

Appendix E

Discontinuities in pay data time series

Using Higher Education Statistics Agency (HESA) statistics

There was a major change in HESA data collection in 2003/04 with the introduction of new individualised staff records. This meant that information collection was extended to professional and support staff in addition to academic staff, and also contracts with a full-time equivalence (FTE) of less than 25 per cent were included.

The transition from the old record to the new makes it difficult to establish a completely consistent time series. The field definition for part-time staff was changed to request part-time salaries to be grossed-up to a full-time equivalent figure. The aim was to introduce consistency in the recording of part time salaries as previously some institutions had been submitting the actual amount paid rather than a pro rata figure. In practice the change in the field definition for part-time staff was not observed effectively by all HEIs, meaning that some reported part-time salaries had not been grossed-up to a full-time equivalent. Since investigations showed inconsistencies in part-time salary time series in particular, the group decided to limit analysis to full-timers.

Problems are less evident in relation to full-time staff, but do exist. The collection of data on support staff is relatively new and may be subject to bedding-in errors. The time series of academic staff may be affected by the extension of the data collection to a wider population of staff.

However, the discontinuity in the ASHE series, discussed below, concerning the introduction of the new Standard Occupational Classification in 2002, does not affect the HESA series since the new SOC 2000 has been used throughout.

Using Annual Survey of Hours and Earnings (ASHE) statistics

There are some problems involved in ensuring consistency of ASHE statistics when using them for measuring change over time. We aimed to use statistics to review change in earnings since the Bett Review's recommendations were implemented in 2001. ASHE replaced the New Earnings Survey (NES) in 2003. While NES is recognisably a close relation to ASHE, methodological changes were made when the latter was introduced. NES figures were recast, applying the new ASHE methodology as far as possible, from 1997 onwards. These recast figures are used for 2001 and 2002.

Methodological changes

There are two potentially greater problems in using ASHE to create a time series. The first is that there have been two methodological discontinuities since its introduction, in 2004 and 2006. For each of these years two sets of statistics have been produced, one consistent with the previous year and one consistent with the following year. This offers two possible approaches to constructing a time series. One is simply to select one version for 2006 and one version for 2004, and indicate that there are discontinuities in the series. This has the advantage of simplicity and the fact that the figures used are those published and so are easily traceable. The obvious disadvantage is that the estimated change over time will partly

reflect methodological changes rather than real change. This can be a particular problem when comparing different occupational groups since the methodological changes will have had different impacts on different groups.

An alternative is to try to eliminate the effects of methodological change. We have adopted this approach. We have been informed by the Office for National Statistics that the estimates of change from one year to another are robust. For example, one can calculate change between 2003 and 2005 by, first, taking the change between 2003 and the 2004 dataset that is consistent with the 2003 methodology; then taking the change between the 2004 dataset consistent with the 2005 methodology, and 2005; then linking the two together.

This is the approach taken in calculating change over time for all groups. An implication of this is that the estimates for some years will be adjusted. We have created a series where the 2008, 2007 and 2006 figures consistent with the 2007 methodology are as published, but all previous figures are adjusted (twice in the case of figures for 2003 and before, to take account of both of the discontinuities). An implication of this approach is that it presents a time series in which some of the figures are not those originally published, and so cannot be directly sourced.

Annexes 1 and 2 compare estimates of change over the period since 2001 with and without the adjustment applied. It is evident that, for a number of the groups considered here, the adjustment has made little difference. This is the case with the broad HE sector and for HE teaching professionals, the largest occupational group within the sector. Rarely does the adjustment result in a change of more than two percentage points in the estimate of growth over the period. However, in a couple of instances the application of the adjustment has changed the relative growth rates of groups within and outside the HE sector (for example, HE teaching professionals recorded faster growth in median gross hourly earnings than employees across the economy as a whole on an unadjusted basis; on the adjusted basis growth was slightly slower than for all employees).

Occupational classification changes

A second problem is that the occupational classification used in 2001 is different to that used from 2002 onwards. For some occupational groups there is congruence between the two classifications. An adviser from the Office for Manpower Economics has noted that figures for University and Polytechnic Teaching Professionals up to 2001 show level and trend consistent with the Higher Education Teaching Professionals figures from 2002 onwards. On that basis we have used the two sets in conjunction for our analyses. We have employed a similar approach for a number of other groups. These are described at appropriate points in the report. For some groups we were unable to find a pre-2002 comparator, and so we have figures only from 2002 onwards. This is the case, for example, with researchers and with 'IT service delivery technicians'. This is recognised in the way that we present the statistics when reviewing change over time. Rather than simply showing the percentage increase in each year using 2001 as the base, we have shown the percentage increase to 2008 for each year from 2001 (or 2002) onwards (i.e. we show change for 2002-8, 2003-8, 2004-8 and so on).

To give a sense of the value of earnings increases we also show changes in the Retail Price Index and the Consumer Price Index.

Annex 1: Effect of correction for discontinuities 2001-7: median earnings change, full-timers.

