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## **Adult training policy with respect to basic skills:**

### **Economic and social issues**

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The UK is far from unique in having a problem with low levels of basic skills amongst a group of its working age population. However, the rates of innumeracy and illiteracy identified by the Moser Report, 1999 and the Skills for Life Survey, 2003 were viewed as unacceptably high for an advanced industrialised nation with aspirations to be at the forefront of the knowledge-economy revolution. Targets have been set to bring the UK in line with acceptable basic skill levels (the Leitch Review) and a remedial Skills for Life programme of education and training has been introduced that will have cost 10.3 billion Euros by 2011. The present paper provides an analysis of the underlying basic skills problems, the government's response and the perceived trends in improvements towards the established targets. It then goes on to discuss a number of problems and barriers that will hinder the achievement of the government's goals. Finally, it considers the question of the basis on which these basic skills goals are set and questions whether they are justifiable on either economic or equity grounds. The latter, in particular, touches on a number of sensitive social issues, which are raised as an issue for debate, rather than for solution within the context of the present paper.

## 1 Introduction<sup>1</sup>

Low levels of "basic skills" amongst the population of working age remain a significant problem in many countries. By "basic skills", the present study refers mainly to acceptable threshold levels of literacy and numeracy, although other skills may also be relevant, such as IT skills.

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<sup>1</sup> The present paper draws upon work undertaken for the *UK Commission for Employment and Skills* in its international skills comparisons and its modelling of the UK's performance in improving the basic skills of the working age population. However, the views expressed in this paper are those of the authors alone – they are intended to stimulate debate in an interesting and important issue, and not to set out any form of "official" (or even individual) position.

While the lack of basic skills is a particular problem amongst the poorer, developing countries, it has become increasingly recognised as a major issue in advanced, developed countries, where the inability to raise the skill threshold amongst the least educated and skilled individuals in society gives rise to a wide range of socio-economic problems. These problems clearly include the more standard economic issues of unemployment, inactivity and income deprivation, but also of health and crime, amongst other things (e.g. Wolfe and Zuvekas, 1997).

Issues surrounding the lack of basic skills are by no means new (see, for example, Clifford, 1984 and Steen, 1990), but their persistence amongst certain quarters of the population seems anomalous, and inconsistent with the aims of a modern economy intent on growth through the development and exploitation of advanced technologies and a modern society intent on access to socially empowering technologies (such as ICTs), as well as more traditional forms of learning and culture. Individuals with low basic skills appear poorly equipped to meet the challenges of a knowledge-based society (OECD, 2010, p. 3).

The continuing literacy and numeracy problems of the UK were highlighted by Moser, 1999. Subsequently a range of education and skills needs were translated into national targets (ambitions) for basic skills achievements in “Ambitions, 2020” (see UKCES, 2009), as set out by Leitch, 2006. In practice, it appears impossible to meet the Leitch targets through improvements in the basic skills performance of 15 year olds alone as they flow into the population of working age (see Bosworth and Kik, 2009), and replace individuals with lower basic skills who retire or die.<sup>2</sup>

The present paper outlines a more detailed consideration of a number of the educational and training issues that underlie the “upskilling” of the population of working age which is necessary to meet the Leitch Ambitions with respect to basic skills. By 2011, the UK government will have spent 10.3 billion Euros in its quest to improve the basic skills of adults. The UK is an interesting case study of a major attempt to engineer improvements in basic skills through programmes such as *Skills for Life (SfL)* in England.

The present paper sets out the nature and extent of the problem the UK faces, both from an historical and an international comparative perspective. It outlines the UK government’s economic analysis of the problem, its policy response, and its view about whether its basic skills programme will meet the *Leitch Ambitions*. The paper’s principal focus is to provide a critique of the conceptual framework the government has used both to estimate the economic and social returns to basic skills, which underpin policy design in training provision.

It is argued that frameworks of this type are fraught with conceptual and practical problems, for example, they fail to: address the increasing marginal costs of the “hard to reach” and “hard to

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<sup>2</sup> The net effects *via* the difference between the youngest and oldest “margins” of the working age population, by definition, take 40 years or more (depending on the length of the period of working age) to fully work their way through.

teach”; account for “forgetting” and “skills attrition”; recognise the critical role of the response of employers in ensuring the success of initiatives such as *SfL*. The present paper provides supporting quantitative evidence to establish the likely magnitude of these conceptual and practical problems, and, thereby, their likely impact on the costs and benefits of government intervention in the area of basic skills. The implications for future policy design are investigated.

Section 2 continues with a discussion of some of the problems that are associated with inadequate levels of basic skills. Section 3 outlines the main initiative introduced to alleviate the basic skills problem, the *SfL* programme, aimed at “upskilling” the adult population to meet the *Leitch Ambitions*. It demonstrates that *SfL* appears to have met the initial targets set by government and, based on simple trend projections, it appears likely go some way towards meeting the Ambitions set for 2020. Section 4, however, takes a somewhat more critical view of a number of the problems that seem likely to form a barrier to achieving the 95% basic skills target for 2020. Finally, Section 5 provides the main conclusions to the present paper.

## **2 The basic skills issue**

The basic skills problem is well known, in particular, individuals with low basic skills are more likely to be in lower paying jobs.<sup>3</sup> UK data for the 1990s suggest that, while only 7% of those with low levels of literacy had income levels over £19.2k, 40% of those with high levels of literacy earned this much or more (Moser, 1999, Ch. 3).<sup>4</sup> Likewise, while only 7% of those with low levels of numeracy had income levels over £19.2k, 46% of those with high levels of numeracy earned this much or more (Moser, 1999, Ch. 3).

More generally, in comparison with individuals possessing adequate skills, those with poor basic skills are more likely to be inactive or unemployed (by up to 5 times as likely) and, where they have a domestic partner, that individual is also more likely not to be in paid employment.<sup>5</sup> Individuals with poor basic skills tend to have children at a younger age and to have a greater number of children, who themselves have problems with basic skills. The children of parents with higher basic skills perform better in cognitive achievement tests demonstrating the positive intergenerational effects of basic skills acquisition (Meschi, *et al.* 2008; Sabates, 2008). There are also broader implications of poor basic skills, for example, greater social (as well as economic) isolation, poorer health, greater probability of homelessness and over-representation in offenders’ institutions.

The other major place where basic skills deficiencies are crucial is in the workplace. According to a survey by the Confederation of British Industry (2008, p. 15), 41% of employers are

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<sup>3</sup> See for example Grinyer (2006), Dearden *et al.* (2000, 2002), and De Coulon *et al.* (2007).

<sup>4</sup> Data from IALS – see, for example, Blum, *et al.* (2001).

<sup>5</sup> See, for example, Bynner and Parsons (1997); Ekynsmith and Bynner (1994).

concerned about with employees' literacy skills and 39% with their numeracy skills<sup>6</sup>, while 56% of employers report concerns about the IT skills of their workforce. Poor basic skills have significant consequences for business performance, with low levels of literacy and numeracy adversely affecting customer service (40%) and productivity (34%).

Recent data from the 2009 National Employer Skills for England (Shury et al., 2010) shows that of those employers struggling to fill vacancies due to skill-related reasons (skills-shortage vacancies), 30% of these are attributable to poor literacy and 26% poor numeracy – rising from 22% and 18% respectively in 2007.

While the data do not relate to basic skills *per se*, the CBI (2008, p. 12) survey data shown in Figure 1 indicate that senior executives show greatest dissatisfaction with the competency of employees in low skilled jobs (over half reported only satisfactory performance and 6% indicated a poor level of performance). It is interesting that the “poor” category formed smaller proportions in both the intermediate and high skilled groups (the same relative rankings are also visible in the “satisfactory” skills categories). This suggests that it is probably the absence of basic skills that is a crucial problem, particularly amongst the least skilled jobs.

