

3 The International Context

3.1 Many users of the National Accounts assume that their form is fully governed by international guidelines. These guidelines, embodied in legal form for EU members by Eurostat (the statistical office of the European Union), are indeed important. The approach taken in these guidelines to the measurement of government output means that, even if ONS had wished to maintain the (output=input) convention, it had no alternative but to develop direct measures. At the same time, the guidelines identify different degrees of conformity, including a distinction between individual and collective public services, and allow some degree of latitude in their implementation. In this chapter, we describe the main features of the guidelines and the experience of other OECD countries. More information is provided in Appendix B.

International Guidelines: UN SNA and OECD Productivity Manual

3.2 In this and the next section, we consider in turn the United Nations *System of National Accounts* (SNA), OECD Productivity Manual, *European System of Accounts* (ESA), and the *Eurostat Handbook on Price and Volume Measures in National Accounts*. The main features of the different sources of guidance are summarised in Table 3.1. Appendix B gives more detail.

3.3 In approaching the guidelines, there are three main questions to which we are seeking answers. The first is the extent to which the international guidelines constrain ONS in its treatment of government output and productivity. As we have already seen, one of the reasons that ONS embarked on the introduction of new measures of government output was the impetus provided by the SNA 1993. The second question is how far the guidelines provide clues as to how we can resolve the issues already identified. Thirdly, the European guidelines form part of an administrative process. To the extent that the United Kingdom has latitude within the legal framework, what are the wider implications of different choices?

UN System of National Accounts (SNA 1993)

3.4 The SNA is drawn up by a group on which the major international bodies are represented and is approved by the United Nations Statistics Commission. It is not mandatory, but its recommendations have been taken seriously by all major statistical offices, including Eurostat (see paragraphs 3.15-3.22).

Table 3.1 International guidance

| Publication | Organisation(s) responsible | Type of guidance on measurement of government output | Status |
|---|---|--|---|
| <i>System of National Accounts SNA (1993)</i> , new version SNA 2008 under preparation | UN, OECD, World Bank, IMF, and European Commission. Document prepared by Inter-secretariat Working Group on National Accounts. Approved by UN Statistics Commission | High level guidance | International standard |
| <i>European System of Accounts ESA (1995)</i> | Eurostat | Fully consistent with SNA 1993, more focused on the circumstances and data needs of the European Union | A legal basis to ensure strict application, providing harmonised statistics |
| <i>Eurostat Handbook on Price and Volume Measures in National Accounts (2001 edition)</i> | Eurostat | Expansion of ESA 1995 guidance, distinguishing activities, outputs and outcomes. Introduces A/B/C score for methods of Member States | Develops ESA 1995 to ensure harmonised price and volume data |
| OECD Productivity Manual (2001) | OECD | Comprehensive guide to productivity measurement | No formal status, but indicates desirable properties of productivity measures |

3.5 The SNA has an extensive discussion of price and volume measures for non-market goods and services (paragraphs 16.133-141). It notes ‘in the case of health and education services provided as social transfers to individual households ... the problems are much less, both conceptually and in practice, than for collective services such as public administration or defence. The objective is to measure the quantities of services actually delivered to households. ... For example, individual health services consist of various kinds of consultations and treatments provided to patients’ (paragraph 16.135). It goes on to say, ‘The output of the health services needs to be clearly distinguished from the health of the community.’ (paragraph 16.136).

3.6 For collective services, the SNA recognises that measuring changes in volume of services is distinctly more demanding: ‘it is difficult to measure the output of preventive services, and this is an area in which further research is needed’ (paragraph 16.139). It goes on to say, ‘in practice, it may not be feasible to avoid using changes in the volumes of inputs into such services as proxies for changes in volumes of outputs, just as it may sometimes be necessary [to do so] in certain market industries, such as agriculture or construction’ (paragraph 16.139). When it is not possible to avoid using an input measure, the SNA states that the input measure should be a comprehensive one, not limited to labour inputs. The SNA then turns to the question of assumed productivity growth where an input measure is employed. ‘A possible alternative method [makes] an explicit assumption about changes in labour productivity: for example, that labour productivity grows at one per cent per year in the production of the non-market service in question. An assumption of zero productivity growth is the most common one in practice because it is felt to be more neutral, even though it is inevitably somewhat arbitrary’ (paragraph 16.141).

