

## **Submission to the House of Lords Select Committee on the Barnett Formula**

by James Foreman-Peck,

*Professor of Economics, Cardiff Business School, Cardiff University, Colum Drive Cardiff CF10 3EU*  
[foreman-peckj@cf.ac.uk](mailto:foreman-peckj@cf.ac.uk) mobile 07947 031945

1. This note first shows the spending pattern achieved under the current system of devolution financing. Consistent with the untrammelled operation of the Barnett Formula, Welsh public expenditure per head increased by a smaller proportion than English spending between 2002 and 2007. But Scotland, unlike Wales, obtained considerably more funding than predicted by a simplified application of the Barnett Formula. In the second section, an alternative rule is presented that maintains existing proportionate differentials in public spending between UK countries. This permits by comparison a calculation of the ‘Barnett Squeeze’ on different assumptions. For Wales, taking 2002/3 as the baseline, the predicted ‘squeeze’ on the 2007/8 budget was about £630 million, and compared with actual (planned) spending, it was around £860 million. The third section suggests a simple needs-based rule to replace Barnett. Household disposable income is a more appropriate needs indicator than GVA per head (when both are adjusted for price differences between regions) because GVA measures production which is less related to need than is income. The rule takes as the needs standard variations with household income of UK state spending on benefits in kind. According to this approach a continuing ‘Barnett squeeze’ is justified.

### ***1. Spending patterns under the Barnett Formula***

2. Under the Barnett Formula, once extra spending has been agreed by central government, it is divided between UK countries on the basis of population. Increases in English public spending in relevant categories (‘comparable programmes’) are matched by equal increases per head in devolved administration budgets. But since the devolved administrations spend more per head of their populations, their budgets are therefore augmented by smaller proportions than England’s. Hence their expenditures per head tend to converge slowly to that of England (the ‘Barnett Squeeze’).

3. Historically there was some ‘bypass’ of Barnett Formula (and use of incorrect population factors). H M Treasury expected that the greater transparency introduced with the Devolution Settlement would reduce such anomalies- and certainly more information as to the operation of the Formula is now in the public domain.

4. The present exercise attempts to assess how much convergence of spending per head the operation of the formula has produced during the period 2002/3-2006/7 (and also to 2007/8, although only planned rather than outcome figures are available for the last date at present). This allows a calculation of (net) formula ‘bypass’.

5. As a reasonable simplification, assume of total identifiable public spending on services at the country and region level, only ‘social protection’ and ‘agriculture’ are not devolved functions. Then the growth of such spending per head can be compared between England and the devolved administrations.

6. This calculation in Table 1 shows that public spending in Wales increased about as much as predicted by the Barnett Formula between 2002 and 2006. Despite Objective One funding, there was minimal net ‘bypass’. Welsh ‘devolved’ spending rose by a little more than 33 percent, while comparable expenditure in England increased by over 38 percent. With greater public spending per head, the Formula prescribes a smaller percentage rise in expenditure for Scotland than for

Wales (about 31 percent compared with 33 percent). Yet Scotland, unlike Wales, appears to have ‘bypassed’ the Formula, almost matching England’s percentage increase in spending per head 2002/3-2006/7.

7. Between 2006/7 and 2007/8, planned spending was to rise by 8.6 percent in England (Table 1). Allocating the implied sum of money per head to the devolved administrations according to the populations, should have given Wales a 7.5 percent increase and Scotland 6.8 percent. However Welsh ‘devolved’ spending increased by 1.8 percentage points less than predicted by the Barnett Formula, while Scottish spending increased by one percentage point more.

8. These figures show that the ‘Barnett Squeeze’ took less from Welsh spending than other budgetary influences between 2006/7 and 2007/8. For one way of calculating the squeeze is to compare the actual budget increment with how much money, say, Wales would receive if the percentage increase in budget was the same as England’s under the Formula. But this approach would require a larger total UK budget. Calculating the ‘squeeze’ within the existing budget requires an alternative budgetary rule against which the current Formula can be assessed.