Evidence from the 2009 National Employer Skills Survey appears to support this, with employers much less likely to report difficulties in recruiting staff with sufficient literacy and numeracy skills in Professional and Managerial occupations compared to occupations such as Administration and Sales (Shury, *et al.* 2010, p. 25).

Improvements in basic skills do not just stand to benefit the individual or the employer either. Eradicating poor basic skills could provide enormous benefits to the national economy, with higher earnings and employment benefiting the public finances through tax, national insurance and higher consumer spending.

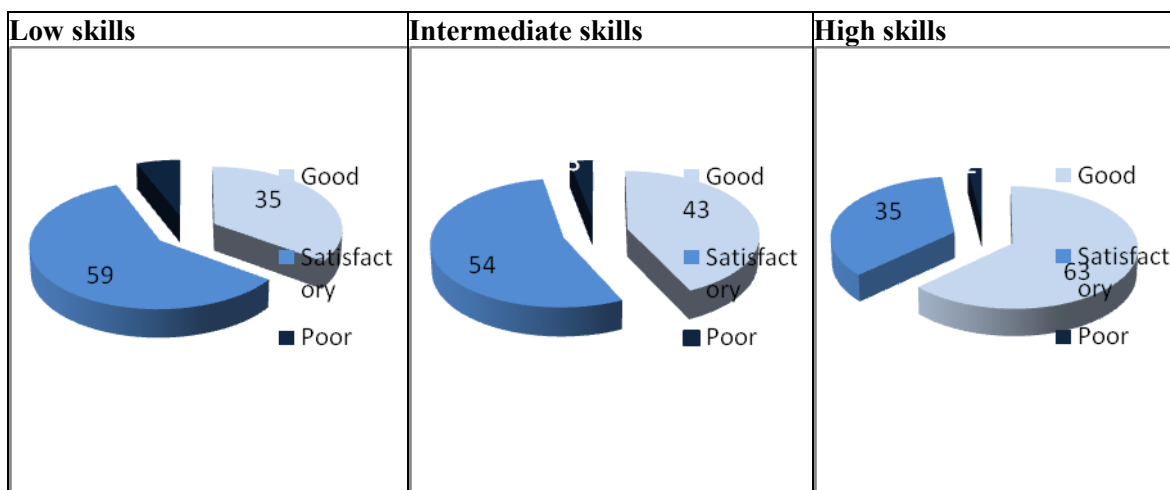
The Leitch review estimated if poor levels of numeracy were corrected, additional earnings of £12.54 billion are estimated along with an increase in employment of 200,600 (Leitch, 2005, ch4). The benefit to the national economy in this scenario was calculated to be just over £5 billion, or £383.00 per person who previously had poor basic numeracy. Similarly, if poor levels of literacy were corrected, increased earnings of £4 billion and increased employment of 180,700 were estimated. The impact on government finances was estimated to be £1.73 billion, equivalent to £373 per person who previously had poor basic literacy (*ibid.* ch4).

The UK uses five levels to measure literacy and numeracy skills: Entry Levels 1, 2 and 3, Level 1 and Level 2. The Moser Report (1999) identified Level 1 literacy and Entry Level 3 numeracy as the standards necessary to function at work and in society in general. These are equivalent to GCSE English at Grade G, and less demanding than GCSE Mathematics at Grade G.

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<sup>6</sup> The quality of written English (constructing properly spelt sentences with accurate grammar) was the major literacy concern (72%) and spotting errors and rogue numbers was the major numeracy concern (68%).

**Figure 1: Employer perceptions of employee competence levels (%)**



Measuring Basic Skills

It is difficult to measure the level of basic skills in the population using traditional qualifications estimates from sources such as the Labour Force Survey, as they are not sufficiently disaggregated at the lower skill levels. GCSE pass rates at different grades can be used to obtain a proxy of the basic skill levels of new entrants to the working age population, but this still leaves the remainder of the working age population.

Surveys, like the Skills for Life Survey conducted in England in 2003, assess people's basic skill levels using a variety of literacy and numeracy problems corresponding to the five basic skills levels described above (see DFES, 2003). Other parts of the UK have used similar surveys to assess the levels of adult basic skills such as the 2004 National Survey of Adult Basic Skills in Wales. As it has been 7 years since the Skills for Life Survey was updated, its conclusions on the basic skills of the adult population are now of limited use, and must be supplemented with additional data. There are plans however for the Skills for Life Survey to be updated in 2010 by the Department for Business Innovation and Skills; this will allow progress on basic skills since 2003 to be assessed for England.

International surveys, such as the OECD's International Adult Literacy Survey (IALS), conducted in 1994, 1996, 1998 and the Adult Literacy and Life Skills Survey (ALL) conducted in 2003, assess basic skills and use similar techniques to the Skills for Life Survey. The UK participated only in the 1996 survey, however (parts of) the UK will participate in the forthcoming Programme for the International Assessment of Adult Competencies (PIAAC), which is an OECD survey that follows on from these previous international surveys. PIAAC is being implemented in 27 countries between 2011 and 2012 and will include direct testing of literacy and numeracy skills thereby allowing internationally comparable results for basic skills.

### 3 Policies to improve basic skills

#### 3.1 Nature of the problem

In some sense, it is in the employers' interests to address the basic skills problems they face and, to some degree, they do this. As the CBI (2008, p. 15) note, "... employers are investing heavily in remedial training – more than a quarter (27%) do so for literacy and 23% for numeracy with 69% investing in IT training".<sup>7</sup> However, in the main, basic skills are generic in nature (*i.e.* not firm specific in nature) and can readily be used by other employers. This creates a disincentive for any one firm to fund training, when their employees may leave to work for other firms that do not provide training (*e.g.* the labour mobility and traditional poaching arguments); this is a potential source of failure in the market for training adults.

It is not surprising, therefore, that employers perceive the provision of such skills to be the role of government, primarily through the educational system.<sup>8</sup> Thus, while employers may be willing to meet some of the basic skills gaps themselves, they clearly also look for government support to encourage work-based programmes of skill development. There is a clear incentive for employers to attribute the source of the problem to others: individuals, who embody the skills and benefit from them in terms of their employability and wages (see above); government, who have an accepted responsibility (on both economic and equity grounds) for ensuring that those who pass through compulsory schooling are inculcated with the necessary basic skills.

However, some care needs to be taken with such arguments – at least in taking them to their natural conclusions (*e.g.* that individuals should pay in terms of taxes to support government intervention to pay for improvements to basic skills) – for a number of reasons:

- first, the issue of when government responsibility ceases, for example,
  - the population of working age went through the education system years – in some cases, many years – ago. In essence, does the current government/society carry a responsibility for the “shoddy goods” produced by earlier governments (see Section \*\* below);
  - basic skills are embodied in individuals, but some people may be unable or unwilling to assimilate such skills. While the government can do many things to incentivise individuals to develop such skills, at the end of the day, they cannot force them to do so. A reluctance or inability by a group of individuals to learn basic skills may take the social rate of return below the social discount rate (about 3% in the UK).

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<sup>7</sup> Further detail of recent employer involvement in adult training can be found in DCSF (2008) and (2005).

