

# Adjusting the Scottish block grant abatement: the algebra of CM and IPC<sup>1</sup>

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## Abstract

*In the Fiscal Settlement negotiations between the UK and Scottish governments earlier this year, one important element of the debate crystallised around the choice between the so-called CM and IPC methods of adjusting the Block Grant abatement. It is well known that the Treasury's preferred method, the CM approach, exposes Scotland to the risk of relative population decline - but the precise mechanism is not well known. This note develops a simple algebraic expression for the difference between the two methods, and explores some of the implications.*

Key words: Scotland, fiscal framework, HMT

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## 1. Introduction

The review of the Fiscal Settlement methodology scheduled for five years of its operation will be a critically important juncture. There is a real danger that the review will become side-tracked into an argument about the merits of the Treasury's CM method, relative to the IPC approach.

The purpose of this note is to clarify the algebra surrounding the relative properties of the CM and IPC approaches to adjusting the Scottish block grant abatement and to use this to highlight some of the issues surrounding the choice of method: and, in particular, to argue that there is a real need now to resolve some of the ambiguities surrounding the question of what was actually agreed during the fiscal settlement negotiations.

## 2. Background.

Under the terms of the post-referendum fiscal settlement, the funding of the Scottish government will come from two main sources: about half will come from the Scottish government's block grant, determined basically by the Barnett Formula; and about half from taxes, like income tax or a portion of VAT, devolved or hypothecated to Scotland. In more detail, the system will operate as follows. There will be an abatement to the Scottish government's block grant as it would have been determined by the original Barnett formula, to allow for those revenues which will be raised by Scotland's devolved or hypothecated taxes. This abatement will initially be set in a neutral fashion, equal to the revenues raised in the base year in Scotland by the relevant taxes. Each year subsequently, this abatement will be increased by some form of indexation or adjustment. Agreeing on precisely how this adjustment should be carried out turned out to be

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<sup>1</sup> CM – Comparable Model; IPC – Indexed per Capita.

one of the main bones of contention between the Westminster and Scottish governments during the Fiscal Settlement negotiations.

The final position reached in these negotiations was an uneasy compromise between two possible approaches to adjusting the block grant abatement. The two approaches in question are known as the Comparable Model, (CM), and Indexed Per Capita, (IPC), approaches, which are basically defined as follows.

- The CM approach involves adjusting the block grant abatement each year by adding on Scotland's per capita share of the change in relevant rest of UK, (rUK), tax revenues, multiplied by a comparability factor, which represents the initial ratio of Scotland to rUK per capita receipts on the relevant tax.
- The IPC approach involves indexing the block grant abatement each year in line with the growth in rUK tax receipts, divided by the relative rate of growth in rUK to Scottish populations. (The approach which later came to be denoted as the IPC method was first suggested in Cuthbert, (2015), where the unstable nature of indexation methods which did not allow for relative population change was discussed.)

Formal definitions of the two approaches can be found in Annex C to the fiscal agreement between the UK and Scottish governments: (UK and Scottish Governments, 2016).

In the fiscal settlement negotiations, the Treasury's approach latterly was that the CM approach should be adopted: while the Scottish government held out strongly for IPC. The agreement that was eventually reached was as follows: (for details, see Annex C to the fiscal agreement). For the first five years the CM approach would be used – on the understanding that the results over that period would be adjusted to be equivalent to use of IPC. After five years, there would be a review. What is stated about this review in Annex C is that:-

- It would be informed by an independent report on the operation of the system to date.
- The fiscal framework does not include or assume the method for adjusting the block grant beyond the five year transitional period.
- The method to be used after the review would be jointly agreed by both governments.

