

# Productivity Measures: ONS Strategy

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## Summary

Improving productivity is one of the Government's key policy objectives. This article provides a coherent strategy for ONS's work on productivity, with clear statements of the priorities. It starts with a quick review of the ONS work on productivity to date, followed by the results of a consultation with key users conducted in October/November 2001, which identify users' priorities and concerns. The work programmes to be taken forward by the ONS are outlined in Section IV. These programmes fall into four main areas: service sector productivity, labour input, capital input and utilisation of the Annual Business Inquiry data. We believe that though each is small in its own right, these programmes together constitute a significant step forward in terms of meeting users' requirements for productivity data.

## I. Introduction

Improving UK productivity has been one of the government's key policy objectives since 1997. This policy drive has resulted in rising demand for better and more comprehensive productivity data to understand the nature of the UK productivity gap with other major industrial countries and in turn to inform policies targeted to close the gap. The Treasury and the Bank of England also analyse productivity trends for fiscal and monetary policy decisions as it is seen as a key determinant of the long-term trend growth of the economy.

As preparation for this strategy paper, a series of bilateral consultations were conducted in October/November 2001 with key users. A list of the government departments and organisations consulted is given in Annex A. The key aims of the exercise were to identify data gaps in productivity measurements and to find out users' views of where the ONS's priority should lie in filling those gaps.

This article is structured as follows:

- Section II provides a summary of ONS's recent work.
- Section III describes the consultation process and gives a broad summary of the outcome.
- Section IV outlines ONS work programmes on productivity to be taken forward within existing resources.
- Section V offers conclusions, summarising ONS's plans for work on productivity, and suggesting further work that could be taken forward if more funding is made available in the next Spending Review, for 2004–2007.

## II. ONS productivity work to date

The following list outlines the ONS productivity work completed in 2001 under the steer of the ONS Productivity Programme Board.

- In April 2001, changes were made to existing productivity measures to improve the consistency between the output and labour input data.
- New measures of output per hour were published in April 2001.
- The dissemination of productivity data has been significantly improved. In April a productivity web page was established and in September a quarterly Productivity First Release was published for the first time. The first release includes a commentary on productivity and unit wage costs data as well as data not available in any other paper releases.
- The ONS took over from the DTI the publication of international comparisons of productivity in October with improvements to the methodology.

- A review of non-production productivity measures was completed, and its findings and recommendations were first published on the ONS website and then in the February 2002 *Economic Trends*. The publication was accompanied by the release of new experimental data, including quarterly measures for the total services and combined sections G/H (Distribution, hotels and catering) as well as annual measures for the combined sections A/B (Agriculture, forestry and fishing). The publication of a measure for the construction section has been withdrawn due to concerns about the quality of the productivity measure.

### III. The consultation process and outcome

In October 2001, the ONS Productivity Team conducted a series of bilateral consultations with key users on ONS productivity work. A list of the users who took part is attached in Annex A.

During the consultation, users were asked to comment on and prioritise seven potential areas of ONS work relating to productivity. This list was not exhaustive and was sometimes augmented by users consulted. These areas of work, identified in terms of data outputs, were:

- Service sector productivity;
- Investment and capital stock data;
- Multi-factor productivity;
- Micro-level data for productivity;
- Skills and productivity;
- Regional productivity;
- Public sector productivity.

Notwithstanding the variations of users' needs, the three areas with consistently high scores among the users were service sector productivity (including public sector productivity), investment and capital stock data, and skills and productivity. Other areas tended to register specific interests and score highly with the specific users under concern.

The demand for official **service sector productivity** measures, with reasonable quality, was high. With the service sector now accounting for 70 per cent of the economy, service sector productivity measures would complement the wealth of detailed data, both at macro- and micro-level, on the production sector, and enable a better understanding of the performance dynamics for the whole economy. Within the service sector is the **public sector**, and the move toward output-based measurement for public sector output was welcomed.

Though not a direct measure of productivity, **investment and capital data** are often analysed closely to explain relative productivity performance and to inform policy. Users, especially HMT, the DTI

and the CBI, were keen on international comparisons of business investment. There is also a demand for more visible investment data on Information and Communication Technologies (ICTs).

For the purpose of productivity analysis, capital input is more appropriately measured by capital services, which reflects the flow of productive services from the cumulative stock of past investments. ONS work on the compilation of capital services data is well underway and strongly endorsed by users.

As far as the capital stock data are concerned, better documentation of the ONS Perpetual Inventory Model would make the underlying assumptions more transparent to users. Furthermore, some users considered that the time series was not always consistent with economic intuitions. The general feeling was that a check of the data and a new review of the assumptions in the PIM might be worthwhile. It may anyway become necessary in due course as the ONS work on capital services progresses. See below for details of ONS work in improving the systems in place for modelling the capital stock and taking the opportunity to review and improve the input data.