**Table 1 Identifiable Public Spending on Services**

	2002/3	2006/7	2007/8	2002-6 %	2002-7 %	2006-7 %
<b>Wales</b>						
‘Devolved’ per head (£)	3662	4802	5051	31.1	37.9	5.2
‘Devolved’ (£ mill.)	10693	14241	15049	33.2	40.7	5.7
‘Barnett’ predicted budget increase				32.9	42.9	7.5
<b>Scotland</b>						
‘Devolved’ per head (£)	3922	5289	5676	34.8	44.7	7.3
‘Devolved’ (£ mill.)	19824	27061	29168	36.5	47.1	7.8
‘Barnett’ predicted				30.6	40	6.8
<b>N Ireland</b>						
‘Devolved’ per head (£)	4497	5368	5684	19.4	26.4	5.9
‘Devolved’ (£ mill.)	7751	9349	10008	20.6	29.1	7
‘Barnett’ predicted				26.7	34.9	6.7
<b>England</b>						
‘Devolved’ per head (£)	3092	4192	4522	35.6	46.3	7.9
‘Devolved’ (£ mill.)	153522	212774	231082	38.6	50.5	8.6
‘Barnett’ predicted budget increase				39.1	50.7	8.6

Notes: Calculated from HM Treasury PESA. Tables 10.1-10.4. ‘Devolved’ = total identifiable spending – agriculture - social protection. ‘Barnett’ predicted = increase over period\* average population share.

### ***II. Barnett without the squeeze.***

9. The objective of allocating a given sum of money without the convergence property of the Barnett Formula is easily achieved. Calculate the total devolved categories of spending for England, as well as for the other administrations. Divide the total UK figure into the sum to be distributed. Then allocate to each administration a proportionate increase in their budgets equal to the resulting fraction. This ensures the continuation of existing disparities in proportionate terms. For any ‘comparable programme’ a similar exercise can be undertaken.

10. As an illustration, suppose the increased money available is expected to be £15 billion and the current spend is £300 billion on 'comparable programmes'. Under Barnett the £15 billion is allocated according to population. For ease of calculation we assume in the planned expenditure period that England's population is 50 million Wales 3 million Scotland 5 million and Northern Ireland 2 million. Under Barnett England gets  $\frac{50}{60} \times 15$  billion = £12.5 billion and Wales gets  $\frac{3}{60} \times 15$  billion = £750 million. With 'Barnett relaxed' each country receives  $(\frac{15}{300}) = 5$  percent. The corresponding number in sterling depends upon the country baseline. If England's baseline was £235 billion (£4700 per head with no population growth according to these numbers) and Wales' £20 billion (£6667 per head), England would receive  $(235 \times .05) = £11.75$  billion, less than under Barnett, and Wales gets  $(20 \times .05) = £1$  billion, more than under Barnett.

**Table 2 Barnett Relaxed and the Squeeze 2006-7**

	% 2006-7	% point difference from UK % increase 2006-7 (8.3)	'Squeeze' 2006-7 £ million	% 2002-7	'Squeeze' 2002-7 (48.8% UK increase)
<b>Wales</b>					
Actual 'devolved' increase	5.7	2.6	370	40.7	866
Barnett predicted increase	7.5	0.8	114	42.9	631
<b>Scotland</b>					
Actual 'devolved' increase	7.8	0.5	135	47.1	337
Barnett predicted increase	6.8	1.5	406	40	1744
<b>N Ireland</b>					
Actual 'devolved' increase	7	1.3	122	29.1	1527
Barnett predicted increase	6.7	1.6	150	34.9	1077
<b>England</b>					
Actual 'devolved' increase	8.6	-0.3	-638	50.5	-2610
Barnett predicted increase	8.6	-0.3	-638	50.7	-2917

Note: The 'Squeeze' columns do not sum to zero because of rounding errors.

11. Table 2 takes the figures for 2006-2007 and 2002-7 from Table 1 to calculate the difference the 'relaxed formula' would have made to the allocation of 2007/8. Applying the 'relaxed formula' for 2007/8 only, England loses 0.3 percentage points of the increase, amounting to almost £640 million. Wales gains £114 million compared with the Barnett formula and £370 million compared with the actual allocation. Scotland gains £406 million from removal of the 'squeeze', but only £135 million more than planned.

12. The impact of the 'squeeze' is cumulative. Had the 'relaxed formula' been adopted in 2002, the effect in 2007/8 would have been much greater. A given percentage increase exercises a larger absolute effect the higher the base on which it is calculated. The earlier the base is raised (by adopting the 'relaxed formula') the higher will be the base in any subsequent year. Table 2 shows that in 2007/8 England's allocation would have been £2.6-2.9 billion less, if the relaxed

formula had been introduced in 2002, and Wales would have been better off by £0.5-0.8 billion. As with the one year exercise, the Barnett squeeze on Scotland is much more severe in theory than in practice. The opposite is the case for Wales.