- 3.7** The position taken in the SNA 1993 was cited by ONS (*Economic Trends*, February 1998) as one of the main motivations for the programme of work on direct measures; and the approach adopted seems in line with that envisaged in the SNA at that time.

SNA revision 2008

- 3.8** The process of revising the SNA 1993 is already underway. The work programme is being steered by the Advisory Expert Group (AEG) on National Accounts of the Intersecretariat Working Group on National Accounts. The AEG, in which ONS participates, hopes to have proposals ready for adoption in February 2007.
- 3.9** Of direct relevance to this review is the item on the AEG agenda: ‘government owned assets – cost of capital services’. As noted below, the OECD Productivity Manual indicates that the volume of capital services is the appropriate measure of capital input for productivity analysis, and it has a solid theoretical basis in the work of DW Jorgenson (1963 and 1995), and others. So far, relatively few countries have made estimates of the flow of capital services (Schreyer, 2003), but progress is beginning to be made. The Australian Bureau of Statistics (ABS) publishes two distinct and complementary capital measures, and stands out in that it ensures full consistency between the different measures: (1) a measure of capital services, as part of ABS multifactor productivity series; and (2) an end-year net capital stock, as part of the Australian System of National Accounts.
- 3.10** There appear to be long lead times in introducing new issues into the revision process for the SNA. We quite appreciate the problems in securing agreement among a large number of countries; we also understand that implementation is itself glacial in its pace. Nonetheless, the issues addressed in this review appear pertinent to the revision of the SNA, and we hope that the ideas put forward here will be allowed to enter the process.

OECD Productivity Manual

- 3.11** The OECD Productivity Manual was produced with the objective of providing an accessible guide to productivity measurement, particularly for use in statistical offices. It identifies desirable characteristics of productivity measures and, although there is no strongly prescriptive element, it seeks to improve international harmonisation. Strong links are made to the underlying economic theory.
- 3.12** The Manual covers the whole of the economy, but it has lessons for our specific concern with the government sector. One important point is that the term ‘productivity’ is used in different ways, and we need to be precise in its application. (This has been clearly recognised by ONS in its work: see for example, *Economic Trends*, May 2002, p 21.) When people talk about the input approach to the public sector ‘assuming zero productivity growth’, this could have several interpretations; and correspondingly the (output=input) approach can have several interpretations. For example, in some cases, the inputs used to estimate output are confined to employment. In this case, it is output per unit of labour input (‘labour productivity’) that is being assumed constant. In other cases, it is total inputs that are used, in which case it is total input productivity that is being assumed constant. Labour productivity in the public sector may be rising because more capital per worker is being applied.

3.13 The OECD Productivity Manual recommends that:

- for labour inputs, the volume measure should be hours worked by workers at different skill levels, weighted together using expenditure on each of these categories;
- for intermediate consumption, purchases of goods and services of different types should be deflated using an appropriate price index for each category, i.e. an index constructed to reflect changes in the quality of the goods or services measured; and
- for capital consumption, there should be a method such as a perpetual inventory model which estimates capital consumption.

3.14 It should be noted that the second of these elements involves the deflation of expenditure, which may be regarded as an indirect method of estimating the inputs, whereas the labour input calculation envisages starting directly from the hours worked, with spending only entering at the weighting stage. As observed in paragraph 2.44, this treatment of labour input may lead in practice to different findings from the deflation of spending on pay by an index of pay.

European System of Accounts (ESA 95) and the Eurostat Handbook on Price and Volume Measures in National Accounts

3.15 ‘The economic accounts in real terms, i.e. adjusted for price changes, are a fundamental tool for analysing a country’s economic and budgetary situation, provided they are compiled on the basis of unique principles that are not open to different interpretations.’ (European Commission Decision of 17 December 2002).

3.16 The ESA 95 was adopted in the form of a Council Regulation Number 2223/96, dated 25 June 1996. There have been subsequent amendments, and particularly important here has been the publication by Eurostat in 2001 of the *Handbook on Price and Volume Measures in National Accounts*, which seeks to provide a complete discussion of the issues involved in measuring current and constant price quantities, from general principles to the deflation of individual goods and services. The recommendations were embodied in the European Commission Decision of 17 December 2002. Although certain member states have secured derogations (in the case of Denmark until 2012), implementation is due for the accounts covering 2006 data. A primary objective of this Commission Decision is to harmonise measures of GDP growth, which is a key concern of this review.

