

Chapter 13

Productivity: The Way Forward

UK productivity statistics, and the measures provided by ONS to support productivity assessments by users, have made significant strides over recent years. Some of the newer developments have been outlined in earlier chapters, but users – and the changing economy – continue to place new demands.

A significant challenge for productivity measurement is responding to structural changes in the economy. Research into new forms of investment shows that this can quite fundamentally affect interpretation of productivity analysis. In addition, the development programme for measurement of public sector output and productivity has been taking shape through a UK-wide consultation exercise. ONS also helps to influence international standards in this area.

This chapter outlines ONS's ongoing work to improve the consistency of input and output measures in a number of areas. Within the market sector this includes covering how better measures of labour input by industry are being created and also details of ONS work to improve definition of new types of capital.

This chapter also describes how ONS will continue to promote the development of international measurement standards to reflect change, but remains committed to producing its productivity outputs to agreed international definitions. In particular, this chapter includes details of future plans within ONS to improve measures of services within the public sector.

Plans for Continuing Improvement in Statistics and Analysis

ONS aims to provide users with the productivity estimates and analyses they require. To do this, ONS continues to tackle the main outstanding issues identified in previous chapters:

- consistency between output and input measures
- consistency of methodology across ONS systems and data series
- locating new, detailed sources of data
- producing new series tailored to users' needs
- meeting changing regional, national and international standards

Continuing improvements in these areas cover a wide range of economic measurement, starting with labour market statistics.

13.1 Labour market statistics

Various improvements to labour market statistics are being pursued in ONS, following the National Statistics Quality Review of Employment and Jobs Statistics (2006). A key project is to develop routine linkage of the Inter-Departmental Business Register (IDBR) with Labour Force Survey (LFS) records, using the address and postcode of respondents' workplaces. If successful, and subject to ONS resources required, this would increase the accuracy, consistency and coherence of estimates of employment and jobs statistics from household and business surveys. For more information on the IDBR and LFS, please see [Chapter 5](#).

Statistics on employment by industry and location of workplace from the LFS and other household surveys are subject to error because of the difficulties in getting accurate responses from individual workers. It is necessary to use business survey sources for more reliable information, based on industry, sector and locations of businesses as recorded on the IDBR.

The Allsopp Review (2004) suggested there should be considerable potential benefits for National Statistics from linking the household survey data with the IDBR as a means of providing improved information on respondents' workplaces (as discussed in [Chapter 11](#)). This would make it possible to make much better use of the LFS and other survey data – including in due course the Annual

Population Survey (APS) and the Integrated Household Survey (IHS) – for productivity statistics as well as for a wide range of other purposes. Coherence will be much improved between corresponding output and employment/hours estimates used to derive productivity series.

These improvements will result in better productivity measures as detailed below.

Productivity by industry – ONS's published productivity measures are now based on LFS-based denominators for whole economy level. If the LFS-industry link could be improved, this whole economy methodology could be applied coherently to the estimation of industry specific productivity measures, potentially allowing a more reliable and more detailed industry breakdown to be published.

Productivity by public/private sector – Private sector employment is currently estimated as the difference between the LFS whole economy employment estimate and an estimate for the public sector. If IDBR information about employer status in the public/private sector could be linked to LFS records, more coherent private sector employment estimates could be generated. These would be very valuable for a number of purposes including improving ONS estimates of market sector productivity.

Productivity and skills – If LFS-based data could be fully integrated into the productivity analysis framework as described above, the potential would be released to use the information about occupations, education and skills in the LFS to generate improved 'quality adjusted' labour input (QALI) measures. It would also strengthen current analytical research on combining information for the LFS and the Annual Survey of Hours and Earnings (ASHE).

13.2 Whole economy and market sector productivity

Taking advantage of these projects, each of the issues identified earlier can be tackled to produce better ONS productivity estimates. For more detail on planned productivity work see Camus and Lau (2006).

13.2.1 Consistency between output and input

While work is under way to improve labour input measures, there are also plans to strengthen the role of labour market data in the National Accounts. Consequently, ONS is currently working on a project to achieve greater consistency between data used in the National Accounts and in labour market statistics (LMS).

This will result in recommendations of data to use in the new modernised National Accounts system:

- recommendations for compensation of employees data
- recommendations for employment data
- the self-employed and unpaid elements being included in a consistent manner
- recommendations for earnings data

13.2.2 Consistency of methodology across ONS systems and data series

In order to take full advantage of the current redevelopment within the National Accounts systems, a structure for long-term productivity analysis will be included in the modernised National Accounts (see Beadle, 2007). This structure will be composed of National Accounts data sources along with checks and calculations to automatically produce detailed productivity estimates consistent with National Accounts.

