

Measuring Adult Educational Attainment Using the Labour Force Survey

1. Background

Data from the Labour Force Survey are used across Government and beyond for a wide range of activities. Within BIS they are used to examine the relationship between qualifications, employment and earnings as well as to calculate the rates of return to qualifications and to measure educational attainment levels. The attainment data are also used to measure the Skills PSA targets, which require increases in levels of attainment within the working age population (further details of these targets are provided in section 2).

Attainment is monitored at levels described in terms of academic qualifications. Full Level 2 (L2) qualifications are equivalent to 5 GCSEs (at grade C or higher), and full Level 3 (L3) qualifications are equivalent to 2 "A" levels. Level 4 and above (L4+) qualifications are Higher Education level qualifications, ranging from HE certificates (L4) through first degrees (L6) up to doctorates (L8). Vocational equivalents to these are agreed by the Qualifications and Curriculum Authority and are mainly achieved through Learning and Skills Council (LSC) funded provision, which includes: Further Education (FE), Apprenticeships and Train to Gain (TtG).

The Labour Force Survey (LFS) is a household survey run by ONS. Around 15,000 separate households are contacted for the first time each quarter (Wave 1) and asked a series of questions by trained interviewers, including questions about the qualifications of those in the household. Where a household member is not present, responses may be provided by proxy. If available, these households are interviewed again in four successive quarters (Waves 2 to 5).

Qualifications attained through LSC-funded provision are identified in the Individualised Learner Record (ILR), which is managed by the Further Education Data Service. In recent years, the high growth rate in educational attainment observed from the ILR was not reflected in the growth rate observed in the LFS data. It is crucial that BIS are able to monitor attainment accurately if we are to ensure we are able to understand, develop and monitor Government policies.

BIS and ONS have therefore been working together on statistical research linking educational attainment in the ILR with LFS reporting. Outputs from this project will clarify whether misreporting occurs and, if it does, where it occurs and whether the levels of misreporting are changing over time. Further to this exploratory work, BIS and ONS have now instigated a substantial statistical review of the robustness of the existing method of measuring attainment using the LFS, to ensure that, going forward, it remains fit for purpose.

This paper sets out the main discussion points on the various issues that impact upon actual levels of attainment and other issues that arise in measuring attainment. The questions this paper discusses will need to be answered in full by the review work that will now be taken forward. The paper also provides information on the key steps of the review work that will be undertaken.

2. Differences between measurements based on the Labour Force Survey and administrative data

Attainment data are collected as part of the regular LFS quarterly survey. The LFS estimates are applied to population data to produce overall estimates of the numbers of adults qualified to certain levels. In the 2004 Comprehensive Spending Review a Public Service Agreement (PSA) target was set to reduce by at least 40 per cent the number of adults in the workforce who lack Level 2 or equivalent qualifications between 2001 and 2010. The Leitch Review of Skills (2007)¹ set out further ambitious targets to raise our skill levels to that of the top quartile of developed nations by 2020. Based on data up to and including Q4 2006, interim PSA targets for 2011 were set accordingly for working age adults, i.e. those aged 19-59/64, as follows:

- to increase the proportion of adults qualified to at least Level 2 to 79% (from 69.9% in Q4 2006).
- to increase the proportion of adults qualified to at least Level 3 to 56% (from 49.4% in Q4 2006).
- to increase the proportion of adults qualified to at least Level 4 to 34% by 2011 (from 30.0% in Q4 2001) and to 36% by 2014.

Since 2003, BIS has developed new policies and increased significantly the public funding of achievements at both full level 2 and full level 3. The main expansion in LSC funded learning in the past few years has been in Train to Gain (TtG) provision but delivery of Full L2 and L3 qualifications has also increased from Further Education (FE) and from Apprenticeships. Overall, the funding has resulted in a threefold increase in total L2 achievements between 2003/4 and 2007/8, and a doubling in L3 achievements. However, in spite of these increases in funded achievements, the proportion of adults holding levels of qualifications at L2 and L3 as measured by the LFS has increased only slightly over the past two years. The gap between growth in the LFS and growth in the administrative data also increased in 2008. This therefore raises questions about how well the current method using the LFS is measuring the level of qualifications held in the population.

