

Scottish Trends Analysis Paper

Scotland's Economic Growth and Productivity Slowdown - Explanations, Implications and Potential Solutions

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March 2018

Executive Summary

- The recent slowdown in the growth rate of the Scottish economy is a worry but how long has it lasted? This analysis suggests there has been **very slow growth in recorded labour productivity since 2004**, with only 2010 providing any real fillip.
- The jump in 2010 was partly the result of a substantial decline in Manufacturing employment at the height of the recession having no impact on output. If this one-off improvement is considered to be exceptional, **it could be claimed that the post 2004 productivity growth rate for Scotland is close to zero**. Even including the 2010 boost, recorded post 2004 Scottish annual productivity growth is only 0.3%.
- There are clearly conceptual **issues with the Construction sector labour productivity** calculation and these may well extend to other areas like Financial Services, casting doubt on some of the big shifts seen in labour productivity in recent years.
- Doubts over the accuracy of the data and over the average annual rate of growth of make it difficult to forecast productivity and therefore difficult to predict how much longer the slowdown will last for.
- This is important as the forecast of productivity growth is a key element in the work of the **Scottish Fiscal Commission (SFC)** when considering prospects for the Scottish economy and the Budget. At present, the SFC have Scottish productivity returning to a rate of 1% a year by 2022-23. This is not high by long term historical standards but may be over optimistic in comparison to the post 2004 average of 0.3% a year.
- This productivity problem is compounded by the fact that a variety of helpful **‘tailwind’** effects over the past half century are now disappearing or turning into growth suppressing **‘headwinds’**. These include: changes to female economic participation; changes to education standards; demographic trends; North Sea activity; internationalisation; and political stability.
- It is therefore essential that a return to productivity growth is somehow engendered, but how? There are a variety of possible avenues to explore although none of them offer easy solutions. Examples include: increasing inward investment and entrepreneurship; increasing R&D spend; improving the diffusion of innovation across firms; improving education and health standards.
- In most cases there will be trade offs involved and losers as well as winners so that difficult decisions will need to be made. However, without a return to annual productivity growth of 1 to 2% then wages, living standards and public spending are equally unlikely to return to past growth rates.
- More ideas will hopefully emerge when the Scottish Conservatives and the SNP’s Growth Commission reports become available in the coming months.

Introduction

The Scottish economy has suffered a significant slowdown in its growth rate for over a decade now, predating even the 2008 world financial crisis. In GDP per capita terms, it has moved from an average annual growth rate of 2.3% to close to zero.

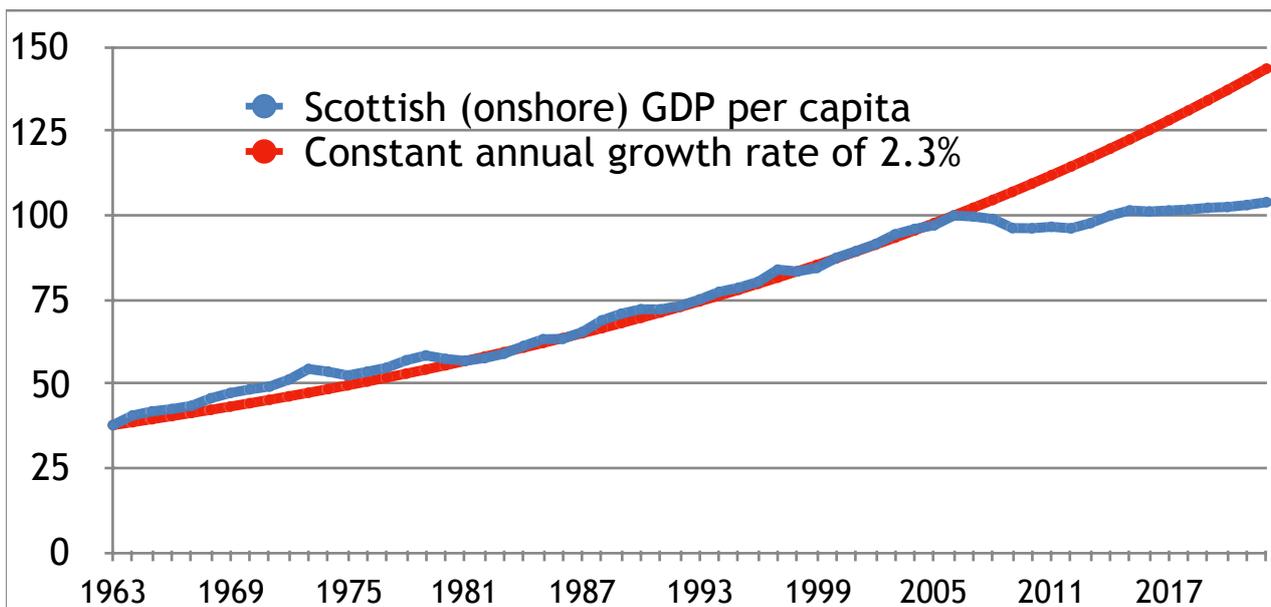
This paper sets out to explore:

1. the role of slowing productivity growth up to now;
2. what the future might hold;
3. potential policies to help overcome such a slowdown.

