

# 9 Education

## Introduction

**9.1** This chapter explains the current UK Education output measure, and recommendations for the future, in five sections.

- Introduction – including scope and objectives for public spending on education
- Current methods of output measurement, and a critique against the criteria in Recommendation 6.1 (see paragraph 6.5)
- Future methods of output measurement
- Inputs and deflators
- Triangulation and productivity measurement

**9.2** Education is the second largest area of government expenditure, after Health: 17 per cent of government final consumption in 2003. Most spending is through local authorities, on maintained schools, but there is also central government expenditure including procurement of courses for health professionals and initial teacher training. General government expenditure does not include education funded through grants and transfers. For this reason, further education (FE) and higher education (HE) institutions are excluded. Government funding for nursery school places outside maintained nursery and primary schools is currently defined as a transfer; however after discussion between the review team and ONS, it has been agreed that this should be reclassified as expenditure. Education is the responsibility of the Department for Education and Skills (DfES) in England and of the Devolved Administrations in Scotland, Wales and Northern Ireland, and there are some important differences in the education systems across the United Kingdom.

**9.3** The DfES Annual Report (2004) states that its aim is ‘to help build a competitive economy and inclusive society by creating opportunities for everyone to develop their learning; releasing potential in people to make the most of themselves; and achieving excellence in standards of education and levels of skills.’ The DfES Public Service Agreement (PSA) 2004 includes targets for schools ‘to raise standards and tackle the attainment gap in schools:

Raise standards in English and maths so that:

- by 2006, 85 per cent of 11 year olds achieve level 4 or above, with this level of performance sustained to 2008; and

- by 2008, the proportion of schools in which fewer than 65 per cent of pupils achieve level 4 or above is reduced by 40 per cent.

Raise standards in English, maths, ICT and science in secondary education so that:

- by 2007, 85 per cent of 14 year olds achieve level 5 or above in English, maths and ICT (80 per cent in science) nationally, with this level of performance sustained to 2008; and
- by 2008, in all schools at least 50 per cent of pupils achieve level 5 or above in each of English, maths and science.

Improve levels of school attendance so that by 2008, school absence is reduced by 8 per cent compared to 2003.

By 2008, ... in all schools at least 20 per cent of pupils to achieve the equivalent of 5 GCSEs at grades A\* to C by 2004, rising to 25 per cent by 2006 and 30 per cent by 2008.

Enhance the take-up of sporting opportunities by five to sixteen year olds so that the percentage of school children in England who spend a minimum of two hours each week on high quality PE and school sport within and beyond the curriculum increases from 25 per cent in 2002 to 75 per cent by 2006 and to 85 per cent by 2008.<sup>7</sup>

**9.4** In Scotland, since devolution in 1999, the Scottish Executive is responsible for education policy. The Standards in Scotland's Schools etc Act 2000 defines the purpose of school education: 'to encourage the development of the personality, talents and mental and physical abilities of the young person to their fullest potential'. The Act set five National Priorities in Education, which set out the long term strategic direction for Scottish education and ensure that improvement encompasses the whole needs of the young person and the whole life of the school. The recent publication *Ambitious Excellent Schools* outlines the Scottish Executive's agenda for action in the coming years.

**9.5** The Scottish Executive's commitments for education include:

- increasing the number of teachers to 53,000 by 2007 and target these additional teachers on reducing class sizes for S1/S2 Maths and English and for P1;
- providing a modern, high quality learning environment through the completion of 300 either new or substantially refurbished schools by 2009; and
- increase the average tariff score of the lowest attaining 20 per cent of S4 pupils by 5 per cent by 2008.

**9.6** The Welsh Assembly Government has responsibility for education policy in Wales. The aim outlined in *Wales: A Better Country* is to ensure that education and training contributes to personal fulfilment, wealth creation, social cohesion and cultural enrichment. The approach taken ‘will overhaul all aspects of learning ... establishing new structures and frameworks for 3-7 year olds; better transition from primary to secondary schools; a new approach to 14-19 years which will allow for greater variation in what is taught (including the related Welsh Bacalaureate qualification)’. The Assembly’s commitments include:

- getting the worst performing schools to catch up with the ever improving performance of the best;
- reform of the 14-19 age range curriculum, extending education at school into life-long learning as an adult;
- development of a new 3-7 curriculum;
- ensuring that by the end of the decade, no pupil in Wales leaves school without qualifications; and
- cutting junior school class sizes.

