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Abstract

What some view as overly-generous funding of the Scottish parliament results from Scotland's credible threat to secede from the United Kingdom. Scotland is shown to benefit from a second mover advantage in a non-cooperative sequential game over the allocation of public funds. Various reform proposals are criticized for not recognizing that reform of Scottish government finances must be consistent with Scotland's credible threat. Fiscal autonomy – in which the Scottish parliament finances a much greater proportion of its spending from Scottish-sourced taxes, is demonstrated to be a viable reform within the existing political context and, in some circumstances, could remove Scotland's second mover advantage. We also use a cooperative bargaining game model to demonstrate that an Australian style grants commission would not be a viable reform in the British context.

Journal of Economic Literature Classification: H77

Keywords: Barnett formula, cooperative game, fiscal autonomy, fiscal federalism, grants commission, non-cooperative game, public finance, regional finance, Scottish executive, Scottish parliament, secession, vertical balance, United Kingdom, vertical imbalance.

Prologue

What role may public finance play at the level of sub-central government in averting secessionist tendencies in a territory of a sovereign entity – i.e., how may tranquility in a union be maintained? This is an age old question, one that George III should have thought carefully about - issues of public finance being at the heart of the American Revolution beginning in 1776.¹ In 1838 the Government of Great Britain heeded this message when, through the Durham Report, it accepted that to maintain the union (the British Empire in this case) a looser form of public finance was required than had been granted to the American colonists three generations earlier.²

As is explained in Hallwood (2007), a state threatened by secession by one of its regions will incur ‘persuasion costs’ when attempting to convince that territory to remain in the union. This cost in the case of Scotland takes the form of large transfers of public money to it from the Westminster government (the central government), the tax burden of which falling on tax-payers in the rest of the UK. A region inclined to secede from a union will incur ‘dispute cost’ because the central government is unlikely to grant the wish of secession easily. These costs could include the cost of guerrilla war which, thankfully, is not so and nor is likely to be so in the case of Scotland but has often been the case.

However, dispute costs are likely to be incurred in other ways as political agitation by Nationalists for independence is an otherwise a non-productive activity. Against these

¹ Indeed, Niccolo Machiavelli in 1513 offered the advice that a wise Prince with newly added territories “must change neither their laws nor their taxes”. Machiavelli, N, *The Prince*, Penguin Classics, 1975, page 36.

² *The Report on the Affairs of British North America* presented to the British government in 1838 by Lord Durham was aimed at heading off rebellion in Canada as had occurred in 1837. The *Report* argued for uniting Upper and Lower Canada and giving the new entity a large degree of freedom to govern themselves – the basis of the argument being that this would be likely to encourage Canada to remain in the British Empire, rather than attempt to secede as had the American colonies. See Lucas (1912).

costs the respective entities draw benefits – respectively, the benefit of maintaining the union (such as a greater weight in world affairs, or, sharing in natural resource rents generated in the territory); and for the region threatening secession, both pecuniary and non-pecuniary benefits may be seen as stemming from secession from the larger entity.

Even in the relative simply benefit-cost framework of Hallwood (2007) a rich variety of historical forms and sequences are explained. There is a) the case of tranquility where a region doesn't want to secede from a union, and even if it did the state would not hotly contest it, the net benefit of doing so being negative. b) 'Empire' is a form of union in which the central power derives positive net benefits from retaining a territory under its control while leaders in the territory calculate a negative net benefit of pressing for secession – perhaps because of a marked imbalance in military power. c) If, by coincidence, the government of a union sees positive net benefits of maintaining a union while a sub-national 'government' or other significant entity (say, a well armed militia) sees positive net benefits of secession, the result is likely to be civil war – this is the case of the American Revolution, Ireland in the early-twentieth century, and a long list of other examples – for a catalogue recent and on going wars of secession see Marshall and Gurr 2005a and 2005b. d) If secessionists lose a war of secession, the outcome is most likely a return to a state of empire. If secessionists win there is a successful contested separation from the 'union'. Finally, e) if a benevolent center (that is, one with negative net benefits of maintaining a union – perhaps because persuasion cost are deemed to be too great - allows a region to exit the union without resistance there is a non-contested secession.

Aspects of this latter historical sequence are examined here - in the specific case of Scotland in the United Kingdom. Indeed, it will be argued that the UK government (Westminster) for about a century has been incurring persuasion costs in an effort to persuade Scotland to remain in the Union. These costs take the form of much higher levels of public spending per head in Scotland than in almost all other regions of the UK, and much higher than is justified by Scottish 'needs' and measured by relative levels of deprivation. Until recently voters in the rest of the UK have been willing to accept these costs. However, recent opinion polls suggest that voters in the rest of the UK have come to resent the Scottish 'subsidy' and would be happy to see it ended. Scottish Nationalists on the other hand argue that Scotland subsidizes the rest of the UK – largely through the medium of taxes on North Sea oil revenues being collected by Westminster, rather than by the Scottish government in Holyrood.³ With the Scottish Nationalists being popular in Scotland, indeed, from 2007 they have formed the Scottish government, secession from the Union is a possibility.

The Westminster government therefore faces a conundrum: how to continue persuading Scotland to remain in the Union while, at the same time, cutting the level of transfers of public money to Scotland from Westminster – to satisfy discontented voters in the rest of the UK. The main argument in this paper is that Scottish voters (more especially the Scottish median voter) can be persuaded to remain in the Union even with reduced fiscal

³ Which way fiscal transfers flow depend a lot on the price of oil – see *The Economist*, “Scottish Public Finances: History Repeats Itself”. June 26th, 2008. Including oil tax revenue, during the 1980s Scotland was a net contributor to the Westminster Treasury, but was not so again until 2008, and even then not on a large scale.

transfers from Westminster (so satisfying voters in the rest of the UK) through the creation of a system of fiscal autonomy for Scotland. That is, Scotland would be responsible, more or less, depending on the degree of fiscal autonomy (or degree of vertical balance in regional public finance), for raising its own taxes to finance its own public spending by the Holyrood government.