Scotland's long term growth trend

From 1963 to 2006 Scotland's growth rate did not vary too far from its annual average of 2.3%, in terms of GDP per capita. However, post 2006 (to 2016) there has been next to no growth and little is forecast up to 2022. (See Figure 1.)

Figure 1: Growth of Scottish onshore GDP per capita, 1963 to 2022



Sources: GDP data for 1963 to 2016 comes from the latest Scottish quarterly GDP publication. Data for 2017 to 2022 is based on the latest (December 2017) Scottish Fiscal Commission forecasts. Population data comes from GROS website.

The Role of Productivity

This breakdown in the growth of living standards (GDP per capita) is largely due to the disappearance of labour productivity (LP) growth i.e. GDP growth per hour worked. Productivity data for Scotland (available from 1998) is shown below.

Figure 2: Real output per hour, 1998 to 2017 Q3 (2007=100)

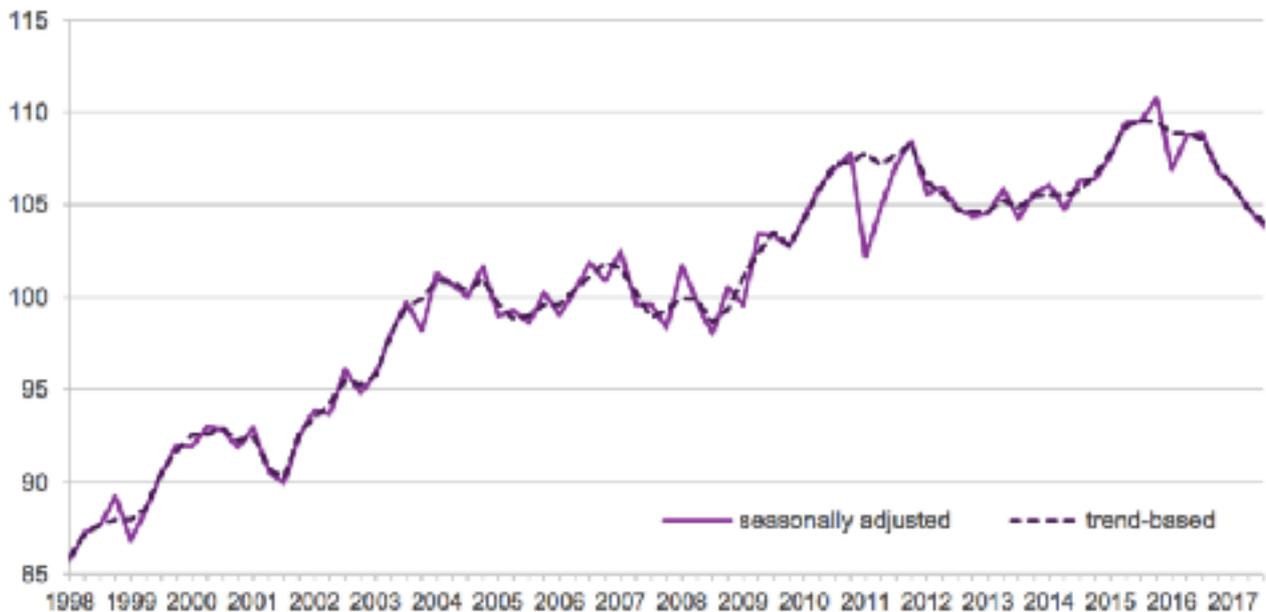
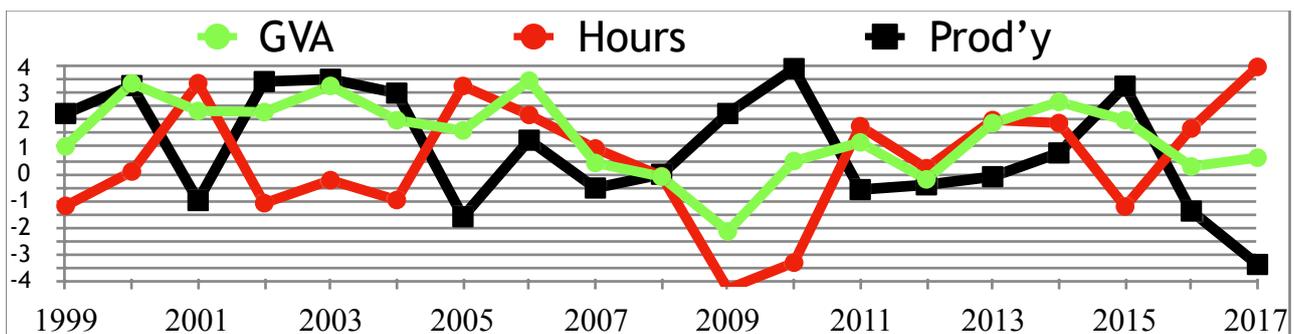


Figure 2 shows that Scottish productivity:

- grew strongly from 1998 to 2004;
- plateaued from 2004 through to 2008;
- grew strongly again through 2009 and 2010;
- after which it has been erratic, with another big gain seen in 2015, since lost.