**9.7** In Northern Ireland, the Department of Education’s vision is ‘to educate and develop the young people of Northern Ireland to the highest possible standards, providing equality of access to all’. The PSA targets include:

‘To promote improvement in educational attainment so that:

- By 2008, 80 per cent of primary pupils to achieve level 4 or above in Key Stage 2 in English and 83 per cent in Maths (compared to 76% and 78% Maths in 2002–03);
- By 2008, 63 per cent of year 12 pupils to obtain 5 or more GCSEs (or equivalent) at grades A\* to C (compared to 59% in 2002–03); and
- By 2008, 60 per cent of year 14 pupils achieving 3+ A levels at grades A to C (or equivalent) (compared to 56% in 2002–03).

To reduce differentials in educational attainment so that:

- By 2008, 70 per cent of pupils in the most disadvantaged primary schools, to achieve level 4 or above in Key Stage 2 in English and in Maths compared to 63% in English and 67% in Maths in 2002/03.
- By 2008, 83 per cent of year 12 pupils in secondary schools to obtain 5 or more GCSEs at grades A\* to G (or equivalent) compared to 80% in 2002–03.
- By 2008, 94 per cent of year 12 pupils gaining GCSEs at A\* to G (or equivalent) in the most disadvantaged post-primary schools compared to 89% in 2002–03.’

- 9.8** These education aims and targets are broader than the outputs measured in the National Accounts. Pupil attainment is relevant to Education output, and we propose, in paragraphs 9.20-9.34, ways of using information about examination results to measure the quality of Education output. The targets also include equity: this is a legitimate area for policy objectives and targets, but not relevant to national accounts measures. Some targets relate to physical fitness and health, a reminder of the issue of joint production covered in paragraphs 6.22-6.25.

### Current Methods of Output Measurement, and Critique

- 9.9** Direct measurement of Education output was introduced into the National Accounts in 1998, backdated to 1986. The output measure relates to government maintained schools in the United Kingdom. In 2004, ONS also introduced an output measure for higher education courses for health professionals, purchased by the National Health Service (NHS). This section describes the current methods and comments on them against the criteria in Recommendation 6.1 (see paragraph 6.5).

#### Schools

- 9.10** The full time equivalent (fte) number of school pupils in the United Kingdom is used as the basis of the Education output measure. The fte pupils in the four types of maintained school (nursery, primary, secondary and special schools) are added together using cost-weighting by type of school, based on total UK expenditure for that type of school. The cost weights have not been updated since 2000. International guidance suggests that pupil hours or pupil numbers should be used to measure education output (together with a quality adjustment). In the National Accounts, fte pupil numbers are used rather than pupil hours. Information is not available in England to measure pupil hours, but DfES advise that they are not expected to have changed over recent years and are not necessarily a better measure than pupil numbers, or attendance (discussed in paragraph 9.18).
- 9.11** A quality adjustment of +0.25 per cent is applied to total cost weighted pupil numbers, omitting those in nursery and special schools. Its basis is that the quality of educational services delivered can be proxied by exam success. The quality adjustment was introduced in 1998 and backdated to 1986. It was based on the trend in the average points score (APS) from General Certificate of Secondary Education (GCSE) results over a period of four years in the mid 1990s, in England only, for pupils who were 15 or younger at the start of the year they took the exam. It has not been updated to verify whether subsequent cohorts of pupils achieved the same improvement. The quality adjustment is applied to school pupils aged 16-18 but there is no separate quality measure of their examination attainments.
- 9.12** Overall pupil numbers are fairly stable but there are underlying trends, with a rising trend to 2001 and then a gradual fall, which is due to a decline in primary school numbers; secondary school numbers are still rising. Figure 4.2 in Chapter 4 shows the trend in a measure based on pupil numbers over a long run of years. The chart shows the Education output trend with the 0.25 per cent quality adjustment and the output trend with no quality adjustment.

