

Economic perspectives

Has there been an economic dividend from devolution?¹

Jo Armstrong, Richard Harris, John McLaren and John Moffat

1. Introduction

It is now over twelve years since the restoration of Scotland's parliament, after a hiatus of almost three centuries. Sufficient time has therefore elapsed that it is possible to provide some evidence on whether Scotland's economy has indeed performed better under devolution. Thus we look at productivity, GVA per head, employment, and R&D to see if there has been any relative improvement post-1999. Having done this, two of the channels through which devolution may affect these variables will be discussed: the composition of expenditure and policy innovation². This is particularly timely given that the UK and Scottish parliaments are currently considering proposals which will give further fiscal powers to the Scottish parliament, and the Scottish government is planning to hold a referendum on full independence in the autumn of 2014.

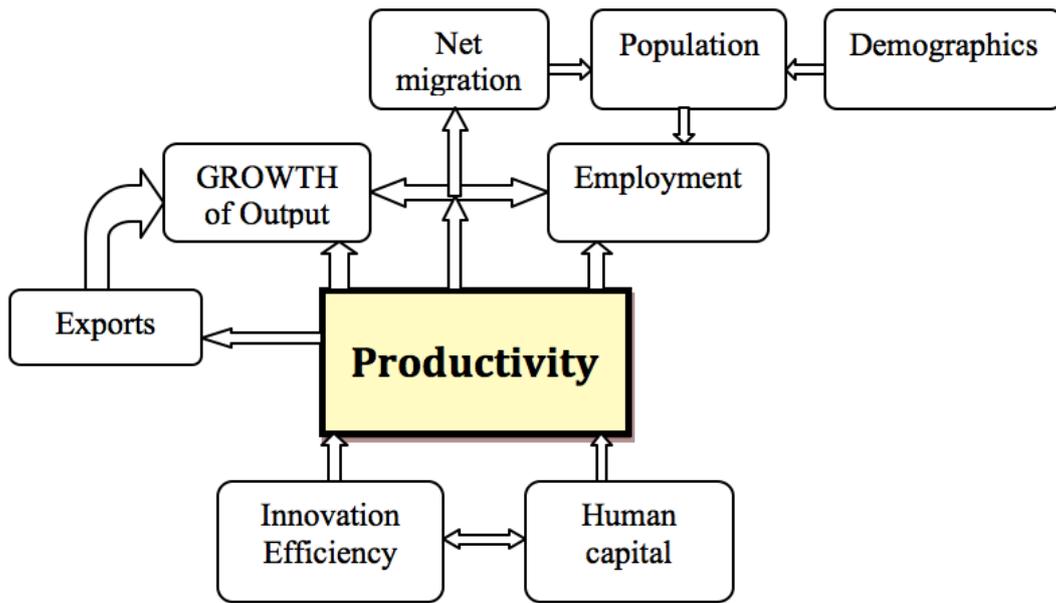
2. What happened?

In considering Scotland's post-devolution, there is a need to consider what is most likely to bring long-run (sustainable) economic growth to the nation. According to Krugman (1997), in the determination of living standards, 'productivity isn't everything but in the long run, it is almost everything'. Similarly, Baumol (1984) states that 'it can be said without exaggeration that in the long run probably nothing is as important for economic welfare as the rate of productivity growth'. Figure 1 shows our emphasis on the central role of productivity in determining living standards and identifies innovation and efficiency alongside human capital as the determinants of productivity.

Figure 2 shows workplace productivity, measured as GDP per hour worked, in the different nations of the UK (and the G7 excluding the UK) relative to productivity in the US since 1996. Scotland's productivity in 2010 was 80.4% of the US level. This is down slightly from a figure of 80.8% of the US level in 1996. Throughout the period, Scotland's productivity has been higher than in Northern Ireland and Wales (notably the Welsh position has deteriorated over time) but lower than in England. There is no obvious *positive* step-change in productivity performance in the devolved nations since 1999.