The decline in productivity growth predates the decline in GDP p.c. growth by two years, starting in 2004 rather than 2006. This was made possible by a substantial rise in the number of hours worked in Scotland through 2004 and 2005, which rose by 5% (See **Figure 3**.)

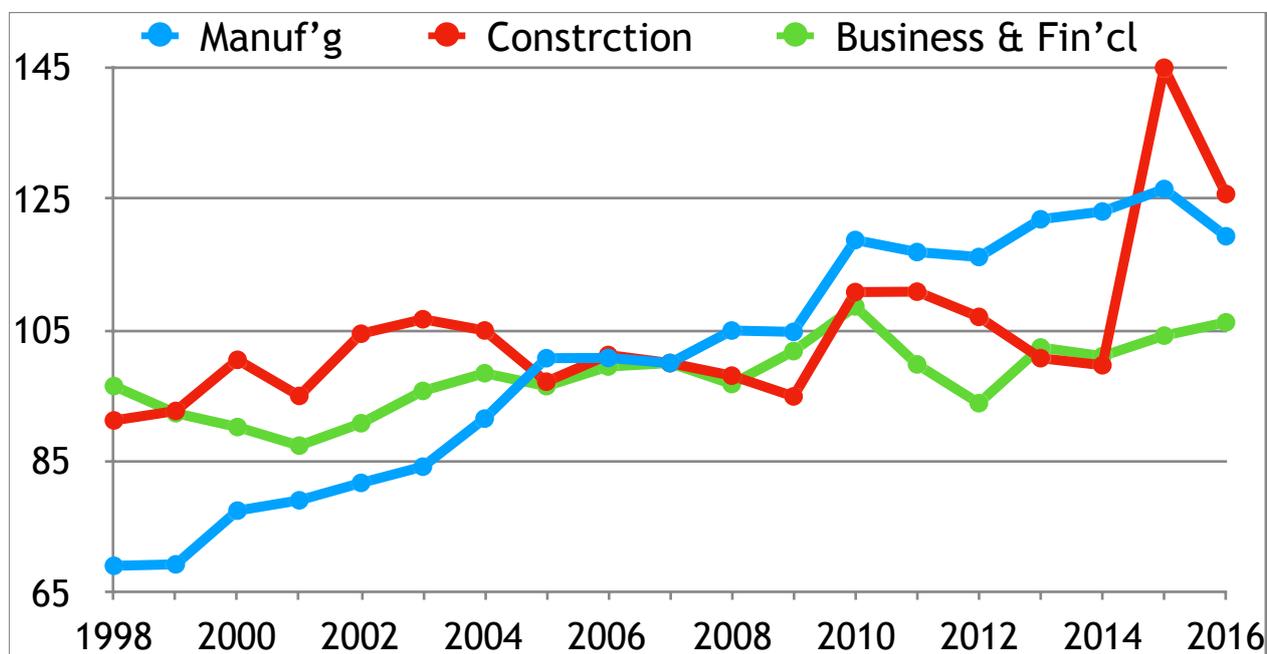
Figure 3: Annual % change in Labour Productivity and its key components, 1999 to 2017



Sources: Scottish Government, Labour Productivity Statistics Q3 2017 up to 2016. Authors own calculation for 2017.

While the lack of productivity growth is the main factor of interest here, it is also instructional to look at where LP has risen, through 2009 and 2010 and in 2015. To help interpret these jumps in LP, the profile of some of the main industrial sectors exhibiting fast LP growth are shown in **Figure 4**.

Figure 4: Scottish Labour Productivity by Broad Industry Group, 2007 = 100



Source: Scottish Government, Labour Productivity 2017Q3

What is immediately striking is that much of the 2015 boost in overall LP is due to the dramatic rise in **Construction** productivity experienced in that year (which also contributes to some of the consequent fall back). This dramatic spike was the result of a huge increase in output which had next to no impact on employment or hours worked. This jump in output has been connected to a surge in large infrastructure projects in Scotland, some of which, like the second Forth crossing, involved highly specialised workers. These workers are often itinerant (i.e. resident in countries outside Scotland) and may not be recorded in labour market surveys, hence the discrepancy between output and employment. This means that the increase in productivity in this sector may be an illusion, or at least overplayed. (Note: this Construction sector output-employment disconnect also has implications for the real rate of GDP growth, as some of the benefits are leaking out-with Scotland, meaning that GNI is a more appropriate measure than GDP in this instance.)

The LP rises seen in **Construction** in 2010 and in **Business & Financial Services** in 2009 and 2010 may also have non-resident employment aspects. However, these jumps up largely work themselves out over the following years.

Some of the overall Scottish LP increase seen in 2010 can be put down to the 13% rise in **Manufacturing** LP in 2010, the biggest on record (back to 1998). As Manufacturing output only grew by 4% in 2010 then the majority of this gain is down to reduced employment having no impact on output levels. (Note: the decline in LP seen through the past 4 quarters (to Q3 2017) has been caused by a big jump up (5%) in hours worked with little in the way of increased output.)