<sup>8</sup> “We believe firmly that the educational system should produce reliable basic material on which employers can build at their own expense to provide vocational skills. We find the educational system does not produce the reliable basic material. It is better to focus on core skills and provide them well than to poorly provide a wider set of skills.” Brian King, Managing Director, Trent Barton (quotation appears in CBI, 2008, p. 14)



- second – there is the issue, not of whether individuals learn basic skills, but whether they lose them through their lack of use (see Section 5 below). While individuals themselves may have a “duty of care” to maintain their skills, some of the basic skills may only be practiced in employment and, hence, it may be the responsibility of employers to maintain them;
- third, employers benefit from basic skills – not all of the benefits are appropriated by the individuals holding those skills, some are captured by employers. Thus, even in the event of market failure amongst employers to train individuals in basic skills, which may require government intervention, this does not mean that employers are exempt from making a contribution to the payment for training in basic skills (where their relative contribution reflects their relative net gains from improvements to basic skills).

### **3.2 Skills for Life qualifications**

In practice, the current system of adult provision in the UK is complex and the distinction between government funded and privately (primarily employer-funded) education and training is far from clear. However, investment in remedial and other forms of training is often supported by government programmes, such as apprenticeship schemes, Train to Gain, etc., which can take place through support for the employer or for the individual. While all such schemes almost certainly have a positive effect on basic (and other) skills, the UK has adopted a major programme aimed primarily at improvements in adult literacy and numeracy – the “Skills for Life” (*SfL*) programme in England, which, until now, has been the responsibility of the Learning and Skills Council (LSC).<sup>9,10</sup>

It is clear that the LSC has significantly changed the mix and balance of courses and programmes over time to meet the various government ambitions and targets. For example, “The LSC’s intention to increase the take-up of approved Skills for Life qualifications was first reflected in the policy statement on the Balance and Mix of Skills for Life provision in 2004/05. The aspiration to achieve an 80:20 ratio between approved *SFL* qualifications and non-approved *SfL* provision continues to be a priority in order to: improve the quality of teaching and learning; ensure we achieve the aims of the Skills for Life strategy and the 2010 PSA target; reflect the

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<sup>9</sup> New basic skills qualifications are currently being piloted in England “Functional Skills” qualifications; these may replace Skills for Life qualifications in the future for both adult learners and young people.

<sup>10</sup> Responsibility for skills policy in the UK is devolved, whilst *SfL* (run in England) is primarily discussed here in the context of the UK, the devolved administrations have their own basic skills programmes. For example “Essential Skills” in Northern Ireland, and “Key Skills” in Wales.

link made in the Leitch Review between gaining transferable qualifications<sup>11</sup> and sustainable employment.” (LSC, 2007)

A series showing the numbers of achievers has been made available, as shown in Table 1. While Table 1 shows that the 2010 target of 3 million additional individuals with first *SfL* qualifications will be met, it provides no information about literacy or numeracy *per se* and little or no usable information about the 2020 targets, which are quite different (see Bosworth, 2010). Adjustments for a range of factors have to be made in order to translate these data to a form that underpin the *SfL* achievements projections used by the UK Commission.

**Table 1: Numbers achieving approved *SfL* qualifications, England, thousands<sup>12</sup>**

	All achievements <sup>1</sup>	First <i>SfL</i> qualifications <sup>2</sup>	Cumulative first <i>SfL</i> qualifications <sup>2</sup>
2001	177	159	159
2002	242	218	377
2003	235	212	589
2004	307	276	865
2005	468	421	1286
2006	518	438	1724
2007	598	502	2226
2008	651	547	2773
2009 <sup>p</sup>	554	466	3239

Notes: 1. includes all those who achieved in that year regardless of whether they also achieved in other years; 2. those who had achieved in previous years were recorded as a repeat learner in the column corresponding to the year of their latest previous achievement; p. provisional.

### 3.3 Projecting basic skills to 2020

The basic skills model is described in detail elsewhere (Bosworth and Kik, 2010). In essence, it has two states: a “policy on” and a “policy off”. The policy on model traces what would happen to the proportion of individuals with “below target” basic skills without the *SfL* programme, allowing the higher qualifications of the entrants at age 16 to replace the lower qualifications of the “retirees” at age 65. As might be expected, given a fairly evenly decreasing level of formal

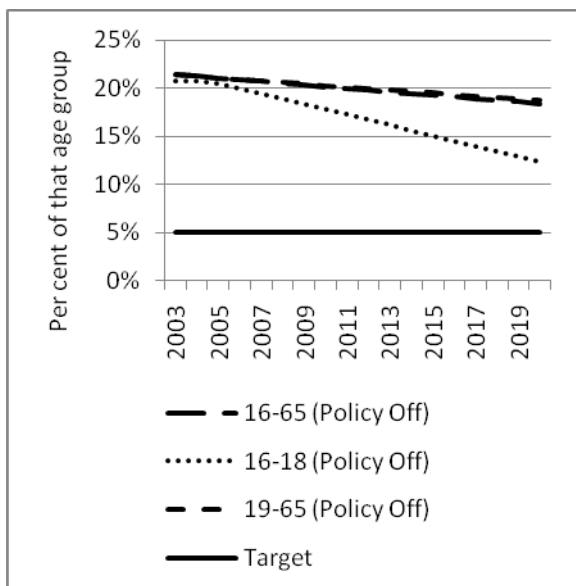
<sup>11</sup> At the time of the LSC (2007) report, only 55% of *SfL* enrolments were on courses that led to an approved qualification (*ibid.* p. 18), which allowed transferability and progression to other qualifications (*ibid.* pp. 18-19). Approval for *SfL* qualifications appears to be the responsibility of the Qualifications and Curriculum Authority (QCA). Ensuring transferability and progression appears to have allowed the expansion of accredited *SfL* achievers.

<sup>12</sup> <http://www.dcsf.gov.uk/rsgateway/DB/TIM/m002020/index.shtml>. Includes those who studied through the following routes: FE, WBL, Ufi, ESF and TtG. Learners who achieved another *SfL* qualification in the same year were not counted as repeat learners.

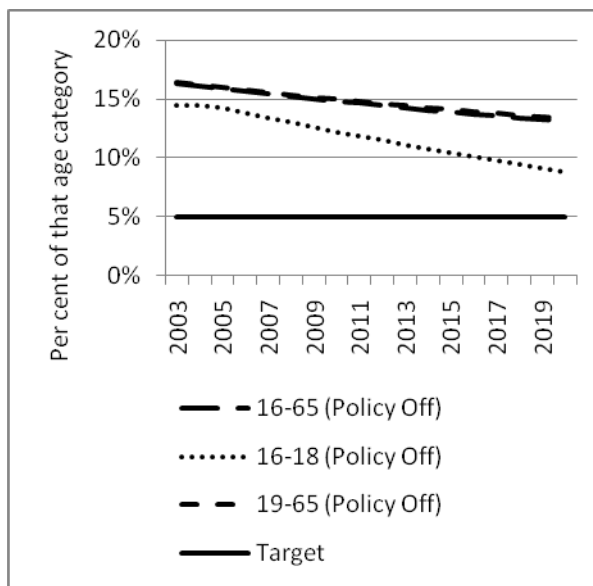
qualifications with age, the “stock-flow” effects of demographic forces act slowly on the population of working age as a whole,<sup>13</sup> as demonstrated in Figures 2a and 3a.