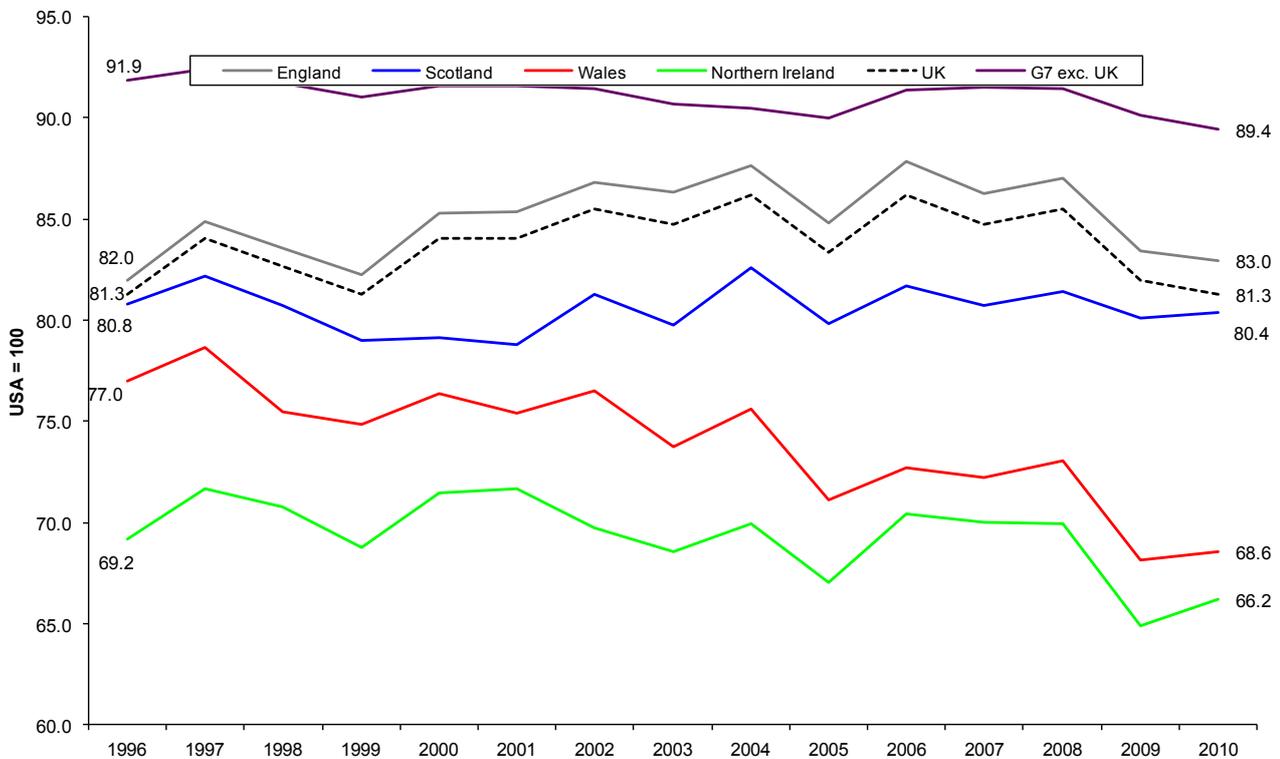
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Figure 1: Drivers of growth



