

12 Executive Summary

Key Points

Highly challenging task

The task with which we have been faced is highly challenging. How we measure government non-marketed output can make a considerable difference to the recorded growth rate of the economy. Yet the absence of market transactions means that it is hard to place a value on the services provided.

Convention that (output=input)

In the face of these difficulties, some might wish to return to the earlier convention that (output=input). If we were to do so, there would still be problems. Much of our report has been concerned with the shortcomings of present measures of inputs. Our investigations have shown the complexity of data flows and weaknesses in the processing chain; we have identified issues regarding the definition and classification of government spending; we are concerned about timeliness; we have recommended the development of measures of capital services; we have recommended the specification of criteria for price deflators. All of these are necessary if ONS is to provide reliable National Accounts measures of government inputs. They are necessary to measure accurately the resources absorbed by the public sector in assessing the macroeconomic supply and demand balance.

Direct measures of output should be used

It is not, however, possible for the United Kingdom to return to the convention that government (output=input). The 2002 European Commission Decision requires that, by the 2006 accounts, direct measures of output be introduced in the case of individual services. Nor do we believe such a return to be desirable. There is an intrinsic case based on public accountability for seeking to measure what is achieved by spending on public services. We cannot simply assume that outputs equal inputs in such a major part of the economy. To fail to measure the output would be to miss the essential complementarity between public services and private economic growth.

Need for major improvements

The route taken by ONS is therefore the right one. The 'first generation' direct measures of government output were pioneering, but they also revealed the need for major improvements, improvements that are already underway. Output indicators have been limited in their coverage of activities; output indicators have been too aggregate; inappropriate classifications have been adopted; geographical coverage of the United

Kingdom has been incomplete; indicators have been affected by changes in the machinery of government; and there have been issues of timeliness.

A principled approach

In seeking to take this work forward, a number of choices have to be made. We believe that these choices are best made within a principled framework and we have enunciated nine principles covering the measurement of outputs, inputs, and productivity. These principles underlie the detailed recommendations of the report, and the checklists that we have given for the criteria to be applied when revising output measures and choosing price deflators. The precise methods adopted will need to change in response to the introduction of new services, and to changes in the machinery of government and the availability of new data, but the principles provide a fixed point of reference in a dynamic situation.

Quality change

Central to our concerns, and to the proposed work programme, is the issue of quality. We are firmly of the view that, in principle, measures of output growth should take account of quality change. Quality has many dimensions, and some will prove elusive, but there are several possible ways forward. At the same time, the greater degree of subjectivity in making quality adjustments, compared with volume measures, means that a higher acceptability threshold should be set for their introduction into the National Accounts. It is essential that the measures employed in the National Accounts should command support from appropriate service experts and from end users. If quality adjustments cannot be comprehensive, they should be representative of the range of dimensions. This will not always be straightforward and may take some time.

Productivity change

Output divided by inputs provides a measure of productivity change. However, the move from the (output=input) convention to direct measurement of government output should be carefully interpreted. It is a definite advance in the sense that government output is no longer simply assumed to equal measured inputs, but the move should not be seen as solving at a stroke the complex problem of measuring government productivity. The statistic obtained by dividing outputs by inputs may no longer be equal to 1 by definition, but no single number, however carefully constructed, can fully capture the performance of complex public services with multiple objectives. Productivity change should be interpreted in the light of a range of other information – the triangulation principle.

A dynamic process

This review is part of a dynamic process. ONS has carried out significant revisions to the health indicators, which we have welcomed, and work, in conjunction with the relevant departments and the Devolved Administrations, is well underway in other fields. While our remit was for the United Kingdom, we are conscious that other countries are undertaking similar work and we put a strong premium on joint learning and development, to underpin international comparability of economic statistics.

Transparency

We would encourage ONS and the departments to carry out this work in a transparent manner, engaging the substantial expertise of academic and regulatory bodies, and others with a legitimate interest including service users, to comment on interim work and further improvements. In an area of such public interest, this risks figures being misinterpreted. It would be highly regrettable if objective study of a matter of public importance were to be inhibited by misunderstanding and public criticism of figures that are clearly interim. Equally, it is essential for ONS and others to make clear in publications the limitations of measurement and the purposes to which analysis may properly be put.