**Figures 2 and 3: Projections of basic skills, with “policy off” and “policy on”**

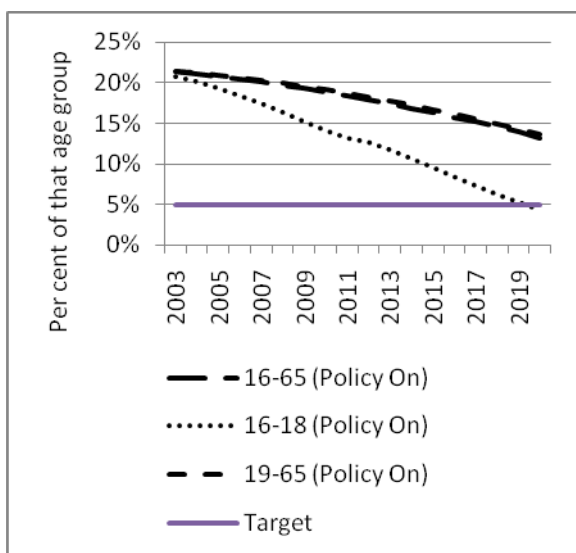
**Figure 2a: Numeracy, “policy off”**



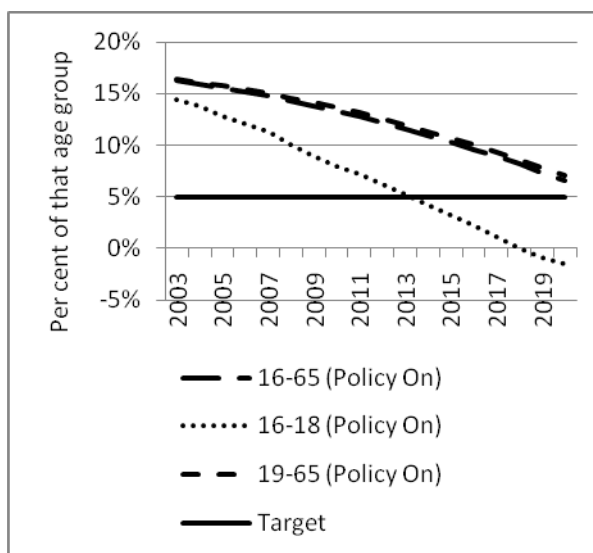
**Figure 3a: Literacy, “policy off”**



**Figure 2b: Numeracy, “policy on”<sup>a</sup>**



**Figure 3b: Literacy, “policy on”<sup>a</sup>**



Note: a. no constraints from “hard to reach” and “hard to teach”.

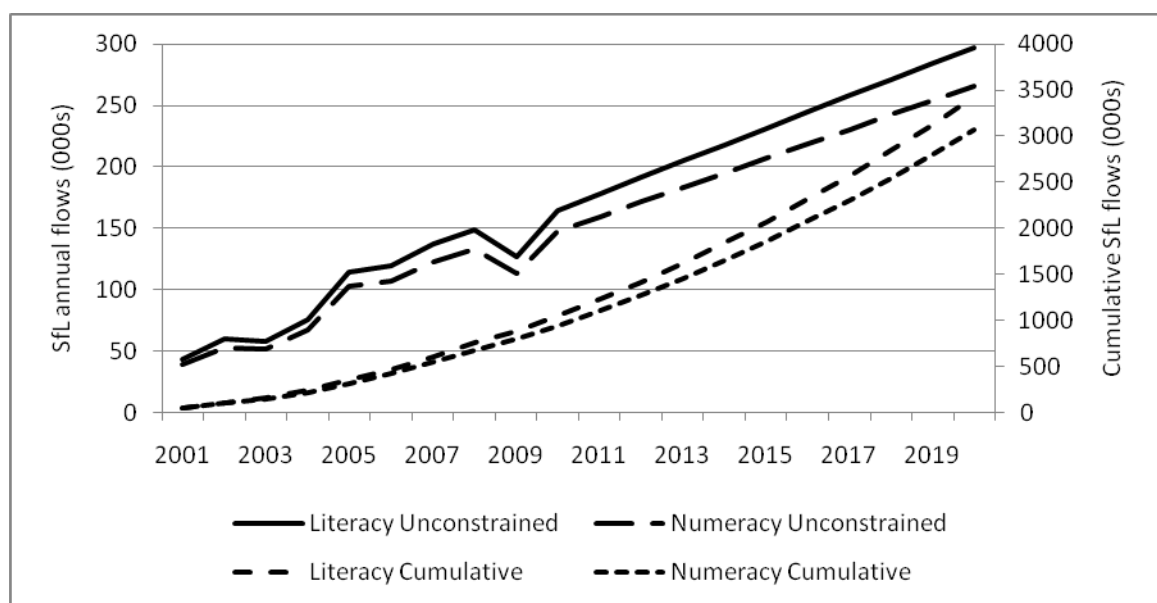
If demographic factors (plus information about the qualifications of new entrants) are allowed to wend their steady way through the population, by 2020, there are still just under 18.5%

<sup>13</sup> The main base-data for this analysis is the proportion of individuals classed as illiterate or innumerate in 2003, based upon the *Skills for Life* survey. An up-date of this survey is currently in the field.

of the working age population (16-64) who would still be classified as innumerate at this time and just over 13% would still be classified as illiterate. As most of the improvement is taking place in the 16-18 year olds, the proportions of 19-64 year olds innumerate and illiterate are higher, at 18.7 and 13.3% of their relevant age group. This is fairly conclusive proof that improvements through demographics is a fairly slow process and, indeed, one that slows even further as the differential in numeracy and literacy between the youngest and oldest age groups declines over time.

Achievement of the Leitch ambitions with regard to basic skills is therefore crucially dependent upon the upskilling of working age individuals. At least from an “official” viewpoint, the only courses that count towards the 2020 target comprise a sub-set of the *SfL* programmes.<sup>14</sup> The annual flows through the accredited *SfL* programmes that count towards the 2020 ambitions are shown in Figure 4. It is clear that there has been a substantial rise in the annual flows from around 39 thousand in the case of numeracy and 43 thousand per annum in the case of literacy at the beginning of the period to about 133/149 thousand (respectively) just before the end of the historical period.<sup>15</sup>

**Figure 4: Flows through *SfL* programmes and the cumulative outcomes**



Source: Basic skills model – final.xls. Note: “unconstrained” refers to the fact that no allowance is made for “hard to reach” or “hard to teach” individuals, other than that already accounted for in (linear) historical trends.

The projections shown here are based upon a linear extrapolation of the trends through to 2009. They suggest that, based upon historical trends at least, the throughput of both *SfL* numeracy

<sup>14</sup> This is important in the sense that there are some *SfL* programmes that appear to impart basic skills which, for whatever reason, the government chooses not to count towards the target, and there may be other courses outside of *SfL* programmes (e.g. apprenticeships, etc.) which also impart basic skills, but are not counted.

<sup>15</sup> The downturn in 2009 is a provisional estimate and it is not clear, as yet, how this should be treated.

and literacy achievers might reach over 250 thousand *per annum* (266 and 297 thousand respectively). If this is the case, then the cumulative throughput contributing to the 2020 ambitions would be over 3 million in both cases (3066 and 3426 respectively).<sup>16</sup>

These are substantial numbers and, if they are taken at face value, they make an important contribution towards the achievement of the Leitch Ambitions. The results are shown in Figures 2b and 3b respectively (*e.g.* combining demographic factors and upskilling). It can be seen that the 16-18 groups show by far the greatest improvement – they have been influenced by both the trends in qualifications at age 15 (see Section 5 below) and in the upskilling of individuals through *SfL* courses. In terms of the 2020 ambitions, however, the model suggests that the literacy target is almost met (with between 6 and 7% illiteracy amongst the population of working age), but the numeracy target is some way from being met (with around 13% of individuals still not meeting the basic skills target).