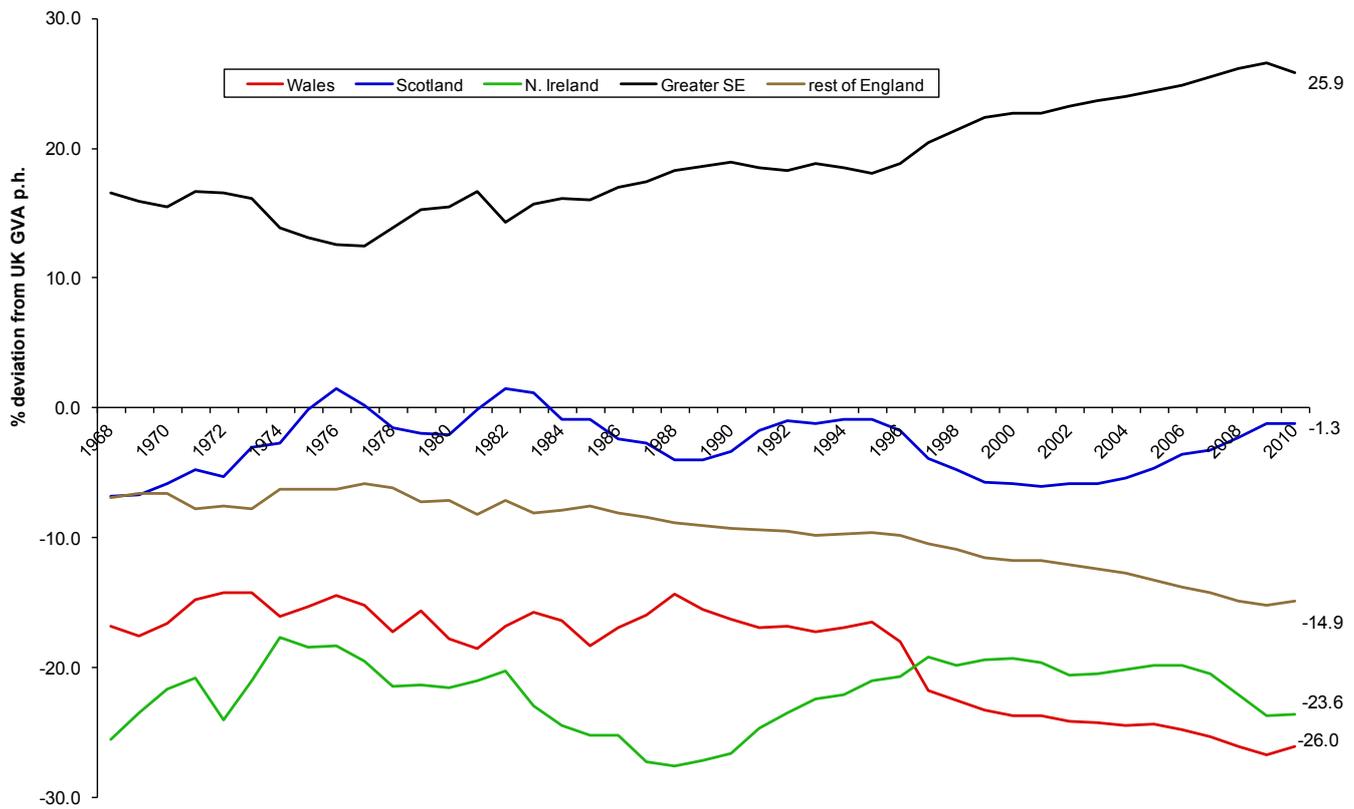
Source: CPPR (2008)

Figure 2: GDP per hour worked, UK and G7 countries relative to USA, 1996-2010



Source: ONS Labour Productivity

Figure 3: Relative (headline) GVA per head, UK regions, 1968-2010



Source: Calculations based on ONS Regional Accounts

Turning to a wider measure of economic well-being, Figure 3 shows relative GVA per head of population, relative to the UK average, for the four nations of the UK (with England divided into the Greater South East³ and the rest of England). Scotland has been close to the UK average since 1968. During that period, the Greater South East has improved its GVA per head significantly while the rest of England and Wales has seen significant relative falls in their GVA per head. Since 1999, Scotland has managed to raise its GVA per head, relative to the UK average, so it has now almost reached parity with the UK average. However, as Figure 3 shows, there is still a large gap between Scotland and the Greater South East, although improvement has been seen relative to the rest of England, Wales and Northern Ireland.

Following the approach of Harris and Trainor (1999), whether there has been any greater convergence or divergence post-devolution can be tested econometrically using the following equation:

$$\Delta(y_{SC} - y_C)_t = \phi(y_{SC} - y_C)_{t-1} + \mu + \gamma_1 t + \gamma_2 t * dev_t + \varepsilon_t \quad (1)$$

where y_{SC} and y_C are GVA per capita in Scotland and a comparator, respectively; μ is an intercept; t is a time trend;

and dev_t is a dummy variable that takes the value of one from 2002 onwards (i.e. the period post-devolution)⁴. The dependent variable is therefore measuring the change in the gap between GDP per capita for Scotland and a comparator region (3 different comparators are used below). The parameter γ_1 measures whether the gap between Scotland and the comparator region is trending upwards or downwards over time⁵ and γ_2 indicates whether this trend (if it exists) has accelerated or decelerated since devolution.

Reflecting what is seen in Figure 3, Table 1 shows that when the comparator used is the UK (either excluding the Greater SE or just excluding the Continental Shelf), there is evidence of a small, but significant, acceleration in the rate of convergence since devolution (when the latter is measured post-2001)⁶. When the comparator is Greater SE, the devolution time trend is not significantly different from zero. However, the inability to reject the null ($H_0: \phi$) that the lag of the gap in GVA per capita between Scotland and the comparator region is not different from zero suggests that there is no equilibrium relationship between the two series (so the above results regarding the devolution trend need to be interpreted with caution)⁷.

