

STRATHCLYDE

DISCUSSION PAPERS IN ECONOMICS

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An Exposition and Critique of the Barnett Formula**

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No. 03-08

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The Regional Distribution of Public Expenditures in the UK: An Exposition and Critique of the Barnett Formula*

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* The authors gratefully acknowledge the support of the ESRC (grant L219252102) under the Devolution and Constitutional Change Research Programme. We are grateful to Jan Mønnesland for his helpful suggestions and comments on an earlier draft and to Alex Christie, Scottish Economic Policy Network, for discussions on a number of aspects of the Barnett formula. We are also indebted to participants for comments on related research during: staff seminars at the Universities of Aberdeen (May, 2002) and St Andrews (October, 2002); British and Irish Regional Science Association conference, Brighton (August, 2002); David Hume Institute Devolution Seminar, Edinburgh (December, 2002); Southern Regional Science Association, Louisville, Kentucky (April 2003).

1. Introduction

The Barnett formula allocates public funds to Northern Ireland, Scotland and Wales for those parts of the budget that are administered locally, by the relevant devolved authorities.¹ The devolved authorities have discretion over the distribution of these budgets. The locally administered budget was previously the block grant, now the Department Expenditure Limit (DEL). The formula was put in place initially in 1979-80 in Scotland and two years later for Northern Ireland and Wales. However, the devolution process in the UK has significantly increased the level of scrutiny that the formula has been subjected to and has further fuelled the controversy surrounding its implications for each of the regions of the UK. This scrutiny is likely to increase in view of the likelihood of yet further devolution (among the English regions, although their own expenditures are not formula-driven) and of continuing pressures from some quarters for greater fiscal autonomy within the currently devolved territories.

In this paper we provide a critical analysis of the operation of the Barnett formula. In Section 2 we explore the implications of the Barnett formula for regional government expenditure and expenditure *per capita* with the aid of some simple analytics. We then outline the history of the formula in Section 3. In Section 4 we discuss aspects of the “Barnett equilibria” that are implied by adherence to the formula and proceed to consider the determinants of the speed of adjustment to such equilibria in Section 5. In each of these sections we provide a brief discussion of the relevant and, as yet limited, empirical evidence on the likely economic impact of the Barnett formula. In Section 6 we briefly review the debate over the likely future of the Barnett formula. Finally, we present our conclusions in Section 7. While our focus throughout is primarily on Scotland, similar analyses would hold for Wales and Northern Ireland. Furthermore, we seek to provide a wider European perspective at appropriate points in the paper.

¹ In fact, at the time of writing the Northern Ireland Assembly is suspended. However, the suspension is expected to be temporary.

2. The Barnett formula

The Barnett formula has attracted media and academic attention and some analysis. (See e.g. Bell et al, 1996; Cuthbert, 2001; Heald, 1996; Heald and McLeod, 2002; Kay, 1998; McCrone, 1999; McLean and McMillan, 2003; Midwinter, 2000, 2002; Twigger 1998.) These contributions have improved our understanding of the consequences of the formula in terms of a relatively restricted analysis of the implications of Barnett for the future pattern of nominal government expenditure and nominal expenditure *per capita* in the countries of the UK. Since these implications are critical to an understanding of the debate surrounding the formula, we briefly outline them here.

The essence of the current formula is that Scotland, together with the other devolved countries of the UK (Wales and Northern Ireland), receives as additional DEL expenditure its population share times the increment to *nominal* government expenditures on comparable programmes in England. It is comparatively straightforward (e.g. Heald, 1996) to explore the implications of this formula for the regional distribution of government expenditures, especially if, for the moment, we assume that the population share employed in the formula is fixed and that the formula is rigorously applied (so that there is no formula “bypass”). It is important, of course, to recognise that the formula does not cover all government expenditures, but essentially drives the assigned budget, which the Scottish Parliament has the power to distribute among alternative uses as it sees fit. The relationship between the relevant expenditures (i.e. those driven by the formula) in Scotland and England is therefore:

$$\Delta G_{S,t}^b = \alpha \Delta G_{E,t}^b \quad (1)$$

where: $G_{S,t}^b$ ($G_{E,t}^b$) is the nominal level of the Barnett-driven, Departmental Expenditure Limit in Scotland (England) in period t ; Δ is the first difference operator and α is the ratio of Scottish to English population (p_S/p_E) at some benchmark time period.

Equation (1) is a first order difference equation that can be solved using the iterative method to yield:

$$G_{S,t}^b = \alpha G_{E,t}^b + (\beta - \alpha) G_{E,0}^b \quad (2)$$

Where: β is the ratio of Scottish to English nominal (covered) government expenditures in the initial (base) period 0, ($G_{S,0}/G_{E,0}$). In the base year we know that Scotland's expenditure share is greater than its population share so that $(\beta - \alpha)$ is strictly positive.