**Skills** are often linked to labour productivity, but little is known about the precise relationship. The main data gaps identified were skills by firm size and industry. In addition, spatial disaggregation would help the understanding of the regional balances on skills, and international comparisons of skills were also identified as desirable.

In addition, the need to improve labour input measures was mentioned. Users felt that the ONS should strive to improve the accuracy, consistency and international comparability of the average hours worked estimate. Beyond that, quality-adjusted hours worked for skills was seen as a worthwhile project as it could be used for multi-factor productivity and for the construction of a labour composition index. The latter is useful for analysing the macroeconomic trends of labour composition and its contribution to labour productivity growth.

**Micro-level data for productivity** are stimulating a vibrant area of academic research, supported by the evidence-based policy fund. The main role of the ONS is to facilitate the access and the use of the dataset.

**Multi-factor productivity** was not among the top priorities for most of the users consulted. The main concern was the measurement difficulties of the components of MFP. However, when the ONS is confident about the quality of the component variables, *viz.* labour and capital, users were content for the ONS to investigate the production of MFP measures – in part as a quality assurance procedure.

The **regional dimension** was important to the work of specific users, notably the DTI and the DTLR. Their regional data requirements are broader than productivity measures, and include regional real growth rates, which are currently unavailable. Users would also welcome improvement on the timeliness of regional data.

#### IV. Outlines of ONS work programmes on productivity

This section outlines the short-term work programmes to be undertaken by the ONS, and is organised under following headings: service sector productivity, labour input, capital input, and utilisation of the Annual Business Inquiry. This reflects our priorities in response to users' need within the current resources. Over the next three to four years, ONS is undertaking a thorough upgrading of infrastructure, so resources will be extremely limited for new substantial initiatives. The longer-term work programme will depend on the outcome of the Spending Review for 2004-2007.

Before we move on to the individual work programmes, one general observation concerning productivity is noted. The quality of productivity data depends on three factors:

- the reliability of the component data: factor inputs, output, and deflators;
- the coherence of these underlying data series; and
- the length of the time series.

The first consideration reflects the fact that in essence, productivity is a derived statistic. The second consideration is specific to productivity data: it could be possible to yield better productivity measures by using a measure which may not be the most accurate measure of the component but which matches other component data series more closely. The length of the data series is important because of the cyclical behaviour of productivity performance. It is essential to analyse productivity, and its related variables, over economic cycles. For the purpose of productivity analysis, discontinuities in many of the series of key variables, due to survey changes or changes in classifications, therefore could greatly impair the values of these data.

#### Service sector

**Further breakdowns of service sector productivity when feasible:** The ONS will continue our ongoing work programme of development of the Index of Services. We will continue to review the effect of this work on productivity measures for the service sector and new measures will be published on an experimental basis whenever we are reasonably confident with their quality.

**Public sector productivity:** The ONS is at the forefront of

developing new output-based measures for public sector output. This development enables the construction of public sector productivity measures, which are in high demand. The ONS plans to publish an article later in 2002 presenting the methodologies and some results to the public for the first time.

There are several programmes of work under way in the ONS which will support work on service sector productivity. These are as follows:

- the major work programme to develop a monthly index of services;
- the development of service sector price indices;
- the review of the National Accounts and Labour Market computer systems (which will take into account the requirements specifically related to the productivity work programme); and
- the compilation of constant price input-output tables.

#### Labour input

**Total hours worked:** The ONS is conducting a review of the estimate of total hours worked as part of a feasibility study into the development of a Labour Costs Index. Where feasible findings from this review will be incorporated into the current estimates of total hours worked. We will also ensure that the recommendations are consistent with international best practice.

#### Integration of Labour Force Survey and National Accounts:

Better integration of the Labour Force Survey with the National Accounts would be very valuable to the construction of productivity data, which require consistency between input and output data. To this end, our work programme includes:

- an international comparative study of methods of integrating the labour market and National Accounts measures of employment, jobs and incomes;
- an investigation of the scope for greater co-ordination of the collection stage of employment and jobs data respectively through household and business surveys to ensure a better correspondence of industry and workplace classifications; and
- a systemisation of the methods applied by the ONS for the reconciliation of the employment and jobs data produced currently by the separate household and business survey data collections.

#### Skills data

- The responsibility of analysing and publishing the existing data on skills rests with DfES. In order to encourage greater utilisation of these data, the ONS is investigating ways to complement the work of DfES in this area, for example, by publishing relative wages by worker type. Attention will be given to ensure that the

data are grouped in such a way that is consistent with the practice of DfES.

- The National Statistics Theme Group on Education and Training Statistics will explore any possible synergies between the ONS and the DfES in producing more comprehensive and time-consistent data on skills to the benefit of all users. Currently the DfES commissions various surveys on skills, which users find useful and informative but these surveys are not time-consistent or repeated at predictable intervals.