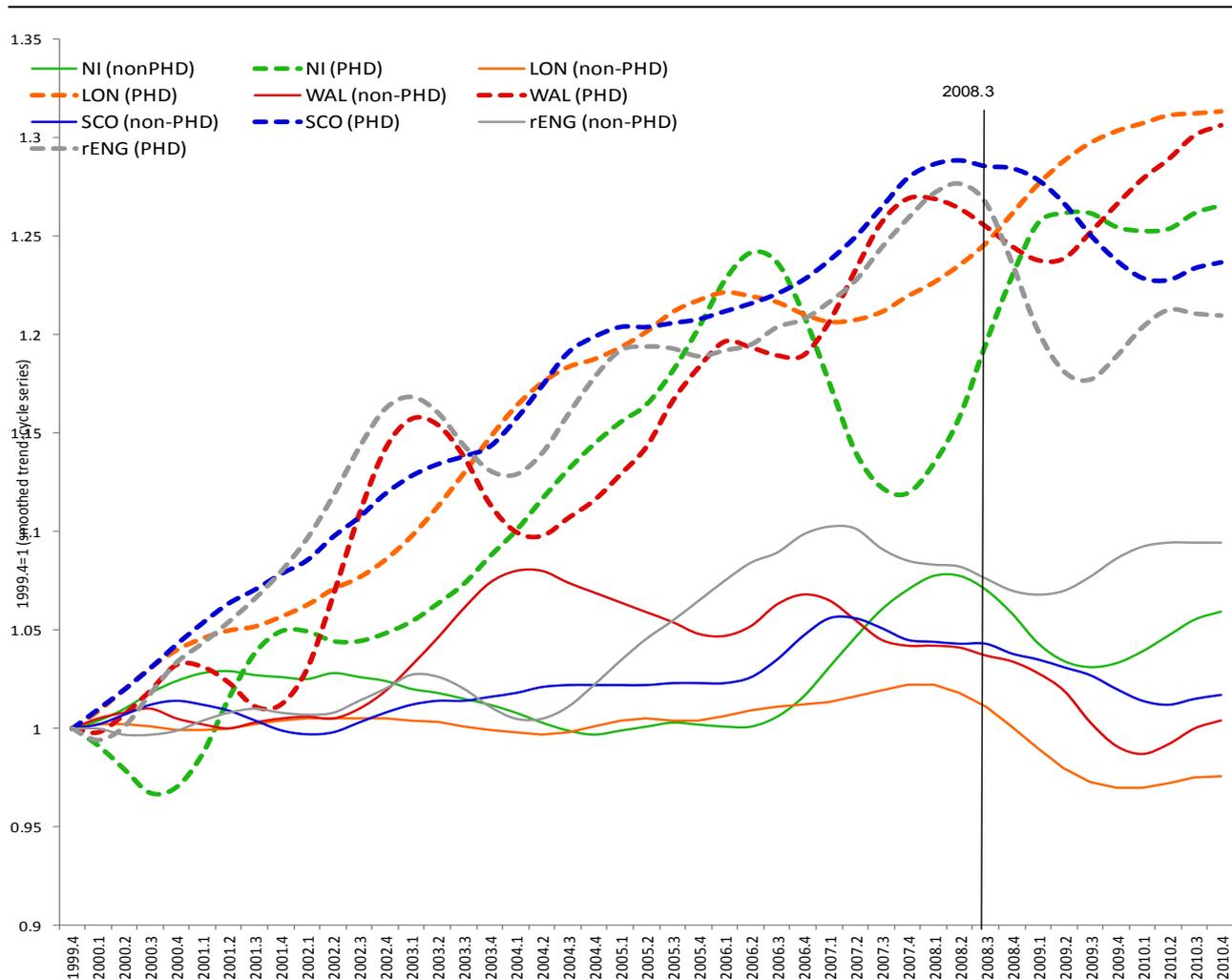
A further measure of Scotland's absolute and relative improvement in welfare/growth is the level of employment.

Table 1: Estimated parameters from model of convergence

Comparator:	UK excluding Greater South East	UK excluding Continental Shelf	Greater South East
Constant	0.0119** (0.0047)	0.0048 (0.0045)	-0.0058 (0.0140)
(Scotland GVA – Comparator GVA) _{t-1}	-0.1551 (0.0851)	-0.1131 (0.0718)	-0.1079 (0.0780)
Trend _t	-0.0000 (0.0002)	-0.0004** (0.0002)	-0.0009*** (0.0003)
Devolution _t × Trend	0.0003** (0.0001)	0.0003** (0.0002)	0.0003 (0.0003)
No. of Observations	42	42	42