Summary

The National Statistician, Len Cook, asked me in December 2003 to conduct an independent review of the measurement of government output in the National Accounts, with a Final Report to be produced by the end of January 2005. An Interim Report was published in July 2004. This volume constitutes the Final Report.

The terms of reference of the review set out by the National Statistician were:

‘To advance methodologies for the measurement of government output, productivity and associated price indices in the context of the National Accounts, recognising:

the full scope of government outputs;

differences in the nature and quality of these outputs over time;

the relationship between government outputs and social outcomes;

the need for comparability with measures of private sector services’ output and costs;

the existing work of the Office for National Statistics (ONS); and

the appropriate measurement of inputs, including quality and the distinction between resource and capital, so that, together with the measurement of output, light can be thrown on developments in government productivity.

The review has been conducted with support from a team of staff from ONS and the Bank of England, directed by Joe Grice, Deputy Head of the Government Economic Service and with Aileen Simkins of the Department of Health as co-Director. The team consulted extensively with the ONS National Accounts Group and worked with officials in the spending departments, the Devolved Administrations, and the Treasury. We also consulted international statistical bodies and other national statistical offices who are working actively on measurement of public service outputs for national accounts. We are very grateful to these bodies, and others, for their contributions to our work, including comments on the Interim Report. None of these bodies or individuals should, of course, be held in any way responsible for the views expressed in this report.

Introduction

Chapter 1 explains that:

This report is about methodology and does not contain any new figures with regard to government output or productivity; the aim of the review is to establish the future strategic direction for work in this area.

The construction of government output measures for national accounts purposes depends very much on co-operation from the relevant government departments including the Devolved Administrations.

National accounts serve several purposes, and no one single number will serve all purposes; different aggregates are relevant to answering different questions.

National income is an indicator of the contribution to welfare of specified economic activities; it is not a measure of total economic welfare; aggregate welfare is not the only objective of government policy.

National accounts estimates for the government sector are related to, but different from, microeconomic measures of public sector performance, and have different purposes; to try to use them in the same way as public sector performance targets misunderstands their nature and limitations.

National accounts are built on a series of agreed conventions; they are subject to margins of error that vary across different parts of the national accounts; the significance of these errors depends on the purpose for which the figures are used.

Measuring Government Output in the UK

Chapter 2 sets out the history of measuring Government output in the National Accounts and identifies some of the key issues:

Since 1998, ONS has moved progressively towards the replacement of the (output=input) approach by direct measures of the volume of government output. This is an important development. The direct estimates now cover some two-thirds of General Government Final Consumption, which is an impressive achievement.

From the earlier experience in the 1950s and 1960s of the use of the direct measurement approach, we can see that the design of direct output measures needs considerable care and the investment of significant resources. Direct measures of output should be continuously monitored to ensure that they are capturing changes in quality. ONS has to steer a careful course with regard to changes in government policy, guaranteeing the independence of the approach to measuring government output while ensuring that its implementation reflects the realities and circumstances of public spending.

Institutional change in the public sector poses problems for output measurement, and these may be more severe for the direct approach than for the (output=input) convention. Effects of technological change, both specific and general, may not be easily captured, an issue that affects private as well as public services.

The implied measure of productivity for the government sector is obtained from three elements: spending, input price index and direct output measurement. The reliability of all three of these different elements needs to be assessed. While the introduction of direct output measures has received most attention, we attach considerable importance to the measurement and deflation of inputs. In the measurement of productivity, adjustment for quality is important for both inputs and outputs.

The process by which the underlying data are assembled, requiring collaboration between ONS, the Treasury and other government departments, is a highly complex one that warrants closer investigation.

If the government wishes to have reliable estimates of government output and productivity, then the statistical resources have to be supplied, and we welcome the indications already given by the National Statistician regarding the allocation of staff to this area of work.

The International Context

Chapter 3 explains the various sources of international guidance, their status and the implications for taking forward measurement of government output in the United Kingdom:

The programme of work initiated by ONS in 1998 was in harmony with the SNA 1993 guidelines; other countries are engaged in the process of revising their methods for estimating government output, although the United Kingdom leads the way in terms of the extent of use of direct volume measures.

