

Methodology of the Monthly Index of Services

Productivity Adjustments

Introduction

At the launch of the experimental Index of Services (IoS) in December 2000, a commitment was made to review and improve where practical, the sources and methods used to measure the service sector. This paper outlines the findings of the review of productivity adjustments.

Summary

The recommendation of this review was to replace the output per head adjustments previously used within the services sector to adjust for labour productivity with the productivity per job series published by the ONS in the Productivity First Release.

The new productivity series was introduced all the way back to 1995 in the IoS and GDP(O) systems. The period from 1995 was revised at Blue Book 2006.

How important are the industries where productivity adjustments impact?

In terms of Gross Value Added (GVA) weights in 2003, the productivity adjustment impacts on:

- 17.3% of the IoS
- 12.8% of Total GVA.

Explanation of the productivity adjustments

GDP(O)/IoS adjust both Average Earnings Index (AEI) deflators and private sector employment series for productivity.

These productivity adjustments are applied in order to take account of productivity changes within the private sector where employment is used as an output proxy.

The rationale for the application of productivity adjustments is that by measuring inputs as a proxy for outputs we are missing out on the impact of changes in labour productivity.

The methodology for creating the productivity adjustment series is applied automatically as part of the computer system. This system attempts to take the output of the service sector components that use direct output indicators and divide this by the employment series for the same industries. The resulting series is applied multiplicatively to the industries where

employment is used as an output proxy. It is used in the same way as a deflator series and will have a similar effect.

Productivity adjustments are applied to AEI and private sector employment series with a cumulative impact of 14% on the output measure of GDP, in terms of GVA weight.

Methodology

Previous methodology¹

Productivity adjusting an AEI series

The productivity adjustment was applied to the AEI series which in turn was combined with RPI (excluding indirect taxes) in order to create an arithmetic mean deflator. This deflator was used to remove the price effect from the turnover proxy used as an indicator in divisions 72, 73 and 74. These series account for 42% of Section K (Real Estate, Renting and Business Activities), 10.1% of GDP(O) and 13.8% of IoS.

Previously two productivity adjustments were used. The difference between the two was the constraint being applied to their growth. The previous methodology is set-out in the table below.

Table 1

SIC	Industry Description	Output Indicator	Source	Deflators	IoS weight per 1000	GVA weight per 1000
					139.2	98.5
72.10	Hardware Consultancy	Deflated gross turnover.	MIDSS	AEI (real estate) adjusted for productivity combined with RPIY.	12.7	9.0
72.20	Software Consultancy				22.5	15.9
72.50	Maintenance & Repair				0.9	0.6
73.00	R&D	Deflated gross turnover.	MIDSS	AEI (other) adjusted for productivity combined with RPIY.	6.2	4.4
74.11	Legal activities	Deflated gross turnover.	MIDSS	AEI (real estate) adjusted for productivity combined with RPIY.	18.0	12.7
74.12	Accounting				14.7	10.4
74.14	Management consultancy activities				12.2	8.7
74.20	Architectural & Engineering activities				23.8	16.8
74.40	Advertising				8.7	6.2
74.87	Other business activities not elsewhere classified				19.5	13.8
Key to table: AEI – ONS Average Earnings Index, MIDSS - ONS Monthly Indicator into Distribution and Services Sector, RPIY – ONS Retail Price Index (excluding indirect taxes).						
Note weights are for 2000						

¹ In this report, the previous methodology refers to the methodology used prior to Blue Book 2005, and the new methodology to the methodology taken on at Blue Book 2006

Productivity adjusting a private sector employment series

In this case the productivity adjustment was directly applied to the private sector employment proxy to effectively "deflate" the impact of changes arising from variations in employee productivity. This impacts on divisions 65, 80, 85, & 91 accounting for 3.8% of GDP(O) and 5.1% of IoS. The methodology is set-out in the table below.

Table 2

SIC	Industry Description	Output Indicator	Source	Deflators	IoS weight per 1000	GVA weight per 1000
					34.2	24.1
74	Other Business Activities	7415 – Employees (GB) in central offices – FTE.	MIDSS	Productivity adjustment constrained to <4%	1.3	0.9
80	Education	801, 802 & 803 - Private sector employees (GB) - Head Count	MIDSS	Productivity adjustment constrained to <1%	1.8	1.2
85	Health & Social Work	Private sector employees (GB) - Head Count & Employees in social work activities (GB) - Head count	MIDSS	Productivity adjustments constrained to <4% & <1%	24.0	17.0
91	Activities of Membership Organisations	Employee in membership organisations (GB) - FTE	MIDSS	Productivity adjustment constrained to <1%	7.1	5.0
Key to table: FTE – Full Time Equivalent, MIDSS - ONS Monthly Inquiry into Distribution and Services Sector						

Reasons for review

The productivity adjustments were applied as part of the monthly automated processing of data. There was a lack of transparency in this process. The adjustments were recalculated every month leading to revisions due to the revisions policy.