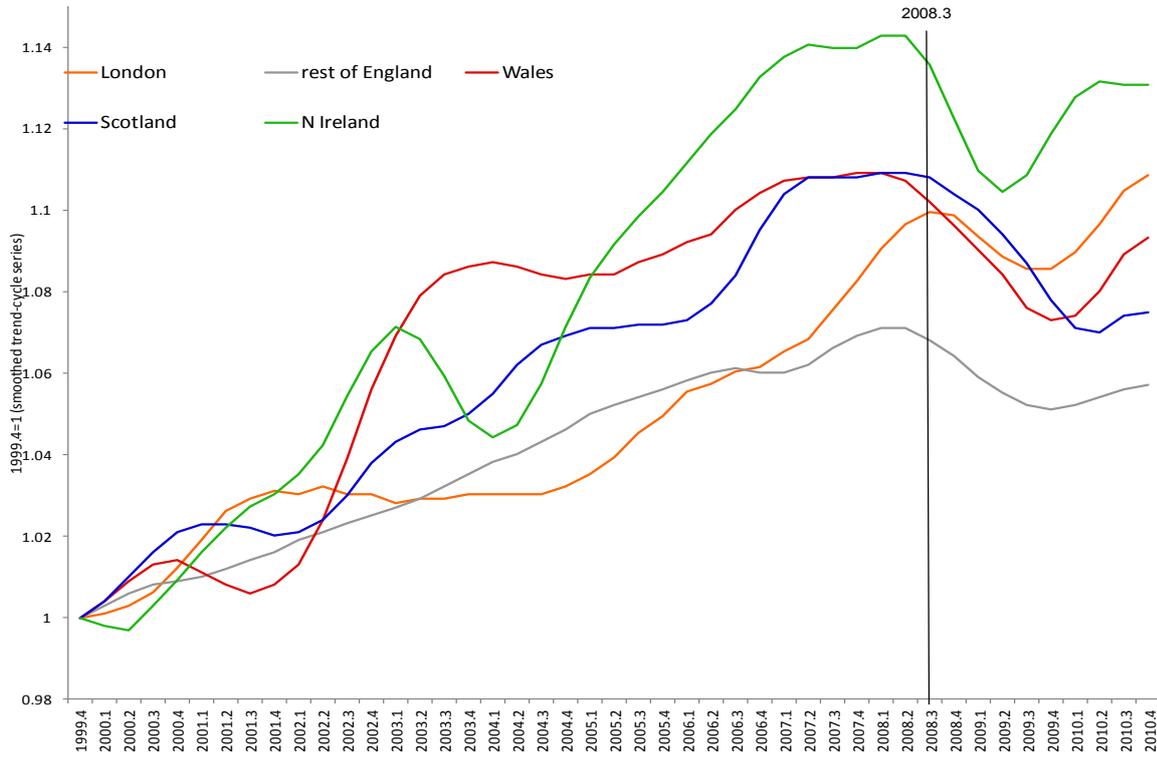
Note: Standard errors in parenthesis. **/** significant at 5/1% level based on standard t-test.