### **III. Needs and Devolution**

13. The ‘Relaxed Barnett Formula’ shares with Barnett the advantages of budgeting simplicity and ease of calculation. It also removes the apparently arbitrary convergence property of Barnett. But it embeds no less arbitrary differences in public spending per head of population between the countries of the United Kingdom. These differentials cannot readily be explained in terms of variations in ‘needs’ between the countries. One reason is that there is no agreed measure of general public spending ‘needs’<sup>1</sup>. GVA per head has been suggested as an aggregate regional indicator but GVA differences reflect divergent regional employment participation rates. Wales’s rate was 55.4 percent at the end of 2006 compared with the UK’s 60 percent. If Wales had achieved the UK rate it is reasonable to expect Welsh GVA per head to be 81 percent of the UK average rather than 75 percent<sup>2</sup>.

14. Household disposable income (standardised for household membership and including transfer payments) is not subject to this difficulty and is more obviously related to need than GVA, which concerns productivity and participation. Differences in regional costs of living should be factored into the needs indicator for an adequate comparison as well. Subject to these and other adjustments, it is possible to obtain a relationship between household income and utilization of public services for a cross-section of the UK population and apply this to a modified income index to obtain a public expenditure allocation model.

15. We use the approximation to ‘devolved’ expenditure under Barnett across UK countries, because England is not subject to the Formula and the other countries do not have identical devolved spending powers. For present purposes we will assume that this measure of ‘devolved’ spending is equivalent to ‘state benefits in kind’ – of which health and education are the largest components. We can compare the equivalent benefit categories received by different income groups in the UK with the comparable benefit possibilities allocated to devolved administrations and English regions by average household income. If the Barnett Formula is working well, we should find similar relations between UK household receipt of state benefits in kind by income as between devolved spending and household income across regions.

**Table 3 UK Household Income and State Benefits in Kind**

Household Income decile	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
Equivalised disposable income (£)	7420	11665	14203	16749	19,403
State benefits in kind (£)	8003	6951	6495	6324	5,774

Source: *Economic and Labour Market Review*, Vol 2 No 7 July 2008

16. Populations of the devolved governments account for only about one sixth of the UK total, so atypical spending allocations to these countries will not significantly influence the total distribution in the present exercise. Table 3 shows the average state benefits in kind received by

<sup>1</sup> Particular needs indicators are more common but still controversial. Free school meals are sometimes used as an indicator of educational needs and the standardised mortality rate on occasion has been adopted for health needs.

<sup>2</sup>  $(GVA/Population.) = (GVA/worker).(workers/pop.)$ . UK GVAP=100, Wales GVAP=75.  $(100/75) = [UK/WalesGVAper\ worker]*[0.60/0.554.]$ . Implied Welsh GVA per worker 81.2% of UK. With UK employment rate Wales would achieve the same GVA per head.

households by decile of disposable incomes in the UK. As incomes rise, state benefits utilised fall.

17. In table 4 and Appendix figure 1, which show the relation between household income by region and public spending, no such negative relationship is observed - once the lowest spending area (in figure 1 the bottom right), England., is excluded. The two highest areas of 'devolved' public expenditure are Northern Ireland and Scotland. The lowest household income area is the North East region of England, which received higher public spending in 2007/8 than Wales. Consistent with the negative relation of Table 1, Wales has a greater household disposable income in 2006 than the North East. The anomalies by UK spending standards then are Northern Ireland and Scotland. These countries receive more in relation to household after-tax income in public spending than the rest of the UK. But Wales is slightly below a line connecting the North East and England as a whole, at least hinting that Wales, unlike Northern Ireland and Scotland, is receiving a slightly poorer deal than comparable English regions.

**Table 4 Gross Value -Added , Household Income and Public Spending**

	<b>GVA per head 2007</b>	<b>Gross Household Disposable Income 2006</b>	<b>'Devolved' public spending per head, 2007/8 planned</b>
Wales	14877	12300	5051
North East	15688	11800	5425
N Ireland	16170	12000	5684
Scotland	19152	13100	5676
England	20463	14000	4522

Source: ONS 12 Dec 2008 Regional, sub-regional and local gross value added; HM Treasury PESA Tables 9.10a and 9.10b.

Note: Definition of 'devolved' as in Table 1.

18. Table 5 shows regional variations in the cost of living. Whereas prices excluding housing costs in Wales were about 4 percent below the UK average, when housing costs are taken into account, the Welsh cost of living was 78 percent lower than the UK average in 2004. How housing is taken into account in the needs indicator is therefore critical.