The Barnett formula therefore implies that there are two components of the current *level* of nominal DEL expenditures in Scotland. The first component is Scotland's population share times the current level of comparable expenditures in England ($\alpha G_{E,t}$). The second component $[(\beta - \alpha)G_{E,0}]$ is a fixed level of nominal expenditures that reflects Scotland's initial beneficial position, in that its expenditure share exceeds its population share in the base year. This fixed nominal expenditure is invariant to any changes in comparable English expenditures,² and so is guaranteed for as long as the formula is rigorously adhered to. This guarantee of continuing favourable treatment for Scotland in the formula, in terms of its implications for the *per capita level of nominal* government expenditures, appears to be the source of criticism from, for example, some English regions (although their own expenditures are not directly formula driven).

While the formula ensures the preservation of a beneficial level of nominal government expenditure in Scotland, general inflation will erode the real value of this given that the formula has operated in terms of nominal financial flows, rather than resources, since 1982-83. Increases in comparable Departmental Expenditure Limit expenditures (DEL) in England will result in a fall in the ratio of Scotland's to England's DEL. Dividing equation (2) by $G_{E,t}$ yields:

² Clearly the partial derivative of the second term in equation (2) with respect to $G_{E,t}$ is zero.

$$\frac{G_{S,t}}{G_{E,t}} = \alpha + (\beta - \alpha) \frac{G_{E,0}}{G_{E,t}} \quad (3)$$

Differentiating equation (2) with respect to $G_{E,t}$ yields:

$$\frac{\partial \left(\frac{G_{S,t}}{G_{E,t}} \right)}{\partial G_{E,t}} = \frac{-(\beta - \alpha)G_{E,0}}{(G_{E,t})^2} < 0 \quad (4)$$

Relevant public expenditures in Scotland as a proportion of those in England decline as a consequence of increases in nominal English expenditures. The reason is clear from inspection of (3). While the first term in (3) is constant the second term – reflecting Scotland’s initial advantage in terms of nominal expenditures – declines as a proportion of current English expenditures as the latter grow. The fixed nominal expenditure advantage represents an ever-declining proportion of growing nominal English expenditures. Through growth of nominal government expenditures in England the second term in (3) ultimately tends towards zero, so that the ratio of Scottish to English expenditures approaches the benchmark population ratio, and, as long as populations remain constant, (Barnett-driven) expenditure *per capita* tends to be equalised across regions. Expressed formally this means that as:

$$G_{E,t} \rightarrow \infty, \frac{G_{S,t}}{G_{E,t}} \rightarrow \alpha \quad (5)$$

This process of gradual movement of expenditure *per capita* in Scotland (and Wales and Northern Ireland) towards the level in England has been referred to as the Barnett “squeeze” (e.g. Kay, 1998), although, as we shall see below, the appropriateness of this terminology has been questioned on the grounds that it only applies in circumstances where DEL in England and Scotland is growing (Midwinter, e.g. 2002).

3. History of the Barnett Formula

In the 1960s and early 1970s, public expenditure plans for Scotland, Wales and Northern Ireland were determined by the same departmental bargaining that characterises the rest of spending allocations among Whitehall departments (HM Treasury, 1997a). The Barnett formula - named after the then Chief Secretary of the Treasury - was used for the first time in 1978 in Scotland and two years later for Northern Ireland and Wales, and has been in continuous use ever since.³ The population proportions used at the time of the formula's initial implementation were estimates for 1976. Under the Barnett formula Scotland then received 10/85^{ths} of any increase or decrease in comparable English programmes (HM Treasury, 1999). It seems clear that the formula was initially intended to be temporary, pending the outcome of the then anticipated devolution referendum (which did not in fact lead to devolution). Its longevity is probably in part attributable to the fact that the formula avoids annual bargaining over expenditures while allowing considerable discretion to (what became the devolved) regional authorities in terms of the uses of the DEL.

There have been a number of subsequent changes to the Barnett allocation mechanism. First, up until 1985 the formula was applied in real terms with figures rolling forward from one year to another with an in-built allowance for inflation. However, post-1985 expenditure changes have been allocated in nominal terms only (UK Treasury, 1999). Subsequent changes relate to the precise measurement of α in equation 1. From its inception until 1999 the formula employed *fixed* population weights, although these were up-dated on one occasion (see below). The significance of this is clear from equation (2): the budgets are determined solely by the historical allocation of expenditure and inherited population ratios.

³ The formulaic approach to allocating public expenditure between the countries of the UK goes back to Chancellor Goschen in 1891. He introduced a formula to allocate probate duties between countries in support of local government expenditure, based on each country's overall proportionate contribution to the Exchequer. This formula was also used as a basis for allocating some elements of public expenditure (e.g. education grants).