Figure 4: Employment levels (1999q4=1), employed and self-employed, 1999-2010



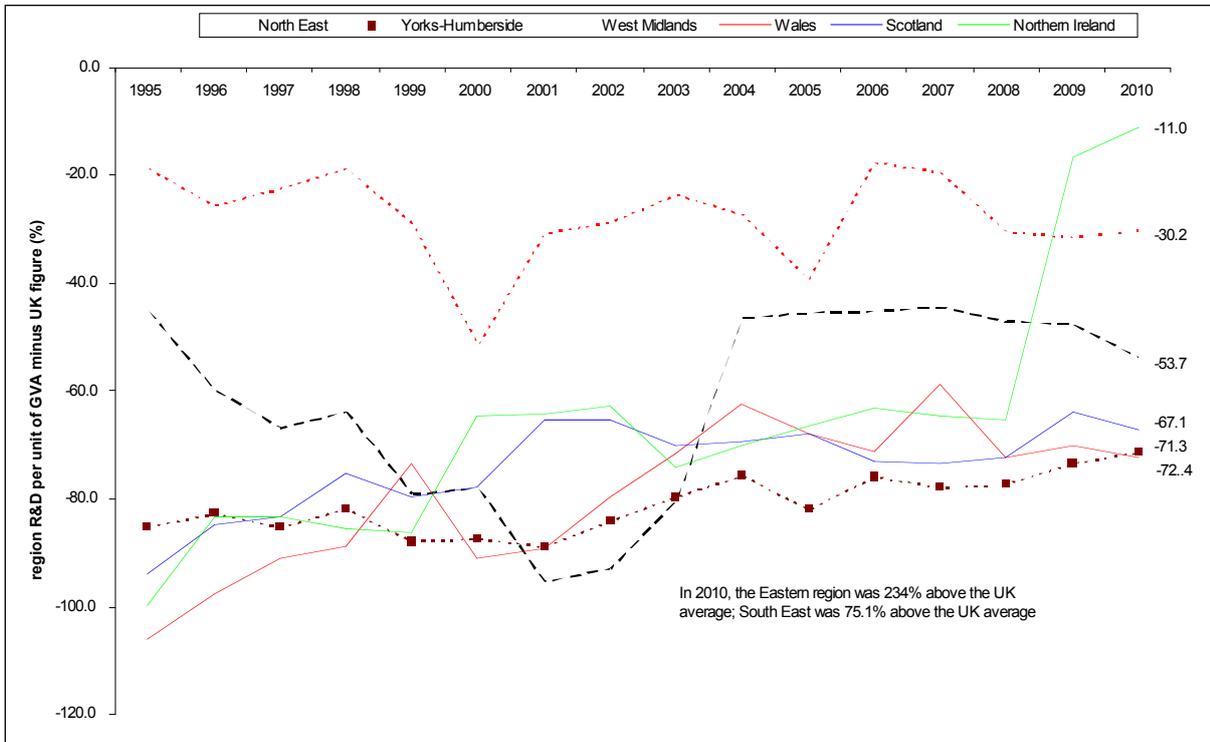
Source: Labour Force Survey

Figure 5: UK Employment levels (1999q4=1), employed and self-employed, 1999-2010 (Public administration, defence, health and education - PHD - sector versus non-PHD sector)



Source: Labour Force Survey

Figure 6: R&D spending per unit of GVA relative to UK figure, 1995-2010



Source: Business Enterprise R&D and Regional Accounts

Figure 4 shows the trend in employment across the different nations of the UK (with England split into London and the rest of England) since the last quarter of 1999. All nations have higher employment than at the beginning of the period with Northern Ireland achieving the most remarkable rise in employment. Scotland also performed relatively well until 2009. However, the rebound in employment after the recession has been far smaller in Scotland than in other parts of the UK which means that, over the period as a whole, Scotland has only performed better than the rest of England.

Figure 5 shows that, when the employment figures in Figure 4 are disaggregated into two broad sectors (public administration, defence, health and education – labelled PHD from now on – versus all other industries)⁸, then, in all parts of the UK, most of the rise in employment is attributable to the PHD sector. In Scotland, Wales and London, aggregate employment growth would have been non-existent or negative, had this sector not expanded. This is clearly a worrying finding given that such employment growth in the PHD sector is more likely to be stagnant or negative in the near future, because of the current UK government's commitment to cuts in public expenditure.

Figure 6 shows R&D expenditure per unit of GVA relative to the UK average for selected UK regions⁹. This is important as R&D is a key determinant of productivity (see, e.g. Harris & Moffat, 2011). Among the selected regions, Scotland's R&D performance has improved slightly since 1995 but has remained relatively poor. Of the selected regions, only Yorkshire & Humberside and Wales had lower R&D expenditure per unit of GVA in 2010. To the extent that R&D is a leading indicator of future performance, this is a worrying finding. Note: these R&D figures are based on information covering the most important R&D spending firms in the UK; thus they are likely to underestimate R&D spending by smaller firms. Table 2 presents nationally representative data from a different source, showing Scotland (and to a lesser extent Wales) to have the smallest proportion of firms innovating and/or conducting R&D¹⁰.

One argument for devolution is that it allows budgets to be spent in accordance with local preferences (cf. the literature on fiscal federalism, especially Tiebout, 1956; Oates, 1972). One way of testing this hypothesis is to look at whether there have been changes in the composition of expenditure since devolution. This can be done with data from the ONS Public Expenditure Statistical Analyses and using the following model:

$$spending_{it} = \alpha_0 + \sum_{d=1}^3 \alpha_d dev_{it}^d + \beta time_t + \sum_{d=1}^3 \delta dev_{it}^d \times time_t + \varepsilon_{it} \quad (2)$$

where $spending_{it}$ measures the proportion of expenditure going to a given area of expenditure in region i at time t , dev_{it}^d is a dummy variable that takes the value of one from 1999 onwards in devolved region d ; $time_t$ is a time trend that

shows how expenditure has grown in the non-devolved regions of the UK (i.e. the regions of England). The coefficient on $dev_{it}^d \times time_t$ is of greatest interest as it shows whether the percentage point increase (decrease) in expenditure has been faster (slower) in devolved region d and therefore provides a measure of the degree of policy heterogeneity¹¹.