**9.13** The current measure for output from schools meets many of the criteria in recommendation 6.1, but could be improved by measuring actual school attendance rather than registered pupil numbers, since those who are not at school are not benefiting. The quality adjustment should be revised or updated, and based on a wider range of information including attainment results from Scotland, Wales and Northern Ireland, and should take account of the success of education given to pupils aged 16 and over.

### Health professionals' courses

**9.14** Government expenditure in the National Accounts is classified by purpose, rather than by the responsible government department. In June 2004, a change was made to the National Accounts to reclassify the Department of Health's (DH's) spending on non-medical health professional education from Health into the Education category of government expenditure. The expenditure goes from NHS bodies to universities to purchase places on diploma or degree courses in nursing and allied health professional training. Many of these are three-year courses taken by students who are not employed by the NHS but intend to make a career in health care. Some students may be current NHS employees taking further qualifications. (University education in medicine and dentistry is funded differently and is outside general government expenditure, as is generally the position for higher education.)

**9.15** There was no specific output measure for this expenditure when it was included in the Health category of the accounts. After reclassification, an output measure was introduced, using the number of new students each year on courses in England, with no cost weighting for different types of course. No quality measure is used. The number of new students in England is used as a proxy for UK output, matched to NHS expenditure on non-medical health professional education in England. This is grossed up by the ratio of England to UK population to give estimated UK output.

**9.16** This measure could be improved by making use of more detailed information about cost weights of different courses, by including actual student numbers and spending figures from Scotland, Wales and Northern Ireland, and by finding a quality measure.

### Future Methods of Output Measurement

**9.17** This section sets out our recommendations for change in the measure of Education output in the National Accounts. These follow the criteria for new measures and replacement measures in Chapter 6 of this report, with improvements in extending coverage, increasing the level of detail at which output indicators are measured, revisions of the weightings used to combine measures, plans to introduce quality adjustment in some areas and revision of the current quality adjustment for school education output.

### Schools output

- 9.18** We propose that pupil attendance is used, rather than the number of pupils, on the basis that it provides a better measure of pupils who are actually being taught in schools. Pupil attendance can be calculated from information collected on pupil numbers and pupil absence, by type of school, though Northern Ireland do not have information on absence for primary or special schools. Absence levels in England have changed over recent years: it is a key DfES objective to reduce absence levels and pupil absence is currently at its lowest level for ten years. This, in part, reflects additional expenditure and effort in improving management of attendance. In addition, the cost weights for different types of schools should be updated annually, under the chain linking method used elsewhere in the National Accounts.
- 9.19 Recommendation 9.1:** we recommend that pupil attendance, rather than the number of pupils, should be used as the volume measure of output, and that school cost weights should be updated annually.
- 9.20** The review team has worked with DfES to develop an improved quality measure of output for schools in England. DfES have developed a number of approaches and plan to describe their work in a published discussion paper later in 2005. The work includes options for measuring pupil attainment and pupil progress through the key stages, or by GCSE results, and estimating the value of education in terms of future earnings (see paragraphs 9.33-9.34). We hope this work will be the basis of a measure which ONS could use in the longer term, taking account of any wider comments on the interesting DfES proposals.
- 9.21** The quality adjustment was based on England results, used as a proxy for the United Kingdom. Quality adjustment measures are currently being considered for school output for England, Scotland, Wales and Northern Ireland. The methodology ought to be consistent across the United Kingdom; however, there are differences between educational systems, including the timing and nature of examinations or key stage assessments, and these may affect the approach to be taken. We have discussed the issues with the Devolved Administrations during the review, to see how ONS can improve on an assumption that quality change in the English educational system is an accurate proxy for change in the other countries of the United Kingdom. All countries have shown interest and commitment to contributing to the review. ONS and the Devolved Administrations need to continue this work so that information for Scotland, Wales and Northern Ireland is included where this is possible.
- 9.22** There are a number of issues for further work and public comment, and we have had to consider whether to advise that the current 0.25 per cent quality adjustment should continue meanwhile, or whether to advise an interim revision. We think an interim update should be considered seriously, not least because it will allow for fuller exploration of the options for a comprehensive, UK wide quality adjustment to be adopted in the future.