Introduction

In the following discussion the main economic and political realities in which the allocation of public money from Westminster to Scotland came to operate are discussed. An analytical model is also used to compare various reform proposals. We will offer explanations for why Scotland enjoys public spending per head – much of it financed by a block grant from Westminster to the Scottish parliament, well above what it should receive on objective criteria, such as its per capita gross domestic product relative to other regions in the UK, or, social ‘needs’ (as was calculated by the Westminster government in 1979, and more recently by various formula suggested in the academic literature). It should be noted that people in the Rest of the UK have noticed and have come to think this to be ‘very unfair’. Thus, Lord Barnett (the inventor of the formula bearing his name that largely governs changes in the size of Scotland’s block grant): "The problem is the formula is based on spending per head, rather than need. The differences in spending now are deeply unfair and unacceptable. It needs to be changed".⁴ Others

⁴ Channel 4 News, July 6th, 2007. In a similar vein: “The problem is not in fact one of expenditure but mainly one of justification or legitimacy. Because Scotland is so small, the Scottish bias in per capita expenditures has little or no impact on per capita expenditure in England. But since the debate over devolution has made the bias visible, it could be a source of English resentment, even if its elimination would make no detectable per capita benefit to the English. It has to be quietly forgotten, or eliminated or justified” (Miller, 2005, page 11).

have argued that being awash in public money is bad for the Scottish economy and would like to see a reduction in Scotland's block grant for the good of Scotland.⁵

As argued elsewhere (Hallwood and MacDonald, 2004, 2005, 2006a and 2006b, and MacDonald and Hallwood, 2006), receipt of public money in the form of a block grant by Holyrood is bad for the efficiency of public spending in Scotland because the Scottish parliament and executive do not have to be concerned with efficiency in public finance. In standard economic theory a prerequisite for efficient resource use is that decision-makers at the margin have to balance benefits against costs. But under the block grant system Scottish parliamentarians collect only the political benefits of their spending decisions without having to balance them against the political cost of having to raise the taxes to finance that spending.

Fiscal autonomy is the only feasible system that can achieve both fairness and efficiency in the allocation of public spending in, respectively, the UK and Scotland. By fiscal autonomy we mean greater reliance on own-sourced taxes, or, equivalently, greater vertical balance in public funding – where taxes passed downward from central government are a much lesser proportion of public spending by Holyrood. Fiscal autonomy is a relative term with greater or lesser degrees of it being possible. In this paper we have in mind a greater degree.

Critical to our argument is that the fiscal autonomy would be seen by Scottish voters as being a legitimate reform of the Scotland Act, 1998, because it furthers democracy in

⁵ MacKay and Bell (2006).

Scotland. None of the other proposed reforms – all amounting to reducing the size of Scotland’s block grant using one formula or another, can succeed because they will not be accepted as being legitimate by Scottish voters. Thus, MacKay and Bell (2006) acknowledge with respect to their favoured formula – size of public spending distributions between the regions of the UK allocated according to an inverse regional welfare spending rule, that ‘there is no question that implementing these [public spending] savings would be politically unpopular’ (page 51). And they say that this also goes for the McLean and McMillan (2002) proposal to use an inverse per capita regional GDP rule.

It is not accidental that Westminster chooses to finance a bloated Scottish public sector - something that according to some experts has by now gone on for a hundred years.⁶ We will argue using a simple non-cooperative game analytical framework that this more-than-generous funding of the Scottish public sector is a natural political response to a Scottish threat to secede from the union.⁷

The assumption that fiscal autonomy would be greeted as a legitimate system within the UK by the Scottish electorate is supported by polling data. This indicated substantial support for a Scottish parliament *with* tax powers. Thus, over the six year period 1997 to 2003 between 44 and 54 per cent of people polled in Scotland supported this, while only

⁶ McLean and McMillan (2002).

⁷ Unless Scottish voters have a change of heart and the threat of secession from the UK evaporates, none of the other reform schemes can succeed because they will not be viewed as legitimate. Besides, none of the lets-reduce-the-size-of-the-block-grant proposals do anything to tackle the absence of proper, voter driven, incentives in Scottish public spending.

between 6 and 10 per cent supported a parliament without tax powers. Moreover, support for independence was lower than support for a parliament with tax powers – varying between 26 and 28 per cent.⁸ More recent polling data indicates the stability over time of voter preferences. Thus, in a YouGov poll taken in April 2008, 38 percent were in favour of retaining the Scottish Parliament but with greater powers, while only 34 percent were in favour of retaining it with its present powers. And with regard to Scottish independence, 59 percent were in favor of retaining the present Scottish Parliament, while only 25 percent were in favour of a completely separate state outside the UK.⁹

Thus, in our view, devolution of taxes to the Scottish parliament would be seen as just the other half of “proper” devolution, the devolution of public spending having done only half the job. Given such legitimacy in the eyes of the Scottish voter, a system of fiscal autonomy in Scotland has some chance of being accepted by the Scottish electorate in ways that other proposals would not.

We think that too often fiscal autonomy is dismissed without serious consideration because the reflex criticism is that ‘it is nothing but a step on the way to Scottish independence’. We think this argument is incorrect. Thus, consider the net flow of public spending minus taxation between Scotland and the Rest of the UK. Scottish

⁸ Research Report, (University of Oxford, Department of Sociology) using polling data drawn from Scottish Election Survey 1997; Scottish Social Attitudes Survey 1999; British Social Attitudes Survey; 1999; Devolution and Constitutional Change surveys 2001 and 2003.
<http://www.sociology.ox.ac.uk/research/National%20Identity%20and%20Constitutional%20Change.doc>

⁹ YouGov/*Daily Telegraph* Survey, Sample Size: 1175, Fieldwork: 24th - 28th April 2008.
<http://www.yougov.com/uk/archives/pdf/08%2004%2028%20scotland%20topline.pdf>