In 1992, Michael Portillo, as Chief Secretary to the Treasury, revised the value of α in the formula to reflect the population figures given in the 1991 Census. Scotland's share in the UK population had fallen, so that marginal change in Scottish nominal DEL for any change in marginal English DEL - the value of α in equation 1 - was reduced from 11.76% to 10.66% (McCrone, 1999). Finally in 1997 a rather more fundamental modification was introduced. Chief Secretary to the Treasury, Alastair Darling, committed the government to an annual revision of the Barnett population weights, based on the latest population estimates for England, Scotland and Wales, published each year by National Statistics (HM Treasury, 1997b). This was to take effect from 1999.⁴ This variable-weight version of the Barnett formula constitutes an important change for any region that experiences a marked decline or increase in its population. Scotland, for example, has typically experienced a decline in population through net out-migration, and the presence of a variable- rather than a fixed-weight Barnett formula would clearly add to its problems, and those of all such declining regions, by inducing reinforcing contractions in government expenditure. The use of the fixed-weight formula until 1999 had effectively provided a crude supplementary automatic stabiliser for UK regions, one from which Scotland, for example, benefited significantly.

It is important to note that during much of the period since 1979, bypass and adjustment of non-formula-driven expenditures have meant that actual DEL expenditures in Scotland have differed, to Scotland's advantage, from those which would have emerged from the strict application of the Barnett formula (Midwinter, 2002) and we consider this issue in more detail below. However, the formula has been accepted as the basis for determining the DEL of the Scottish Parliament (and the budgets of other devolved territories). Further, the recent concern with adjusting the formula population weights, together with the greater transparency produced by devolution, has led to a belief that the Barnett formula will play a more central role in the actual allocation of regional expenditures in the future (Goudie, 2002).

⁴ The population proportions used in the 1998 Comprehensive Spending Review related to 1996 mid-year

4. Barnett equilibria

We define a Barnett equilibrium to be a spatial allocation of devolved DEL expenditure that, once attained, would be replicated by the subsequent operation of the Barnett formula. In the fixed population-weight Barnett formula analysed above, this equilibrium would have the following characteristic. The ratio of Scotland's DEL expenditures to the comparable expenditures for England would equal the benchmark ratio of Scottish to English populations. This also defines the expenditure ratio to which Barnett, if rigorously applied, would ultimately tend. There seems to be no real disagreement on this; rather any debate or disagreement seems to concern the significance of such a "Barnett equilibrium".

While the Barnett formula *per se* governs only increments to DEL, its continued application in a scenario in which the relevant English nominal public expenditures are continually rising would, if population does not vary, drive the distribution of these regional expenditures ultimately towards the equal *per capita* expenditure equilibrium.⁵ In fact, as already noted, it seems very unlikely that, when the formula was introduced in 1978, that it was associated with any notion of a Barnett equilibrium. Rather, it appears to have been regarded as a temporary measure pending the then anticipated devolution (which did not in fact materialise). It seems likely that even now the government does not envisage such equilibria ever being attained. However, the formula has now been accepted as the basis for determining the assigned budget of the Scottish Parliament (and other devolved budgets), subject to the amendment of annual up-dating of population shares used in the formula, and strict application of the formula implies that Scotland would ultimately tend towards a Barnett equilibrium (Ferguson *et al*, 2003a).

It is therefore worth exploring the properties of Barnett equilibria and assessing their likely desirability. A Barnett equilibrium can only be considered "desirable" to the

population estimates that reported Scotland's population as 10.45% of the English value.

⁵ Strictly, however, the equilibrium is never attained since the fixed nominal expenditure advantage in Scotland is never eliminated.

extent that equal expenditure *per capita* across all the devolved regions of the UK is considered desirable. However, we begin with an examination of the practical relevance of Barnett equilibria.

The practical relevance of Barnett equilibria

We begin with a consideration of the practical importance of Barnett equilibria because some contributions to the literature imply, in effect, that such equilibria are of little or no genuine policy significance because a Barnett equilibrium would be politically unacceptable and so the Westminster government would never allow it to be established.⁶ Thus, whatever the official position, the argument is that in practice the formula does not *in fact* govern the assigned budget of the Scottish Parliament: bypass and adjustment of non-formula-driven expenditures are such as to render the formula virtually irrelevant in practice, presumably despite the enhanced scrutiny of expenditure changes since devolution.

The empirical evidence on expenditure *per capita* since the establishment of the Scottish Parliament is not yet clear, in part because of the limited number of observations we currently have and a lack of comparable English data on formula-driven expenditures.⁷ Some commentators (e.g. Midwinter 2000, 2001) argue that expenditure shares do not appear to have fallen in accordance with the predictions of those who draw attention to the Barnett “squeeze”, and while many would accept this as a description of the situation prior to devolution, greater scrutiny of expenditure decisions since then lead many to expect devolution to result in greater adherence to Barnett in future (see e.g. Goudie, 2002). Clearly Westminster government action can dramatically extend the adjustment

⁶ See e.g. Midwinter (2002).