The above exceptions of one off boosts to productivity aside, the story is largely one of stagnant LP growth across most sectors.

A number of important points arise from the above analysis:

- 1) Ignoring the dubious contribution of the Construction sector, it could be claimed that there has been no underlying improvement in Scottish LP since 2004, apart from a one-off jump in 2010;
- 2) This one-off jump was partly the result of a substantial decline in Manufacturing employment at the height of the recession having no impact on output (which increased);
- 3) If the one-off improvement in LP in 2010 is considered to be exceptional, it could be claimed that the underlying post 2004 productivity growth rate for Scotland is close to zero;
- 4) Even including the 2010 boost, post 2004 annual productivity growth may be only 0.3%.

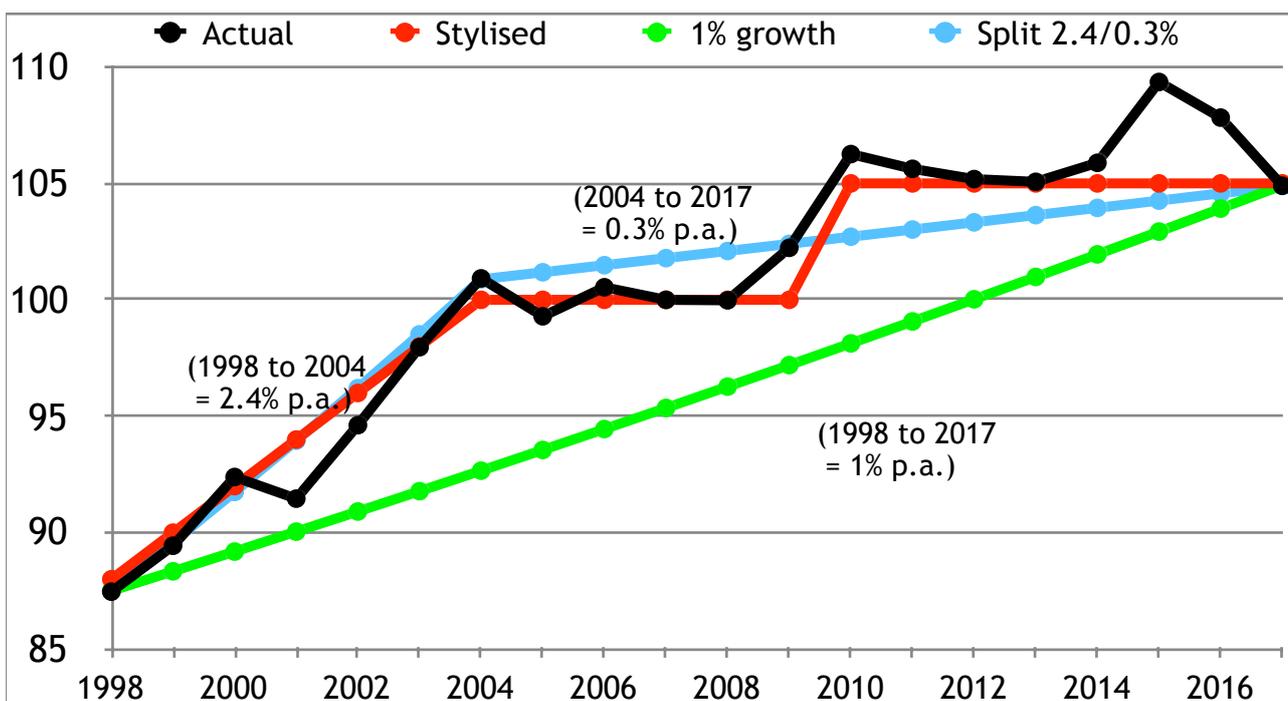
All of this brings into doubt the accuracy of Scottish productivity data, which is important, given that an assumption over productivity growth is one of the key inputs made by the **Scottish Fiscal Commission** (SFC) when forecasting future Scottish growth. The latest such set of forecasts (December 2017) assumes that Scottish productivity:

- has grown at an average of 0.5% per year since 2008;
- compared to an average growth of 1.6% per year prior to 2008 (based on SFC methodology);
- is assumed to steadily rise from 0.2% in 2016-17 to 1% by 2022-23.

(Note: in their recent paper ‘Forecasting the long-run potential of the Scottish economy’ (2018), the SFC acknowledge that “*the slowdown in productivity happened around 2004*”, as well as recognising, and adjusting for but not explaining, the problem with the Construction sectors productivity estimates.)

While 1% annual LP growth is still well below the SFC’s pre 2008 average of 1.6% it is well above any average measure recorded since 2004. Indeed it is equal to the average seen over the whole period from 1998 to 2017 (see **Figure 5**). As such, the SFC’s estimate for future LP growth may be over-optimistic and so too its forecasts for Scottish economic growth and future tax take.

Figure 5: Scottish Labour Productivity profiles, 1998 to 2017



Sources: Scottish Government, Labour Productivity 2017Q3 and authors calculations.