As an illustration of the differences in the change in qualifications, the annual increase in L2 qualifications held within the population between Q4 2007 and Q4 2008 reported in the LFS was only 0.5 percentage points. However, the 240,000 publicly-funded first full achievements in 2008 would have been expected to produce a 0.8 percentage points increase by themselves. In addition, the replacement in the population of 59/64 year olds by better qualified 19 year olds, and privately-funded qualifications should have produced a further increase of around 0.6 percentage points. The LFS figure of 0.5 percentage points is significantly different from 1.4 percentage points (the sum of the estimated adult up-skilling and demographic changes).

BIS use detailed trajectory models, which as far as possible take into account factors such as: population changes through immigration, emigration and death; replacement of 59/64 year olds in the population by better qualified 19 year olds; publicly-funded achievements; and private upskilling. Starting from the Q4 2006 situation and applying the achievements observed, the models predict that 71.9% of the population would have been at Level 2 at Q4 2008. The Labour Force Survey reports 71.2%, which suggests it may be under-reporting by 0.7 percentage points relative to Q4 2006 (or around 210,000 people with L2 qualifications are under-reporting) i.e. there is evidence that under-reporting may have increased from 2006 to 2008.

Similarly for L3 qualifications, the annual increase since Q4 2007 was only 0.2 percentage points. However, 99,000 publicly-funded first full achievements in 2008 should, by themselves, have produced a 0.3 percentage points increase. In addition, privately-funded upskilling, and the replacement in the population of 59/64 year olds by better qualified 19 year olds should have produced a further increase of around 0.7 percentage points.

Starting from the situation at Q4 2006 and applying the achievements we have observed, BIS's trajectory models predict that 51.6% of the population should have been at Level 3 at Q4 2008. This suggests that the Labour Force Survey may be under-reporting by 0.8 percentage points relative to Q4 2006 (or around 240,000 people with L3 qualifications are under-reporting).

The situation for Level 4 and above (L4+) is less clear. It is more difficult to make comparisons between the Higher Education Statistics Agency (HESA) administrative data on HE attainment (numbers of first L4+ qualifications achieved each year) and the LFS data on L4+ attainment within the adult population. However, although the proportion of the population shown by the LFS to hold L4+ qualifications has fluctuated more in recent quarters than might be expected from random error, over a longer time period the rate of growth does seem to be broadly similar to that seen in the HESA attainment data. This fits with the intuitive expectation that degree level attainment is easier for respondents to report accurately on the LFS. Further analytical work in this area will establish the validity of this assumption.

ONS and BIS agree that the scale of the apparent differences between reported qualification levels in the Labour Force Survey and BIS models based on funded achievements warrants further investigation.

3. Factors affecting the underlying level of attainment in the population

The following section discusses the factors which control the amount of upskilling in the adult population and the degree to which they are understood. For simplicity, some of the detail is only described for Level 2 but findings are similar at Level 3.

3.1 Publicly-funded qualifications

The major impact on the annual increase of qualifications held in the population in recent years are the publicly-funded achievements funded by the Learning and Skills Council. The numbers of "first" full L2 and L3 achievements are obtained from the ILR. Details of all qualifications attained are recorded for each learner, so learners gaining two full L2 qualifications in a year are only counted once.

Only learners who are "first" i.e. who have not attained qualifications at this level before will increase the proportion of the population with L2 and L3 qualifications. "Firstness" has historically been measured by sample surveys, but more recently has been recorded on the ILR. It has been fairly low for FE (around 40%), but much higher for Train to Gain (around 70%).

3.2 Replacement of 60/65 year olds by better qualified 19 year olds

Every year the composition of the 19-59/64 population changes slightly. Relatively well-qualified 19 year olds replace less well-qualified 60/65 year olds who leave the target population. The effect of this is to increase the proportion of qualifications held

at L2+ in the population and it can be modelled fairly precisely. On average the number of people qualified to L2+ rises by 160,000 – 200,000 per year as a result.

3.3 Immigration

For people who were not born in the UK, the LFS records how long they have lived here. Based on the LFS data, we estimate that only 58% of people who arrived in the UK in the past 5 years held qualifications at L2 or above, compared to 72% of the general population. So immigration may be reducing the proportion of people at L2+ but only slightly, by around 0.1 percentage points per year.