Nationalists claim that Scotland is a net paymaster to the Rest of the UK¹⁰ Fiscal autonomy would defuse this argument because Scotland would retain tax revenues raised from the Scottish tax base. On the other hand, if Scotland actually enjoys net inflows of public funds from the Rest of the UK – which government statistics regularly demonstrate is the case¹¹, it is by no means obvious that having gained fiscal autonomy, the next step must be to claim independence – there would be no financial saving.¹²

This is not to deny that transition to fiscal autonomy would have to be carefully handled. If as a result of fiscal autonomy public spending in Scotland is set to decline then a period of phase-in is desirable, both from the point of view of the Scottish voter, and of Unionists in Scotland and in the rest of the UK. Moreover, many other details of a system of fiscal autonomy would need to be worked out – for example, how much should Scotland pay for centrally provided services such as national defense, and would some

For example see IT, 14th June, 2007,

<http://www.channel4.com/news/articles/uk/do+scots+get+a+better+deal/558752>

¹¹ Government Expenditure and Revenue in Scotland (GERS), various years - a Scottish Executive National Statistics Publication. Data. According to calculations by Alexander Kemp (University of Aberdeen), counting 83 percent of oil tax revenues as Scottish but using an oil price of only \$65 per barrel, Scotland ran a substantial budget surplus for much of the 1980s, and was in deficit thereafter until the sharp rise in oil prices beginning in 2006. Oil prices averaging about \$120 per barrel would make a substantial difference to the size of Scotland's budget surplus in recent years (*The Economist*, June 26th, 2008).

¹² Granting fiscal autonomy is by no means the end of the UK as a sovereign state. For one thing what Westminster grants can be revoked. It is through the sovereign Westminster parliament that the Scottish parliament exists at all. And if the powers of the Scottish parliament are to be expanded, it will be through laws enacted at Westminster. Indeed, what powers the Scottish parliament already has - spending powers over devolved matters, was through the Scotland Act passed in 1998 by the Westminster parliament. Expanded powers over taxation - fiscal autonomy (and, perhaps, rights to a continuing smaller block grant, or, obligations to make payments out of taxes raised in Scotland to Westminster for centrally provided services such as national defense) must be enacted in the same way. In this sense, devolution does not dilute the sovereignty of the UK over its territories – short of a war of secession, the four countries of the UK constitute a sovereign entity. This sovereign entity not only has rights over internal laws, but it also has rights and obligations in international law – such as the right to sign treaties, to declare war, to declare peace, whether or not to recognize new countries, and for its diplomats to be protected when on duty in foreign countries. None of this constitutional legal paraphernalia is upset by the extension of fiscal autonomy to Scotland.

residual block grant still flow northwards? Ah ha, one might say, so Scotland would still need to be paid a ransom for not seceding - so how is it different to the current system or to other proposals. The difference we submit is that fiscal autonomy would be seen as a legitimate system in Scotland and so not so much, perhaps no, compensation would be needed for remaining in the UK. Moreover, in the sequential game model developed below we will argue that granting fiscal autonomy to Scotland has the potential advantage of changing the order of play. Specifically, Scotland would no longer have the second mover advantage that it has enjoyed for about one-hundred years.

We will also discuss a proposal to fund Scottish public spending through a Grants Commission, instead of through the Barnett formula. We model decision-making in such a Grants Commission as a cooperative game, and we argue that such a system would almost certainly fail to resolve the main issues in Scottish public finances.

Secession and its threat value

McCrone (1975), in a secret government document, wrote that the advent of North Sea oil tax revenues, potentially huge in relation to public spending in Scotland, could promote the nationalist cause. Thus, he wrote that

“...it is obvious that the surpluses from North Sea oil would open up new opportunities for a nationalist Government” (McCrone, page 9).

He was also clear that to head off the possibility of a nationalist government Scotland would need to be compensated, in particular, through increased regional aid aimed at promoting economic growth in the central belt. In other words, if voters were not to move

to support the nationalists, Scotland required a *quid pro quo* – as the following statement makes absolutely clear.

“If, in five years’ time North Sea oil is contributing massively to the UK budget, while the economic and social condition of West Central Scotland continues in the poor state that it is today, it would be hard to imagine conditions more favourable to the growth of support for the nationalist movement. *Very determined steps to urgently transform economic conditions in Scotland will therefore be necessary and the Scottish people will have to be persuaded that their problems really have received the attention and expenditure they deserve if this outcome is to be avoided*” (McCrone, 1975, page 18, italics added).

Increased UK government expenditures in Scotland were this *quid pro quo*, and if they were not forthcoming the threat of voting nationalists in larger numbers than here-to-for by Scottish voters would be executed, and the union threatened. Exactly how much compensation was required to remain loyal to the union was an open question, but it is a question that has been grappled with for about one hundred years for, according to Devine (1996) support for Scottish nationalism and the desire for home rule in Scotland ebbed flowed throughout the twentieth century.

In the same vein McLean and McMillan (2002) and McLean (2005) point out that disproportionately large allocations of public funds to Scotland have for long been a part of a political strategy to encourage Scotland to remain within the UK. Thus, they quote Stanley Baldwin, Prime Minister in the 1920s and again in the 1930s:

“political unrest [in Scotland] was [not] in the interests of the Union” (McLean and McMillan, page 9).

Baldwin did not therefore seek to reduce allocations of public funds to Scotland under the Goshen formula even though Scotland’s population share had fallen below that used in

the formula. The Goshen formula they say was used as the minimum share of UK public spending that Scotland would obtain through bargaining on a government department-by-department basis. Good bargainers could generally win more for Scotland. Moreover, things were little different in the period between Goshen and Barnett (1958-1978) when the Scottish Office bargained for public money on Scotland's behalf. Indeed, the Treasury's needs assessment exercise of 1979, using 1976-77 data did find per capita public spending in Scotland (at 122 per cent of England's level) to be above its needs level (estimated to be 116 per cent of England's level)¹³.

The Barnett formula was meant over time to converge Scottish public spending to the English level. But in thirty years of the Barnett formula this has not happened. McLean and McMillan (2002) explain why:

“the reason for non-convergence [in per capita public spending between the regions] are political, not mechanical. Even the decision to persist with an incorrect population ratio was probably political. Scotland [in the 1990s] continued to pose a credible threat to the Union, which any SNP resurgence would bring back to life” (page 10).