It is hoped that the work of ONS on the output of the government sector will influence the SNA 2008.

The ESA 1995, and the *Eurostat Handbook on Prices and Volumes Measures in National Accounts*, have expanded the SNA guidance, introducing an A/B/C classification. By 2006, C methods will no longer be acceptable under a European Commission Decision of 2002. In the case of individual services, this precludes use of the (output=input) convention in measuring government output; in the case of collective services, input measures may be retained as a B method providing that they satisfy certain criteria.

A number of countries are working on the development of direct output measures, including the treatment of quality change, and it would be desirable if cooperation could be formally established.

Methodology for the Future: The Principles

The use of direct measures of government output is justified both by its intrinsic merits and by the obligations placed on the United Kingdom by the European Commission Decision. Chapter 4 discusses a range of important issues which underlie the international guidance, and need to be understood clearly in order to determine the appropriate way of measuring output, inputs and productivity for the UK national accounts. In view of the high profile of these statistics in political debate, we believe that it is important to begin by enunciating a set of principles on which to base National Accounts measurement.

Recommendation 4.1:

The direct measurement of the output from government spending, and the measurement of inputs and productivity, should be based on a set of principles, within the framework set by international guidelines.

The principles cover outputs, inputs, deflators and productivity:

Principle A: the measurement of government non-market output should, as far as possible, follow a procedure parallel to that adopted in the national accounts for market output.

Principle B: the output of the government sector should in principle be measured in a way that is adjusted for quality, taking account of the attributable incremental contribution of the service to the outcome.

Principle C: account should be taken of the complementarity between public and private output, allowing for the increased real value of public services in an economy with rising real value of public services in an economy with rising real GDP.

Principle D: formal criteria should be set in place for the extension of direct output measurement to new functions of government. Specifically, the conditions for introducing a new directly measured output indicator should be that (i) it covers adequately the full range of services for that functional area, (ii) it makes appropriate allowance for quality change, (iii) the effects of its introduction have been tested service by service, (iv) the context in which it will be published has been fully assessed, in particular the implied productivity estimate, and (v) there should be provision for regular statistical review.

Principle E: measures should cover the whole of the United Kingdom; where systems for public service delivery and/or data collection differ across the different countries of the United Kingdom, it is necessary to reflect this variation in the choice of indicators.

Principle F: the measurement of inputs should be as comprehensive as possible, and in particular should include capital services; labour inputs should be compiled using both direct and indirect methods, compared and reconciled.

Principle G: criteria should be established for the quality of pay and price deflators to be applied to the input spending series; they should be sufficiently disaggregated to take account of changes in the mix of inputs; and should reflect full and actual costs.

Principle H: independent corroborative evidence should be sought on government productivity, as part of a process of ‘triangulation’, recognising the limitations in reducing productivity to a single number.

Principle I: explicit reference should be made to the margins of error surrounding national accounts estimates.

The analysis underpins the discussion of inputs and deflators in Chapter 5 and the approach to output measurement set out in Chapter 6.

Inputs

Consideration of the measurement of inputs, and of the price deflators applied, has turned out to be an important element of the review. Chapter 5 describes the way in which inputs (expenditure on Government services) are measured for the National Accounts, setting out issues about current data sources and processes, and developments in hand. The recommendations are:

Recommendation 5.1: We recommend that the importance of accurate data on government spending for the National Accounts be recognised at the highest level, for example, by including suitable requirements in the letters of appointment of Accounting Officers and Principal Finance Officers (see paragraph 5.4).

Recommendation 5.2: We recommend that ONS should continue work to document the data flows on government spending on public services in the National Accounts, both inside and outside ONS. This should be kept up to date as the Treasury's single data system, COINS, is implemented, and ONS should be ready to adapt and improve its current processes to take full advantage of COINS. The requirements for supply of data to ONS from COINS should be managed as part of the Service Level Agreement between the Treasury and ONS, and similar formal relationships may be needed in other areas (see paragraph 5.17).