Note: the 2017 figure in the actual data line is an average of the first three quarters of 2017.

Appendix 1 further illustrates how the choice of the time period significantly impacts on the ‘past average’ calculation.

It would be interesting to see what the impact on Scottish Government finances were to be if variant forecasts are made assuming a productivity growth rate ranging from 2.4% (the 1998 to 2004 average) all the way down to 0 (potentially the post 2004 average).

Overall, the above analysis has established that Scotland’s recent productivity performance has been poor and for a longer period of time than is generally acknowledged. **Appendix 2** considers how this has compared with the UK experience.

The next section looks at how other key elements that will impact on future Scottish economic growth.

Box 1: The Scottish Fiscal Commission - Changing the Debate

The introduction of the SFC into the political and economic landscape has led to a profound change in the nature of the economic debate in Scotland. Its results and analysis are not especially novel, in that they chime with what other independent forecasting bodies like the Office for Budget Responsibility (OBR) and the Institute for Fiscal Studies (IFS) have been saying in recent years. However, whereas before any ‘negative’ analysis by such UK bodies could be dismissed as ‘biased’ or too close to the UK Government or HM Treasury, this claim is now difficult to make, given that the SFC was set up by the Scottish Government.

As a result, the relatively pessimistic, compared to previous Scottish Government analysis, forecast that emerged last December - growth of under 1% forecast for the next few years - was not challenged by the Scottish Government, indeed it is a core element of the official Budget.

What are the wider prospects like for future Scottish growth?

The above analysis of recent Scottish productivity does not bode well for future growth prospects.

Furthermore, in addition to attempting to re-energise productivity growth, Scotland simultaneously faces a number of other challenges. In particular, a variety of tailwind effects evident over the past half century are likely to turn into headwinds for the decades to come.

For example, past **tailwinds** have included:

- a considerable expansion of female **economic participation**;
- a considerable expansion of **education standards** e.g. participation at Higher education level;
- positive **demographic** impacts e.g. a falling dependency ratio;
- the rise of **North Sea** oil related onshore and offshore activity;
- a reduction in trade barriers and increased **internationalisation**;
- relative **political stability**.

Whereas, future **headwinds** could include:

- a slowing or end to greater female economic participation;
- a slowing or end to rising education standards;
- negative demographic impacts e.g. a rising dependency ratio;
- the decline of North Sea oil related onshore and offshore activity;
- an increase in trade barriers and reduced internationalisation;
- increasing political instability.

So the pressure to improve Scottish productivity is made all the greater by this turnaround in other factors. (Note: the SFC's analysis document from the last Scottish Budget (December 2017) also illustrates how past supports for growth have diminished (see page 46).)

The SFC's forecasts for Scottish productivity assume a gradual return towards their assumed long term trend, but stopping well short of achieving it. However, as we have seen, even this may be an over-optimistic view. Post 2008, the OBR has consistently downgraded its future productivity growth assumptions for the UK economy and the SFC may have to do the same. If the above analysis is correct then the post 2004 productivity growth rate may be near to zero and so the degree of bounce back assumed by the SFC may be unwarranted.

Give these unpromising circumstances what can be done, policy-wise, in order to help turn the situation around?

What Policies Should be Pursued?

Much work has been done in this area suggesting that single policy solutions are unlikely to provide a complete answer as the underlying problems may well be multiple and complex.

The following highlight some of the more interesting findings from recent reports.

OECD led analysis

A 2015 **OECD** report ('The Future of Productivity') highlighted that, at the firm-level, key policies to sustain productivity growth include:

- pro-competition reforms** to product markets, especially in services to incentivise and facilitate diffusion of new technologies and managerial performance
- closer **collaboration** between firms (of all sizes) and universities in order to benefit from access to the global knowledge frontier
- a **level playing field** that does not favour incumbents over entrants
- greater **labour mobility** in order to reduce skill mismatch
- public investment in **basic research**

The OECD considers that the UK, and most likely Scotland too, is at or near the forefront already in areas like A, C and D. (This led the Secretary General to comment in 2015 that "*The UK is a textbook case of best practice on how good labour and product markets can support growth and*

jobs creation.”) Recent editions of the OECD’s ‘Economic Survey of the United Kingdom’ have emphasised the following with regards to improving general economic performance:

- Encouraging highly qualified **immigrants** to work and live in the UK.
- Foster competition among contracted providers of **active labour market policies** (ALMP’s).
- Supporting **Land planning regulations** that encourage an increase in housing supply.
- Increase **public infrastructure investment**, including a move towards user pricing in areas like road transport and develop further the use of PPP and public guarantees for privately financed infrastructure projects.
- Greater investment in **R&D**, where the UK continues to have a low international ranking.

These findings by the OECD highlight some of the political issues that inevitably emerge when seeking to improve productivity. For example: the UK is moving away from encouraging immigrants; the use of PPP’s is increasingly unpopular; and introducing road charging is ‘challenging’.