**9.23** We consider that, rather than continuing to rely on an out of date calculation, the current quality adjustment should be updated by using similar information to the previous measure (i.e. APS for GCSE results achieved by age 16), but using more information and more recent years. As an interim measure, this might still be based on results in England only, but it would be preferable for ONS to work with the Devolved Administrations to make use of results from all four countries in the United Kingdom, taking account of the different exam systems. In Scotland, the average tariff score of S4 pupils could be used.

**9.24** The GCSE results are the outcome of 11 years of compulsory schooling. The main drawback with this measure is that a time lag of 11 years is therefore required to measure the attainment of all 11 cohorts of pupils in any year. This could be handled by making projections for future years based on current trends and expectations, but the most appropriate method would have to be considered. Each year, retrospective adjustments would be made using actual GCSE results to replace predicted results. As discussed in paragraph 6.37, education results in one year may be attributable to an investment in increased resources, or new teaching methods, many years earlier. This should be recognised in the analysis and interpretation of results, and possibly in any intermediate estimates.

**9.25** An interim updated GCSE measure has a number of advantages.

- It continues to use GCSE APS results for the quality adjustment, like the current quality measure.
- It can make use of the long time trend available for GCSE results.
- It is relatively simple to use and the method and data will be transparent, and easier for Devolved Administrations to implement.
- It provides a measure of the final outcome of compulsory schooling (ages 5 to 16) in England.
- It would be more defensible than continuing a calculation, with no mechanism for annual review, based on changes in the education system in the mid 1990s.

**9.26 Recommendation 9.2:** we recommend that ONS should update and revise the quality adjustment factor for schools, using later information about GCSE results, and if possible also information from all parts of the United Kingdom.

**9.27** For the future, the review team and DfES have explored the potential for using alternative approaches for measuring quality based on:

- pupil attainment;
- quality of teaching; and
- class size.

Our work has included consideration of the value of education in terms of future earnings.

### Pupil attainment

- 9.28** DfES have worked on a number of approaches and plan to describe their work in the forthcoming discussion paper. In addition to methods based on GCSE results, the paper will examine alternative approaches to measuring pupil attainment. In England, pupils are assessed at the end of the key stages of school education by key stage tests (see box). DfES have produced methods for measuring progress between the key stages. Briefly, the quality of education output would increase if pupils make more progress between key stages than would be expected, based on past experience. More detail of possible methods was given in our Interim Report.

In the current compulsory education system in England, pupils are required to sit statutory tests at ages 7, 11 and 14 and GCSE exams at age 16. The tests aim to assess the knowledge and skills gained by pupils over the period of the four key stages of education. The tests are called Key Stage 1, Key Stage 2, Key Stage 3 and Key Stage 4 (or GCSE) respectively.

- 9.29** In Scotland, the Scottish Survey of Attainment will be introduced in 2005 and will report annually on the results of a sample-based survey of pupils in the school years P3, P5, P7 and S2 for English, mathematics, science and social subjects. This will provide national level information on primary and early secondary school attainment.

In the current education system in Scotland the 'key stages' in terms of the Scottish Survey of Attainment will be P3 (age seven), P5 (age nine), P7 (age 11) and S2 (age 13). Final exams take place in S4 (age 15), for Standard Grades (broadly similar to GCSEs); in S5 (age 16) and S6 (age 17) pupils are likely to sit Highers and Advanced Highers.

- 9.30** DfES have started to consider ways in which a quality adjustment for education of school pupils aged 16 and over can be measured. The GCSE based quality measure will need to be reviewed when the way in which pupils take exams becomes more flexible, as a result of 14 to 19 education policies in England. Following a review of the curriculum in Scotland, the Scottish Ministers' response to the recommendations of the Curriculum Review Group include the abolition of Age and Stage regulations (which state when young people can sit exams) by the end of 2005, and the introduction of guidelines. It is important for ONS and DfES to work with the Devolved Administrations so that future quality adjustments take account of educational systems and results in all parts of the United Kingdom.