3.17 Central to the approach of the Eurostat Handbook is the introduction of an A/B/C classification. This distinguishes between:

- A methods: the most appropriate;
- B methods: methods which can be used where it is not possible to apply an A method; and
- C methods: methods which should not be used.

3.18 In particular, ‘C methods are too far away from the ideal to be acceptable. They would generate too great a bias or would simply measure the wrong thing’ (Eurostat Handbook, paragraph 1.4). The Commission Decision means that from 2006 (or, in some cases, 2004 or 2005), C methods are no longer allowed.

3.19 This classification applies to the whole of the national accounts, not just to the government sector, but the Eurostat Handbook discusses its application to non-market output, covering both individual services (those consumed by individual households) and collective services provided to the society as a whole. The Eurostat Handbook rejects the convention that (output=input) on the grounds that it ignores all changes in productivity. It rejects, too, the input approach complemented by an assumed productivity change: ‘there is no reason at all why for example a 1 per cent productivity adjustment would be more plausible than a zero per cent adjustment. Productivity might just as well have declined’ (Eurostat Handbook, paragraph 3.1.2.1). The Eurostat Handbook equally addresses the argument that the input method, if not ideal, can at least ensure comparability across member states if all make the same assumption about productivity. It is robust in dismissing this argument: ‘a harmonised assumption about productivity does nothing to make the resulting estimates of output more comparable. The more different the developments in productivity among member states, the less comparable are the results from using the same productivity change assumption’ (Eurostat Handbook, paragraph 3.1.2.1).

3.20 Member states are therefore required to develop direct output measures. The requirements for different gradings are summarised in Table 3.3. The criteria for an A grade provide a valuable checklist when considering the individual functions in ONS accounts. The B classification still represents compliance. In the case of collective services, the B classification does allow input methods, provided that they estimate the volume of each indicator separately, taking quality changes of inputs into account. Provided that this criterion is satisfied, it would be open to ONS to continue to use input measures for collective services, although it could not achieve an A classification. For individual services, input measures are unacceptable. It should be noted that the classification of services into collective and individual is itself an issue.

3.21 In considering alternatives to inputs, the Eurostat Handbook distinguishes between activities, outputs, and outcomes. These are described in more detail below:

- a) *Activity* is, ‘for example, the number of operations in hospitals or number of patrols carried out by the police. Such data can often be found. Activity indicators reflect what the non-market units are actually doing with their inputs and are therefore closer to the output. However, suppose for example that new improved forms of medical treatments reduce the number of operations necessary. Taking the number of operations, as an indicator would imply a decrease of output and productivity, which does not seem appropriate in this case. Using activity indicators often does not lead to reasonable productivity numbers. However, for some collective services, activity indicators may be the only indicators that can be found’ (Eurostat Handbook, paragraph 3.1.2.1).

- b) *Output* ‘is the preferred approach. However, it is not always easy to define exactly what the unit of output is. For individual goods and services it is in principle possible to define the output, since an actual delivery of that output takes place from the producer to the consumer(s) ... For example, for education, the output is the amount of teaching consumed by a pupil. For hospital services, the output is the amount of care received by a patient. For cultural services, the output is the amount of theatre plays consumed. For collective services, however, there is no transaction between producer and consumer since these are provided simultaneously to the society as a whole. It becomes therefore very difficult to define the output. It is very difficult to say for example what the unit of output is of defence or police services’ (Eurostat Handbook, paragraph 3.1.2.1).
- c) *Outcomes* are ‘for example indicators of the level of education of the population, life expectancy, or level of crime. Such indicators might be influenced by factors that are unrelated to the activity, and therefore are generally not representative of the output. In some cases, however, outcome indicators can be used as indicators for the quality of the output’ (Eurostat Handbook, paragraph 3.1.2.1).

3.22 These are valuable distinctions, and they have informed the approach taken by ONS (see Chapters 8 to 11 below for discussion of their application to individual spending areas). At the same time, the distinctions need some elaboration, and this will be taken up in Chapter 4.