#### **4 Three main issues in meeting the 2020 ambitions**

This section addresses three principal issues concerned with meeting the 2020 basic skill ambitions, the:

- increasing marginal costs of the “hard to reach” and “hard to teach”;
- effects of “forgetting” and “skills attrition”;
- critical role of the response of employers in ensuring the success of initiatives such as *SfL*.

##### **4.1 “Hard to reach” and “hard to teach”**

Little attention has been paid to the so-called “hard to reach” and/or “hard to teach” in the government education and skills targets. These should not be seen as dichotomous groups, but as a spectrum of individuals ranging from those with few, if any, problems, through to those who are extremely difficult to assimilate into the education and training system and/or those who experience extreme learning difficulties. The existence of the increasingly “hard to reach” and/or “hard to teach” groups suggest that the costs of “successful” education and training interventions will be increasing at the margin, whilst, at the same time, the outcomes of such intervention may be constant or even declining at the margin, at least in standard economic terms.

##### **“Basic skills” at the end of compulsory education**

Detailed discussion of the causes of the failure of the school system to impart the desired level of basic skills lies outside the scope of the present study.<sup>17</sup> What is important from an adult

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<sup>16</sup> Note, however, that, insofar as older individuals may gain *SfL* qualifications that count towards the target, they may also “retire” prior to 2020. It should also be borne in mind that the 2020 ambitions are based upon a subset of qualifications used for the 2010 targets and are, therefore, in some sense, more difficult to achieve.

<sup>17</sup> This debate covers a huge range of topics from “status deprivation” (*e.g.* impacting on school attendance and dropout; see, for example, Elliot, 1966) through to the style and quality of teaching staff (*e.g.* impacting on classroom behaviour and the quality of the learning process; see, for example, Miller, *et al.* 2000).

education and training perspective is that, at least at the present time, a significant proportion of individuals reach age 16 without having mastered even the basic skills. These individuals who proved “hard to reach” and “hard to teach” individuals at compulsory school level in earlier years, now form an important component of the adult population targeted by government basic skills programmes at the current time.

If the government target for the working age population is that 95% of individuals should possess basic skills, then this implies that, to help meet this target, less than 5% of individuals flowing into the working age population should be without basic skills. If the government relied just on the difference between the qualifications of inflows (new entrants) and outflows (retirees), then, under various assumptions about the distribution of basic skills across ages, this might take up to (about) 48 years to achieve, if slightly more than 95% of the inflows possessed the required basic literacy and numeracy skills.

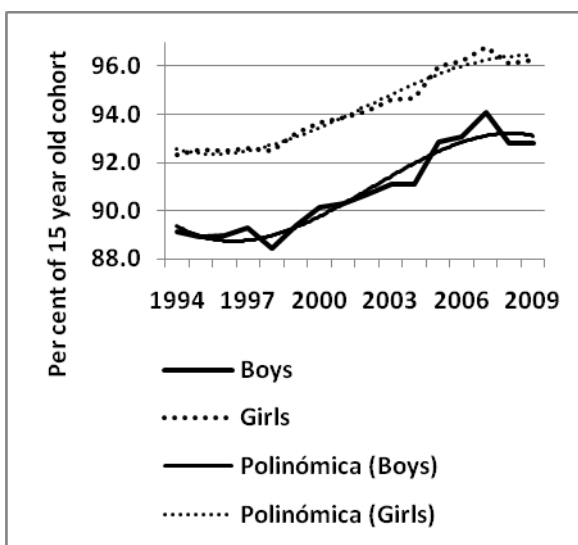
The main source of information available about the level of basic skills at the end of the compulsory schooling period in the UK is given by General Certification of Secondary Education (GCSE) results at age 15 (and its Scottish equivalent). Figures 5 and 6 show the recent trends in GCSE achievements at the two levels relevant to meeting the basic skills requirement: part (a) of each of the figures shows the proportion of all individuals of that age who sit the examination; part (b) of each of the figures shows the proportion of all individuals that age that either fail to sit the examination or, if they sit the examination, obtain less than grade G.

Figures 5a and 6a show the proportions of the 15 year old cohort taking mathematics and English over the years 1994 to 2009 inclusive, along with fitted polynomial lines that attempt to capture the main underlying trends in the data. Both series show significant improvements over the period, but only females break the 95% proportion in terms of individuals sitting the examinations. While too much should not be made of the recent movements, the polynomials suggest, at best an important slowing in improvement and, more likely, some evidence of a reversal of the positive trend of earlier years.

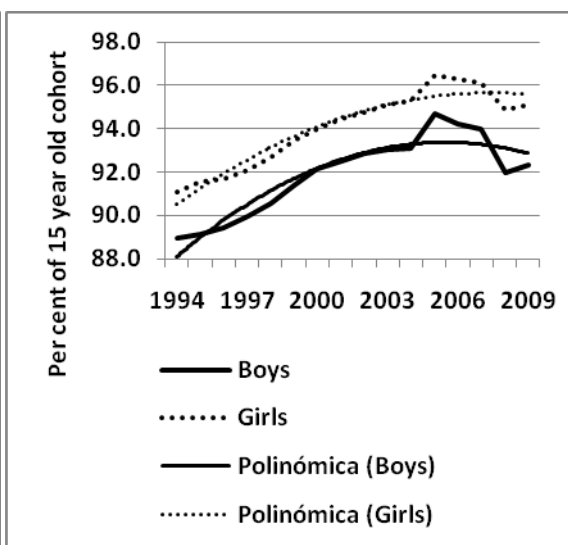
Figures 5b and 6b combine this information with the proportion who, having sat the examination, obtain a pass at grade G or higher. While it is difficult to translate directly between literacy or numeracy skills at level G and the corresponding basic skills, this is the closest match available and has been used in all earlier work in forecasting using stock-flow models in this area. The issue is now whether either males or females break the 5% target for Mathematics or English (*e.g.* corresponding with 95% numeracy and literacy rates). The answer to this question is that only females do so and only in the case of English, even then, the combined male and female outcome for English is above the 5% level (there are roughly equal numbers of males and females represented in Figure 5b).

**Figures 5 and 6: Flows of individuals into working age without basic skills**

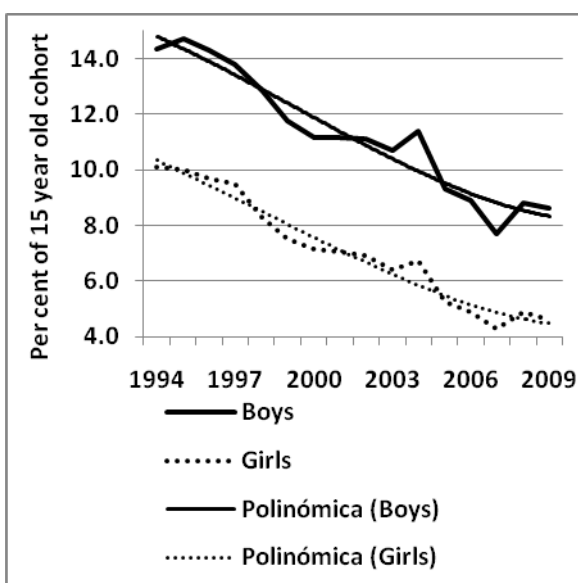
**Figure 5a: Taking English (%)<sup>a</sup>**



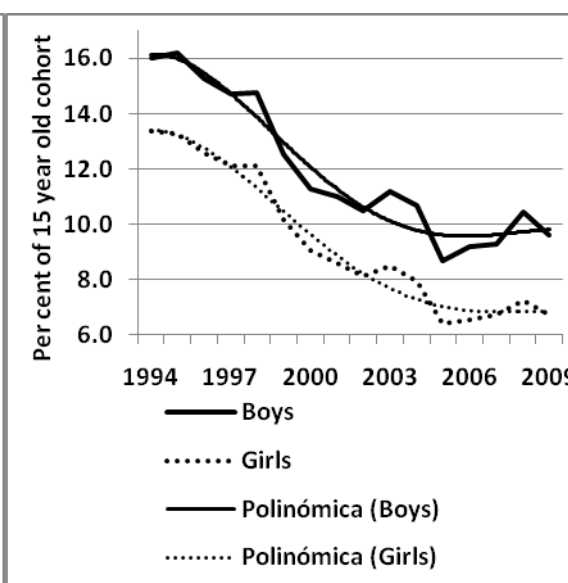
**Figure 6a: Taking maths (%)<sup>c</sup>**



**Figure 5b: Below Level 1 English (%)<sup>b</sup>**



**Figure 6b: Below Level 1 maths (%)<sup>d</sup>**



Source: Bosworth and Kik (2010). Note: a cubic polynomial; b quartic polynomial; c quadratic polynomial; d quartic polynomial.