- 9.31** One area of concern when using test and exam results is whether standards have been maintained over time. In England, the Qualification and Curriculum Authority (QCA) is responsible for regulating the public examination system. The Scottish Qualifications Authority are responsible for regulating the examination system in Scotland, to ensure that standards are maintained at a consistent level for each year. We discussed with the QCA their work on setting, maintaining and monitoring examination standards. The examination bodies have rigorous procedures in place to ensure that standards remain constant year on year and the role of QCA is to ensure the consistency of those standards over a longer period. QCA has in place a rolling programme of standards reviews which looks at the syllabuses, question papers and candidates' work over time.
- 9.32** QCA's view is that, over the last five years, standards in England have remained constant. However, in the longer term it is more difficult to guarantee maintenance of standards, because of major changes in syllabuses. Where QCA's monitoring of examination evidence suggests any changes in standards, action is taken to set appropriate standards in the following year. Given this form of correction, it may be preferable to measure average exam results over several years, rather than a single year.
- 9.33** The DfES paper will set out their work on measurement of the value of education output in terms of future earnings, which has been based on discussions with the review team. In Chapter 4, we drew on the parallel with the private sector, and this was embodied in Principle A (see paragraph 4.7). In order to apply this principle, we have, in the absence of market transactions, to infer the value that would be attached, and the account that would be taken of quality change. The example was given of driving schools, and the contribution of driving lessons to passing the driving test. Passing the test has a value to the individual concerned. Taking the specific example of Heavy Goods Vehicle (HGV) driving licences, we can see that the acquisition of the licence adds to the person's earnings prospects. Other things being equal, the wage premium associated with the possession of an HGV licence rises over time in real terms with the level of real earnings. Historically, in the United Kingdom, the annual increase in real earnings has averaged around 1½ per cent.
- 9.34** In principle, the argument of the previous paragraph applies to educational qualifications in general. An adjustment of 1-1.5 per cent per annum would close the gap identified in Chapter 4 (see paragraph 4.32) between a demographic-based output measure and growing GDP. It would recognise the complementarity between public and private output. At the same time, the magnitude of the adjustment is much larger than that associated with the improvement in qualifications (with which it is additive). Moreover, as far as we know, no other country yet makes such an adjustment. These are grounds for proceeding cautiously, and ensuring that the adjustment commands wide support in principle before it is implemented. But we recommend that ONS give serious consideration to the earnings adjustment. Not to make such an addition would miss an important part of the contribution of public output.

### Quality of teaching

**9.35** Quality of education could be measured through school inspections. In England, this would mean using the quality judgements made about schools in inspections undertaken by the Office for Standards in Education (Ofsted). In Scotland, HM Inspectorate of Education is responsible for inspecting schools.

**9.36** Ofsted quality judgements about individual schools in England could be summarised to measure changes in the quality of education. For example, the percentage of schools judged as good and above for teacher quality could be used as an annual measure of quality. There are a number of advantages, which could justify the use of Ofsted assessments.

- Ofsted advised us that, although frameworks for inspection have evolved, the method of judging teaching quality had been one of the more stable elements. There are checks and balances to ensure consistency in inspection standards, with inspectors working to a common framework and themselves subject to monitoring and scrutiny.
- Inspections cover all aspects of education, not just examination scores.
- Ofsted have an unrivalled depth and breadth of knowledge about the quality of schools.
- Judgements are recorded on a seven-point scale, from excellent to very poor.
- Ofsted ensure that its annual summary of inspection results is nationally representative by using appropriate weights for the numbers of different types of schools inspected.

**9.37** But there would also be a number of difficulties.

- Ofsted continually reviews and changes its inspection procedures. This makes long term comparisons difficult. The Ofsted results are not designed for monitoring long-term trends.
- Schools prepare for Ofsted inspection and there may be an artificial climate, and no certainty that the criteria for teaching and school quality would be consistent across schools and time.
- There are discontinuities, such as a major change in how judgements were made and recorded in April 1996 (each point of the seven-point scale was given a description, this had a significant effect on the way judgements were made).
- The next changes, planned for September 2005, will be an even bigger step change as they will (subject to consultation) introduce a four-point scale. For comparative purposes, it is unlikely that there will be an easy read across from one scale to the other.
- From September 2005, the inspection cycle will change from 6 years to 3 years and the inspection process will change to no or very little notice, with a substantially reduced amount of inspection coverage.