⁷ The evidence prior to devolution suggests that the Barnett formula was not rigorously applied. However, it was expected that the scope for by-passing the formula would be significantly less under devolution, since the regional distribution of public expenditure would be subject to much closer public scrutiny. The lack of detail on English DEL seems odd given its key role under current arrangements, and there would appear to be a compelling case for greater transparency. However, this could be regarded as implying a potential loss of flexibility for policymakers.

period to a Barnett equilibrium, a point considered further below, even if it does not ultimately prevent its achievement.

The rationale for Barnett and alternative equilibria

Equal expenditure *per capita* across UK regions would typically be considered inequitable, since it would imply a lack of recognition of significant regional differences in “needs” for services and in the costs of provision of public services. A Barnett equilibrium would, for example, only very fortuitously be compatible with the “principle of equalisation”: that, regardless of their location, UK residents should enjoy broadly equal public services. In the UK context it has often been suggested that the regional distribution of public expenditures should ideally be assessed on the basis of a “needs assessment” exercise. This would seek to establish relative needs in different regions of the UK (due for example to different health indicators) and take account of variations in the cost of provision across regions (because of, for example, variations in population dispersion). The only publicly available exercise in the UK relates to 1976-77 and is reported in H M Treasury (1979). Calls for a new “needs assessment” reflect a judgement that Barnett should not ultimately determine the distribution of government expenditures across the regions. Only if “needs” were adequately captured simply by population size would a Barnett equilibrium be compatible with the outcome of a needs assessment (e.g. Twigger, 1998). The consensus appears to be that a needs assessment would indeed validate a Scottish *per capita* (formula-driven) public expenditure share that is below its current level but is greater than that implied by a Barnett equilibrium.⁸ However, without the very detailed research implied by a needs assessment we have no way of evaluating this consensus.

⁸ Midwinter (2000), in suggesting that a needs assessment could conceivably provide a rationale for the existing pattern of regional *per capita* expenditures, points to higher unemployment rates, greater share of public housing, poorer health, higher housing and social security expenditure, and greater dispersion in Scotland relative to UK averages. Sceptics e.g. Heald (1996) and McGregor *et al* (1997) would emphasise *inter alia* the comparative proximity of Scottish to UK GDP per head. Kay (1998) argues for the maintenance of current per capita expenditure shares through equi-proportionate adjustment of expenditures across regions, but as temporary measure, pending a review of needs.

Of course, alternatives to Barnett equilibria imply alternatives to the Barnett formula for incremental dispersion of government expenditures. The *status quo* would involve the maintenance of *per capita* expenditure shares and so require equi-proportionate allocation of DELs across all (covered) regions. Intermediate positions, such as a needs assessment benchmark, could be generated by initial application of the Barnett formula until (relevant) Scottish per capita expenditures reached the appropriate level and then the Barnett formula should be replaced by the equi-proportionate change formula (Bell, 2001). On the other hand, compensation for the implied under-provision of English needs in the past would necessitate temporarily less favourable incremental shares for Scotland than implied by the Barnett formula, although this is not a possibility that appears to have been identified or discussed in the literature.

Needs assessment is by no means the only criterion that may be considered relevant in judging a “fair” regional distribution of expenditures. For example, the regional distribution of incomes and of tax revenues may also be important. However, reference to a possible target of balanced regional public sector budgets could not possibly provide a rationale for the Barnett formula since, for example, government revenues *per capita* are very unlikely to be equal across the devolved territories of the UK, and there is in any case no fundamental rationale for such “balance” even in the unlikely event of a Barnett equilibrium being associated with it.⁹

While the use of “formulae” to help determine the regional distribution of important components of government expenditures is quite common in Europe, the use of a formula that links the distribution of regional expenditures solely to the distribution of regional populations and past allocations of expenditures would appear to be unique to the UK. In fact, “with very few exceptions, European countries have moved away from allocation formulae based on historic shares, such as the UK’s Barnett formula, towards formulae that use objective parameters that measure fiscal need and tax-raising capacity” (Darby *et*

⁹ Goudie (2003) presents summaries of official estimates of tax revenues in Scotland. These typically imply that Scotland has a structural public sector deficit, excepting years of peak oil flows and prices.

al 2003). Examples of alternative allocation formulae can be found in Darby *et al* (2002, 2003), Moisiu (2003), Nam and Radulescu (2003) and Thierstein and Abegg (2003).^{10,11}