The implication is that, up to 2009, the inflows into the working age population from compulsory education may improve the basic skills outcomes (as they tend to be better qualified than retirees), but they have not, to date, contributed to the 95% numeracy and literacy targets. The preferred projections of these trends assume that the proportions of all individuals achieving mathematics at grade G or higher remains constant at the highest level reached during the historical period (that is at about 92% equivalent numeracy rate – below the 95% target for all individuals of working age) (Bosworth and Kik, 2010, Figure 10a). The projections for all individuals achieving grade G English or higher are more optimistic, breaking the equivalent 95% literacy barrier at

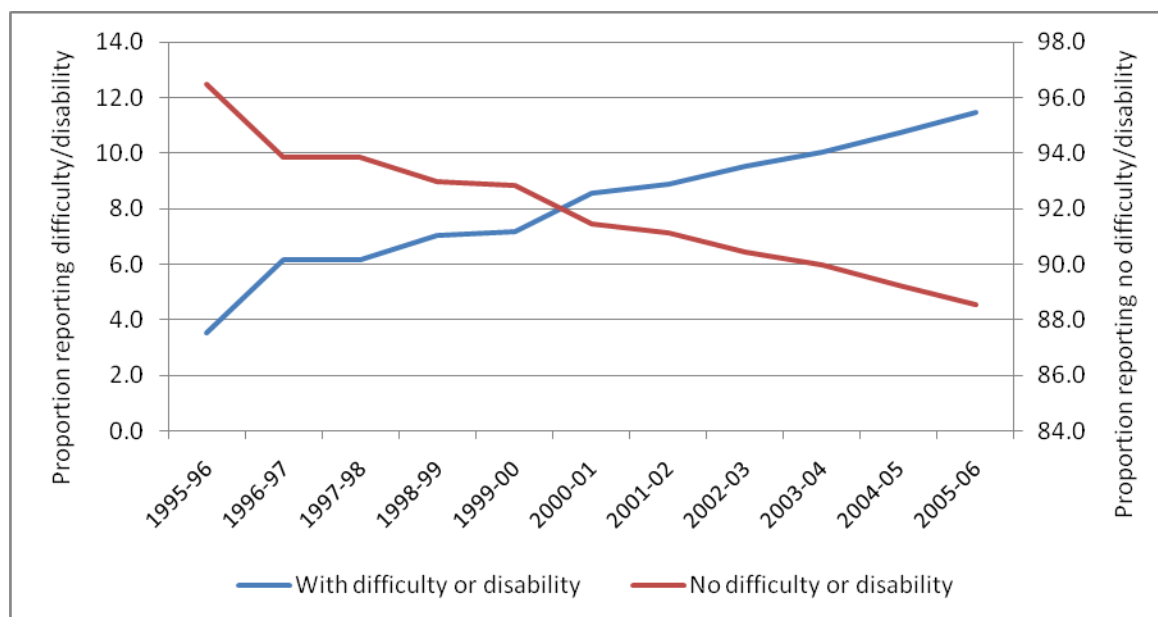
around 2014 (*ibid.* Figure 10b) and continuing to improve, at a declining rate to around 94% by 2020).

### *Individuals with learning difficulties and disabilities*

As the earlier discussion has showed, one of the major vehicles for resolving basic skills problems in the UK is the further education system, which has picked up resits amongst 16-18 year olds, as well as the majority of *SfF* and other adult learning programmes. One of the issues arising from these client groups is that, the larger the proportion of the group that enter remedial programmes, the greater the proportion that will have a variety of “special needs”.

The incidence of learning difficulties are potentially very important from the perspective of meeting future skills targets (for an initial discussion see Bosworth, 2009). There might, for example, be some proportion of the population who simply cannot be trained even to the level of basic skills consistent with the *SfL* qualifications. Consistent with the earlier discussion, however, while there may be some limit of this type, it may be better to view individuals as exhibiting a spectrum of difficulties, removal of which requires increasing resources *per person*<sup>18</sup> in order for them to gain the required level of basic skills, the greater the level of difficulty of the individual.

**Figure 7: Possible trends in learning difficulties or disability, England**



<sup>18</sup> The LSC already provides additional support, defined as: “... any activity that provides direct support for learning to individual learners, over and above that which is provided normally in a standard learning programme which leads to their primary learning goal. The additional support is required to help learners gain access to, progress towards and successfully achieve their learning goals. The need for additional support may arise from a learning difficulty and disability, or from literacy, numeracy or language support requirements.” (see LSC, 2007b, p. 59).



Focusing only on those with learning difficulties or disability and those without (i.e. omitting the not stated group and making the other two groups sum to 100<sup>19</sup>), the resulting trends shown in Figure 7 emerge (note that different axes are used for the two series). This suggests that there is a significant rise over time in the proportion of individuals reporting a learning difficulty or disability, mirrored by a significant fall in the proportion who do not report such a problem. The pattern of rising learning difficulties and disability may itself, in part, reflect the growing proportion of “hard to reach” and “hard to teach” individuals resulting from the *SfL* programme.

It is difficult to say much about the implications of this for future achievements in basic skills, but it is something that, in principle, might present a barrier to the achievement of *SfL* ambitions. Note that the data in Figure 7 relate to all FE students in England, and may underestimate the increasing problems posed by programmes such as *SfL*. A simple linear trend through the few observations available for the proportions with learning difficulties and disabilities suggest that not will this group increase over time, but may reach over 20% of the FE population by 2020. Allowing for this in the projections of *SfL* achievements suggests that, by 2020, between 22 (literacy) and 24 thousand (numeracy) less achievers *per annum* might flow from the FE system because of the strain that “hard to reach”/“hard to teach” individuals place on resources, unless further provision is made.

### ***International comparisons of “basic skills” outcomes***

This section examines the OECD data on educational attainment (OECD, annual), which is broken down by three levels, giving the proportions of the population aged 25 to 64 that are below upper secondary (BUS), upper secondary and tertiary level. While none of these groups corresponds exactly to the concept of basic skills used here, nevertheless, it is interesting to see what the data suggest about the achievement of less than 5% of individuals at BUS.

To date, these data have been used in *Ambition 2020* (UKCES, 2009) to undertake international comparisons of the educational level of the UK population of (approximately) working age (25-64 years of age) and to project the ranking of performance across countries to 2020. The projections to 2020 have been made using linear trends and demonstrate that, a number of countries seem set to break the 5% limit at BUS. However, further analysis of the data suggest that this may be optimistic, if the change in proportion of BUS is allowed to be non-linear.