**9.38** This is an interesting area. We do not recommend using Ofsted results directly in output measures at this time, but they should be kept under review, and used in the triangulation work discussed in Chapter 4 and later in this chapter.

#### Quality of resources based on class size

**9.39** An alternative approach for measuring quality would be to use class size, or an adult/pupil ratio, on the assumption that the smaller the teacher/pupil or adult/pupil ratio the better the quality of learning. But clear evidence of these relationships would have to be established.

**9.40** Class sizes in infant schools (for five, six and seven year olds) were reduced to a statutory maximum of 30 from September 2001 as part of the drive to raise standards in schools in England. There are no plans to require further reduction in class sizes, which have reduced slightly over recent years. In Scotland, there is a commitment to reduce the size of S1/S2 for Maths and English, and to reduce the size of P1. Although there may be advantages in having smaller classes in some circumstances, the case is not proven that reducing class size alone would improve quality.

**9.41** Schools in recent years have taken on a greater number of classroom support staff, increasing the adult/pupil ratio. Support staff can directly help pupil learning. Support staff can also take some of the administration work from teachers to increase teachers' time with pupils. This change in the mix of skills can be considered in the wider examination of education productivity, but it would be wrong to presume that outputs have changed just by measuring the change in quality-adjusted inputs.

**9.42** **Recommendation 9.3:** we recommend that ONS and the four education departments should continue to work on a longer term revision of the quality adjustment for the schools output measure. This should take full account of results from throughout the United Kingdom, measure if possible the quality of education delivered at younger ages rather than relying on examinations at age 16 to proxy the whole education output, include information about attainment of school pupils who are 16 and over, and consider an adjustment to reflect the value of education for future earnings. We regard the sources of information on quality of teaching and class size as useful for assessment in productivity articles rather than the National Accounts measure.

#### Initial Teacher Training courses

**9.43** Central government expenditure includes the procurement of Initial Teacher Training (ITT) courses. This gives scope for a new output measure, mirroring that which ONS introduced in 2004 for health professionals' courses. The number of students taking ITT courses can be used as the output measure, classified and cost weighted by type of course, updating the weights each year. Data are available to construct a time series back to 1995. Initially, England would be used as a proxy for the United Kingdom and no quality adjustment would be made. However, it is desirable to add Devolved Administration data as soon as possible, and quality issues should be examined further.

- 9.44 Recommendation 9.4:** we recommend that ONS should introduce a new output measure for Initial Teacher Training courses, using a cost weighted index of student numbers. This should, as soon as possible, include information from the Devolved Administrations, and further work should be done to develop a quality measure.

#### Health professionals' courses

- 9.45** The current measure is the number of new students per year in England, cost weighted by the total cost of the courses in the base year, currently 2000. We recommend that the current output measure is revised, by using total student numbers, adding detail by type of course and updating the cost weights each year. The new measure would be the number of students per year by course type, cost weighted by the cost of the type of course, with cost weights updated each year. England could still be used as a proxy for the United Kingdom but it is desirable to add Devolved Administration data as soon as possible.
- 9.46** The Quality Assurance Agency for Higher Education (QAA) is starting to devise a quality assurance arrangement in health care education in England. This could provide a future source of quality measurement. Alternatively, there may be scope to use student attrition data from the Higher Education Statistics Agency (HESA), as an indicator of quality.
- 9.47 Recommendation 9.5:** we recommend that the health professional education output measure is updated by using total student numbers, cost weighted by type of course, with UK data added as soon as possible, and working towards a quality adjustment based on Quality Assurance Agency for Higher Education or Higher Education Statistics Agency information.