Moreover, McLean (2005) states that:

“The Secretary of State could protect the Goshen proportion because he had a credible threat at his back. He could tell the cabinet that unless they protected Scotland's spending share the Nationalists would start winning elections, and where would the United Kingdom be then? All Secretaries of State have done this, but the supreme practitioners have been Tom Johnson (Lab, in the Churchill wartime coalition 1941-5), Willie Ross (Lab, 1964-1970 and 1974-6), Ian Lang (Cons, 1990-5, and Michael Forsyth (Cons. 1995-7)” (McLean, 2005, page 4.)

This narrative in effect says that Scotland is able to obtain a larger share of UK public funds (relative to its 'needs') because it could threaten to leave the Union – or, more

¹³ Source: McLean and McMillan (2002).

narrowly, votes won by the Scottish Nationalist would increase. The implication is that year-after-year bargainers on the part of Scotland held high threat values so ‘twisting’ the Treasury’s arm into being generous to Scotland. By ‘threat value’ we mean some level of per capita public spending in Scotland which if not achieved would trigger increasing demands for secession. In particular, the median voter would vote Nationalist.¹⁴

Admittedly, among Scottish historians, there is not unanimous agreement on the thesis of a persistent Scottish secessionist threat. For example, Miller (2005) says that “arguably a British Government has implemented devolution not so much because it fears Scottish nationalism and secessionism, as because it no longer fears them” (page 8). And Finlay (2005) rather disputes the notion that separatism was an issue in Scotland for most of the twentieth century – only in the last decade or so of that century did it become of any importance (page 20). So if the political scientists and historians are divided in their assessment of the relevance of Scottish secessionism what is an economist to do? We have to choose between the shades of opinion and we rather think that secession is indeed a long-standing threat – a point of view that we largely base on the last thirty or so years of opinion poll data that does indeed indicate persistent and significant support for the Scottish Nationalists.

¹⁴ Very many polls of Scottish opinion show support for the Scottish Nationalists fluctuating, but taking annual averages, typically over the last 34 years or so in the 23 to 29 per cent range (see compilation at <http://www.alba.org.uk/polls/pollwestminsteryearly.html>). Over this period, most often support for the SNP is less than for Labour, but greater than either the Liberal Democrats or the Conservatives. However, in monthly poll data support for the SNP sometimes approaches, or, even surpasses, 50 per cent – for a compilation see the web site <http://www.alba.org.uk/polls/pollwestminster74.html>. Moreover, Heath and Smith 2005 examining some poll data write in Scotland “there are four groups of people – nationalists/separatists, potential nationalists/separatists, unionists and the disengaged. While nationalists/separatists are clearly in a minority ... unionists do not comprise a majority” (page 1). Again our point is that voting intentions in Scotland are fluid, and that no one political party has a lock on a majority vote.

We will now enquire into the insights that basic game theory reveals about the economics and politics of what we shall call the ‘block grant game’. One thing to explain is why Scotland has been winning it for the last 100 years. A second issue is the likely effect of the introduction of an Australian style Grants Commission in place of the Barnett-determined block grant.

Determination of the size of the bloc grant in a non-cooperative sequential game

Payoffs

We begin this exercise by modeling grant allocation as a non-cooperative game. This game is played between Scotland and the Rest of the UK. The ‘player’ for Scotland is the median Scottish voter. The player for the Rest of the UK is the Treasury - assumed to have a strong preference to maintain the Union.

Scotland can play one of two strategies: either ‘stay in the union’ (U), or, ‘threaten secession’ (TS). The Rest of the UK also has two strategies: to make a “needs” appropriation, NA, i.e., public fund appropriations strictly to meet Scottish “needs” due to deprivation and no more; or, to make a ‘large appropriation’ (LA), that is, larger than proportional to Scotland’s population.

Table 1 shows this game in simultaneous play, the payoffs are utility values for each player. Alternatively expressed, you can think as the numbers showing the ranking of preferences with 4 being the most preferred. In each cell of the matrix Scotland’s payoff is written first, those of the Rest of the UK second. Thus, the ranking of outcomes from

best to worst for the Rest of the UK is: best, U/NA – Scotland stays in the Union as well as receiving an allocation of public funds proportional to its population; second, U/LA – Scotland remains in the Union but receives a disproportionately large allocation of public funds; third, TS/LA – Scotland threatens secession while at the same time enjoying a large apportionment of public funds; last, TS/NA – Scotland threatens secession but is only enjoying a population proportion allocation of funds.

That Scotland chooses ‘stay in the union’ is ranked as the Rest of the UK’s first and second preferences is reasonable given that the Rest of the UK, *circa* 2009, wants to maintain the Union. That the Rest of the UK ranks ‘threaten secession/large appropriation’ above ‘threaten secession’/’needs appropriation’ is also reasonable on the assumption that a threat of secession is more likely to lead to secession if Scotland were to receive the smaller block grant (i.e., one proportional to its population).

Table 1: Pay-offs in the Scotland/Rest of the UK block grant game

		REST OF THE UK	
		Needs Appropriation (NA)	Large Appropriation (LA)
SCOTLAND	Stay in Union (U)	2, 4	4, 3
	Threaten secession (TS)	3, 1	2, 2

Scotland’s utility ranking from best to worst is: best, U/LA – on the reasonable assumption, *circa* 2009, that the Scottish median voter is not a Nationalist, but wants to be compensated for remaining loyal to the Union - he/she perhaps holds some sort of

historical grievance against the ‘auld enemy’ (or, for some other reason); second, TS/NA – the Scottish median voter threatens secession - tells opinion pollsters that he/she intends to vote Nationalist (or, actually votes Nationalist) if a larger compensatory block grant is not forthcoming; equal third and fourth in the Scottish rankings, are U/NA and TS/LA. The former of these is not welcomed by the median voter because no compensation for staying in the union is forthcoming; but the latter combination is also not ranked highly because if secession occurred the large block grant would not be paid. Our assumption here is that the median voter is indifferent between these two outcomes. In fact, the outcome of the game in figures 1 and 2 does not depend on the median voter’s ranking of U/NA relative to TS/LA. Instead of indifference, either could out-rank the other without changing the equilibrium of the game.¹⁵