Recommendation 5.3: We recommend that ONS and the Treasury should work together, and with ODPM and the Devolved Administrations, to improve the accuracy of data classification for government spending on public services in the National Accounts. In particular:

- ONS should engage actively in the Local Authority Working Group which ODPM are setting up, aiming for data to be collected at source in ways consistent with ONS economic categories, and to improve timeliness;
- ONS and the Treasury should plan to collect Level 2 COFOG data, as now required by Eurostat, and should work with departments to ensure they understand what is required so that data are classified accurately at source;
- ONS should review accuracy of current classification in the National Accounts, by government function and by economic category, and should rectify any inconsistencies;
- ONS and the Treasury should review their respective roles in advising departments on classification issues to assess whether current arrangements are the best that could be achieved, in the interests of clarity for data suppliers and accuracy in compiling the National Accounts, and other purposes for which the same data are used;
- ONS and the Treasury should develop a satisfactory basis for attributing government spending, consistent with the National Accounts, between functional classification, economic category and country within the United Kingdom, as this will be required for productivity analysis (eg matching appropriate deflators for different countries (see paragraph 5.33)).

Recommendation 5.4: We recommend that ONS, and the Treasury should regard ONS as an important end-user of the COINS system, fully engaged in plans for future development. We suggest that ONS is involved in a thorough Post-Implementation Review of COINS; ensure there is an ongoing mechanism by which issues of data quality can be addressed; and is involved in the design and delivery of enhanced training for data suppliers (see paragraph 5.47).

Recommendation 5.5: We recommend that ONS should continue to develop estimates of capital services, aiming to increase the level of detail presented to distinguish between functions and public and private sectors, to assist in analysis of productivity of public service spending (see paragraph 5.50).

Recommendation 5.6: We endorse the ONS decision to move towards use of the accounts of departments and other public bodies as a basis for estimating capital consumption, rather than its own Perpetual Inventory Model, and recommend that transition should continue, as technical issues are resolved (see paragraph 5.56).

Recommendation 5.7: We recommend that ONS should continue work to clarify why there is a divergence between the amount of capitalised ICT software in the UK national accounts compared with other countries, with particular reference to public sector spending, and should publish revised estimates and commentary when available (see paragraph 5.61).

Recommendation 5.8: We recommend that ONS should continue to develop its estimates of labour inputs using both the direct and indirect approaches, exploring issues on data availability and interpretation in the light of comparisons between the results of both methods. For the direct approach, ONS should expand the analysis by function, introduce a public/private split and incorporate information on changes in skill mix. On the indirect approach, ONS should improve the quality of the deflators used for public spending on labour services (see paragraph 5.65).

Recommendation 5.9: we recommend that ONS should agree quality criteria for price deflators for public services such as those in Table 5.1 (ONS might prefer to subsume them as part of wider work on quality criteria for deflators), and use them to improve deflators used in measurement of volume of public service spending and productivity (see paragraph 5.68).

Outputs

Chapter 6 discusses a number of over-arching issues affecting the development of new or improved output measures in the UK context. Recommendations are:

Recommendation 6.1: we recommend current direct measures of output should be improved, where needed, by:

- a) widening the coverage of output volume indicators for each function;
- b) increasing the level of detail at which output indicators are measured;
- c) adopting a more reliable data source;
- d) revisions of the weighting process;

- e) replacing activity indicators with output measures that reflect changes in quality or outcome attributable to a unit of output;
- f) introducing or revising an overall quality adjustment;
- g) improving timeliness and in-year indicators; and
- h) improving UK coverage by making full use of measures from Scotland, Wales and Northern Ireland (see paragraph 6.5).

Recommendation 6.2: we recommend that ONS should be satisfied on the following conditions, before introducing a replacement output measure:

- a) there should be evidence of significant improvement in one or more of the directions listed above, giving particular emphasis to completeness of coverage and to measures that reflect quality change;
- b) an analysis should have been carried out of the relevant output data from past years, with sensitivity testing for possible future changes;
- c) the validity of the proposed measure should be tested by those with expert knowledge of the relevant function; and
- d) there is assurance of the likely continuation of the key data sources (see paragraph 6.8).

Recommendation 6.3: we recommend that ONS should monitor changes in government services, and in the machinery of government, with regard to their impact on direct output measurement and the need to add further output indicators or to transfer activities (see paragraph 6.11).