The qualifications of immigrants are likely to be under-estimated because LFS interviewers are currently instructed to code foreign qualifications to 'other'. These 'other' qualifications are later apportioned to different levels, but research by the MORI Social Research Institute suggests the proportion holding L2+ may be under-estimated. Improvements are therefore required in the way foreign qualifications are treated in the LFS.

ONS has conducted researchⁱⁱ that shows there are significant barriers to the participation in the LFS of migrant populations with little or no command of English. It is unclear how the lack of participation from these groups would impact on attainment measures, but the research indicates some practical ways in which the survey materials and process might be better adapted to the target groups.

3.4 Death and emigration

Deaths in the target population are known accurately from administrative data. Emigration is estimated from the International Passenger Survey. The level of qualifications held by these groups is not known and in BIS models is assumed to be the same as that for the general population. However, the proportion of L2s in the population is not very sensitive to this assumption. For example, if emigrants and people who died were qualified at 10 percentage points above the national average then this would only reduce the percentage of L2s in the population by 0.1 percentage points.

3.5 Privately-funded up-skilling

A key question is whether increased Learning and Skills Council funding (eg for Train to Gain) is replacing some previously privately-funded up-skilling. There is no administrative data for privately-funded upskilling, but we can estimate this activity to some degree of accuracy. Our models suggest privately-funded up-skilling to be around 60,000 first L2s for most years since 2003. Furthermore, LFS analysis of who Level 2 achievers said had paid for their course suggests the number of privately-funded achievements has remained fairly steady in the last 3 years.

The issue of privately-funded up-skilling will be investigated further as part of the statistical research set out in section 6.

4. Possible reasons why the LFS may not measure attainment accurately

This section looks in more detail at attainment measurement issues in the LFS, setting out our findings to date and whether these issues have become more profound in recent years.

4.1 Does the LFS have trouble picking up some of the qualifications which are driving up attainment?

The LFS may have difficulty in picking up qualifications from particular age-groups (for example young people who may be hard to contact for interview, or for whom responses are more likely to be provided by other household members – i.e. by proxy) or particular qualification types (e.g. Vocationally Related Qualifications).

The Department for Children, Schools and Families (DCSF) provides information on the qualifications held by 18 and 19 year olds using matched administration data. This shows a 10 percentage point increase in all Level 2 and above qualifications held by 19 year olds from Q4 2004 to Q4 2008, but the LFS only shows a 2 percentage points rise over the same period. The situation is similar for 18 year olds. This suggests that the accuracy of reporting of qualifications held by these groups is changing in the LFS at a time when there has been a substantial increase in the use of vocational qualifications by schools and pupils.

As discussed in section 2, most of the increase in achievements has come through Train to Gain provision. All Train to Gain and apprenticeship qualifications and most FE qualifications are vocational (as opposed to academic). It may be that people are less inclined to remember vocational qualifications or that the questionnaire is not probing for them sufficiently.

4.2 Non-response bias and other sampling issues

ONS is considering undertaking more thorough research on non-response issues, expanded to a wider selection of low-response groups, which should help us to identify any issues more specific to attainment. Depending on the outcomes of any further research, ONS may take measures to adjust the weighting of the LFS and to improve the response through a targeted approach.

The overall response rate has fallen from 72.7% in spring (March to May) 1999 to 63.3% in Q1 (January to March) 2009 so there is potential for increased non-response bias in recent years.

Obviously in common with any other survey, sample variability will have some effect on the attainment estimates, i.e. every time a group of people is sampled the answers given will vary from those of the whole population, depending on how representative that particular sample is of the whole population (representative in terms of educational attainment in this case). Therefore, in using estimates published from sample surveys, allowance needs to be made for this level of variability, particularly in understanding change. For the LFS, sample variability can be lower than other surveys because in each quarter's results only wave 1 is a new sample, replacing the previous quarter's wave 5. This means that four-fifths of any quarter's data are drawn from the same sample as the previous quarter and we should only be observing real change.

4.3 What impacts might the evolution of the questionnaire have had on attainment measures?

One of the main concerns of LFS data users is maintaining the consistency of the data gathered. LFS data is often used for time-series analysis, and any changes to the questionnaire should have minimal impact on the reliability of any time series analysis.