Observation of Table 1 shows that if the game is played simultaneously neither player has a dominant pure strategy. Moreover, cell-by-cell inspection shows that there is no Nash equilibrium in pure strategies.¹⁶

However, in practice, the block grant game is played sequentially rather than simultaneously. With the same payoffs as just described, in sequential play, a roll back

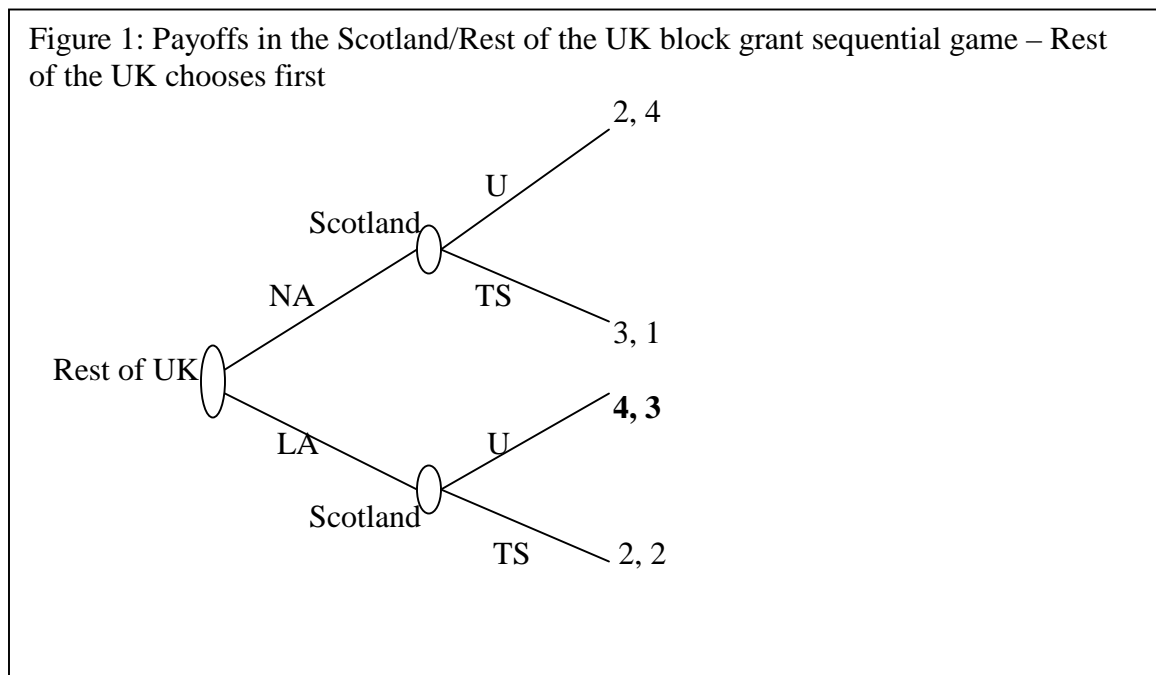
¹⁵ We have experimented with lexicographic preferences where the Rest of the UK prefers U and NA, but that U comes before NA. Similarly, the Scottish median voter prefers U over LA, and that its preferences are lexicographic in that LA comes first. This setup creates both Nash and roll back equilibria of TS/NA. However, this equilibrium does not square with historical facts. The Scottish median voter is observed in many opinion polls not threatening secession and Westminster appropriations are repeatedly greater than NA, i.e., they are LA. As is shortly to be shown the roll back equilibrium in the game defined in the text is U/LA and this does square with history.

¹⁶ It would be fruitless to search for mix strategy equilibrium as it is difficult to conceive of the Scottish median voter playing such a strategy.

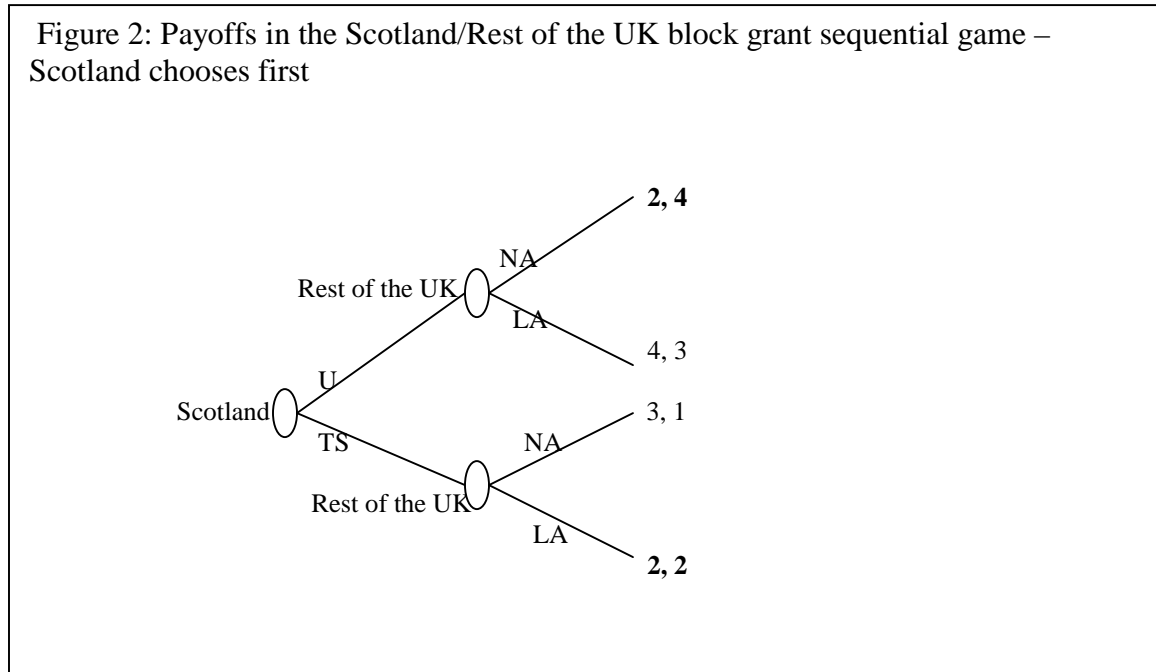
equilibrium can be found. Moreover, it will be shown that the game has a second mover advantage for Scotland.

