

# B

## EXPENDITURE METHODOLOGY

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This appendix outlines the methodologies used to estimate public sector expenditure for Scotland and highlights where these methodologies differ from those used in previous editions of GERS.

### Methodology

Figures for UK and Scottish public sector expenditure are taken directly from official UK Government sources.

Total Expenditure on Services (TES) can be separated into two components:

- Identifiable expenditure: that is expenditure that can be clearly allocated to a country or region in terms of having been spent for the benefit of that country or region; and
- Non-identifiable expenditure; that is expenditure that cannot be identified as benefiting a particular country or region of the UK but is instead incurred on behalf of the UK as a whole.

Total Expenditure on Services covers most expenditure by the public sector. Adding an accounting adjustment reconciles it with Total Managed Expenditure (TME). In 2007-08, TES accounted for approximately 95 per cent of TME.

### UK Expenditure Figures

The primary data source used to estimate Scottish public sector expenditure is the Public Expenditure Statistical Analyses (PESA) database, published by HM Treasury<sup>28</sup>. Within PESA, tables relating to a Country and Regional Analysis (CRA) are available in which UK Government departments and devolved administrations have allocated expenditure programmes to Scotland, Wales, Northern Ireland and English regions.

### Methodologies for apportioning non-identifiable expenditure

In GERS, the methodology to apportion non-identifiable expenditure and identifiable expenditure which occurs outside the UK to Scotland varies according to the particular expenditure estimated.

The methodologies used are listed in Table B.1. Each reflects the approach that is thought to capture most appropriately the 'who benefits' principle. None of the methods used to apportion non-identifiable expenditure to Scotland have changed from the previous edition of GERS.

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<sup>28</sup> [http://www.hm-treasury.gov.uk/pesa2009\\_tables.htm](http://www.hm-treasury.gov.uk/pesa2009_tables.htm)

**Table B.1: Apportionment Methodologies for Non-Identifiable Expenditure: Scotland 2003-04 to 2007-08<sup>1, 2</sup>**

	Non-id	Outside the UK
General public services		
Public and common services	Population	n/a
International services	Population	Population
Public sector debt interest	Population	n/a
Defence	Population	n/a
Public order and safety	Population	n/a
Economic affairs		
Enterprise and econ development	Population	Population
Science and technology	GVA	Population
Employment policies	n/a	Population
Agriculture, forestry and fisheries	n/a	n/a
Transport	GVA	Population
Environment protection <sup>3</sup>	GVA & Population	Population
Housing and community amenities	n/a	n/a
Health	n/a	Population
Recreation, culture and religion	Population	Population
Education and training	n/a	Population
Social protection	n/a	Population
EU transactions	Actual	GVA, VAT & Population

1: Where there is no UK non-identifiable expenditure this is entered as not applicable (n/a).

2: Identifiable expenditure outside the UK, except EU transactions, is apportioned on a per capita basis.

3: All environment protection expenditure is apportioned on a GVA basis, except UKAEA and BNF expenditure on nuclear decommissioning, which is apportioned on a per capita basis.

### Methodology for estimating the accounting adjustment

The public sector expenditure analysis in this report focuses on Total Expenditure on Services (TES). In UK public finance documents, the principal measure of public sector expenditure is Total Managed Expenditure (TME). The main difference between TES and TME is that TES does not include general government capital consumption and does not reverse the deduction of certain VAT refunds in the budget-based expenditure data. It also contains a number of items that are in budgets but not in TME, for example the grant equivalent element of student loans. TME is consistent with ONS National Accounts and the UK Public Sector Finances.

An accounting adjustment is introduced to align TES to TME. The largest component of the UK accounting adjustment is general government capital consumption. This is a measure of the amount of fixed capital resources used up in the process of providing public services.

The estimate of an accounting adjustment for Scotland is calculated using a variety of apportionment methodologies. Firstly, estimates of capital consumption from the ONS regional accounts, together with data from UK local government returns, have been used to estimate capital consumption for Scotland. In 2007-08, capital consumption for Scotland was estimated at £1.5 billion (11.4 per cent of the UK total). This calculation is identical to that underpinning the estimates of general government gross operating surplus on the revenue side. These two elements cancel out when calculating net borrowing.

VAT refunds have been allocated to Scotland using the apportionments derived in the revenue calculations (see Appendix A), and therefore cancel out in the calculation of net borrowing. The figures for Scottish student loan subsidies were provided by HM Treasury. The imputed subsidy from local authorities to HRA adopt the same apportionment allocation as in the gross operating surplus calculations on the revenue side, and the imputed flows for ROCs adopts the same methodology used in 'other taxes and royalties'. These items cancel in the net borrowing calculations. The Scottish share of the Nigerian debt write-off has been allocated on a per capita basis. The residual has been allocated by TES and disaggregated to current and capital components used in Scotland's TES ratios.