While Italy is perhaps closest to the UK in terms of allowing history and political considerations to continue to exert a major influence on regional expenditures, the Barnett formula remains unique in a European context, but it seems very unlikely that the associated Barnett equilibrium could be considered compatible with any but the most crude notion of an “optimal” or desirable regional allocation of public expenditures. This is perhaps not surprising since the Barnett formula was not designed with any such criterion in mind, but in practice this may be regarded as a matter of some concern since the implied equilibrium concept is embodied in the formula that governs the assigned budget of the Scottish Parliament, and the Welsh and Northern Irish Assemblies. As long as the Barnett formula remains the basis of the regional distribution of (formula-driven) public expenditures, the implied Barnett equilibrium is of interest, regardless of how “unfair” the associated regional distribution of expenditures is judged to be. However, there is no fundamental welfare-based rationale for such equilibria.

The likely consequences of Barnett equilibria for the Scottish economy

In Ferguson *et al* (2003a) we explore the likely consequences for the Scottish economy of rigorous adherence to the Barnett formula. We adopt a system-wide theoretical and empirical analysis in recognition of the fact that, as a significant element of regional aggregate demand, changes in regional government expenditures are likely to have significant macroeconomic consequences. In fact, we estimate that Barnett equilibria associated with the fixed weights version of the formula may result in an ultimate

¹⁰ It is perhaps worth noting that the UK has always had a needs-based formulae for grant allocation to local authorities.

¹¹ We could explore the consequences of alternative definitions of needs and alternative formulae, including those applied in other fiscal federalist systems (see e.g. Christie (2002) and Jeffrey (2002) in addition to the references in the text). For example, Bell and Christie (2001) take social security spending in each region as an indicator of need. But capturing “needs” appropriately would again appear to require some kind of system-wide perspective that would take us beyond the present limited focus, and indeed beyond the scope of the current paper.

contraction in Scottish employment of up to 3.88%. As we would expect, the variable-population-weight formula currently employed to determine regional DEL changes for the Scottish Parliament implies a bigger employment contraction, of up to 5.03%. Rigorous adherence to Barnett may therefore have non-trivial adverse impacts on the economies of the devolved authorities.

5. Speed of adjustment to Barnett equilibria

Once we have established the nature of a Barnett equilibrium – or indeed any of the alternative long-run equilibria discussed above (such as that consistent with the Treasury’s needs assessment exercise) - the key remaining question concerns the speed of adjustment towards such a long-run equilibrium. In the present context the key determinants of the speed of adjustment are apparent from previous studies (Heald (1994), Heald and McLeod (2002)), and can be simply illustrated by reference to equation (3) and (4). One important factor is the rate of growth of nominal government expenditures in England. The more rapid is this growth rate, the more quickly will the second term in equation (3) tend to zero and the expenditure relative converge on the population ratio. Note that it is not simply real expenditures that matter: the higher is the rate of inflation the more rapid will be the speed of adjustment.¹²

A second key influence is population change, and although this is not immediately apparent from equation (3), we have already commented upon it in the context of the operation of the fixed-population-weight version of the formula. When the Barnett formula operated on fixed population weights then changes in population inhibited equalisation of government expenditures *per capita* between Scotland and England, since Scotland’s population was falling (and England’s increasing), mitigating the pressure towards falling expenditure *per capita* in Scotland. Under the system since 1999, however, population weights are up-dated on an annual basis.

¹² This only applies since the formula shifted from an effectively inflation-adjusted basis to a cash (nominal) basis in 1982-83.

Recall that a Barnett equilibrium would be generated by *rigorous adherence* to the Barnett formula. If policymakers (in Westminster) chose to deviate from such adherence – through bypass and differential adjustment of non-covered expenditures - this would influence the speed of adjustment in an obvious way. Unless such deviations are systematic there would, though, be a continuing pull towards a Barnett equilibrium. We have considered examples of systematic deviations above, with the Barnett formula effectively being overridden by some alternative notion of a (possibly needs-based) acceptable or desirable equilibrium. However, it is not clear whether discretionary adjustment is of this type or is more *ad hoc* in nature, responding to (perhaps changing) political spending priorities. If the latter, then it may simply be the adjustment process that is being extended with no fundamental change in Barnett. That is to say a Barnett equilibrium would still ultimately emerge, but it would take much longer for the economy to move towards it.

Evidence on the speed of adjustment to Barnett equilibria

Heald (1994, 1996) and Heald and McLeod (2002) explore some partial equilibrium numerical simulations based on equations (1) and (2). Instructive though these analyses are in drawing attention to the typically very extended period of adjustment to what we term Barnett equilibria, they neglect the system-wide consequences of rigorous adherence to Barnett. In the regional macroeconomic context lags in capital stock adjustment and in migration further extend the equilibrating process. In Ferguson *et al* (2003b) we examine the period-by-period consequences of adherence to the Barnett formula in the context of a dynamic computable general equilibrium model of the Scottish economy. This is essentially the multi-period counterpart to the analysis of Ferguson *et al* (2003a), and serves to reinforce the message of the partial equilibrium simulations: adjustment to Barnett equilibria is extremely attenuated. Given a growth rate in English DEL of 6% per annum, by period 10 employment has fallen by only 1.01% under the fixed-weights and by 1.02% under the variable-weights version of the Barnett formula, as compared to their corresponding long-run equilibrium values of 3.88% and 5.03% respectively.