A simple way of illustrating this non-linearity is to estimate the overall change in proportion at BUS level over the ten year period available (e.g.  $BUS_{2007} - BUS_{1998}$ ) for each country, and relate this change to the average level of BUS by country ( $\overline{BUS}$ ). If the assumption of a constant slope is valid, there should be no relationship between the two, but if it becomes more difficult to reduce

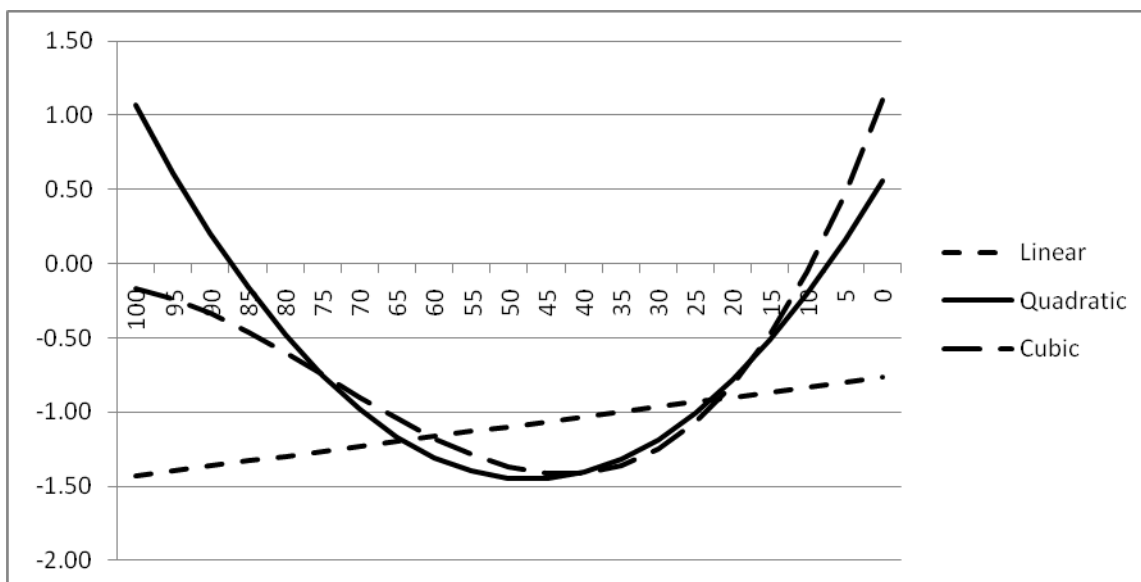
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<sup>19</sup> This is equivalent to allocating the not stated in equal proportions to the sizes of the other two groups.

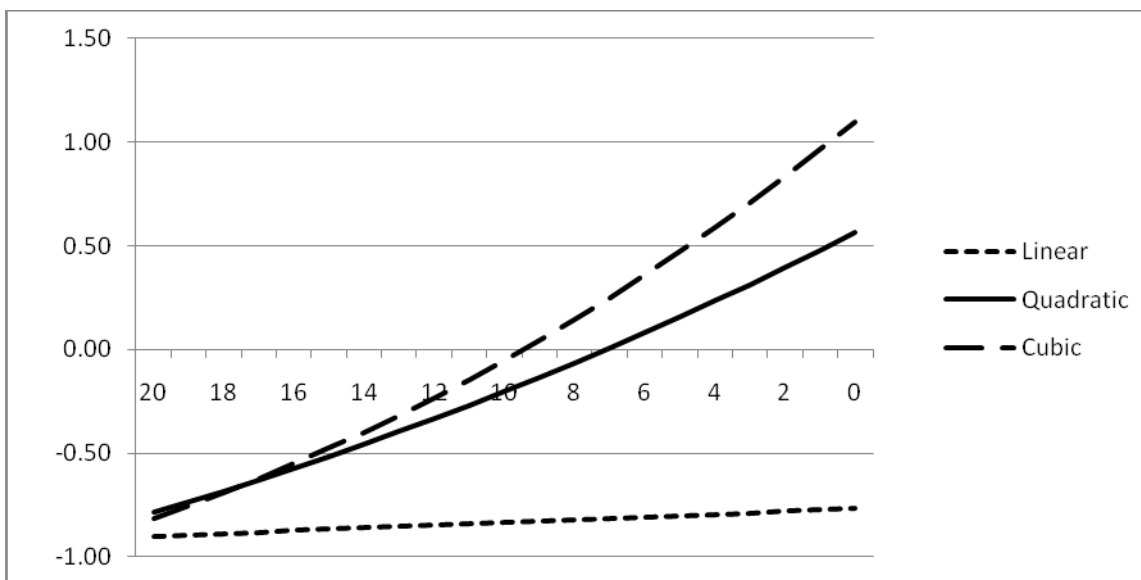
BUS further as the proportion becomes increasingly small, then there should be a relationship between the two, and the reduction in BUS should become smaller as  $\overline{BUS} \rightarrow 0$ .

**Figure 8: International comparisons of improvements in basic skills**

**Figure 8a: Pattern of improvement in basic skills, all possible levels of average BUS**



**Figure 8b: Pattern of improvement in basic skills, very highest levels of average BUS**



The results of this investigation are shown in Figures 8a and 8b. All the different curves fitted to the relationship suggest that it becomes harder to reduce the BUS proportion as  $\overline{BUS} \rightarrow 0$ . While the linear version in Figure 8a suggests that it becomes increasingly hard, the change in BUS never becomes zero. However, the quadratic and cubic curves, which fit the relationship much

better, not only suggest that further reductions in BUS become increasingly hard as  $\overline{BUS} \rightarrow 0$ , but also reductions are difficult when education levels are very low and  $\overline{BUS} \rightarrow 100$ . Figure 8b provides an estimate of the possible lower limit to BUS, based upon different explanations of the changing slope function. While there is no lower limit in terms of the linear relationship estimated, the quadratic relationship (which is probably the preferred function for the lower end of the spectrum of BUS) suggests a lower limit of about 7% (the lower limit for the cubic function is slightly higher, at about 10%).

#### **4.2 Learning, forgetting and skills attrition**

It is important to recognise that there is a difference between the results of set, formal educational testing, such as GCSE examinations (*e.g.* in mathematics and English) and results obtained from *Skills for Life* and similar surveys of the numeracy and literacy of the population. Even if the chosen threshold (*e.g.* below G in GCSE mathematics and English) can be taken to be identical to that of the numeracy and literacy thresholds in *SfL*, memory theory suggests that many individuals who would have been capable of passing the GCSE examinations under formal educational conditions (involving a designated period of teaching, revision and examination) would not do so outside of these formal conditions unless other mechanisms are in place (which might be the day to day use of the associated knowledge), which continually reinforce their numeracy and literacy skills.<sup>20</sup> The implication of “forgetting” for *SfL* education and training is that at least some (in some cases all) of the benefits may be lost if the skills are not used on a continual basis by the individual who has learnt them.

A related issue in the context of adult education is that older individuals may be both slower to learn and/or more likely to forget (or have more imperfect recall) than younger individuals, other things being equal (*e.g.* Barnes and McNaughton, 1985; Cohen and Faulkner, 1989; Trahan, 1992). There is a huge literature linking aging with learning ability and recall capability, not all of which is supportive of a simple, deterioration of ability with age (*e.g.* Waters and Caplan, 2005, see also Small, 2001 and Foos, 1989). Nevertheless, it is probably true to say that the literature suggests that, “[t]here is little question that memory declines with age” (Small, 2001, p. 363). This seems of considerable importance in the present context, for example: if older individuals are more costly to educate and train to the same standards and, if their retention of knowledge (which may partly reflect their greater problems in learning) is poorer, then this will have important implications for the economic returns to programmes such as *SfL*.