Returning to the firm-level data, Andrew Haldane of the Bank of England (2017) reports that the OECD’s (2015) finding of a widening gulf in the performance of ‘frontier’ companies (i.e. on the frontier of using new innovative practices) and ‘laggard’ companies is especially true for the UK. He concludes that it is stalling diffusion, rather than stifled innovation, that accounts for much of the UK’s productivity puzzle. (Note: Harris & Moffat (‘The sources of the Scotland-Test of the UK productivity gap implications for policy’, 2017) and Nick Crafts (‘What Kind of Supply-side Policy for the UK? What Implications for Scotland’, David Hume Institute, power point presentation, 2013) have both highlighted the lack of diffusion and low share of ‘innovation active’ businesses in Scotland.)

Breaking this ‘slowing diffusion’ finding down further, Haldane finds that firms that export and foreign owned firms are important in acting as innovation leaders. For example, large multi-national companies are often highly productive in themselves and, equally important, their techniques can be copied by existing native companies to improve productivity, via supply chains. Others might point to improving Scotland’s poor record in **entrepreneurship** (i.e. a higher start-up rate for new businesses) in order to encourage innovation and productivity.

However, two problems exist with these routes to improvement. First, the policies needed to increase inward investment or entrepreneurship are not obvious and, especially in the case of the latter, the problem has proved stubborn for some time.

Second, evidence that either approach would improve the Scottish performance is scant. Research by **Harris & Moffat** (2016) found that, counterintuitively and in contrast to the position at the UK level, foreign owned companies and start ups actually worsened Scottish productivity. Such a finding is very dispiriting, but these avenues for improvements need to be further explored rather than ignored, it just means that care needs to be taken when policies in these areas are being promoted.

With respect to R&D it may be better to incentivise innovation rather than provide investment subsidies as diffusion of innovation may matter more than original invention, which can be imitated from elsewhere. Haldane provides a couple of ‘mentoring style’ examples of how companies might be helped to assess where they stand in terms of their productivity record and how to improve it.

Other analysis

Some analysts of UK productivity highlight ‘institutional level’ problems in the UK. The **LSE Growth Commission** reports (2015 & 2017) found that “*failures in the institutional architecture are at the roots of the persistent and serious failure in UK investment in public capital*”. As a result they proposed an infrastructure planning commission be set up. The economic historian **Nick Crafts** (see NIESR (2015)) proposes setting up an (Australian style) Productivity Commission tasked with benchmarking supply-side policies against international best practice and which will audit progress towards their effects on medium term productivity.

Current Scottish Government policies

According to the SFC, policies announced at the time of the last Scottish Budget are assumed to have no impact on future growth. The Scottish Government have also highlighted the potential impact of the new Scottish Investment Bank. However, we are very much talking about potential here. Similar attempts by the UK Government to attempt to ‘fill a hole’ in the private sector provision of investment have seriously underperformed against targets.

Beyond economic policies

Recent OECD ‘Economic Survey of the United Kingdom’ reports have also emphasised wider policy changes such as:

- Improving outcomes and equity in **school education**, through supporting greater autonomy across school types and investment in disadvantaged children, and expansion of high quality postsecondary vocational programmes.
- Addressing excessive remuneration for GP’s and increasing competition in **health** care provision (another ‘politically challenging’ policy in the current political environment).

While not immediately important in increasing productivity, such policies can be very influential in the longer run.

Education has a clear connection with the labour skills that will impact on future productivity. Falling school standards have also been a problem in recent years, with Scotland slipping down the OECD rankings in each of the last 4 rounds of PISA.

Health has a less clear connection but perhaps an increasingly important one. Improving health standards so that the economic participation rate also improves is one way of helping future growth. It also addresses Scotland’s woeful life expectancy record, which continues to be one of the worst in the OECD.

In Summary

The harsh truth is that it is difficult task to improve productivity and it is especially difficult to do so without making hard choices that can have negative knock on impacts in other areas of the economy. Any firm level support may reap greater dividends where it addresses ‘imitators’ rather than ‘innovators’ and be in the form of guidance rather than grants.

From Here to Where?

More ideas will hopefully emerge when the Scottish Conservatives and the SNP's Growth Commission reports become available in the coming months.

The problem is likely to remain how to incorporate ambitious new policies, which will inevitably involve a degree of upheaval, with the Scottish Government's traditionally 'conservative' approach to change.

Many analyses of productivity emphasise the importance of competition and the inevitable 'creative destruction' that accompanies it, but such an improvement to the supply side is often hampered by an unwillingness to accept that there will be losers as well as winners.

Equally, if Scotland prefers a 'coordinated market economy' (more typical of northern European countries) to a 'liberal market economy' then this will require comprehensive institutional reform, including more patient capital, more training, higher taxes and and wage moderation.

A perhaps less divisive and potentially more productive approach would be to concentrate on improving the performance of 'laggard' companies in Scotland. However, such an approach remains relatively novel and so success is again far from guaranteed.

What can be said with some degree of confidence is that if a return to productivity growth of 1 to 2% per annum does not emerge then wages, living standards and public spending are also unlikely to return to growth rates seen on anything like the historical average scale.