**Quality-adjusted labour input:** We will conduct a feasible study of a labour composition index, equal to the difference between the growth rates of quality-adjusted (for education attainment) labour input and unadjusted total hours worked. The index will require shares of total labour compensation for each worker type as weights. At present, the Labour Force Survey provides data on shares of total wages for each qualification level but they are not consistent with the National Accounts, and ideally labour compensation should be used instead of wages. The study will investigate these issues and how this work might be taken forward.

**An education satellite account:** An education satellite account could link the outputs of the public sector, the private sector (both education establishments and in-house training by business) and household production to outcomes – the stock of skills / education in the economy. This would help shed some light on the relationship between skills and productivity. Initial work on education in the household satellite account, will be undertaken by the Household Satellite Accounts Branch, with a view to scoping an education satellite account towards the end of the year.

## Capital input

**Implementation of capital services data:** ONS has compiled a preliminary volume index of capital services (VICS), in collaboration with the Bank of England. The methodology used is similar to the one set out in Oulton (2001).<sup>1</sup> The next step is implementation. Also since there is a great demand for information about ICT, we are looking into the possibility of publishing ICT investment and capital services data separately as part of the implementation.

**Review of the ONS Perpetual Inventory Model (PIM):** The ONS will produce an official documentation of the ONS PIM, which will help illuminate the underlying assumptions. In parallel, a review of the data and assumptions used by the model will be conducted so as to improve the overall quality of aggregate capital stock data. In particular, we will look at improvements on the asset categorisations which means separating assets with materially

different depreciation rates, and in turn an overhaul of the treatment of ICT assets such as computers (which are currently included in plant and machinery) and software (currently included in intangibles).

**International comparisons of business investment:** Following the successful handover of International Comparisons of Productivity from the DTI to the ONS, the DTI and HM Treasury are interested in us doing the same for business investment. This project involves a study of the data sources used in the existing DTI system and the underlying methodologies, and making recommendations to ensure comparability both across time and countries.

## Utilisation of the Annual Business Inquiry (ABI)

**Productivity measures based on ABI data:** The ONS will conduct a pilot study on the potential of the ABI to produce robust productivity measures. The feasibility of producing detailed industry breakdowns will be investigated as well as the possibility of extending regional measures to produce broad industry breakdowns within regions.

## Facilitating the use of the ARD/ABI dataset:

The ONS will continue the process of linking relevant data sets to the ABI data through the ARD, to improve evidence base for analysis of business level data. If feasible, the data set for services will be extended back in time.

The ONS will continue the dialogue with academics to find a constructive way forward regarding on-site access, and to improve their onsite working environment.

The ONS will compile a manual for users of the data set by collating contributions from academics who have used the data set. This is part of the Business Data Linking Project. In the long run, if the demand supports this, we envisage that an ONS expert on the data set will be available to deal with users' queries more efficiently and professionally.

The ONS notes that minimising the discontinuities of the data set would greatly increase its quality. This could be done by having one overlapping year, should there be a change of reference code, to ensure complete matching. However, the cost implication would mean that it might not always be practically feasible.

## V. List of ONS work programme on productivity

In summary, the ONS plans to deliver the work programmes listed below in the next three years. These are each small programme in

their own right, but together, we believe, constitute a significant step forward in terms of meeting users requirements for productivity data:

- further breakdowns of service sector productivity when feasible;
- public sector output and productivity;
- a review of the estimate of total hours worked;
- an international comparative study of methods of integrating the Labour Force Survey and National Accounts;
- a report on the scope for greater co-ordination between the Social Survey Division and the business statistics team in data collection;
- an investigation into ways of complementing DfES work on skills data;
- an investigation into any possible synergies between the ONS and the DfES in producing new skills data;
- a feasibility study of a labour composition index;
- initial work on a household education satellite account;
- implementation of capital services data;
- an official documentation of the ONS PIM;
- a review of the ONS PIM;
- international comparisons of business investment;
- a pilot study on the potential of the ABI to produce robust productivity measures; and
- facilitating the use of the ARD/ABI dataset.

A bid has been put forward in the next Spending Review for 2004–2007 for work on productivity. If this is approved, the work programme could be developed significantly, to provide a much more detailed breakdown of service sector productivity, robust deflators for the output measure of GDP, a longer back series of productivity data, and further development of data on the capital stock and skills and productivity.

## Reference

- 1 Oulton N (2001), *ICT and productivity growth in the United Kingdom*. Working paper No. 140. Bank of England: London.

## **Annex A**

### **List of participant departments and organisations in the bilateral consultations**

Bank of England

Confederation of British Industry

Institute of Fiscal Studies

Department for Education and Skills

Department of Trade and Industry

Department for Transport, Local Government and the Regions

Department for Work and Pensions

HM Treasury