However, it must be acknowledged, that this method will not necessarily capture policy heterogeneity because differences in policy do not necessarily require changes in expenditure (the same amount can be spent, but spent on a different 'mix' of underlying services captured by the aggregate figures). Furthermore, given that a large proportion of spending is on wages, which will increase or decrease at the same rate across the UK, looking for variation in expenditure totals may be a very strict test of policy heterogeneity.

The results from estimating equation (2) by OLS regression¹², for those areas in which the majority of expenditure is under the control of the Scottish government, are given in Table 3. Taking health as an example, the coefficients can be interpreted as follows (taking each in turn): at the start of the period, on average 18.3% of identifiable expenditure went towards health across the English regions; there was no significant difference in the amount of identifiable expenditure going towards health in Scotland at the start of the period; health expenditure in England has grown by 0.4 percentage points per year since 1999; health expenditure in Scotland has grown by 0.1 percentage points less (i.e. 0.3 percentage points) than in England over the period. This latter we can take as evidence of policy heterogeneity in Scotland.

It is reasonable to expect that expenditure on enterprise and economic development, agriculture, forestry and fisheries, transport and education and training will have the most direct impact on economic performance (through potential increases in productivity). Expenditure on education and training, and transport, has been growing by 0.1 fewer percentage points, and by 0.2 more percentage points, respectively, in Scotland compared to England. The difference is positive but not statistically significant in enterprise and economic development and agriculture, forestry and fisheries. In sum, therefore, there is no clear indication of expenditure moving towards those areas that are likely to improve the performance of the Scottish economy in the future

However, there has been little evidence of such economic policy innovation. Most recent economic policy documents (see Northern Ireland Executive, 2011; Scottish Government, 2007; Welsh Assembly Government, 2010) from the devolved nations focus on the same drivers of growth such as R&D, training and investment and employ the same type of methods to encourage them (based on comparable analysis undertaken at HM Treasury after 1997.

In doing so, they tend to follow the UK strategy documents (HM Treasury, 2000, 2001)

Another argument for devolution is that it encourages policy innovation by creating inter-jurisdictional competition. However, there has been little evidence of such *economic*

policy innovation. Most recent economic policy documents (see Northern Ireland Executive, 2011; Scottish Government, 2007; Welsh Assembly Government, 2010) from the devolved nations focus on the same drivers of growth such as R&D, training and investment and employ the same type of methods to encourage them (based on

Table 2: Percentage of establishments producing a product innovation or undertaking R&D, 2002-2008

	Product innovation	Blue-sky innovation ^a	R&D
South East	25.9	13.0	33.3
Eastern England	25.8	12.3	32.3
East Midlands	25.5	11.5	31.0
South West	24.9	11.2	30.0
West Midlands	24.1	10.9	30.6
UK	24.0	11.1	30.8
Yorks-Humberside	23.4	10.4	30.2
North East	23.3	10.4	29.4
London	23.1	11.0	30.9
Wales	23.0	10.3	29.4
North West	23.0	9.8	30.1
Scotland	20.8	9.2	28.3

^a Introduction of a new product that is new to the industry (not just the firm)

Source: weighted data from Community Innovation Surveys, 2002-2008

Table 3: Estimates of parameters from Equation (2), 1998-2010

Dependent variable - % of identifiable expenditure going to:	General Public Order Public Services	Public & Safety	Enterprise & Economic Development	Agriculture, Fisheries & Forestry	Transport	Housing & Community Amenities	Health	Recreation, Culture & Religion	Education & Training
Constant	0.015*** (0.000)	0.061*** (0.002)	0.015*** (0.001)	0.020*** (0.001)	0.033*** (0.002)	0.012*** (0.001)	0.183*** (0.001)	0.020*** (0.000)	0.160*** (0.001)
Devolution × Scotland	0.008*** (0.001)	-0.011 (0.007)	0.005 (0.004)	-0.001 (0.004)	-0.005 (0.007)	0.019*** (0.005)	0.001 (0.005)	0.005*** (0.002)	0.001 (0.004)
Devolution × Wales	0.006*** (0.001)	-0.007 (0.007)	0.017*** (0.004)	-0.005 (0.004)	-0.002 (0.007)	-0.001 (0.005)	-0.009** (0.005)	0.007*** (0.002)	-0.010** (0.004)
Devolution × NI	0.008*** (0.001)	0.048*** (0.007)	0.015*** (0.004)	0.013*** (0.004)	-0.014* (0.007)	0.029*** (0.005)	-0.030*** (0.005)	-0.006*** (0.002)	0.006 (0.004)
Time Trend	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)	0.000* (0.000)	0.001*** (0.000)	0.004*** (0.000)	-0.001*** (0.000)	0.001*** (0.000)
Time Trend × Devolution × Scotland	-0.000 (0.000)	-0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	0.002** (0.001)	-0.001 (0.001)	-0.001** (0.001)	0.000 (0.000)	-0.001** (0.001)
Time Trend × Devolution × Wales	0.001*** (0.000)	-0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)	0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.001)
Time Trend × Devolution × NI	0.000 (0.000)	-0.003*** (0.001)	-0.001** (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	-0.000 (0.001)	0.001*** (0.000)	-0.003*** (0.001)
Observations	156	156	156	156	156	156	156	156	156