John McLaren,
Scottish Trends,
March 2018

Appendix 1: Scottish productivity ‘trend-line’

The following table highlights how the choice of trend-line can vary depending on the period being looked at.

Table 1: Variations in annualised productivity growth rates for Scotland

Time period	Annual growth rate	Differential: Late vs Early
Overall period		
1998 - 2016	1.2	
1998 - 2017	1.0	
Early period		
1998 - 2004	2.4	
1998 - 2008	1.3	
1998 - 2010	1.6	
Late period		
2004 - 2016	0.6	-1.8
2004 - 2017	0.3	-2.1
2008 - 2016	0.9	-0.4
2008 - 2017	0.5	-0.8
2010 - 2016	0.2	-1.4
2010 - 2017	-0.2	-1.8

Source: authors calculations.

Note: the SFC average growth rates are different to those shown above as they exclude the Construction sector.

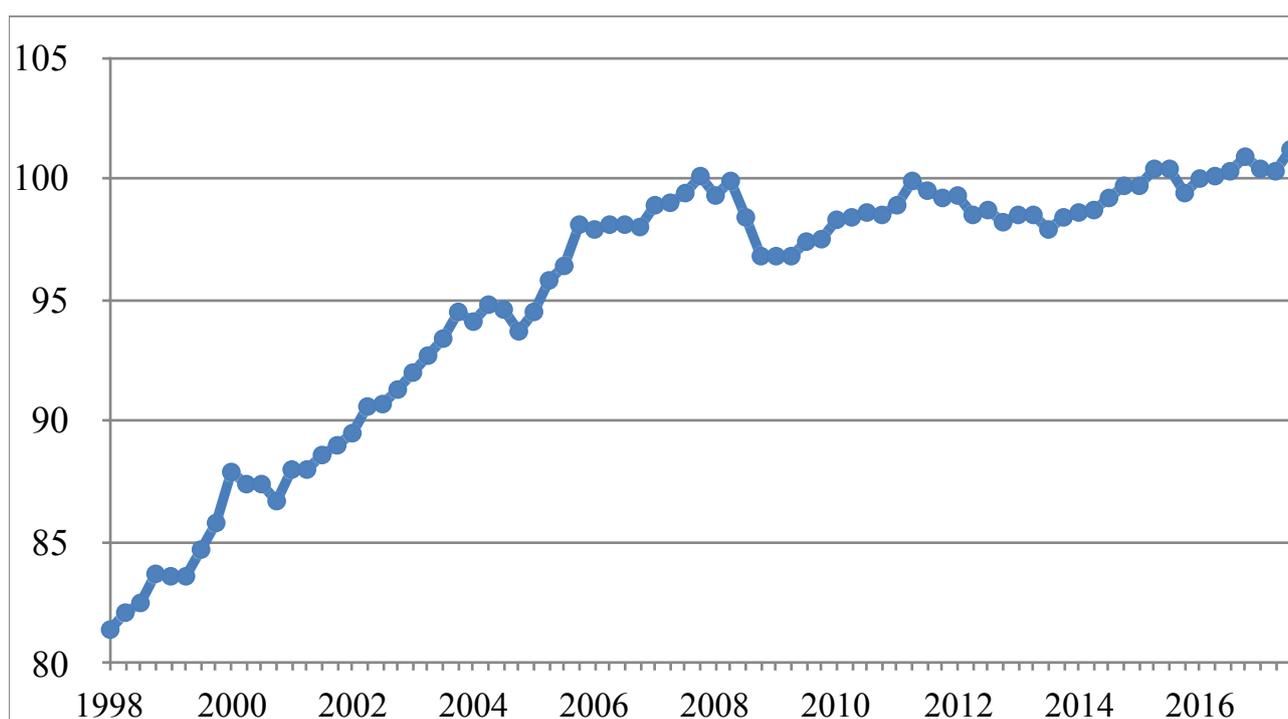
Appendix 2: Productivity in the UK vs Scotland

The slowdown in productivity is by no means a unique Scottish event, the UK for example has also performed poorly. Considerable analysis has been undertaken trying to explain the productivity problem in other countries but much still remains unexplained (see SCDI paper - <http://scottishtrends.co.uk/wp-content/uploads/2016/03/SCDI-Productivity-paper-III.pdf> also Haldane (2017)).

Figure 6 shows the labour productivity (LP) path for the UK since 1998 (i.e. it is comparable to the Scottish data shown in Figure 2. (Note: the UK data is for the UK including the North Sea.) Post 2004, the UK profile is noticeably different to that seen for Scotland, in that:

- UK LP continued to grow through to 2008, rather than flatlining from 2004 to 2008;
- there is a notable fall in UK LP through 2008, which is recovered by 2011, in contrast to Scotland's barely perceptible blip in 2008 and much stronger growth through 2009 and 2010;
- post 2011, UK LP has seen mild trends up and down but essentially very little net growth, not dissimilar to Scotland.