**Table 5 Price Indices in 2004 Relative to the UK (UK=100)**

	Excluding housing		Including housing	
	National weights	Regional Weights	National Weights	Regional Weights
Wales	96.5	95.8	93.1	92.1
Scotland	98.0	96.1	94.5	93.1
Northern Ireland	100.9	98.7	95.8	95.3
North East	96.1	94.9	94.2	93.0

Source: Wingfield, D., Fenwick, D., Smith, K. 'Relative regional consumer price levels in 2004' *Economic Trends* 615 February 2005

19. The bulk of devolved spending is on state benefits in kind. Figure 2 shows how these benefits vary with household disposable income. One description of the relation between income and benefits is that a one percent rise in income is associated with 0.39 percent fall in state benefits consumption (Table 6) A fair allocation would then be obtained from the proportionate deviation of devolved household disposable income from the UK average, adjusted for differences in costs of living.

**Table 6 Regression of Proportional Relation Between Household Disposable Income and Benefits in Kind**

Adjusted R Square	0.98	
Observations	10	
	<i>Coefficients</i>	<i>Standard Error</i>
Intercept	12.55	0.20
Disposable income	-0.39	0.02

20. In the case of Wales, household disposable income, now 11 percent lower than the UK average, must be divided by 0.921 (Table 5) or 0.931 to correct for lower Welsh prices. Real income per head is then approximately 4 percent lower than the UK average. Wales therefore requires  $0.39 \times 4\% = 1.6\%$  more spending per head or per household than the UK average, if the distribution of state benefits in kind in relation to income across the UK is taken as the standard.

21. According to this needs measure Welsh devolved spending per head should be reduced. Wales' identifiable state spending net of social protection and agriculture 2007/8 was £5051 per head and the UK was £4679. That is, Welsh state spending per head was 7.9 percent greater than the UK average, compared with the 1.6 percent warranted. For the other devolved administrations, the excess of budgets over those warranted by UK spending are far greater.

22. This aggregate approach to needs assessment has the advantage of relative simplicity, consistent with devolution. Devolved administrations themselves employ needs-based rules to allocate spending between health authorities and among local governments. They make the decision about the resources to allocate between spending departments. So for central government to employ a needs-based formula that explicitly takes into account health, education, transport and so on, would be second guessing the lower tier government. The weights assigned to the various indicators would reflect the central government's valuations not those of the devolved administrations.

23. A cost-based formula is unsatisfactory in removing incentives to control costs and to adjust provision according to circumstances. Scotland might have chosen a less expensive housing policy before devolution had it faced a less accommodating budget constraint. By contrast, a modified income approach provides encouragement for cost-containment and flexible cost-minimisation, at least in the short-run. If a devolved authority is less efficient than the UK average at providing public services, it will be less able to conceal the shortcoming by spending more on them.

24. While at first sight the Barnett squeeze appears arbitrary, the application of an aggregate needs indicator suggests it is a pragmatic solution to the excessive budgets granted to the devolved administrations.

## Appendix. Data for Calculating the Barnett Replacement

1. To calculate 'devolved' spending, 'social protection' is excluded from 'regionally identifiable public spending', because most of this expenditure is not devolved. Agriculture is also excluded from 'devolved' spending on similar grounds to 'social protection'. Most of the two categories are classified as Annually Managed Expenditure, rather than the Department Expenditure Limits expenditure, which broadly corresponds with the block grant to devolved governments (as well as with UK government departments' budgets).

'Spending that cannot reasonably be subject to firm multi-year limits is included in Annually Managed Expenditure (AME). ... It includes social security benefits, local authority self-financed expenditure, payments under the Common Agricultural Policy, net payments to EC institutions and debt interest.' ([http://www.hm-treasury.gov.uk/spend\\_sr00\\_repannexa.htm](http://www.hm-treasury.gov.uk/spend_sr00_repannexa.htm))

### *Aggregate Needs Indicators*

2. GVA is available for 2007 (ONS First Release December 2008 *Regional, sub-regional and local gross value added*) whereas household income by region is only available for 2006 (ONS First Release May 2008 *Regional Disposable Household Income*). On the other hand, at first sight GVA is not such a good needs indicator as household income- because it includes the benefits in kind that we are trying to predict. These benefits are supplied at regional level and therefore their resource costs should be included in regional value added. Insofar as greater benefits are provided to lower income households, this redistributive effect of taxation should therefore tend to equalize GVA per head between regions with different household incomes. But, in the opposite direction, a region such as Wales with a low labour force participation will also have a low GVA per head. Household income on the other hand, which includes central government transfers designed to reduce interpersonal inequalities and 'needs', will show less divergence from the national average.