Table 3.2 Eurostat Handbook recommendations for government output

| Type of service | A/B/C methods |
|---|--|
| Individual services (such as Education, Health, Social Security, Recreation and Cultural Services) | <p>A methods – output indicator approach where the indicators satisfy the following criteria:</p> <ul style="list-style-type: none"> a) they should cover all services provided; b) they should be weighted by the cost of each type of output in the base year; c) they should be as detailed as possible; and d) they should be quality adjusted. <p>B methods – output indicator approach where the criteria are not fully satisfied: eg the level of detail could be improved or the measure does not take into account changes in quality.</p> <p>C methods – if input, activity or outcome is used (unless outcome can be interpreted as quality-adjusted output) or if coverage of output method is not representative.</p> |
| Collective services (such as General Public Administration, Defence, Police, and Research and Development). | <p>Broadly the same as for individual services but:</p> <p>B methods – input methods are B methods, as are the use of volume indicators of activity. If input methods are used they should estimate the volume of each indicator separately, taking quality changes of inputs into account. Applying productivity or quality adjustments to the sum of the volume of inputs is not recommended.</p> <p>C methods – the use of a single input volume indicator is not a B method.</p> |

Progress of Other Countries in Measuring Government Output

- 3.23** In 2003, ONS carried out a simple fact-finding survey of the steps being taken in other countries to implement the SNA 1993 recommendation regarding the use of direct volume measures. Questionnaires were sent to many OECD countries, and form one input into this section of the report. The second input has been the consultations undertaken with the statistics offices of Australia, Finland, Italy, the Netherlands, Norway, Sweden, and with Eurostat and OECD. See Appendix A.
- 3.24** The United Kingdom is among the world leaders, both in its extensive use of direct volume measures of output, covering two-thirds of government output, and in the priority attached to developing this dimension of the national accounts. Australia, Italy and the Netherlands also place a priority on developing direct volume measures, and they cover between 20 per cent and 50 per cent of government output. New Zealand covers 60-70 per cent of central government output.
- 3.25** Several countries, including Finland, Germany and Norway, plan to incorporate them for certain sectors in their national accounts in the next few years, although it should be noted that Germany believed that the traditional input measures were more suitable generally, as they offer international comparability and timely data. The experience of the Netherlands suggests that GDP growth is lower using direct volume measures; Italy has seen no systematic impact; Australia, New Zealand and Canada found that estimates of GDP growth rates increased with the introduction of direct volume measures.
- 3.26** One of the key issues is how to capture quality change in government output. In the case of Education, a number of countries make adjustments, but little account is otherwise taken of quality in the measures actually employed. Several countries reported that they are seeking to develop methods to take account of quality change.
- 3.27** The United States does not make output-based estimates of government output, despite the fact that it has had extensive experience of seeking to measure government productivity. From 1973 to 1994, there was a federal productivity measurement programme, covering two-thirds of federal civilian employees, and tracking a sample of state and local government activities, with data going back to 1967 (Fisk and Forte, 1997). The programme built up some 2,500 indicators of productivity, covering such items as medical care provided (weighted composite), letters delivered, acres of fine lawn maintained, cases disposed by the courts, and disaster loans approved. There has been substantial academic research on productivity change: see, for example, Hulten (1984).

3.28 The productivity measurement series have not been used in the construction of national accounts. In part, this reflects the fact that the federal productivity measurement programme was the responsibility of the Bureau of Labor Statistics, whereas responsibility for the US national accounts is with the Bureau of Economic Analysis at the Department of Commerce. In part, this reflects the fact that their objectives were rather different. But there have been voices calling for a different approach. In his magisterial survey of extended national accounts, Robert Eisner criticised the US official treatment of government service as follows: ‘Government output is counted on the basis of market inputs of labor services. ... The value of government output is understated by the extent to which it ignores inputs of capital and land. And there is no imputation for the value of labor time not paid for.’ (1988, p 1,620). The last sentence highlights the role of unpaid services to which we referred in Chapter 1.

Summary

- 3.29**
- a) 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.
 - b) It is hoped that the work of ONS on the output of the government sector will influence the SNA 2008.
 - c) 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.
 - d) 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.