Recommendation 6.4: we recommend that collective services should be measured by the appropriate international standard, i.e. either a volume index of activity or the volume of inputs, aiming to satisfy Eurostat's requirements for a 'B' method, taking account of quality change of inputs. The same approach should be used for collective elements included in a function classified overall as 'individual', rather than assuming their output changes pro rata to other areas for which there are direct output measures (see paragraph 6.16).

Recommendation 6.5: we recommend that the ideal approach to developing a single aggregate output measure for a function is to weight together different elements by weights based on their marginal valuation. This requires indicators of output values that are comparable for different components. If that is not possible, it may be necessary to use marginal costs. In practice, average costs may be the only information available. Cost weights may be most appropriate where an outcome is affected by several government services and it is not possible to calculate the value of relative contributions (see paragraph 6.25).

Recommendation 6.6: we recommend that ONS choose on a case by case basis whether to measure quality by differentiation of service, success of activity or attributable contribution to outcome, having regard to:

- the nature of the service;
- the extent to which the service is, or should be, differentiated; and
- the degree to which the change in outcome can be directly and confidently attributed to the service concerned (see paragraph 6.27).

Recommendation 6.7: we recommend that ONS should give priority to work on quality adjustments, but consider that a relatively high threshold should be set for their introduction into the National Accounts; in particular, ONS should not introduce quality adjustments until it is assured that the dimensions covered are sufficiently representative (see paragraph 6.33).

Recommendation 6.8: we recommend that ONS should seek to improve the timeliness of annual estimates of outputs of public services (as a greater priority than more accurate estimates for quarterly outputs) (see paragraph 6.36).

Implementation

Chapter 7 makes proposals for the approach to implementation of our recommendations. The recommendations are:

Recommendation 7.1: we recommend that the National Statistician and Statistical Heads of Profession in relevant government departments should discuss arrangements for formalising their joint responsibilities in respect of the National Accounts (see paragraph 7.5).

Recommendation 7.2: we recommend that ONS should make public information about new or revised output series, once decisions have been taken that they are fit for use in the National Accounts, including information about the basis for that decision (see paragraph 7.8).

Recommendation 7.3: we recommend that ONS should undertake a formal review, with external expertise, of each area of public service output measurement about every three years, and that the results should be made public, with any recommendations for change and action taken (see paragraph 7.12).

Recommendation 7.4: we recommend that ONS should continue to publish articles about outputs, inputs, deflators and productivity, commenting on data sources, methods and results, explaining limitations of different methodologies and interpreting the available data in that light (see paragraph 7.15).

Recommendation 7.5: we recommend that ONS should explore ways of analysing and publishing information about public service outputs in parallel to the National Accounts, such as satellite accounts. In particular, it would be useful to have a satellite account on human capital resource formation (paragraph 7.20).

Recommendation 7.6: we recommend that ONS should work collaboratively with other countries on public service output measurement, as joint agreement on the broad techniques to be used would aid comparability between measures of government final consumption in different countries (see paragraph 7.23).

Recommendation 7.7: we recommend that ONS should give priority to consolidating the treatment of that part of General Government Final Consumption covered by existing direct output measures. Extension to other areas should proceed circumspectly, where opportunities present themselves and as resources allow (see paragraph 7.28).

Recommendation 7.8: we recommend that ONS, with the Devolved Administrations, should consider how to make progress towards separate regional accounts (see paragraph 7.33).

Recommendation 7.9: we recommend that ONS make resources available to support the developments we have proposed; resources will also be needed in other departments, including the Devolved Administrations (see paragraph 7.36).

Health

Chapter 8 explains the current Health output measures in the National Accounts, including recent improvements; identifies areas where further improvements are needed and recommends the way forward. The major concerns are about inclusion of output data from Scotland, Wales and Northern Ireland, measurement of primary care output, movement towards measuring whole courses of treatment, and measurement of quality change. The recommendations are:

Recommendation 8.1: we recommend that ONS should continue working with the four health administrations to make use of information from computerised general practitioner research databases to improve measurement of GP output, and should update cost weights (see paragraph 8.32).