#### Nursery places

- 9.48** Public funding for private nursery places for three and four year olds is currently treated as a transfer in National Accounts. After discussion between the review team and ONS, it has been agreed that this should be considered to be direct purchase and included in general government expenditure on Education. The new output measure proposed is the total number of filled nursery places per year; with annually updated cost weighting. Initially, England would be used as a proxy for the United Kingdom and no quality adjustment would be made. However, full UK coverage should be achieved as soon as possible, and the possibility of a quality measure should be examined further, perhaps taking account of Ofsted inspections of provision for under 5s.
- 9.49 Recommendation 9.6:** we recommend that a new output measure should be introduced for publicly funded private nursery places, including inclusion of information for all parts of the United Kingdom and consideration of how to develop a quality measure.

## Inputs and Deflators

### Inputs

**9.50** General government Education expenditure on schools occurs at four levels: schools (nursery, primary, secondary and special), local authority, central government spend and non-departmental public bodies. There are three components of input expenditure: labour, intermediate consumption and capital consumption. In 2003, at current prices, labour accounted for around 75 per cent of Education inputs, goods and services for 22 per cent and capital consumption for three per cent. Table 9.1 presents figures of the various Education components at current prices; these figures are consistent with *Blue Book 2004*.

Table 9.1 Expenditure on general government Education inputs: labour, intermediate consumption and capital consumption, current prices, UK

£m	1995	1996	1997	1998	1999	2000	2001	2002	2003
Labour	17,960	18,246	18,788	19,560	20,928	22,663	25,008	27,208	29,557
Intermediate consumption	6,495	6,612	6,712	7,050	6,965	7,086	7,261	8,236	8,776
Capital consumption	1,055	1,073	1,073	1,098	1,128	1,171	1,211	1,247	1,273
Total	25,510	25,931	26,573	27,708	29,021	30,920	33,480	36,691	39,606

Source: Office for National Statistics

**9.51** Expenditure figures for the National Accounts are obtained from several different accounting sources. The sources for local authority data are the Office for the Deputy Prime Minister (ODPM) and DfES for England, the Scottish Executive for Scotland, the Welsh Assembly for Wales, and the Treasury for Northern Ireland. Chapter 5 explains the data flows and issues which arise.

**9.52** For England, local authority expenditure data on labour and goods and services are obtained from the Revenue Outturn 1 (RO1) form supplied by the ODPM. The RO suite of forms divides local authority services into key areas: employees, running expenses and total expenditure. However, for the National Accounts, the figures need to be adjusted to remove transfers, subsidies and grants. This detail is not given on the RO1 forms, so ONS obtains it from the section 52 form, which local authorities send to DfES, and assumes both forms are consistent. However, inconsistencies in the data have been discovered by ONS and the Treasury and the review team have consulted DfES, ODPM, the Treasury and CIPFA on why the differences are occurring and to investigate how this can be resolved. ONS and the other departments should continue to work on this.

**9.53** The Teaching Training Agency purchases teaching training courses from higher education institutions and provide financial information via DfES. Spending by NHS bodies on health professional education is reported via DH. Both are classified as intermediate consumption.