This structure will incorporate:

- consistent national accounts/labour market data – recommendations from the LMS/NA Consistency Project (detailed in [Section 13.2.1](#))
- constant Price Input-Output (KPIO) tables – these are required for the construction of multi-factor productivity estimates because of the need for information on the flow of intermediate inputs
- double deflation – this is needed, along with KPIO, to ensure that the intermediate input and outputs are correctly deflated; this ensures that there is consistency between GDP and industry output when calculating productivity (see [Chapter 4](#) for more details on double deflations)

Additionally, this structure should ensure that productivity estimates can also be used as a check for the National Accounts themselves. This will be strongly linked to the development of a growth accounting framework. This structure will also include improved public services outputs developed by UK Centre for the Measurement of Government Activity (UKCeMGA).

13.2.3 Locating new, detailed sources of data

ONS will continue to support and develop the microdata business lab which was established in early 2003. Productivity analysis projects using microdata will be taken on in-house or in partnership when ONS is

sponsored to do so and/or where the work contributes to measurement improvements.

ONS will also look into the possibility of using administrative data, particularly HM Revenue & Customs (HMRC) PAYE records where appropriate either as quality assurance or as data in their own right.

13.2.4 Producing new data series tailored to users' needs

This covers a number of different productivity series for a range of users and requirements.

13.2.4.1 Developing market sector productivity measures

From March 2007, ONS has published market sector productivity measures on both a per worker and a per hour worked basis. In future, increasing emphasis will be given to measures of market sector productivity and of productivity for the public services (see [Chapters 8](#) and [9](#) for more details).

13.2.4.2 Service sector productivity estimates

ONS currently produces some service sector productivity estimates on an experimental basis for Distribution, Hotels and Catering and also Agriculture, Forestry and Fishery as well as total services estimates. In future ONS will be looking to expand this range further and to review the 'experimental' status of existing series.

13.2.4.3 International Comparisons of Productivity (ICP)

Comparisons of GDP per worker and per hour worked are currently produced comparing the UK with key competitors from the G7 countries. Given the changing nature of the world economy, other countries may be added to this comparison in future.

13.2.4.4 Capitalisation of Research and Development (R&D)

Research and Development is currently treated as intermediate consumption instead of as a form of investment. The SNA 2007 discussion group has recommended that the SNA93 should be changed to recognise the outputs of R&D as assets. A project is under way, funded by Eurostat, to assess the practical and methodological issues involved in capitalising R&D.

13.2.4.5 Inclusion of the Information and Communication Technologies (ICT) investment revision

Revisions to software investment, which indicate that this is a greater proportion of GDP than previously thought, were published in *Economic Trends* (Chesson and Chamberlin, 2006). These results will be included in the revisions procedure for National Accounts.

13.2.4.6 Intangibles

A research project, jointly owned by HM Treasury (HMT), is in progress to produce and analyse productivity measures for this area of work. While software is recognised as an asset and R&D is planned for recognition by 2008, other areas, such as advertising, are not. These areas suffer from measurement problems but are generally recognised as important. Analysis in this area has previously been carried out in the United States (Corrado, Hulten and Sichel, 2004).

13.2.5 Meeting changing regional, national and international standards

The way forward for regional productivity was tackled as part of the *Review of Statistics for Economic Policymaking* (Allsopp, 2004). A primary aim of the review is to obtain better regional data, including regional gross value added. Further details are given in [Section 11.5](#).

The UK also developed national standards through the Atkinson Review and ONS is the first national statistics agency to follow UN and Eurostat guidance in how to treat public services output and productivity differently. All of this helps improve ONS's productivity work compared to past performance.

The details of this are tackled in detail in the next section.

13.3 Public service productivity work programme

The way forward when improving public service productivity can be divided into three distinct categories:

1. improvements in measuring outputs
2. improvements in measuring inputs
3. improvements in using triangulation information to support productivity estimates

More detail is provided below, including some examples in the context of health service output.

13.3.1 Improvements in measuring outputs

Market sector outputs for productivity tend to come directly from the National Accounts as total output or value added. Outputs for public services are much more difficult to define as there is not automatically an expenditure or volume associated with such things as improved hospital care or policing. Therefore defining and measuring public service output can be difficult. Future work can be categorised into the individual areas given below.

13.3.1.1 Coverage

Improving the coverage of output indicators will make them more representative of the departmental expenditure used to produce them. Principle D of the *Atkinson Review* outlines the conditions required for accepting new output indicators. For example it covers adequately the full range of services for a particular functional area and the effects of its introduction have been tested service by service.

13.3.1.2 Quality adjustment

UKCeMGA have just carried out a series of public consultations on measuring the quality of public services output. The detailed response to these consultations has been published in a strategy paper (ONS, 2007). But more generally, further developments in the quality adjustment of public service outputs are required. In particular, to have consistency with market sector output, the aim is to ensure the quality indicators are comprehensive and fit together in a robust framework. See [Box 13.1](#) for a summary of the main points from the strategy paper that addresses these issues.