Recommendation 8.2: we recommend that ONS and the health departments should work together to incorporate the widening scope of Reference Costs into the Health output measure as this becomes possible, with further improvements in timeliness; should keep under review the NHS services for which there are no direct output measures, taking expert advice on the potential impact on overall NHS output and productivity estimates; and should distinguish appropriately between individual services, collective services and overheads (see paragraph 8.36).

Recommendation 8.3: we recommend that ONS and the health departments in Scotland, Wales and Northern Ireland should introduce measures of Health output in those countries into the National Accounts once sources and methods have been verified (see paragraph 8.38)

Recommendation 8.4: we recommend that ONS should explore, with DH and the wider health information and research community, ways of taking forward work on whole courses of treatment, technical change and substitution, and should make use of the results in Health productivity articles (see paragraph 8.45).

Recommendation 8.5: we regard the measurement of quality change in health care as a difficult area, but have a number of suggestions for work which should be taken forward. The results of research commissioned by DH from the University of York and National Institute for Economic and Social Research will also be important. We recommend that:

- a) a number of dimensions of quality should be measured, with results weighted together by marginal social valuation: more work would be required to underpin these weights;
- b) a range of expertise should be used to develop quality measures, including public health medicine, epidemiology, health service management, health informatics and health economics;
- c) ONS and the health departments should assess options for collecting new information on health outcomes resulting from NHS treatment, with particular consideration to the needs ONS has for measurement of change over time;
- d) ONS and the health departments should consider studies of changing treatment patterns for particular major disease groups to assess whether these could provide useful estimates of improved health outcomes resulting from changes in clinical practice;
- e) ONS and the health departments should explore the data set on quality standards in general practice, resulting from the new GP contract, to see whether this could be the basis for a measure of quality change;
- f) ONS and the health departments should consider whether, with advice from the National Institute for Clinical Effectiveness, it might be possible to identify treatments where marginal valuation and cost weights are very different, and explore the difference in output growth resulting from use of estimated marginal valuation instead of cost weights;
- g) ONS and the health departments should develop a measure of quality change based on speed of access to elective treatment, using the Hospital Episode Statistics data set and taking account of non-linearity, with further developments if new measures of total waiting time are introduced;
- h) ONS and the health departments should explore whether measures of quality change could be developed from information sources for time taken for admission to hospital from accident and emergency departments, time before seeing a general practitioner and ambulance emergency response times;
- i) ONS and the health departments should explore whether measures of quality change over time could be based on the national patient survey programme which measures aspects of patient experience (see paragraph 8.66).

Recommendation 8.6: we recommend that ONS should work with the four health departments to improve the deflators for current price expenditure on health, and the matching expenditure weights (see paragraph 8.70).

Recommendation 8.7: we recommend that ONS should continue to publish health productivity articles and extend the range of sources and issues explored in them (see paragraph 8.76).

Recommendation 8.8: we recommend that ONS should consider developing the framework for health accounts further, developing full satellite accounts including health production accounts (see paragraph 8.80).

Education

Chapter 9 explains the current Education output measures in the National Accounts; identifies areas where further improvements are needed and recommends the way forward. The major proposals are to update the quality measure for schools as an interim measure while further development work is done on an extended quality measure, which should include further consideration of measuring the value of education through increased earnings, and to increase the completeness of coverage by adding additional output measures, for initial teacher training and for publicly funded nursery places. We also emphasise the importance of including information from Scotland, Wales and Northern Ireland at the earliest possible stage. The recommendations are:

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 (see paragraph 9.19).

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 (see paragraph 9.26).

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 (see paragraph 9.42).

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 (see paragraph 9.44).

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 (see paragraph 9.47).

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 (see paragraph 9.49).

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 (see paragraph 9.60).

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 National Accounts and other sources, to be published in ONS productivity articles and through development of a satellite account for human capital resource formation (see paragraph 9.65).