Begin with the actual case: the Treasury (playing for the Rest of the UK) chooses its strategy first with Scotland choosing second. Figure 1 shows the game tree and payoffs.

The Treasury reasons that if it chooses a needs appropriation block grant (NA), Scotland will choose threaten secession (TS) for a Rest of the UK payoff of 1. However, if the Treasury chooses a large block grant (LA) Scotland will then choose stay in the Union (U) for a Rest of the UK payoff of 3. The roll back equilibrium of this game is therefore U/LA with Scotland-Rest of the UK payoffs of 4 and 3 respectively. Scotland therefore maximizes its utility and stays in the Union.



However, suppose a sequential game in which Scotland chooses first. Figure 2 shows the game tree.



In this game if Scotland chooses U, the Rest of the UK chooses NA for a Scottish payoff of 2. Should Scotland instead choose TS the Rest of the UK would choose LA, also for a Scottish payoff of 2. Clearly, the Scottish median voter does better when it chooses second (as in figure 1, obtaining a payoff of 4) – which we submit is the real-world case.

Thus, in figure 1 Scotland benefits from second mover advantage and maximizes its utility. As we have seen, the large block grant payoff that it gets has been criticized both in the Rest of the UK - that questions why a relatively high per capita income region should obtain such high public funding, and in Scotland itself - on the argument that the high level of public funding is bad for the private sector and economic growth in

Scotland because the public sector absorbs a disproportionately large amount of resources. However, we have argued, proposals simply to cut Scottish funding run up against Scotland's threat to secede from the union.

Fiscal autonomy

Fiscal autonomy, because it would be welcomed as being legitimate by the Scottish median voter (at least on the basis of available polling data), could change the order of play so that Scotland chooses first. Here is how this could happen. First, full fiscal autonomy is granted to Scotland – which is accepted as legitimate by the Scottish median voter, but then oil prices or Scottish oil production fall so unbalancing the Scottish budget. After borrowing possibilities are exhausted, Scotland turns to the UK Treasury (activating a clause written into a “Fiscal Autonomy Settlement”), to ask for a block grant to finance ‘needs’ that it cannot itself now finance. Scotland is now the first mover and the Rest of the UK the second mover – the public funding game is now played as in figure 2. Accordingly, Scotland gets public funding only into proportion to its needs, and no longer disproportionately greater. The Scottish median voter does not threaten secession both because fiscal autonomy is viewed as a legitimate system in a UK context, and because the revealed weakness of Scottish public finance. Moreover, those in Scotland arguing that Scotland would benefit from a small block grant would be satisfied, as would tax payers in the rest of the UK. By potentially changing the order of play in the block grant sequential game fiscal autonomy is all round win-win.

A benefit of fiscal autonomy is that it can deal with a potential time inconsistency problem. We are referring to the idea that an apparently rational commitment made today may not actually be so when it comes to honouring it at some future date. The classic example, of course, is a central bank's commitment to keep inflation low, but reneges when it has to face the unemployment cost of a tight money policy. Under present arrangements, and any of the other proposed reforms of Scottish finances, central government in Westminster cannot credibly commit to not over-funding Holyrood because no mechanism exists for reducing, or, getting around, Scotland's high threat value to secede from the union. In the public financing of sub-central government Oates (2004) suggests a 'no bailout clause', but the latter would not deal with Scotland's secessionist threat. We have already argued that fiscal autonomy changes the nature of the game played between the Scottish median voter and the Rest of the UK in the event that Scotland found itself unable to fully finance its public spending – in the event of an oil price collapse perhaps. Fiscal autonomy would also deal with time inconsistency, because it could be written into the original "Fiscal Autonomy Settlement Agreement" that, should Holyrood have occasion to ask Westminster for resumption of the block grant, it would be given an amount no more than proportional to its relative per capita income. And with Scottish public finances in a mess, so dampening support for the nationalists, and with Scotland as the supplicant, its threat of secession will have been set aside.

We emphasize that the foregoing analysis is based on the idea that the Scottish median voter is neither a Nationalist nor a dyed-in-the-wool Unionist, rather, he or she is

somewhere in the middle. The main conclusions that we arrive at is that in the non-cooperative sequential game in which the block grant system currently operates – Scotland with a second mover advantage the median voter gets the largest payoff possible.

However, this is not to say that the present Barnett block grant system is best either for the Union or for Scotland. The Rest of the UK is left to ponder whether it is ‘fair’ to have to pay a premium to keep Scotland in the Union. And, while Scotland enjoys a block grant larger than ‘needs’, Scottish governments are bereft of incentives either to spend the block grant to raise the rate of economic growth or to balance resource deployment between the public and private sectors – as would elected representatives in political systems where they are responsible for and so pay the political costs of imposing taxes, as well as enjoying the political benefits of their spending decisions.

A “Grants Commission” in a cooperative Nash bargaining game

In the previous section determination of the Scottish block grant is modeled as a non-cooperative game between the Scottish median voter and the UK Treasury. There is a proposal to reform Scottish public finances along the lines of an Australian-style Grants Commission. In this section we discuss this proposal, model it as a cooperative game, and conclude that a Grants Commission unlikely to be a viable solution to the issues under discussion.