Figure 6: UK (inc North Sea) output per hour



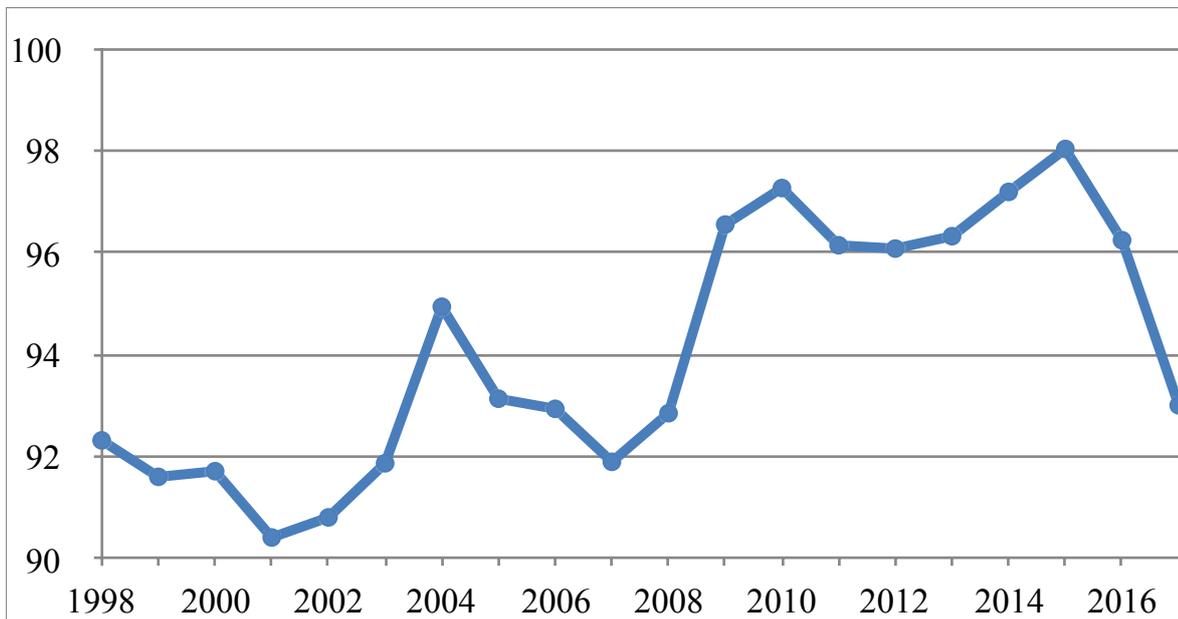
Source: ONS, UK productivity Quarter 3 2017

Note: For the UK, excluding the North Sea would result in faster productivity growth than seen in Figure 5, as North Sea output fell considerably, 1998 to 2017, while employment fell by much less. This is particularly true over the period 2003 to 2013.

These relative shifts are seen more clearly in **Figure 7**, which shows that, barring the outlier of 2004, Scottish productivity relative to the UK can be viewed as fairly constant 1998 to 2008, followed by a one-off jump up in 2009, which has only recently, through 2016 and 2017, been lost. Essentially the relative position is little changed now to what it was in 1998 or in 2006. This suggests that the UK's overall LP record has been just as poor as Scotland's only with a different profile.

This may be true but more analysis would need to be done over the robustness of the UK data to see whether some of the doubts expressed above for Scottish LP are also relevant at the UK level.

Figure 7: Real output per hour, UK = 100



Sources: Scottish Government, Labour Productivity Statistics Q3 2017 up to 2016. Authors own calculation for 2017.

Looking in more detail at the picture for 2009, Scottish productivity relative to the UK leapt up by 5%, the only UK region to experience such a dramatic shift in that year. The fall in hours worked in Scotland over this period was much greater than at the UK level. It is this reduction in hours worked that led to a 5% relative increase in labour productivity in 2009, even though output was also falling. Every other region of the UK saw productivity falling or flat in 2009 (bar the North West of England and Northern Ireland, which saw increases < 1%).

The ONS regional labour market publication for Scotland also shows number of jobs by industry. This confirms that over the period 2008 to 2010, the number of jobs lost in Scotland was proportionately more than for the UK. In particular, the fall was greater in the Construction sector as well as in Public Sector related services (i.e. Public Administration, Education and Health & Social Services). The latter saw an overall rise of around 5% over this period in the UK, but a small fall in Scotland. While the regional ‘Workforce Jobs by Industry’ database is not the most reliable in terms of accuracy, separately published ‘public sector jobs’ figures also show a disparity, with Scottish public sector employment down 1%, but up 2% at the UK level (2008 to 2010), so this divergence is likely to have contributed to some degree. As a result, Scottish Government Services productivity rose by 4.5%, a highly unusual gain and in contrast to the 1.5% fall seen at the UK level. However, it should be noted that public sector output and productivity are notoriously difficult to measure, which must in turn throw some doubt over these figures.

Most of the recent downward adjustment looks to have taken place since the second half of 2016. We do not have much detail on this yet but there has been a big jump up (5%) over the last four quarters in hours worked with little in the way of increased output. The reasons for this are equally as difficult to fathom as the reasons for the big fall in employment through 2009 and 2010, again without any strong impact on output.