There nevertheless appears to be a good deal of confusion about what the agreement actually means. For example, the Secretary of State for Scotland, David Mundell, said the following in his statement to the House of Commons on 24<sup>th</sup> February, after the agreement was reached: *"For tax, we will use the UK Government's preferred funding model. Under that model the Scottish Government hold all Scotland-specific risks in relation to devolved and assigned taxes, just like they do for devolved spending under the Barnett formula. That is fair to Scotland and fair to the rest of the UK.*

*However, for a transitional period covering the next Scottish Parliament, the Governments have agreed to share those Scotland-specific risks as these powers are implemented. Specifically, the Scottish Government will hold the economic risks while the UK Government will hold the population risks, so the Scottish Government will not receive a penny less than Barnett funding over the course of the spending review simply due to different population growth. By the end of 2021, a review of the framework will be*

*informed by an independent report so we can ensure that we are continuing to deliver Smith in full, with the Scottish Government being responsible for the full range of opportunities and risks associated with their new responsibilities.”*

This statement by David Mundell can clearly be interpreted as implying that the default position is that the CM model, (i.e., the UK government’s preferred funding model), should be used after the review. This, for example, was the interpretation taken by the Daily Telegraph, when, reporting on Mundell’s statement, they said that “*Scottish ministers would be expected to start bearing the financial consequences of Scotland having lower population growth after a five-year transitional period for the new powers ends.*”

### 3. How relative population growth drives the difference between CM and IPC.

It is indeed well known that the difference between the effects of the CM and IPC approaches to adjusting the Block Grant abatement relates to relative population change. It is also well known that the difference between the two methods is likely to be significant: e.g., a report by the IFS estimated that the revenues available to the Scottish government under CM might be some £330 million per annum less than under IPC by 2021, and around £1 billion per annum less by 2031: (Bell et al., 2016, page 31).

What is perhaps less well known is precisely how relative population change affects the difference between the two approaches. The purpose of this section is to provide the algebra to fill this gap.

Some notation is required first of all: suppose that

$a_k$  = the block grant abatement in year k under CM:

$b_k$  = the block grant abatement in year k under IPC:

let  $\gamma_k$  = the relative rate of growth of population in rUK as compared to Scotland in year k:

( so  $\gamma_k = \frac{p_{k-1}^S}{p_k^S} \frac{p_k}{p_{k-1}}$ , where  $p_k^S$  and  $p_k$  represent population in year k in Scotland and rUK respectively.)

Then, given the formulae for the CM and IPC approaches set out in Annex C to the fiscal agreement, (paras C24 and C31), it turns out that the relationship between  $a_k$  and  $b_k$  is given by the formula

$$a_{k+1} = b_{k+1} + \sum_{j=0}^k (1 - \gamma_{j+1}^{-1}) b_j \quad (1)$$

(See Annex for proof.)

Note the following implications of formula (1).

a) Since  $\gamma_k$  has historically been greater than 1, (in fact, commonly around 1.0035), the terms  $(1 - \gamma_{j+1}^{-1})$  will be positive: so the CM abatement will be larger than the IPC abatement.

b) Further, since the difference between the two approaches is given by the summation term in the above formula, the absolute difference will build up cumulatively through time.

c) Moreover, since  $(1 - \gamma^{-1})$  is an increasing function of  $\gamma$ , formula (1) contains within itself the potential for a re-inforcing feedback mechanism under the CM approach. As the relative size of the CM abatement increases through time, this will put increasing pressure on Scottish public expenditure, (or upward pressure on Scottish tax rates): leading to depressed relative economic growth: leading to upward

pressure on relative population growth in rUK, (i.e., an increase in  $\rho$ ): which, feeding back into formula (1), will further increase the difference between the CM and IPC abatements: and so on.

### 3. Wider implications.

The purpose of this note is not to pre-empt the review of abatement adjustment methods which is scheduled to take place in five years' time. But, on the other hand, that review will be a difficult enough process in its own right: so it is important that the conduct of the review is not clouded by needless arguments. As the algebra in the preceding section demonstrates, (and as confirmed by the Bell et al. estimates), if the review comes down to a choice between the CM and IPC methods, then this choice will be very significant for Scotland – particularly given the potential for the CM method to contribute to a self-reinforcing process of relative economic and population decline.

