*Reporting 'Skills Under-utilisation' (%)*	*Number of Observations*
Manufacturing	44.03	134
Electricity, Gas and Water	48.28	58
Construction	49.04	157
Wholesale and Retail	53.42	146
Hotels and Restaurants	48.98	49
Transport and Communication	60.61	99
Financial Services	54.01	187
Other Business Services	58.28	163
Public Administration	59.32	177
Education	55.69	246
Health	46.70	364
Other Community Services	66.67	78

Table 18. Binomial Logit: The Probability Of Responding That The Levels Of Skills Possessed Are Higher Than Those Required To Do The Present Job

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effect*
Personal Characteristics			
Female	-.0757	.1428	-.01
Aged 16 – 21	.1033	.3041	.02
Aged 22 – 29	-.0264	.2475	-.00
Aged 40 – 49	.1104	.1891	.02
Aged 50 and over	-.0583	.2007	-.01
With dependent child/children	-.1803	.1458	-.04
With caring responsibilities	.1882	.1710	.04
With a long term disability	.5886	.3062	.14 *
Highers/A levels	.1555	.1349	.03
Degree or higher	.3039	.3028	.07
NVQ/SVQ Level 2	.0807	.1731	.02
NVQ/SVQ Level 3	-.1317	.3124	-.03
NVQ/SVQ Level 4	-.5381	.6045	-.13
NVQ/SVQ Level 5	1.7783	.9133	.34 **
Earning £4.50 or less per hour	.2066	.2892	.05
Earning £4.51 -£5.00 per hour	.1500	.2129	.03
Earning £15.00 or more per hour	-.3796	.1983	-.09
Supervising other employees	.2383	.1566	.05
Tenure: less than 1 year	.3108	.2481	.07
Tenure: 2 to less than 5 years	-.1110	.2004	-.02
Tenure: 5 to less than 10 years	-.3077	.2015	-.07
Tenure: 10 years or more	-.3812	.2276	-.09
On temporary contract	.3345	.2559	.08
On fixed term contract	-.9485	.2826	-.22 **
Received less than 1 days training	.2222	.2260	.05
Received 1 to less than 2 days training	-.2312	.1998	-.05
Received 2 to less than 5 days training	-.4330	.1914	-.10 *
Received 5 to less than 10 days training	-.2929	.2065	-.07
Received 10 days or more training	-.6717	.2613	-.16 **
Dissatisfied with training received	.5970	.1318	.14 **
Workplace Characteristics			
Employing 5 - 10	-.5543	.3514	-.13
Employing 11 – 25	-.6261	.2502	-.15 *
Employing 26 – 50	-.3245	.2473	-.08
Employing 101 -200	.0584	.2138	.01
Employing 201 -500	.2113	.2413	.05
Employing more than 500	.0973	.2290	.02
Public sector	-.0043	.2103	-.00
Voluntary/not for profit sector	.0296	.1954	.00
Multi-plant establishment	.0179	.1452	.00
Single plant of overseas owned mne	.1878	.2420	.04
Plant experienced ‘change’	-.2085	.2476	.05

Table 18 cont.

Variable	*Coefficient*	*Linearized Std. Err.*	*Marginal Effect*
Standard Industrial Classification			
Manufacturing	-1.0874	.3307	-.26 **
Electricity, Gas and Water	-.5373	.3054	-.13
Construction	-.8534	.2670	-.20 **
Wholesale and Retail	-.4624	.2962	-.11
Hotels and Restaurants	-.6210	.3299	-.15 *
Transport and Communication	-.2550	.2784	-.06
Financial Services	-.3031	.2818	-.07
Other Business Services	-.2734	.2908	-.06
Public Administration	-.0560	.1896	-.01
Health	-.5443	.2191	-.13 *
Other Community Services	.5302	.2943	.12

Number of Observations: 16,492
Number of PSUs: 1,646
Number of Observations in Sub Population (Scotland) : 1,858
F (59, 1,587) : 4.19
Prob > F : 0.0000

Footnotes to Table 18:
1. Additional variables included in the estimation: colour; the log of the number of hours usually worked; whether the individual was a member of a union/staff association, had been in the past, or had never been one; and whether or not the workplace offered 'long term' employment to potential recruits.
2. The reference categories of the variables identified in the table are: male; aged 30 – 39; not with a long term disability; having GCSE/SCE as the highest academic qualification; having NVQ/SVQ level 1 as the highest vocational/professional qualification; earning between £5.01 and £14.99 per hour; not supervising any workers; employed at the workplace for between 1 but less than 2 years; with a permanent contract of employment; receiving no training; not satisfied with the training received; employed at a workplace employing between 51 and 100 employees; employed at a workplace which is in the private sector; employed at a single plant establishment; and employed at a workplace which is in SIC 10 (Education).
3. The marginal effects reported are for a discrete change of the dummy variable from 0 to 1.
4. * and ** statistically significant at 0.05 and 0.01, respectively.