In sum, the accounting adjustment for Scotland was estimated at £2.9 billion in 2007-08, or 10.7 per cent of the total UK Accounting Adjustment.

## Amendments to PESA CRA Data

A number of significant improvements have been made to the PESA CRA database in recent years to apportion expenditure more accurately to countries and regions. While many anomalies in previous editions of PESA CRA have been addressed and are now reflected in both PESA CRA 2009 and this GERS report, a number of supplementary amendments to the PESA CRA 2009 dataset were made in producing GERS. The aim of these refinements was to ensure that the public sector expenditure figure for Scotland captures as accurately as possible expenditure for the benefit of Scotland.

The revisions to PESA CRA 2009 made in GERS can be grouped under the following headings and are summarised in Table B2:

- re-classification of expenditure
- re-apportionment of expenditure
- amendment to Scottish Water capital expenditure

**Table B.2: Revisions to Estimates of Total Public Sector Expenditure from PESA 2009: Scotland 2003-04 to 2007-08**

	(£ million)				
	2003-04	2004-05	2005-06	2006-07	2007-08
Total Expenditure in Scotland (PESA) <sup>29</sup>	42,349	44,438	48,098	50,535	53,654
Total Expenditure in Scotland (GERS)	42,360	44,625	47,746	50,267	53,336
<b>Total revisions between PESA and GERS</b>	<b>11</b>	<b>187</b>	<b>-352</b>	<b>-268</b>	<b>-318</b>
Of which					
Re-classification of expenditure	-58	-37	-41	-151	-190
Re-apportionment of expenditure	-123	-136	-430	-116	-128
Amendment to Scottish Water capital expenditure	192	361	120	0	0

<sup>29</sup> In this analysis, an estimate of total expenditure from PESA has been calculated as the sum of all ID expenditure plus a proportion of Non-ID/outside UK expenditures. This figure therefore excludes all amendments documented in this appendix.

### Re-classification of expenditure in PESA 2009

In PESA CRA 2009, some expenditure by UK Government departments with responsibility only in England and Wales was recorded as UK non-identifiable. This included:

- Office of the Third Sector,
- Natural England,
- Commission for Rural Communities,
- an element of central health administration expenditure
- elements of police and crime reduction
- Department for Innovation, Universities and Skills expenditure on the Technology Strategy.
- Department for Culture, Media and Sport (DCMS) expenditure on libraries and administration.

In GERS, such expenditure has been re-classified as expenditure for England and Wales only. As a result, no share was apportioned to Scotland in this publication.

As discussed in Box 6.1 in GERS railways expenditure, alongside expenditure on roads, is apportioned to Scotland on an 'in' basis. This means that expenditure 'in' Scotland on railways is apportioned to Scottish public sector expenditure while, where possible, a zero share is allocated to Scotland for all expenditure on rail across the rest of the UK. This required a number of modifications to the underlying PESA data which affected the expenditure by London and Continental Railways, the Channel Tunnel Rail link, and Network Rail.

**Table B.3: Re-classification of Expenditure in PESA 2009: Scotland 2003-04 to 2007-08**

	(£ million)				
	2003-04	2004-05	2005-06	2006-07	2007-08
Office of the third sector	-	-	-	-	-1
Natural England	-9	-7	-10	-16	-15
Commission for Rural Communities	0	0	0	-1	-1
Central health administration	-1	-1	-1	-1	-1
Technology Strategy	0	0	-3	-7	-1
Libraries and DCMS Administration	-18	-3	-3	-4	-4
Network Rail	0	0	0	-94	-93
London and Continental Railways	-16	-12	-11	-8	-6
Channel Tunnel	0	0	-1	-1	-3
Police and Crime Reduction	-8	-7	-7	-12	-59
Other	-6	-6	-5	-6	-7
<b>Total</b>	<b>-58</b>	<b>-37</b>	<b>-41</b>	<b>-151</b>	<b>-190</b>

- : less than £0.5 million

Re-apportionment of Expenditure in PESA 2009

In PESA CRA 2009, expenditure on nuclear decommissioning was classified as identifiable to the region where nuclear facilities are located. However, as discussed in Box 6.4 it is believed that this expenditure is best captured as a non-identifiable expenditure. This has been amended and nuclear decommissioning expenditure has been apportioned on a per capita basis. Other associated nuclear expenditure has also been reappportioned on a per capita basis.

In addition to this relatively major revision, a number of smaller amendments were made.