Public Order and Safety

Chapter 10 explains the current Public Order and Safety output measures in the National Accounts; identifies areas where further improvements are needed and recommends the way forward. The major proposals are to improve current cost weighted activity indices by using more detailed activities and costs, with the possibility of a quality adjustment for Prison output, to reduce the value of overcrowded prison cells, and to measure Fire output on the basis of weights which reflect the cost to the community of fire, rather than the response costs for the fire service. We also recommend further development work on an integrated administration of justice approach to measuring output of the Criminal Justice System as a whole. The recommendations are:

Recommendation 10.1: we recommend that current methods for measuring Police, Courts and other Criminal Justice System delivery agencies are improved by extending detail of coverage and improving weights. This work should be extended to include information from Scotland and Northern Ireland as soon as possible. The measure for correctional services output should be reviewed when the National Offender Management System is in place. In the interim, we consider it would be reasonable to adopt a quality adjustment to reduce the output value of crowded prison cells (see paragraph 10.34).

Recommendation 10.2: we recommend that the administration of justice approach be developed further for future use in the National Accounts, and that work is undertaken to replicate this approach for Scotland and Northern Ireland (see paragraph 10.43).

Recommendation 10.3: we recommend that ONS should measure civil courts output through a detailed cost weighted activity index, subject to the Department for Constitutional Affairs completing work to identify unit costs for each type of case, and to further work to replicate the approach for Scotland and Northern Ireland (see paragraph 10.45).

Recommendation 10.4: we recommend that ONS should measure fire response output using an index based on consequential costs, which measure damage to life and property, but should also continue to calculate an alternative index based on response costs which reflect the costs to the Fire Service, and monitor the sensitivity of the index to different weights. We also recommend continued work on the output of fire prevention and non-fire activities (see paragraph 10.56).

Recommendation 10.5: we recommend that specific deflators for labour, intermediate consumption and capital consumption should be developed for expenditure on Public Order and Safety where they do not already exist (see paragraph 10.56).

Recommendation 10.6: we recommend that ONS should analyse changes in productivity in Public Order and Safety services in the context of a range of other triangulation information, and should continue to develop analysis in this area (see paragraph 10.62).

Social Protection

Chapter 11 explains the current Social Protection output measures in the UK National Accounts; identifies areas where further improvements are needed and recommends the way forward. The major proposals are to improve the adult social services output measure by improving detailed coverage and cost weights; to consider an extension to the children's social services measure though with issues about frequency of the data source; to continue development work towards quality adjustments for adult and children's social services; and to update the index for Administration of Social Security. The recommendations are:

Recommendation 11.1: we recommend that ONS should update the output measures for adult social services with wider and more detailed coverage and updated cost weights, making use of similar information from the Devolved Administration as soon as this is available, and updating timeliness of data collection or interim estimates through joint work with the Health Departments. For the future, the research commissioned by DH into a welfare-based approach to the measurement of adult social care output may lead to further improvements including the use of weights based on value and other quality adjustment factors. This could also be used in conjunction with the ONS experimental household sector satellite account if this is resumed (see paragraph 11.61).

Recommendation 11.2: we recommend that ONS should consider using a revised cost weighted index of children's social services which uses information about children supported in families or living independently, but only after careful assessment of the problems on frequency and timeliness from using a biennial census as source data. Information from the Devolved Administrations should be included at the earliest possible stage. We encourage continued development work to use the full range of children's social services quantity and quality data available to local authorities and inspection bodies, in consultation with practitioners and other experts, to develop both volume measures and quality adjustments (see paragraph 11.72).

Recommendation 11.3: we recommend that ONS should update the output measure for Administration of Social Security, with a wider range of benefits, accurate unit costs and weights, differentiation between new and existing claims, and quality adjustment in respect of timeliness and accuracy. It would be very desirable to include measures on a similar basis for Administration of Social Security in Northern Ireland and to extend the same approach to benefit programmes delivered by other departments, including child benefit and housing benefit. We also recommend that ONS should take advantage of the development of a quality-adjusted direct measure of Jobcentre Plus labour market outputs for use in the Economic Affairs function of COFOG (see paragraph 11.79).

Recommendation 11.4: we recommend that work continues to develop pay and price deflators which enable measurement of changes in volume of inputs used in social care (see paragraph 11.87).

Recommendation 11.5: we recommend that ONS should continue to develop analysis of productivity in Personal Social Services and Administration of Social Security, taking account of a wide range of information to add context to estimates derived from the National Accounts (see paragraph 11.96).