Figures 1 & 2 illustrate the changes in growth in the productivity adjustment between successive GDP(O) production rounds.

Figure 1

Services Productivity versus Output per head (1%)

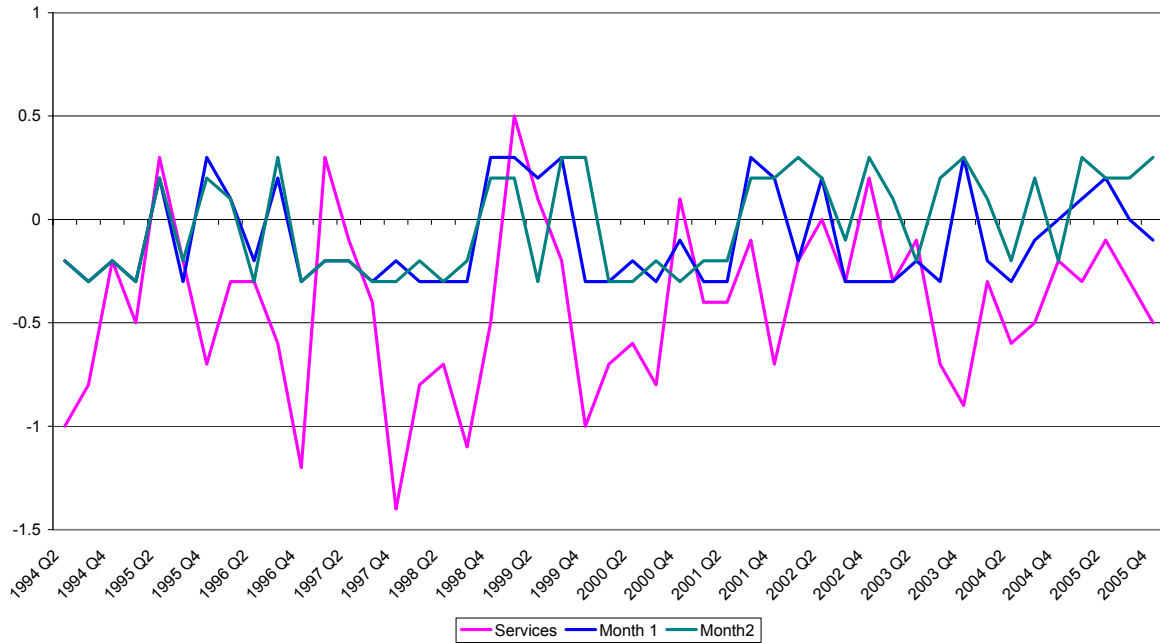
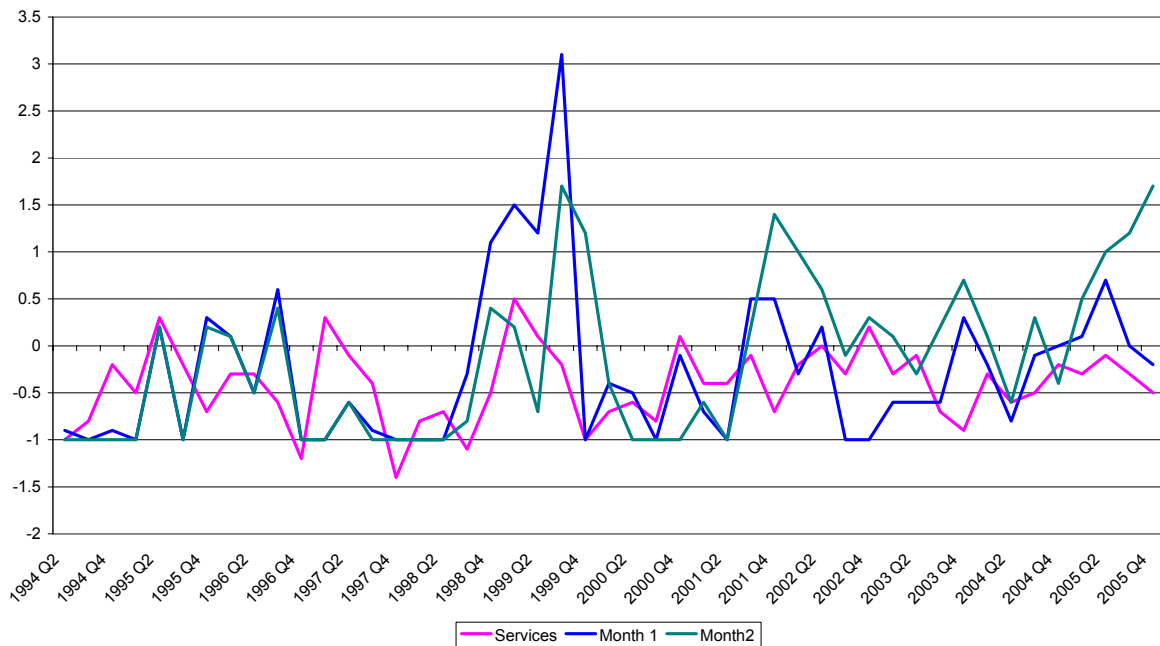


Figure 2

Services Productivity versus Output per head (4%)



In addition, there were a number of other issues with the previous productivity adjustment series.