As a result, the LFS education and training section has changed and developed gradually, with each new change introduced incrementally. Because of this incremental change, some elements of the education and training section are now rather lengthy and unwieldy and this may be impacting upon the quality of qualifications data. However, any more substantial review of the education and training section would need to be carefully managed, to ensure that any discontinuities are minimised and well understood.

The historical data may also be affected to varying degrees by those minor questionnaire design changes that have been made. For example, in Q1 2007 the introduction of a soft check on the main apprenticeship question unexpectedly resulted in a noticeable fall in reporting of apprenticeship attainment. Although the soft checks were removed in Q2 2008, it has taken some time for the data to stabilise. However, we believe this has had a small impact on the overall attainment estimates.

5. Possible reasons why the ILR may not measure attainment accurately

The Further Education Data Service collects the administrative FE data in order to inform funding decisions. This necessarily means that efforts to improve data quality have historically been focussed on those data items that directly affect funding.

Key issues that have been considered in recent work on ILR data quality include:

- Are there learners recorded as completing a course that they started but did not finish?
- Are there learners who were assigned the wrong qualifications on the ILR, compared with what they actually achieved?
- Are there learners whose personal details on the ILR are incorrect, meaning that they are wrongly recorded as attaining certain qualifications?

Overall, BIS's investigations in these areas have showed that, as a result of the audit controls in place on funding, these errors are very unlikely to occur. In fact, there was some evidence that providers are more likely to under-report attainment, through not completing some returns. As a result, data on total numbers of attainments and on types of qualifications attained tend to be of very high quality.

However, where data are not used for funding purposes there can be some issues similar to those experienced when conducting surveys. Some of the issues that may affect the other data types that provide context to the attainment data include:

- Age data can be subject to reporting and processing errors;
- Information not directly related to the course will be self declared and therefore subject to issues such as recall, e.g. data on employer details, employment both prior and subsequent to a course, or data on prior attainment;
- The structure of qualifications data can also make comparisons difficult, in terms of identifying specific qualification types.

BIS and the Further Education Data Service are continually working to ensure that all of the data collected are fit for purpose and fields such as prior attainment have seen significant improvements in recent years.

6. Next Steps

There are a number of areas where further work is required to ensure that the LFS provides, and continues to provide, fit for purpose data on educational attainment and related measures.

BIS and ONS are continuing a project to conduct “Wave 6” follow-up work on the LFS, which is using cognitive and quantitative work to test alternative ways of structuring both individual questions and the education and training section of the LFS as a whole. This work will be used alongside user workshops and other consultation within Government to ensure the education and training section of the LFS remains fit for purpose going forward.

BIS and ONS have also instigated a project to review how well the LFS and administrative sources currently report on attainment and identify improvements to be made to these measures. In order to produce an authoritative and transparent report on these issues, the project has a number of components.

BIS and ONS have initially been working together to produce matched data sets of LFS and ILR records to provide the evidence to establish whether the current measure is appropriate.

A statistical research team has now been appointed to take forward this work in the following areas:

- Clarify the extent to which any misreporting may be occurring and how this may have changed over time;
- Understand in more detail the strengths and weaknesses of all of the available data sources on attainment;
- Review the robustness of the existing method of measuring attainment using the LFS;
- Identify what improvements might be required to ensure the attainment measures are fit for purpose at the present time;
- Offer views on how the attainment measures should continue to be improved in the light of future changes to the education and training questionnaire.

A statistical quality reviewer has also been appointed to:

- Provide an independent check on the objectives of the work.
- Provide an independent check on the statistical methods being used.
- Independently review the detailed statistical work undertaken.
- Provide an independent check on the conclusion and outcomes of the work.

A first progress report on the findings from this review will be produced in the autumn and it is intended that informal but inclusive consultation will take place at this time through various user groups and other forums. A full report will then be published in early 2010 setting out the final conclusions of the review and any proposed improvements to the estimates.

ⁱ http://www.hm-treasury.gov.uk/leitch_review_index.htm

ⁱⁱ *Improving Migrant Participation in the Labour Force Survey: Non-response and Attitudes of Non-English Speaking Migrants to Participation*.
Author: Marilyn Thomas, Published in: ONS Survey Methodology Bulletin Issue 63, September 2008