Note: standard errors in parenthesis.

comparable analysis undertaken at HM Treasury after 1997. In doing so, they tend to follow the UK strategy documents (HM Treasury, 2000, 2001).

3. Conclusion

Our review of economic indicators has failed to provide any strong evidence of a significant impact – following the (re)-creation of the Scottish parliament – on Scotland's relative economic performance. While there has been some post devolution impact in terms of improved GVA per head relative to the UK, as shown in Figure 3 and Table 1, the remainder of the evidence fails to highlight why this might have occurred. For Wales and Northern Ireland there is even less to suggest devolution has resulted in any economic dividend.

However, it ought to be acknowledged that our approach can be criticised on the grounds that it may be unsuitable for identifying a causal impact of devolution. A better approach, particularly in relation to productivity, would be one to estimate the impact of devolution at a micro-level, as that would allow us to control for many of the determinants of firm productivity (see, for example, the approach used by Harris and Moffat, 2011). The detailed work needed to undertake this approach is something we plan to do in the near future.

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Endnotes

¹ This paper is based on the presentation the Urban and Regional Economic Study Group on 11th January, 2012. We wish to thank the participants for comments, with the usual disclaimer that only we are responsible for the final views expressed here.

² Identifying a causal impact of devolution on different indicators of economic performance is difficult. This is because of the problems inherent in estimating what would have happened to Scotland's economy, had the Scottish parliament not been created (the counterfactual). As a result, in this paper, we generally rely on comparisons of Scotland's performance with that of other regions and with its performance prior to devolution. Both have shortcomings as measures of what would have happened in the absence of a Scottish parliament because of differences in others factors across time, and across regions, that will affect performance.

³ Specifically, London, the South East and the East of England.

⁴ We started with dev_t having the value of one from 1999 onwards, but the results were not significant for Scotland. However, as any policy changes will take time to feed through to changed outputs, then using a later start date for the dummy seems reasonable.

⁵ A negative (positive) sign indicates that the gap is getting larger (smaller).

⁶ Results (not shown here) for Wales and Northern Ireland never show any evidence of convergence or divergence, even when (to give devolution a fairer chance of working) we have experimented by setting dev_t to later years.

⁷ Note, the t-values obtained from the analysis must be compared to the Dickey-Fuller distribution, and not the Student's t-distribution.

⁸ Note, the first broad sector (public administration, defence, health and education) mostly comprises

employment in the public sector (some 77% of total employment in 2010.q3 was in the public sector based on data from the ONS series "Public Sector Employment Statistics"). Thus overall, most jobs depend directly on public sector spending.

⁹R&D spending in Northern Ireland rose significantly in 2009-2010. Part of the reason seems to be a significant increase in spending by the aerospace industry in the Province.

¹⁰Similar data for is available for Northern Ireland (but was not available here).

¹¹It may be thought unlikely that any significant policy heterogeneity will emerge immediately after the creation of the devolved bodies. To allow for a delayed impact of devolution, we experimented by changing the definition of

dev_{it}^d to being a dummy variable that takes the value of one from 2000, 2001 and so on onwards in devolved region d . Using 2000 to 2003, there was little impact on the results for Scotland but using 2004 onwards a larger number of the coefficients on the $dev_{it}^d \times time_t$ became statistically significant although their magnitude remained small. This implies that it took a lengthy period of time for the Scottish Parliament to begin to deviate from UK spending priorities.

¹²This method is not strictly applicable in the current situation because the dependent variable is bounded between 0 and 1. However, it has the advantage of providing results that are easy to interpret.