Expenditure by the Child Support Agency has been classified as non identifiable and assigned on a population basis to Scotland. Similarly non attributable administration expenditure by the Department for Business, Enterprise and Regulatory Reduction has been classified as non identifiable and assigned to Scotland on a population basis.

PESA CRA 2009 assigns no expenditure from the Export Credit Guarantee Department to Scotland. As the department covers the whole of the UK, an element of this expenditure has been assigned in Scotland in proportion to Scotland's share of UK Manufacturing GVA.

Finally, in PESA CRA 2009, expenditure for the Scottish Office Pension Agency, NHS and Teacher pensions was allocated only to Scotland. In contrast, expenditure by comparable pension agencies across the rest of the UK was allocated to the residence of the recipient of the pension. To correct for this asymmetry, information from the Scottish Office Pension Agency was used to re-apportion these pension expenditures across the UK according to residence. As some elements of the pension expenditure were negative this change has resulted in a slight increase in expenditure assigned to Scotland.

**Table B.4: Re-apportionment of Expenditure in PESA 2009: Scotland 2003-04 to 2007-08**

	(£ million)				
	2003-04	2004-05	2005-06	2006-07	2007-08
Nuclear Decommissioning	-90	-102	-388	-88	-95
Other Nuclear Expenditure	-21	-11	8	1	5
Child Support Agency	-17	-17	-27	-34	-40
Export Credit Guarantee Department	4	-2	1	3	2
BERR Non Attributable Administration	-7	-12	-34	-7	-6
Public Pensions	7	7	9	8	5
<b>Total</b>	<b>-123</b>	<b>-136</b>	<b>-430</b>	<b>-116</b>	<b>-128</b>

Amendment to Scottish Water capital expenditure

Due to a reporting change, capital expenditure by Scottish Water in PESA CRA 2008 and 2009 was revised downwards from the expenditure reported in PESA CRA 2007. While the figures for 2006-07 and 2007-08 in PESA CRA 2009 are accurate, the figures for earlier years are incorrect. Following a review of the actual capital expenditure undertaken by Scottish Water, GERS replaced the erroneous data in PESA CRA 2009 with the correct data, entered in PESA CRA 2007, for the years 2003-04 to 2005-06. These are consistent with Scottish Water's published annual accounts.

**Table B.5: Amendment to Scottish Water Capital Expenditure in PESA 2008: Scotland 2003-04 to 2007-08**

	(£ million)				
	2003-04	2004-05	2005-06	2006-07	2007-08
Scottish Water capital expenditure	192	361	120	0	0
<b>Total</b>	<b>192</b>	<b>361</b>	<b>120</b>	<b>0</b>	<b>0</b>

**Revisions to Expenditure Estimates from GERS 2006-07**

Tables B.6 to B.9 set out the changes in estimates of public expenditure in Scotland and the UK between this report and GERS 2006-07. These revisions reflect changes in the underlying PESA CRA data and other revisions to the GERS methodology. Revisions to public expenditure that can be traced to changes in the PESA CRA database are specified separately.

Revisions to total expenditure

Table B.6 displays the difference between the estimates of total expenditure in GERS 2006-07 and those contained in Chapter 6 of this publication.

Total public sector expenditure for Scotland in 2006-07 has been revised up by £372 million (0.7 per cent of total expenditure). For the UK as a whole total expenditure has been revised down by £720 million in 2006-07 (0.1 per cent of total expenditure). The majority of these changes reflect revisions made in PESA 2009 which have a corresponding impact on the estimates in this edition of GERS.

**Table B.6: Revisions to Estimates of Total Expenditure: Scotland 2003-04 to 2006-07**

	(£ million)			
	2003-04	2004-05	2005-06	2006-07
<b>Scotland</b>				
GERS 2006-07	41,932	44,073	46,956	49,895
GERS 2007-08	42,360	44,625	47,746	50,267
<b>Revision</b>	<b>428</b>	<b>552</b>	<b>790</b>	<b>372</b>
Of which revisions made in PESA 2009	429	616	796	204
<b>UK</b>				
GERS 2006-07	438,905	470,553	499,501	523,723
GERS 2007-08	439,608	471,000	501,166	523,003
<b>Revision</b>	<b>703</b>	<b>447</b>	<b>1,665</b>	<b>-720</b>
Of which revisions made in PESA 2009	583	404	1,568	-1,044
<b>Scotland/UK Ratio</b>				
GERS 2006-07	9.6%	9.4%	9.4%	9.5%
GERS 2007-08	9.6%	9.5%	9.5%	9.6%
<b>Revision</b>	<b>0.1%</b>	<b>0.1%</b>	<b>0.1%</b>	<b>0.1%</b>

All other revisions are net changes between GERS 2006-07 and GERS 2007-08.