13.3.1.3 Value weights

There are clear economic arguments to support the use of value weights rather than cost weights, however there is also general recognition that it is very difficult to derive value weights. It is likely, therefore, that cost weights will continue to be used in the short to medium term, but that should not preclude further research into the possibility of using value weights. When considering which type of weight to review, priority should be given to areas where cost and value weights are likely to be significantly different, as outlined in the *Atkinson Review*.

13.3.1.4 Collective services

There will be further investigation and consequent developments to assess how best to measure the output and productivity of collective services. As it currently

Box 13.1: How measurement of public service output will develop

The key methodological direction that will be used to measure the output, and subsequently productivity, of public services is the development of an overall quality measurement framework. This will allow UKCeMGA to develop authoritative, credible, and transparent estimates using the best data sources and research methodologies available, but also to make transparent, informed estimates when data do not allow definitive conclusions. A key objective is to reduce the measurement errors that would be associated with not measuring the quality of output at all.

The recently published UKCeMGA strategy paper starts with the key concepts required for quality measurement of public service output covering:

- dimensions – what outcomes do the outputs deliver
- techniques – such as measuring the contribution outputs make to outcomes and
- the capacity for benefit – consideration of the variables that affect the way individual users can actually benefit from the output delivered

The paper then considers three particular methodological issues:

- the relative importance of quality dimensions – for example how much weight should be given to education attainment compared with other objectives of the education system such as keeping children active and healthy

- using value weights instead of costs weights – recognising that cost weights traditionally used to measure output may not reflect the value of public services as perceived by users of the service and
- time lags – recognising the effects outputs have on outcomes may be delayed or spread over a number of years

The quality measurement framework will operate on the basis of professional statistical judgement and should be transparent to all who are interested. The strategy paper sets out the ways in which ONS intends to ensure the relevance and robustness of particular concepts, techniques and data sources used in this work.

Using the quality measurement framework and taking on board the contributions made by those who attended the ONS consultations, the key direction for measuring the quality of education output will include, for example:

- a more refined use of GCSE results
- developments to take account of the 14–19 initiative so diplomas and A levels are taken into account
- developments to measure quality of under-fives' childcare and education

All will be set in the context of the outcomes covered by the 'Every Child Matters' framework.

The key direction for measuring the quality of health output will include, for example:

- a refined set of quality dimensions putting more weight on those based on health gain
- more work on the activities that prevent illness and
- extending further beyond the current set of quality indicators, in particular for health gains from treatment

UKCeMGA will also be developing the quality measurement framework further through research funded by the Invest to Save Budget, with particular focus on adult social care and under-fives' education, and on tools for local use to measure the quality of services, whether provided by public, independent or third sector providers. The project will also be used to strengthen methodologies for quality measurement, which can be extended into other areas of public service.

Finally, after further consultation with a panel of economic experts in the UK, UKCeMGA will not be adjusting GDP output in the National Accounts to reflect complementarity, other than if such an adjustment already fits with existing conventions. However, UKCeMGA will be developing a wider welfare measure of GDP output for publication in productivity articles, but the methodology will need to be robust and clearly explained. Adjustments made will be tailored towards specific public services and not based on the uniform 1.5 per cent used so far.

stands, the <output =inputs> method is used to measure the output of collective services. Further development work will investigate the extent to which collective services can be divided into separate activities and associated costs and quality.

13.3.2 Improvements in measuring inputs

As for outputs, inputs for the public sector can also be difficult to define, but mostly at lower levels of

disaggregation. Again, planned future work can be divided into categories as shown below.

13.3.2.1 Expenditure data

This work will involve driving forward the agenda for getting better and more detailed expenditure data for both central and local government. There has already been a substantial improvement in the way central government expenditure data are collected using the new Combined

Online Information System (COINS) developed by HMT. But more progress is required for developing better systems for local government expenditure. ONS will be working with the Department for Communities and Local Government (DCLG) to achieve this.

13.3.2.2 Deflators

In association with the National Accounts and improved expenditure data, ONS will derive improved deflator measures for individual public services (see **Chapter 4** for more details on deflators and how they are used in productivity measurement), in particular better deflators for goods and services used for producing outputs.

13.3.2.3 Quality adjustment

There will be further work to improve the quality adjustment of inputs (see **Chapter 6** for details of the work already carried out).

13.3.3 Improvements in using triangulation information to support productivity estimates

It is unlikely that a single measure of productivity will ever fully capture the performance of complex public services, so it is essential that the wider evidence base is used in a more rigorous way to support productivity estimates. Further research and development of the evidence base and the direct links with measures of output and input will be carried out. This will improve all round confidence in published productivity estimates.

13.4 References

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