## Deflators

- 9.54** The review is also considering price indices used to ensure that the most appropriate adjustment is made to convert expenditure to constant prices. Using the criteria proposed in Recommendation 5.9 and Table 5.1, we have been working with DfES to produce new deflators that cover England. We have discussed this with the Devolved Administrations and it is hoped that country specific education deflators can be developed.
- 9.55** Expenditure on labour is by far the biggest area of Education spend. Previously, deflation of labour was calculated using a local authority education pay index supplied by ODPM to deflate all local authority labour expenditure. The ODPM pay index included national insurance contributions and pension contributions. However, the pay index used headline pay settlements, though it would be preferable to deflate by changes in average earnings for different staff groups. The figures covered England and Wales but did not include teachers' pay in Scotland and Northern Ireland. Costs of all groups of staff, i.e. teachers, support and administration staff, were deflated using the same ODPM pay index.
- 9.56** Work has been carried out to address these weaknesses, but more remains to be done. ONS and DfES have developed a more robust and responsive method that measures changes in earnings of the different groups employed. This needs to be developed further to take account of national insurance and superannuation contributions. The DfES database of teachers' records holds information (for pension purposes) on the average earnings of all teachers. The movement in earnings is used to obtain measures of changes in the average earnings of teachers. For support, administration and other staff, the public sector average earnings index (AEI) would be an improvement on the existing methodology while a more appropriate index is developed. Given that the number and expenditure on school support staff has increased significantly over the last few years, it is important to deflate this expenditure accurately.
- 9.57** Intermediate consumption represents 22 per cent of total education current expenditure in 2003. Education goods and services include the purchase of teaching aids, books and stationery, electricity and other utilities. The ideal method for deflating goods and services would be to apply specific price indices on a product-by-product basis. Previously, a combination of Producer Prices Indices and the Retail Prices Index excluding mortgage interest payments (RPIX) was used as a deflator. ONS and DfES have carried out further work and are progressing towards improved deflators for use in this area.
- 9.58** The inclusion in output of health professional higher education courses, and the proposal to include initial teacher training courses, means these costs should be separately deflated. Currently, RPIX is used as the deflator. However it would be better to use price indices that measure specific movements in the cost of these higher education courses. ONS and DfES should continue researching more appropriate higher education deflators.

- 9.59** Government purchase of private nursery places should be separately deflated. Initially, RPIX could be used as the deflator. However, ONS and DfES should investigate a better price deflator.
- 9.60** **Recommendation 9.7:** we recommend that ONS and the four Education departments should continue to work together to improve accuracy, timeliness and classification of figures for Education spending, and suitable deflators to measure volume of spending in a way which takes account of changes in the quality of inputs.

## Productivity and Triangulation

- 9.61** ONS plans to produce an education productivity article later in 2005, to analyse figures based on the National Accounts, for inputs and outputs, and estimate productivity change, using the best available deflators. The intention is to make use also of alternative estimates of outputs to be published separately by DfES, which do not yet form part of the National Accounts. It would be helpful to set these various figures for estimated change in outputs in the context of changes in staffing and resources. Expenditure in schools could be linked more accurately to achievements where there is a lagged delivery. Pupil key stage results could be linked to inputs over relevant preceding years.
- 9.62** Such a publication would be very helpful. It could also include triangulation information – evidence on quality change and productivity from other sources. This would enable measures based on pupil attainment to be placed in context and compared for example with results of Ofsted inspection reports on teaching quality (see paragraphs 9.35-9.38). Other sources of evidence include international comparisons of pupil attainment, and public satisfaction surveys. The Efficiency Technical Note, published by DfES and the Treasury as part of the 2004 Spending Review, sets out a range of detailed ways of measuring improvements in efficiency in school, such as reductions in teachers' time spent on particular administrative tasks as a result of delegation to classroom assistants, and savings in costs of supply teachers by extending the roles of school support staff. The results of these measurements could usefully be considered in future productivity articles. Over time, the triangulation section could be extended by reviewing relevant government, academic and international reports and research on education output and productivity.
- 9.63** It would be desirable for ONS to publish a series of education productivity articles, updating and expanding the range of analysis and research in each new article. For example, articles could look at education in the Devolved Administrations, examining the output, outcomes and productivity and the wider triangulation evidence for Scotland, Wales and Northern Ireland. Other areas that could be examined in more detail would be the health professional and initial teacher training courses and nursery provision procured by government.

- 9.64** In the longer term, analysis of outputs from education could be extended more widely. There is a logical progression into exploring quality adjusted output measures for all higher and further education: these are currently classified outside general government in the United Kingdom, though most other European countries include this area of education in their non-market education area. In a wider sense, education funded privately by households, and training funded by employers, also contribute to future earnings growth and other benefits of education and it would be interesting to identify figures on inputs and outputs equivalent to those used for general government expenditure. These could be explored in a satellite account on human capital resource formation, as proposed in Recommendation 7.5 (see paragraph 7.20).
- 9.65** **Recommendation 9.8:** we recommend that ONS and the four Education departments should continue to work together on analysis of education output and productivity change, using the National Accounts and other sources, to be published in productivity articles and through development of a satellite account for human capital resource formation.