McLean and McMillan (2002) and McLean (2002) discuss the idea that the allocation of public money to Scotland could be channeled through an Australian style Commonwealth Grants Commission. Such a Grants Commission would be independent of the Treasury, and its members would be appointed by agreement between the UK government and UK regions. Each region would make its case for some desired level of public funding in its region, but would receive this only by unanimous vote of the Commission. What is unclear is how a UK Grants Commission would handle a credible threat of secession from the Union by Scotland. Scottish voters would still have the right to vote anyway they chose in reaction to decisions made by a UK Grants Commission. It seems to us, therefore, that for a Grants Commission to be effective a necessary first step would be to establish its legitimacy as a vehicle for dealing with horizontal and vertical balances in the UK. Without this legitimacy anything done in a Grants Commission to reduce Scotland's block grant to levels commensurate with any of the formulas mentioned earlier would still run up against a secessionist threat from Scotland. Basically, without the prior establishment of legitimacy it is hard to see how a UK Grants Commission would change the fundamental rules of the public spending game in the UK.

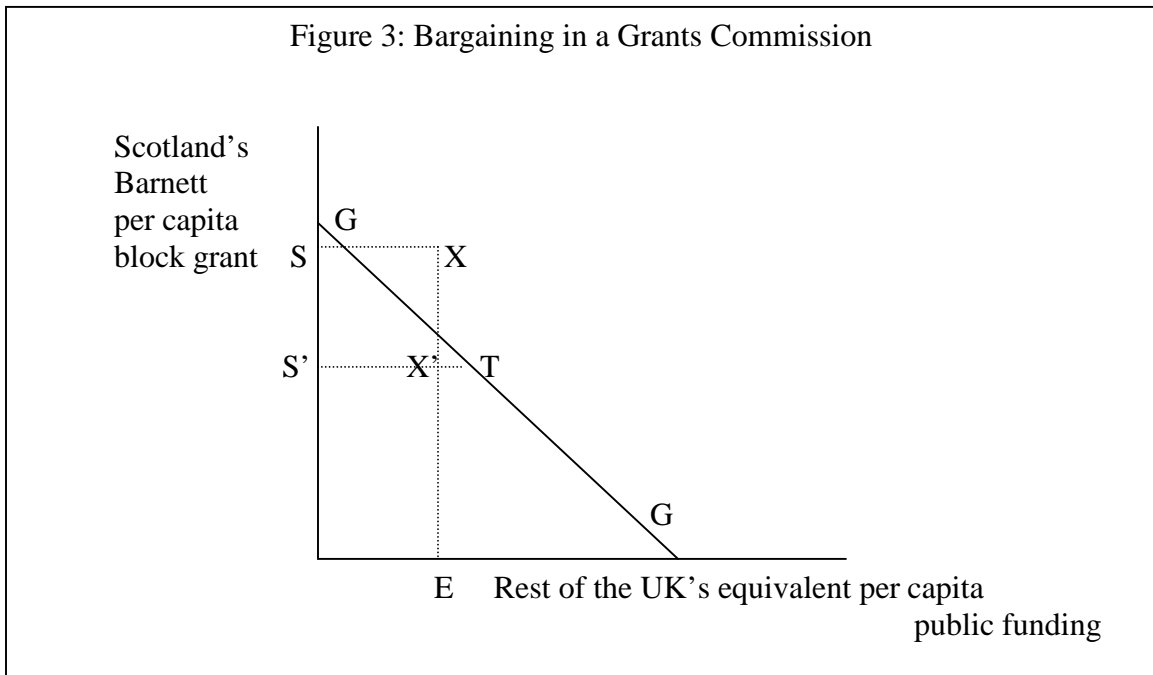
Anyway, in a UK Grants Commission, appointed representatives would bargain over the allocation of per capita public spending between the regions. Unless there was unanimous agreement, public funds would be allocated according to a default rule in which per capita public funding in each region of the UK would be determined by an inverse per capita GDP rule – the lower is a region's relative GDP the greater would be the level of its public funding. McLean argues that all twelve regions of the UK that

would be represented on the Grants Commission hold some credible threat against all of the others. Though we must say that some of these stretch credulity - "London offers in particular the threat that the public services used by the editors of the Daily Mail and the Sun could deteriorate sharply if the government does not throw money at them" (page 8). But the Grants Commission proposal is not necessarily doomed because of a lack of credible 'credible threats' on the part of some region or other, but because it is not cognizant of the fact that some regions, in particular, London and the South East of England are the paymasters to all the other regions. Rather than it being in their interests to agree to payments to some regions above their default levels, so that they will get their share too, it is likely to be in their interest to encourage collapse to the default, as this spells lower public spending in the UK as a whole and lower taxes for them. On this argument our expectation is that Scotland would find its block grant from the Rest of the UK falling. Thus, we don't see how the Grants Commission proposal deals with Scotland's credible threat secede – a threat that has to be fed with larger and larger block grants, not by smaller ones.

Thus, the idea behind the suggestion for a Grants Commission is to create fairer sharing of public spending between Scotland and the Rest of the UK through a process of cooperative bargaining that either reaches unanimous agreement on the allocation of public funds, or, else, there is fall back to a default option - that itself has been agreed by the players. In what follows we will assume that bargaining in a Grants Commission is more than just a zero sum game. Specifically, we will assume that 'fairer shares' will also contribute to an increase in the UK's real gross domestic product. Such an outcome is

possible if a reduced block grant led to a lower tax burden in the UK as a whole. This could result in greater private sector activity and, hence, to a larger real GDP. Out of this enlarged GDP, at constant tax rates, public spending in the Union as a whole, in the long-run, could increase – though this would, of course, be a political decision.

In fact, we think that the benefits of a UK Grants Commission are questionable. Our argument is illustrated in figure 3. The key assumption, reflecting our earlier discussion, is that the existing Barnett grant is at, or, near Scotland’s threat value. That is, if the flow of public funds to Scotland fell much below current levels, the Scottish median voter would move toward supporting secession.