- The product adjustment was calculated on an output per head basis when there was potential of utilising an output per job series.
- Over time the adjustment had failed to change in line with indicator changes leading to some step-changes in the back history.

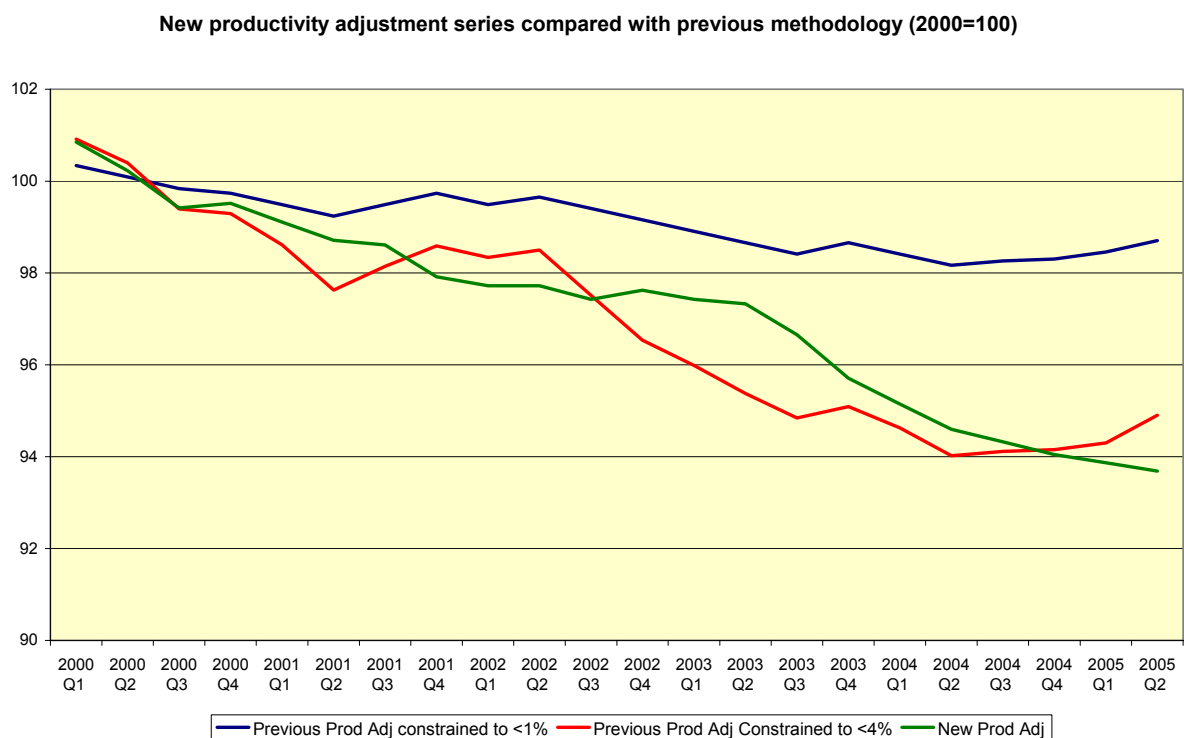
Issues faced by the industry review

Labour Productivity Indices for the Non-Production Industries were produced on an experimental basis by ONS². These indices were quarterly and interpolated into a monthly series.

While this method was experimental and does not seek to exclude input based methods, it was an officially produced estimate of productivity and of improved conceptual quality.

Figure 3 shows the quarterly movements of the two previously used productivity series along with the proposed Productivity Per Job (PPJ) series.

Figure 3



² Please see <http://nswebcopy/statbase/Product.asp?vlnk=9339>. The methodology for deriving productivity estimates can be found in the following article http://www.statistics.gov.uk/articles/economic_trends/labour_productivity_measures_for_non_production_industries.pdf

Who was consulted as part of the Industry Review process?

Within the ONS, there was comprehensive consultation with relevant teams both within National Accounts and in the survey teams.

New methodology

The recommendation of this review was to replace the previous productivity per head adjustments with the productivity per job adjustment published in the Productivity First Release.

Benefits and issues of new methodology

The main benefits and assumptions of the proposals have been summarised in the table below:

Table 3

Benefits		Assumptions
Transparent method	v	General changes in productivity are specific to each industry
Based on published data		

Impact of new methodology

The data have been revised back to January 1995. This was line with the open period for revisions set out in the National Accounts Revisions Policy for Blue Book 2006. Due to a combination of other changes, it is not possible to isolate the change just from the new adjustment.

Contact Information

Any questions or comments on this article are welcome, as are offers to participate in the process of improving industry sources and methods. Any enquiries should be addressed to:

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