3. The figures for Wales for these two sources show a marked divergence, with Wales 25 percent below the UK average GVA per head in 2007 but only 11 percent behind for household income in 2006. Although Welsh GVA grew more slowly than the UK average 2006-7, by 0.9 percent, this is insufficient to account for the discrepancy when used to extrapolate the household income divergence.

4. Gross disposable household income is income after taxes and social contributions, property ownership and provision for future pension income. It includes pension income, income support<sup>3</sup> and imputed rent values- what owner-occupiers would have to pay for living in their homes if someone else owned them. Subtracted to get household incomes are 'Other outgoings'. These payments include those made by households to other sectors on interest (e.g. mortgages) and rent. So apparently the lower costs of property ownership in Wales are already taken into account with this measure.

5. The GVA measure (income approach) excludes transfer payments such as child benefit and the state retirement pension. It also includes an imputed value for rental incomes of owner-occupiers to cover the rental value of their properties. Regional estimates are calculated using estimates of average property prices by region. Higher property prices in SE England mean higher imputed rentals and therefore higher GVA and disposable income. But they also mean higher mortgage payments for those buying property, or higher actual rent outlays. GVA and disposable income should be deflated by the price index including housing costs in any needs index.

<sup>3</sup> [http://www.statistics.gov.uk/articles/nojournal/Regional\\_Household\\_Income\\_article\\_March\\_2007.pdf](http://www.statistics.gov.uk/articles/nojournal/Regional_Household_Income_article_March_2007.pdf)

**Estimates of UK State Benefits in Kind By Income Group**

6. Data for the relation between state benefits and final income are from the official *Economic and Labour Market Review*, Vol 2 No 7 July 2008 ‘The effects of taxes and benefits on household income, 2006/07’, Table 14 (Appendix 1). Average incomes, taxes and benefits by decile groups of all households, 2006/07. Figure 2 below shows the household deciles with a constant proportionate relation between the variables, and this is the basis of the calculation of Table 6 above. An equation relating benefits to the reciprocal of income fits the data slightly less well.

7. The largest spending items are health and education. How well does the ONS ELMR study estimate these items? Any survey-based estimate of, say, health spending utilisation will reflect not just ‘need’ but the demand and supply responses as well. Higher income people may well be more articulate and accomplished at extracting the health benefits they require from the NHS. So if we could get actual health state benefits consumed by income group it would not necessarily tell us precisely what we want. The approach used in this survey (described below) is reasonable.

. ‘Data are available on the average cost to the Exchequer of providing the various types of health care – hospital inpatient/outpatient care, GP consultations, dental services, etc. Each individual in the EFS is allocated a benefit from the National Health Service according to the estimated average use made of these various types of health service by people of the same age and sex, and according to the total cost of providing those services. The benefit from maternity services is assigned separately to those households containing children under the age of 12 months. No allowance is made for the use of private health care services.’

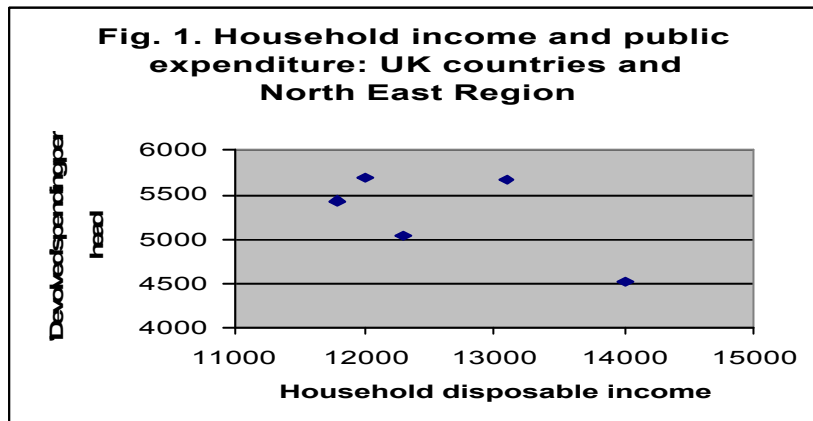


Figure 2