In figure 3 the existing Scottish per capita block grant is at the level S while public per capita funding in the rest of the UK is at a lower level, E. Based on either the Grant

Commission's default or a (non-fudged needs assessment exercise) Scotland's per capita bloc grant falls S' . As mentioned, the resulting lower UK public spending and tax burden could produce an aggregate gain such that real GDP increases, and out of this larger GDP, public spending could increase. The aggregate gain in potential public spending (i.e., above the level at X') can be allocated between Scotland and the Rest of the UK anywhere along the line GG, and the larger is the aggregate gain the further to the right is GG. However, given Scotland's threat value of S' and the Rest of the UK's threat value of E, any outcome agreeable to both side must be the northeast of X' . The closer the final outcome is to point T (on GG) the greater is the gain to the Rest of the UK and the lesser is Scotland's.

Figure 3 has been set up such that, at least in the not very long-run Scotland would lose out from bargaining in a Grants Commission. This is because GG passes below point X, and even if Scotland were to obtain all of the aggregate gain, it would still be worse off than at S. However, if indeed there is an aggregate gain for the Union as a whole from cutting public spending in Scotland, over time, GG may move so far to the right that it eventually passes to the right of point X – Scotland's initial, threat value determined by its per capita block grant. If this did in fact happen, Scotland in the long-run, could end up with a larger per capita block grant than in the initial position.

Assuming this happy long-run outcome is possible Scotland faces a tradeoff. When the Grants Commission cuts the Scottish grant below Scotland's threat value, Scotland could indeed move to leave the Union, but it would be giving up on the potential long-run

increase in public spending due to increased economic growth in the UK. It is impossible to know how a hypothetical median voter would view this trade-off. Relevant is that costs (of lower public spending) would be felt immediately, while benefits would only accumulate in the long-run and, anyway, would be uncertain – depending on whether the UK tax burden did in fact fall, or, whether the Grants Commission would simply play a zero sum game transferring public spending from Scotland to the Rest of the UK with no overall reduction in the UK tax burden.

If the Scottish median voter sees the Grants Commission as a forum for the playing of a zero sum game in which he or she is the loser, the Grants Commission really has no degrees of freedom to reduce Scottish public spending. Political realities will not have changed. The Grants Commission must choose between fudging the Scottish grant so that it remains at the level of its threat value, S in figure 3, or, cutting it to S' , so risking Scotland's exit from the Union. But this is exactly the problem that the Treasury faced when it introduced the Barnett formula. Start off with a grant equal to Scotland's threat value and hope that nobody in Scotland notices the Barnett squeeze. And if somebody does, then fudge the Barnett process in some way (e.g., make payments above Scotland's population share) so that the squeeze doesn't happen. A Grant's Commission would face pretty much the same problems. It would have to find its own set of 'fudge factors' whenever the Scottish block grant threatened to fall below Scotland's threat value.

Fiscal autonomy

Viewed in the light of the foregoing discussion our proposal for fiscal autonomy for Scotland has two main advantages.

First, if Scotland accepts that public spending by the Scottish executive should be financed through Scottish sourced taxes, the Scottish high threat value that underpins the large block grant allocations to Scotland over the many decades from Goshen through Barnett melts away. We also believe that the potential effectiveness of a Grants Commission would be defeated because it does nothing to change Scotland's "we will exit the Union" threat value. If, however, Scotland voluntarily embraces fiscal autonomy, and is therefore determined to rely upon its own funds, the Rest of the UK is freed from making more than population proportional block grant payments to Scotland. Thus, fiscal autonomy changes the block grant game in a way that none of the other proposals manage.

Nor do we think that fiscal autonomy would be a threat to the Union because it would be understood that if per capita public funding in Scotland began to decline this could not any longer be blamed on the 'dastardly' UK central government. Indeed, nostalgia for the old, generous, UK system may well heighten support for the Union in Scotland, rather than the opposite which is feared would happen if Westminster attempted to cut the Scottish block grant below LA and toward NA.

Would booming Scottish public finances under fiscal autonomy have the opposite effect on public opinion in Scotland, favouring secession? Well, perhaps less so than under the present system whereby increased tax revenues – such resulting from increased prices for North Sea oil – are passed straight to Westminster, fueling some resentment in Scotland. At least with fiscal autonomy, increased tax revenues would be retained in Scotland.

Secondly, fiscal autonomy offers Scotland a whole set of efficiency incentives that are absent in either the Barnett system and would almost certainly be so under any likely Grant Commission system. As much of our other work on devolved taxes is about tax incentives we will not say anything more about them in this paper beyond what was said in the introductory paragraphs – namely, that we expect greater efficiency in public spending whenever politicians have to balance engendered benefits against the political costs of having to raise taxes¹⁷.

Conclusions

In this paper we have discussed the Barnett formula and its precursors as resulting from a non-cooperative game in which the Scottish median voter holds a threat of secession. In effect, Scotland gets to choose what it does after spending decisions have been made in Westminster - a second mover advantage. It is because of this combination of high threat value and second mover advantage that for about a century Scotland has been able to extract disproportionately high levels of public spending from the Westminster parliament. Having understood these political imperatives one is in a better position to appraise the various proposals for reform of the block grant system.

¹⁷ See Hallwood and MacDonald (2004, 2005, 2006a, 2006b), and MacDonald and Hallwood (2006).

In recommending only limited tax devolution and continuation of a (much smaller) block grant, what other reform proposals do not explain is why the Scottish median voter would accept overall lower funding (own-source taxes plus residual block grant) in the interests of "fairness" in the UK. As long as the threat of secession hangs over the UK, the median voter still needs to be compensated. Fiscal autonomy would eliminate any block grant, and in the event of lower oil prices, Holyrood could some day be supplicant (to Westminster) and would take what was offered – Scotland by becoming the first mover would lose its second mover advantage. In the forgoing economic models "fairness" does not come from the goodness of the Scottish median voter's heart, but it could if the structure of the Scotland-Rest of the UK bargaining game was changed - fiscal autonomy is a means of restructuring that game.

We have also argued that other reform proposals fail to deal adequately, if at all, with the need to increase efficiency in Scottish public spending. We argue, however, that fiscal autonomy in Scotland would go a long way toward stemming the threat of secession because fiscal autonomy would be welcomed as a legitimate reform in Scotland.

Moreover, fiscal autonomy would help to raise efficiency in public spending in Scotland – an imperative that the other reform proposals would fail to achieve.

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