6. The future of the Barnett formula

The future of the Barnett formula is, of course, ultimately a political issue, and here we provide a brief critical review of key elements of the recent debate over funding of the Scottish Parliament. The Labour Party remains committed to the Barnett formula. The case for the Barnett formula is typically couched in terms of pragmatic avoidance of regular political conflict over expenditure shares, stability of funding (especially against the background of radical constitutional change) and the view that all sides can see some merit in the formula (if those in the peripheral economies focus on the favourable settlement in terms of the levels of formula-linked expenditures, but the English concentrate on the greater percentage increases that they enjoy).¹³ However, it could be objected that some of these claimed advantages would apply to the use of *any* formula,¹⁴ and that all sides can also see disadvantages in the Barnett formula (as when the focus of the Scots and the English in the previous sentence are reversed). (See e.g. McLean and McMillan (2003)). Certainly none of these arguments come close to providing a convincing rationale for a Barnett *equilibrium*, which, as we have seen, would require some justification for an outcome in which DEL *per capita* was equalised across all countries of the UK.

Within the academic literature on the subject Midwinter (2000, 2002) is the strongest defender of the *status quo*. However, this defence appears at least in part to be predicated upon a belief that the current regional distribution of expenditures is *not* in fact governed by the Barnett formula. As we have already noted, Midwinter (2000) effectively regards the actual system of distribution as consisting of the formula combined with discretionary adjustments, and the latter have been such as to offset any element of a Barnett “squeeze”. Clearly, this is no defence of the formula *per se*, and would, *in extremis*, imply that Barnett equilibria are little more than theoretical *curiosa* and of no practical

¹³ See e.g. the *Financial Times* interview with Jack McConnell, Friday August 16, 2002.

¹⁴ However, since Barnett at least in principle applied pre-devolution, any alternative formula would imply change.

relevance if discretionary adjustments systematically offset the squeeze. If this view were to be accepted the implication is that the Barnett formula is not really the funding basis of the devolved authorities at all. However, we have already argued that the evidence does not appear to allow such a conclusion as yet, at least in respect of the experience since devolution. In any case, while the Labour Party's commitment to the Barnett formula appears to be very firm in the short-run, there is a recognition that the issue is bound to be re-visited.¹⁵

The SNP has traditionally opposed Barnett, focussing especially on the implied "squeeze" properties of the formula. In the academic literature Cuthbert and Cuthbert (1998), Cuthbert (2001) and Kay (1998) have been the strongest advocates of the view that the Barnett squeeze is operational and potentially damaging for the Scottish economy. The "squeeze" terminology is objected to by Midwinter (e.g. 2002) on the grounds that the *levels* of government expenditures in Scotland will be increasing during this adjustment period (though less rapidly than those of England). Indeed the more rapid the growth in government expenditures in England (and in Scotland) the greater the so-called "squeeze". Certainly, it seems unlikely that those who object to the "squeeze" would prefer the increases in expenditure shares that would result in Scotland from a contraction in nominal government expenditures in England. However, as we have seen, it would be inappropriate to deduce from this that the declining Scottish expenditure relative implied by Barnett is a matter of indifference for the Scottish economy.

Recently the focus of the SNP's critique (supported by a number of Conservatives) has shifted away from Barnett to the argument for greater "fiscal autonomy", arguing for the Scottish Parliament to be endowed with the fiscal powers normally enjoyed by national economies. A strong intellectual case for such autonomy is provided by the literature on fiscal federalism, which particularly emphasises the improved efficiency of bringing tax

¹⁵ In his interview with the *Financial Times*, Friday August 16, 2002, Jack McConnell, then First Minister of the Scottish Parliament, responded to a question about a review of the formula as follows: "I wouldn't expect this debate ever to go away, and at some point in the future there will be a genuine and honest debate about what is the right time to review the formula. But I think in the short term, the formula is a good thing for Scotland and the UK. And it would make sense to leave it well alone."

and expenditure decisions closer to those who benefit/pay (as compared to a system of grant allocation that obscures incentives) and perhaps also provides a greater stimulus to both innovation (through improved incentives to the local government) and also to local participation in the democratic process. (See e.g. Darby *et al* (2002, 2003) for a summary, Oates (1999) for a review and Tiebout (1956) and Oates (1972) for two of the classic contributions to the field.)