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<sup>20</sup> “While students may pass a test, they may also forget the information shortly after taking the exam.” (Drew and Mardis, 2008, p. 167). Of course, there are ways of delaying knowledge attrition, “Traditional instruction for pre-service teachers often involves lecture with an over-reliance upon note-taking and memorization. ... However, a problem-based learning approach helps students learn more effectively by constructing their own knowledge through experience and by responding to an authentic problem that they might face in their future classrooms.” (*ibid.* p. 167)

There issue of age is also important from a more standard economic perspective – the economic returns to education and training through improvements to earning are traditionally argued to be crucially related to the number of years of economic activity that remain after the education and training take place. Thus, when an individual gains certain skills at age 20, there are around 40 years in which those skills are likely to influence their wage premium prior to retirement, but an individual who gains the same skills at age 40, will only have 20 years or so of increased earnings power. This, of course, ignores all other benefits of education and training, such as improvements to health and wellbeing, as well as the consumption benefits of education.

These are contentious issues, but ones that policy design and debate nevertheless needs to consider. However, the general issues are just as important in the context of, for example, young people taking subjects that they will never (or only intermittently – see Nembhard, 2001) utilise throughout their life, as older individuals who might benefit from, say, the acquisition of basic skills, but have greater learning and recall difficulties.

#### **4.3 Employers role in maintaining the skills of individuals**

Section 1 has already discussed the crucial issue of the employers' role in the education and training of individuals. In addition, there is the issue raised in Section 3.4 that some basic skills may only be practiced in an employment context. In a general context, for example, Bynner and Parsons (1998) investigate a cohort of individuals aged 37, exploring whether the duration of their paid employment through to age 37 impacts on the level of their basic skills. They concluded that,

“The longer the absence from paid employment between age 16 to 37 the greater the negative impact on the numeracy scores of men. For men and women with poor skills at age 16, the negative impact is felt on both numeracy and literacy scores. In contrast, the association was much weaker for both men and women with *good maths* or *good reading skills at 16*”. (*ibid.* p. 15)

The weaker link between literacy and absence from paid work than for numeracy is taken to reflect the greater use of reading and writing skills of individuals outside of paid employment. The link between periods of unemployment and the deterioration of basic skills may become increasingly important in the current economic climate with raised levels of unemployment and high youth unemployment, potentially having adverse effects on the overall level of basic skills within the adult population. However, the role of prior basic skills at age 16 also leads to the important conclusion that,

“A basic skill threshold needs to be reached before we can be sure that the skill is going to be retained.” (*ibid.* p. 15)

However, in addition to the question of whether the individual is in employment or not, there is a further issue of the extent to which those in employment are given the opportunity to practice

their basic skills by their employers. Bosworth, et al. (2010, pp. 109-111), for example, investigate the way in which work is organised and the ability to learn and maintain employees' skills. It appears that enterprises differ enormously in the extent to which they provide such opportunities, but that, in the main, employees value the chance to learn and practice their skills – in particular, such opportunities increase the employees' satisfaction with their working conditions. More broadly this links to the need for employers to achieve effective skills utilisation within the workplace through High Performance Work Practices (HPWPs) so to develop and maximise employee skills in the workplace (see Belt and Giles, 2009). While there is little direct empirical evidence, it would appear, therefore, that employers also have a duty of care to provide an environment within which basic skills are practiced and honed.

## **5 Conclusions**

The present paper has addressed the question of adult training policy with respect to basic skills. It is clear that basic literacy and numeracy in particular, but also, probably, ICT skills are an almost universal requirement for advanced industrialised countries not only giving access to paid employment, but also empowering them in a variety of ways (e.g. in terms of access to ICTs) and in raising the satisfaction that they experience in work.

What has been so surprising in, for example, an advanced economy such as the UK, has been the extent of basic skills deficiencies amongst the population of working age. The Skills for Life survey of 2003 suggested that 22% of individuals aged 16-64 inclusive were functionally innumerate and 17% were functionally illiterate. Such figures do not gel well with the aspiration for a knowledge based economy and, hence, the setting of 95% numeracy and literacy “ambitions” for 2020.

It is possible to demonstrate how problems with adult basic skills are, in part, the consequence of earlier failures of compulsory schooling. The best match of school qualifications and basic skills suggests that, at no point in the recent past have the proportions leaving schooling achieved the 95% aspiration level which now forms the “target” for 2020. Indeed, acceptable projections of future school leaving outcomes suggest that the improvements to the inflows of those of working age would be a long and drawn out solution – if a solution at all – to the basic skills problem of the UK.

It is perhaps not surprising, therefore, that the UK introduced a major programme designed to increase basic skills amongst adults – such as the *Skills for Life* programme. This has certainly been a radical effort to re-engineer the basic skills of the population of working age, which appears to meet the 2010 targets for additional individuals trained in literacy and numeracy skills. Based upon current projections, however, the more stringent targets for 2020 seem unlikely to be met, especially in the case of numeracy skills.

Such projections are in part too pessimistic (errors of omission) and, as a consequence, there may be more success in some respects than these simple projections suggest. In particular, the very stringent restrictions on the courses that counting towards the 2020 ambitions appear to omit many lines of education, training and learning that nevertheless generate basic skills, some of which are actually designated *SfL* courses. Those counted towards 2020 are much more restricted than those counted towards 2010, and both omit areas of education and training that may contribute to the targets.

On the other hand, the current projections may be too optimistic (errors of commission), as there are a number of grounds for believing that “up-skilling” the working age population will prove more difficult than anticipated. The present study deals with three potential barriers to success, in particular, the failure to:

- address the issue that there is a “non-linearity” present – that the more inroads that are made into reducing the proportion of innumerate and illiterate individuals, the more “hard to reach” and “hard to teach” the remaining group with low basic skills becomes;
- consider the role played by “forgetting” and “skills attrition” – all of the empirical literature suggests that these are important phenomena, right from learning during compulsory education through to the education and training of older adults;
- highlight the role played by employers in allowing employees to practice their basic skills – following Bynner and Parsons (1998, p. 16) the present discussion emphasizes that, “... ‘use it or lose it’ must be replaced by ‘practice it and keep it’ ...”.

While the aspiration for a wholly functionally numerate and literate population is an understandable starting point for any society, it may not be a practically achievable objective and needs to be tempered by economic considerations:

- making further and further inroads into the “hard to reach” and “hard to teach” is associated with an increasing marginal cost. While purely economic arguments may be tempered by issues of equity, there is a cost to society of improving the basic skills outcome that has to be balanced against the other ways in which solutions can be found and other uses to which such resources can be put;<sup>21</sup>
- making such inroads is also, almost certainly, associated with decreasing marginal returns, at least in economic terms and, perhaps, also in societal terms.

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<sup>21</sup> Little work to date has been done on exploring the links between the achievement (or non achievement) of our 2020 ambitions for skills and the broader societal impacts. An extensive joint programme of work is planned for 2010/11 between the UK Commission for Employment and Skills and Joseph Rowntree Foundation to investigate the links between skills, poverty, and, inequality in the UK. This will include work on the inequality and poverty scenarios which might face the UK upon the achievement or non-achievement of the 2020 skills ambitions (<http://www.jrf.org.uk/work/workarea/future-labour-markets>).

The authors have no firm views on these issues, but, to date, they appear to have received little attention and, hence, the lack of an associated debate has not informed the policy decisions taken so far.

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