

Appendix: Data and methods

SOCIAL SECURITY PRODUCTIVITY

For the main outputs series for the 1997–08 to 2007–08 series we relied on information provided by the Department for Work and Pensions (DWP) from its own productivity work and covering a total of 14 benefits. These include both the number of benefits paid (load) and the number of new applications for benefits processed (claims): Each benefit was weighted according to the total costs of administering each benefit. Weighted benefits were then added and converted into a total index of output.

Benefits analysed for 1999 to 2008 period

Both load and claim measures unless otherwise stated:

Income Support	State Pension
Jobseeker's Allowance	Minimum Income Guarantee (until 2003)
Social Fund Payments	Pension Credit (after 2003)
Incapacity Benefit	International Pension Credit
Other Working Age Benefits	Future Pension Forecasts
Carers' Allowance	Attendance Allowance
Child Support Benefit (here we used a DWP measure for the number of children benefiting)	Disability Living Allowance

The index of total inputs for the 1997 to 2008 total factor productivity (TFP) analysis was based on deflated expenditure data (pay, procurement and capital) from the DWP (and before that the Department of Social Security, DSS) for the period under analysis. Specific deflators were used to deflate each expenditure components. These components were then

Table A.1 Staff numbers in the Department for Work and Pensions, and before 2001 in the Department of Social Security, in FTEs

Year	1997/ 08	1998/ 09	1999/ 00	2000/ 01	2001/ 02	2002/ 03	2003/ 04	2004/ 05	2005/ 06	2006/ 07	2007/ 08
FTE staff (000s)	115.8	118.5	114.6	116.1	124.1	131.4	130.8	126.9	118.3	112.7	105.9

Source: Authors' calculations assembled from data supplied by DWP, DSS and relevant agencies.

added and converted into the index of total inputs. The index of full-time equivalent (FTE) staff was built according to the total number of FTE staff for DWP/DSS, with key results shown in Table A.1. Staff productivity was the ratio of the index of output to the index of staff. Our staff measure draws on data from the DWP, DSS and other DWP-predecessor agencies.

The 20-year social security index (covering 1988 to 2008)

For our longer time series we used outputs data on the benefits described in Table A.2 that were taken from the Abstract of National Statistics. We checked the reliability of these data with the Work and Pensions Statistics (for the 1988–99 period) and with the Work and Pensions Longitudinal Study from DWP (for the 1999 to 2008 period). For this series we included only ‘payments’ (that is, the total number of benefits paid or ‘loads’). Unfortunately ‘claims’ were not reported in the public sources referred to above for this period. For *the index of total inputs*, we used data from the Abstract of National Statistics on ‘General Government Total Final Expenditure on Social Security Administration’.

We also calculated staff productivity by constructing an index of staff costs by using data on the deflated paybill costs during this period. This is slightly different from the approach we have taken in other services where we use the total number of FTE staff, but unfortunately consistent data on FTE staff are not available dating back to 1987–08.

Paybill data was deflated using the GDP deflator and an index of staff costs was calculated using 1987–08 as the base year. Staff productivity was the result of the ratio of the index of total output to the index of staff costs.

Table A.2 *Benefits analysed 1988–2008*

Benefits	
Working age benefits	Income Support (introduced in 1988; IS for unemployed people is included until 1996, after which it was replaced by Jobseeker's Allowance) Jobseeker's Allowance (before 1996 the Unemployment Benefit was considered) Social Fund Grants and Loans (introduced in 1993) Incapacity Benefit (before 1995 data include Invalidity and Sickness Benefit) Other working age benefits: Maternity Allowance, and Widow Bereavement Child Benefit
Disability and carers' benefits	Attendance Allowance Disability Living Allowance (since 1993) Invalid Carers' – Carers' Allowance
Benefits for elderly people	State Pension Pension Credit (before 2003 Minimum Income Guarantee was considered; between 1993 and 2000 data are for people aged 60 and over and on Income Support) War Pensions
Housing	Housing Benefit

CUSTOMS PRODUCTIVITY

For the 1997–08 to 2007–08 output series we relied on data provided by Her Majesty's Revenue & Customs (HMRC) statistical teams. The output data covers the total number of import and export consignments processed by HMCE (Her Majesty's Customs and Excise) and HMRC since 2005. The output data was then weighted year on year, using the share of administration costs for each type of output.

Expenditure data for developing the input series were obtained from HMCE and its successor HMRC Annual Reports. It was necessary to estimate from these sources the total expenditure on staff (paybill) and other expenditure (procurement) for the customs area. It was not possible to separate out capital consumption for the customs and tax activities, so this expenditure category was excluded for the calculation of the index of total inputs. However, since this item tends to represent less than 10 per cent of total expenditure we do not believe that its exclusion will bias the results significantly.

The data was then deflated using the GDP deflator and a total index of inputs was established, using the same base year as for the index of outputs: 2001–02. The ratio of the index of output to the index of input constitutes the best approximation to TFP in the Customs area, but readers need to take into account that capital consumption is not included.

To calculate staff productivity, it was necessary to develop an index based on the number of FTE staff focused on the customs area. These data were obtained from HMCE and HMRC Annual Reports and special care was taken in isolating the number of staff relevant to customs.

An index of FTE staff was then developed, with the base year of 2001–02. The FTE staff productivity index results from the ratio of the index of output to the index of FTE staff.

TAX COLLECTION PRODUCTIVITY

1997–08 to 2007–08 analysis

For the output series we relied on data provided by statistical teams at HMRC. The data covers the total number of taxes processed for the different taxes listed below. It is important to note that this measure is different to the amount of money collected by each type of tax:

Income tax (includes Self-Assessment total, and number of PAYE live schemes)

Corporation tax

Capital gains tax

Inheritance tax

VAT

Excise duties and other indirect taxes (including insurance premium tax, air passenger duty and tobacco duty)

The data was then weighted according to the share of HMRC administration costs employed in processing each type of tax. An index of total output was then calculated, using 2001–02 as the base year.

Expenditure data for the series of inputs were obtained from Inland Revenue and its successor HMRC Annual Reports. Special care was taken to separate out the expenditure that corresponded to the tax effort during the whole period. The administrative costs data was composed of expenditure on staff (paybill) and other expenditure (procurement). It was not possible to estimate capital consumption. These data were then deflated using the GDP deflator. An index of total inputs was then calcu-

lated, using 2001–02 as the base year. The ratio of the index of output to the index of total input is the TFP index.

Alternative analysis

To gain more insight, we employed publicly available data to construct an index of output for the 1987–08 to 2007–08 period. Here, rather than relying on the total number of taxes collected we used the total tax amounts collected by each type of tax. The amount collected by the different taxes listed above was first deflated in order to have comparable yearly data using the GDP deflator. The deflated volumes were then weighted using the share of administration costs for each type of tax.

As with the main 1997–08 to 2007–08 series above, expenditure data on paybill and other expenditure from HMCE/Inland Revenue and HMRC Annual Reports were employed. These data were deflated using the GDP deflator and an index of total input was calculated using 1988–89 as the base year. TFP was the result of the ratio of the index of output to the index of input.