### Revisions to identifiable expenditure

Table B.7 summarises the effects of methodological changes and revisions to the underlying PESA CRA data on the estimates of Scottish identifiable expenditure between 2003-04 and 2006-07. In 2006-07, the estimate of identifiable expenditure in Scotland has been revised up by £304 million. This revision equates to 0.7 per cent of identifiable expenditure in 2006-07.

Revisions made in PESA 2009 reflect changes made by UK Government departments in allocating spending to UK countries and regions. The reduction of £158 million is the difference between the estimate of total identifiable expenditure on services for Scotland reported in Table 9.1 in PESA 2009 and that reported in the same table in PESA 2008.

**Table B.7: Revisions to Estimates of Identifiable Expenditure: Scotland 2003-04 to 2006-07**

	(£ million)			
	2003-04	2004-05	2005-06	2006-07
GERS 2006-07	36,383	38,024	40,686	43,134
GERS 2007-08	36,780	38,541	41,298	43,438
<b>Revision</b>	<b>397</b>	<b>517</b>	<b>612</b>	<b>304</b>
Of which revisions made in PESA 2009	327	552	642	158

All other revisions are net changes between GERS 2006-07 and GERS 2007-08.

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### Revisions to non-identifiable expenditure

Table B.8 summarises the effects of methodological changes and revisions to the underlying PESA data on the estimates of Scottish non-identifiable expenditure between 2003-04 and 2006-07, the final year for which such comparisons are possible.

In total, revisions to the underlying PESA data and changes in apportionment methodologies have resulted in an upward revision of £68 million to the estimate of total non-identifiable expenditure for Scotland in 2006-07. This revision equates to 1 per cent of total non-identifiable expenditure in that year.

**Table B.8: Revisions to Estimates of Total Non-Identifiable Expenditure: Scotland 2003-04 to 2006-07**

	(£ million)			
	2003-04	2004-05	2005-06	2006-07
GERS 2006-07	5,549	6,050	6,270	6,761
GERS 2007-08	5,579	6,084	6,448	6,829
<b>Revision</b>	<b>30</b>	<b>34</b>	<b>178</b>	<b>68</b>
Of which revisions made in PESA 2009	102	64	155	46

All other revisions are net changes between GERS 2006-07 and GERS 2007-08.

### Total Revision to expenditure (including accounting adjustment)

The overall change in Total Managed Expenditure (TME) is highlighted below. The revision is equal to the sum of revisions to Total Expenditure on Services (TES) and the accounting adjustment.

**Table B.9: Revisions to Estimates of Total Managed Expenditure: Scotland 2003-04 to 2006-07**

	(£ million)			
	2003-04	2004-05	2005-06	2006-07
<b>Total Expenditure on Services</b>				
GERS 2006-07	41,932	44,073	46,956	49,895
GERS 2007-08	42,360	44,625	47,746	50,267
<b>Accounting Adjustment</b>				
GERS 2006-07	1,713	2,240	2,519	2,673
GERS 2007-08	1,868	2,292	2,486	2,801
<b>Total Managed Expenditure</b>				
GERS 2006-07	43,645	46,313	49,475	52,568
GERS 2007-08	44,228	46,917	50,232	53,068
<b>Revision to Total Managed Expenditure</b>	<b>583</b>	<b>604</b>	<b>757</b>	<b>500</b>

## Sensitivity Analysis

As the figures for public sector expenditure for Scotland contained in this report are estimates, it is important to obtain a sense of the impact on total expenditure of any possible variation in the estimates of individual expenditure components. Table B.10 illustrates the effect a 1 per cent variation in the estimate of each expenditure programme would have on overall expenditure for Scotland in 2007-08.

As the largest elements of public sector expenditure for Scotland, changes in the estimated level of social security, health and education will have the most significant impact on estimated total public sector expenditure for Scotland.

<b>Table B.10: Effect of a 1% Change in Expenditure: Scotland 2007-08</b>		
	<b>Impact of 1% variation</b>	
	<b>(+/- £ million)</b>	<b>as % of total expenditure (+/- %)</b>
General public services		
Public and common services	14	~
International services	6	~
Public sector debt interest	26	~
Defence	28	0.1%
Public order and safety	24	~
Economic affairs		
Enterprise and economic development	10	~
Science and technology	4	~
Employment policies	3	~
Agriculture, forestry and fisheries	7	~
Transport	28	0.1%
Environment protection	10	~
Housing and community amenities	17	~
Health	98	0.2%
Recreation, culture and religion	14	~
Education and training	74	0.1%
Social protection	172	0.3%
EU transactions	-2	~
<b>Total</b>	<b>533</b>	<b>1.0%</b>

- : less than £0.5 million

~ : less than 0.05%