As the above quotation from David Mundell indicates, one of the chief protagonists was able to emerge from the fiscal settlement negotiations giving the firm impression that the CM approach would be the default position after five years: even though the Annex C wording appears to contradict this. The time to root out this potential ambiguity is now: after five years, it will be very difficult to go back to determine who said what, and what was actually agreed. The best approach would be for a full record of the negotiations to be published: this would be consistent with the pledge made by John Swinney in the course of the negotiations, that “*Scotland’s Parliament and people have a right to see all the key documents*”: (as reported, for example, in *The Daily Mail*, 7<sup>th</sup> February 2016). Failing this, a clear agreed statement should be issued now by the Scottish government and the Treasury, confirming that Mundell was wrong, and that there is indeed no presumption that the CM approach is the default position after five years. To command credibility, such a statement would also have to fill in another vital piece of information which is currently missing: namely, what is the resolution mechanism if the Westminster and Scottish governments cannot reach agreement in the course of the five year review?

In the absence of further clarity, there is a danger that argument about the relative status of the CM and IPC methods could become a distraction in the review process. The main weakness with the current settlement is the extent to which, (even with IPC), it exposes Scotland to the danger of becoming locked into a progressive cycle of relative economic decline, and increasingly penal indexation of the block grant abatement, if Scotland fails to match rUK in the growth of per capita tax receipts. (It is worth recalling that the IFS report, (Bell et al., 2016), noted that Scotland’s new fiscal arrangements look “*increasingly unusual*” in international terms, with “*virtually no insurance for future economic shocks or trends that affect Scotland’s devolved revenues and welfare more than they do equivalent spending in rUK*”). When the five year review comes round, there is a real risk, particularly given the secular decline in the North Sea, that Scotland will be locked into a just such a cycle of decline. In these circumstances the five year review should focus on radical alternatives to IPC indexation – and should be attempting to put back in place arrangements which are consistent with the proper operation of a monetary union. It would be a tragedy if the Treasury were able to use the current ambiguity about what was actually agreed post-Smith to distract attention into a debate about CM versus IPC: or to use CM as the default position.

## References

Bell, D., Eiser, D. and Phillips, D., (2016): "Scotland's Fiscal Framework: Assessing the Agreement": IFS Working Paper W16/05; March.

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Annex: Proof of Formula (1).

In addition to the notation already introduced in section 3, let

$X_k$  denote rUK tax receipts in period k: and let

$\alpha$  denote the comparability factor for the CM method.

According to the definition given in para C22 of the fiscal agreement, (UK and Scottish Governments, 2016), the comparability factor represents the initial ratio of Scotland to rUK per capita tax receipts: since  $b_0$ , the initial abatement under the IPC scheme, is by definition equal to Scottish tax receipts in the base year, it follows that

$$\alpha = \frac{b_0 p_0}{p_0^S X_0} \quad (2)$$

From the definition given in para C24 of the fiscal agreement, it follows that

$$a_{k+1} = a_k + \alpha \frac{p_{k+1}^S}{p_{k+1}} (X_{k+1} - X_k) \quad (3)$$

And it follows from the definition given in para C31 of the fiscal agreement that

$$b_k = b_0 \frac{X_k p_k^S p_0}{X_0 p_0^S p_k}, \text{ hence}$$

$$b_k = \alpha \frac{p_k^S}{p_k} X_k. \quad (4)$$

From (3) and (4), it follows that

$$a_{k+1} = a_k + b_{k+1} - b_{k+1} \frac{X_k}{X_{k+1}}. \quad (5)$$

Now, since  $\frac{b_{k+1}}{b_k} = \frac{p_{k+1}^S}{p_k^S} \frac{p_k}{p_{k+1}} \frac{X_{k+1}}{X_k}$ , it follows that

$$b_{k+1} \frac{X_k}{X_{k+1}} = b_k \frac{p_{k+1}^S}{p_k^S} \frac{p_k}{p_{k+1}} = b_k \gamma_{k+1}^{-1}.$$

Substituting this into (5), it follows that

$$\begin{aligned} a_{k+1} - a_k &= b_{k+1} - \gamma_{k+1}^{-1} b_k : \text{ which implies} \\ a_{k+1} - a_k &= b_{k+1} - b_k + (1 - \gamma_{k+1}^{-1}) b_k \end{aligned} \quad (6)$$

Summing equation (6) for all values from 0 up to k implies that

$$a_{k+1} - a_0 = b_{k+1} - b_0 + \sum_{j=0}^k (1 - \gamma_{j+1}^{-1}) b_j :$$

Since, by definition,  $a_0 = b_0$ , this establishes formula (1).