This shift in focus has enjoyed considerable success, attracting support from business leaders and academics.¹⁶ However, it needs to be said that up to now Labour has precluded the use of the limited degree of fiscal autonomy that the Scottish Parliament already possesses. It committed itself to not make use of the "tartan tax" during the lifetime of the first parliament. This fiscal arrangement allows the Scottish Parliament to vary the income tax rate in Scotland by plus or minus three pence in the pound, with the revenues so derived becoming part of the Scottish budget.¹⁷

While there is a strong intellectual case for increased fiscal autonomy, the academic literature also identifies reasons why it may be desirable to limit the degree of such autonomy as Darby *et al* (2003) note. In particular, tax externalities, the mobility of factors of production and the possible complexity of the resultant tax system may make full fiscal autonomy for any given set of regions undesirable. However, perhaps the most significant issue inhibiting the degree of fiscal autonomy in practice is a concern about equity, in terms of access to public services in less well off regions. In the Scottish context this is perhaps less apparent than elsewhere in Europe, but there is little doubt that the current distribution of DEL, combined with the UK's progressive tax system, does improve equity by reallocating resources from a better-off English core to a less well off periphery (though clearly Barnett equilibria would be less progressive in their impact). This is reflected in the structural public sector deficits that appear to characterise

¹⁶ The most recent contribution is from Robert Mundell, a Nobel Laureate in Economics, who argues that Scotland could potentially gain significantly from fiscal autonomy and independence. He quotes Ireland as an example of a country that successfully employed its fiscal discretion to lower business taxes and stimulate growth (Glasgow Herald, Monday 28th April, 2003).

¹⁷ McGregor *et al* (1998) provide an analysis of the likely economic impact of the "tartan tax".

the periphery, although this is itself an area of some controversy, with the SNP asserting the existence of a public sector surplus in Scotland once revenues are adjusted appropriately. However, even if, as most commentators accept, there exists a structural public sector deficit in Scotland, this would not constitute an emphatic case against greater fiscal autonomy, though it perhaps counsels against “full” fiscal autonomy without adequate equalisation mechanisms being introduced.

Overall, the political debate appears to be shifting in favour of reform of the Barnett formula. The Labour Party is the main remaining political ally of Barnett, but it is clear that its support is only assured in the short run, presumably until devolution is judged to have “bedded down”. Furthermore, variants of fiscal autonomy appear to be a natural extension of the Labour Party’s emphasis on the importance of stimulating regional efficiency as a solution to regional problems, and the central importance of the devolution programme as a key instrument through which this improved efficiency is to be achieved (Department of Trade and Industry *et al*, 2003). There would therefore appear to be no intellectual barriers to the Labour Party’s endorsement of variants of fiscal autonomy, although equity considerations, given its belief in the prevalence of structural deficits in the devolved regions, would presumably rule out the limiting version of full fiscal autonomy that is favoured by the SNP.

While the Barnett formula may have a limited remaining lifespan a proper analysis of its economic consequences appears merited given its longevity so far and its current central role as the basis of regional DEL allocations. Furthermore, the durability of the formula, despite its origins, cautions against a premature requiem: reform may be virtually inevitable, but it seems unlikely to be immediate (given that Labour remain a lead partner in the ruling coalition within the Scottish Parliament following the May 2003 elections). Additionally, we believe that the discussion of Barnett should explicitly incorporate system-wide analysis and that such an approach should be adopted to assess the likely consequences of any successor to Barnett. While the academic literature on fiscal federalism is impressive, its focus is very firmly on the microeconomics of incentive structures and efficiency. While this is important, the analysis is weakest when dealing

with the possible system-wide and macroeconomic effects of fiscal changes, which tend to be assumed to be neutral for simplicity. Yet these changes may well be important in the Scottish context, as is apparent in the analyses of Ferguson *et al* (2003a,b), and could conceivably dominate any induced efficiency effects, unless reforms are carefully selected and managed.

7. Conclusions

The Barnett formula is important because it is the stated basis of funding of each of the currently devolved authorities in the UK. The regional DELs determined by the formula take the form of unconditional grants, the use of which is largely at the discretion of the devolved authorities. Despite the longevity that the Barnett formula has enjoyed, we believe that its reform is now inevitable for a number of reasons.

First, while the origins of the formula are not comprehensively documented, it seems clear that it began as a temporary measure to cover the interregnum between traditional (annually negotiated) settlement and the anticipated establishment of devolved authorities (that did not materialise at the time). It was not intended to last and certainly was not anticipated to have the 25-year lifespan that it has enjoyed to date (albeit with some variation in the detail of its operation). It was not designed to bear the weight of the central mechanism for distributing resources among major devolved authorities.