	Gross Hourly				Gross Weekly			
	Without correction	With correction	2004 ratio	2006 ratio	Without correction	With correction	2004 ratio	2006 ratio
All employees	22.9	25.2	-0.7	1.1	21.5	23.3	-0.6	-0.9
All public sector	24.3	23.6	-0.3	0.8	23.8	23.7	-0.6	0.7
All private sector	20.4	23.7	-0.7	-2	20.1	23.2	-0.7	-1.8
All professionals	19.3	20.3	-0.7	-0.2	23.9	24.5	-0.6	0.1
All teaching professionals	19.6	19.1	0.4	0	25.3	24.9	0.3	0.1
HE teaching professionals	25.4	24	0.3	0	27.6	26.4	0.1	0.9
Secondary teaching professionals	17.5	16.6	0.6	0.2	25.3	25.2	0.1	0
HE SOC 3	24.3	27.3	-1.5	-0.9	23.2	25.5	-0.5	-1.4
Not HE SOC 3	9.8	11.8	-0.7	-1.1	10.3	12.5	-0.8	-1.1
HE scientific technicians	25.5	32.3	-5.1	0	23.7	23.9	0	-0.2
Not HE scientific technicians	14.6	17.4	-1	-1.4	15.2	17	-1.4	-0.2
HE computer technicians	16.2	13.5	2.5	-0.2	11.2	15.7	-2	-1.9
Not HE computer technicians	0.1	1.4	-0.1	-1.2	0.6	1	0.2	-0.5
HE SOC 4	34.4	35.8	0	-1.1	34.6	35	-0.2	0
Not HE SOC 4	27.7	29.9	-0.4	-1.3	24.4	25.8	-0.5	-0.7
HE 41	32.7	33.7	-0.6	-0.1	33.3	34.7	-1	0
Not HE 41	23	25.1	-0.4	-1.3	22.4	23.9	-0.5	-0.7
HE 42	29.2	29.7	0	-0.4	28.3	28.3	0	0
Not HE 42	3.1	5	-0.7	-1.1	4.5	6.9	-0.8	-1.5
HE SOC 9	37.1	36.9	0	0.2				
Not HE SOC 9	27	26.5	0.2	0.2				
HE cleaners	38.7	38.9	-0.3	0.2				
Not HE cleaners	29.2	29	0	0.2				
HE catering assistants	31.9	30.8	0.8	0.2				
Not HE catering assistants	25.3	25.3	-0.2	0.2				
HE industry		30.7				30.3		
Public administration & social security		20.9				23.2		
Education		20.8				22.8		
Human health activities		28.8				28.1		
Social work		28.3				27.1		

Source: ASHE

All figures are percentages.

Columns B and F show percentage increase in earnings 2001-7 without any adjustment for discontinuity.

Columns C and G show percentage increase with adjustments applied (i.e. the figures used in the report).

Columns D and H show the percentage difference between 'new' and 'old' figures in 2004.

Columns E and I show the percentage difference between new and old figures in 2006.

Negative figures in columns D, E, H and I indicate that adjustment will tend to increase % change estimates.

Positive figures in those columns indicate that adjustment will decrease the percentage change estimate.

If the 2004/6 changes have reduced estimates, then a consistency correction should increase them.

If the changes had inflated estimates then the consistency correction should deflate.

NB SOC3 group figures are for 2002/7 change. SOC 9 figures relate to part-timers.

Annex 2: Effect of correction for discontinuities 2001-7: mean earnings change, full-timers

	Gross Hourly				Gross Weekly			
	Without correction	With correction	2004 ratio	2006 ratio	Without correction	With correction	2004 ratio	2006 ratio
All employees	23.2	25.8	-1.6	-0.5	22.3	24.8	-1.6	-0.5
All public sector	26.8	26.3	0.8	-0.3	26.8	26.4	0.7	-0.4
All private sector	21.5	25.3	-2.5	-0.5	20.7	24.4	-2.5	-0.5
All professionals	21.1	22.2	-0.3	-0.5	23.2	24.2	-0.2	-0.6
All teaching professionals	20.1	19.4	0.1	0.5	24.8	24.2	0.1	0.4
HE teaching professionals	26.1	25.5	0.4	0	27.5	26.9	0.4	0.1
Secondary teaching professionals	17.7	17.2	0.1	0.4	23.5	23	0.2	0.3
HE SOC 3	23.4	25.3	-1.1	-0.4	21.3	23.5	-1.3	-0.4
Not HE SOC 3	9.2	11.6	-1.9	-0.3	9.4	11.9	-1.9	-0.4
HE scientific technicians	27.2	30.6	0	-2.6	24.3	24.5	-0.2	0
Not HE scientific technicians	16.2	18.7	-1.1	-1.1	16.4	18.4	-0.7	-0.9
HE computer technicians	16.1	11.8	-2.9	6.9	15.4	19.8	-3	-0.6
Not HE computer technicians	0.4	-0.1	-0.8	1.2	0.8	0	-0.8	1.5
HE SOC 4	38.5	40.5	-0.5	-0.9	38.1	40.3	-0.5	-1
Not HE SOC 4	30.3	32.3	-1.4	-0.1	27.6	29.4	-1.4	-0.1
HE 41	39.1	41.5	-0.5	-1.1	37.7	40.2	-0.5	-1.3
Not HE 41	25.6	27.7	-1.4	-0.2	26	27.9	-1.4	-0.1
HE 42	30.5	31.2	-0.6	0.1	30.6	31.4	-0.7	0.2
Not HE 42	5	7.5	-1.8	-0.6	7	9.3	-1.7	-0.4

Source: ASHE

All figures are percentages.

Columns B and F show percentage increase in earnings 2001-7 without any adjustment for discontinuity.

Columns C and G show percentage increase with adjustments applied (i.e. the figures used in the report).

Columns D and H show the percentage difference between 'new' and 'old' figures in 2004.

Columns E and I show the percentage difference between new and old figures in 2006.

Negative figures in columns D, E, H and I indicate that adjustment will tend to increase % change estimates.

Positive figures in those columns indicate that adjustment will decrease the percentage change estimate.

If the 2004/6 changes have reduced estimates, then a consistency correction should increase them.

If the changes had inflated estimates then the consistency correction should deflate.

NB SOC3 group figures are for 2002/7 change.