Second, the formula does, in the presence of nominal DEL growth in England, imply that percentage increases in DEL in Scotland (and Wales and Northern Ireland) are less than those in England, but it also ensures that the devolved authorities retain their current advantage (relative to their population share) in terms of the current *levels* of DEL (although this is an advantage that is fixed in nominal terms). While all can therefore see something positive for them in the formula, there is no general contentment since all can also see something negative.

Third, the formula has traditionally (with the fixed population weights employed until 1999) allocated to regional DEL solely on the basis of inherited (although once updated) population shares and historical allocations. Since 1999 population figures used in the formula have been regularly updated, and so recent history now matters, in a way that effectively eliminates a crude supplementary fiscal stabiliser, since government expenditure allocations now follow and reinforce population movements.

Fourth, the formula implies Barnett equilibria – characterised by expenditure ratios which would be replicated by continued application of the formula – that imply equal DEL *per capita* across all regions of the UK. This is inevitably an equilibrium that is incompatible with the “principle of equalisation”, and implies an allocation that is independent of regional variations in “needs” or the costs of provision of public services, except insofar as these are captured by regional populations alone.

Fifth, the UK is virtually unique in a European context in adhering to a formula with these properties: most other European economies have been moving in the direction of adopting formulae that recognise variations in needs, costs of provision and taxable capacity.

Sixth, being a formula effectively for allocating block grants, the Barnett mechanism is subject to the usual concerns about both efficiency (and innovation) in resource allocation associated with grants, and about local participation in the democratic process.

Seventh, it is clear from Ferguson *et al* (2003a) that the Barnett formula may ultimately have important adverse system-wide implications for each of the devolved countries/regions of the UK. We estimate a relative contractionary impact on the Scottish economy of up to 5% of employment. Some 30% of this impact is attributable to the switch in 1999 to a variable-population-weighted version of the Barnett formula, which has enhanced the scale of UK regional multipliers. However, in Ferguson *et al* (2003b) we estimate that, over the 10-period time horizon that civil service policy evaluations would typically be conducted, the likely impact of adhering to Barnett is significantly

lower than this – only around 1% of employment, assuming a 6% pa growth rate in English nominal DEL. This reflects the combined impact of lags in the adjustment of DEL in Scotland, together with the delays in the impact of expenditure changes on the economy created by gradual adjustment of capital and population stocks, and so we do not anticipate this as a major immediate pressure to reform. Nonetheless, the impacts are non-trivial, ultimately cumulate to a substantial effect and should not be ignored.

Finally, the Labour Party is the main political advocate of the Barnett formula, but it is clear that this support is only assured in the short run, presumably until devolution is judged to have “bedded down”. The political climate is likely to be much more conducive to consideration of reform now the recent election process in Scotland (May 2003) is over. Labour is again the dominant partner in the ruling coalition in Scotland, but a move in the direction of greater fiscal autonomy would seem entirely compatible with Labour’s emphasis on the importance of devolution as a central plank of the new regional policy, and a major source of potential efficiency gains, although equity considerations will almost certainly preclude advocacy of full fiscal autonomy.

While reform of the Barnett formula seems virtually inevitable, we end on what we believe to be an important cautionary note. Alternatives to Barnett are often argued in terms of largely microeconomic considerations such as needs, costs of provision of public services and taxable capacities. These considerations are undoubtedly important, but, as we have seen, the Barnett formula has important regional system-wide or macroeconomic consequences and the process of reform should give appropriate weighting to this. Equally, the case for greater fiscal federalism is typically couched in terms of the microeconomics of incentives and potential efficiency gains, albeit qualified in terms of potential adverse effects on equity. However, in the UK context, if devolved authorities are genuinely characterised by the presence of significant structural public sector deficits then a move to full fiscal autonomy may have adverse system-wide consequences that could swamp any potential efficiency gains, and could possibly create major problems of

regional inequity in the process.¹⁸ The resultant equilibria could be inferior to the Barnett equilibria discussed here (in the sense of being associated with lower levels of employment and GDP, for example), a point that serves to emphasise the importance of the comparator used in any analysis of reform. In Ferguson *et al* (2003a,b) the benchmark is taken to be the *status quo*, but the equi-proportionate allocation of incremental DEL expenditures across regions that this assumes may not in fact be a feasible alternative. Of course, this is not an argument for the maintenance of the *status quo*; rather it is intended as a cautionary note that the regional macroeconomic consequences of significant fiscal reforms cannot in general be assumed to be neutral. Any regional system-wide effects should form an integral part of the *ex ante* evaluation process that ought to precede the implementation of proposed fiscal reforms, ideally using a framework that identifies the impacts on each of the devolved regions of the UK.

¹⁸ In McGregor *et al* (1995) we illustrative some of the possible macroeconomic consequences of a shift to “hard” regional budget constraints in the presence of structural public sector and balance of payments deficits.

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