



Fraser of Allander Institute

Economic Commentary

Vol 41 No 2

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** Opinions expressed in the economic perspectives are those of the authors and not necessarily those of the Fraser of Allander Institute*

Need to know

- The Scottish economy continues to remain in a precarious position. Output declined in the final three months of 2016, and most business surveys and indicators of economic confidence suggest any growth in the first six months of 2017 has been fragile at best.
- Whether or not Scotland has formally entered technical recession (defined as two consecutive quarters of falling output) is in the balance.
- All things considered, we still expect the Scottish economy to grow this year and create more jobs – albeit at rates well below trend. A number of ‘big’ political factors – not least the Brexit negotiations – cast a shadow over the outlook.
- In such uncertain times, we continue to recommend that just as much attention is given to the range of estimates that underpin this outlook as well as our central estimates.
- Our central forecast is for **growth of 1.2% in 2017, 1.4% in 2018 and 1.6% in 2019** – broadly in line with our March forecast.
- Financial and business surveys are forecast to lead the return to growth, building on the momentum gained over the last year to eighteen months. Food & drink and tourism should continue to benefit from the low value of Sterling, although the retail sector will face further pressure as a result of falling household incomes.
- Unemployment is forecast to rise slightly as the recent sharp increase in inactivity levels off.

FAI forecast Scottish GVA growth (%) by sector, 2017 to 2019

	2017	2018	2019
GVA	1.2	1.4	1.6
Production	1.4	1.6	1.8
Construction	0.7	0.8	1.0
Services	1.2	1.3	1.6

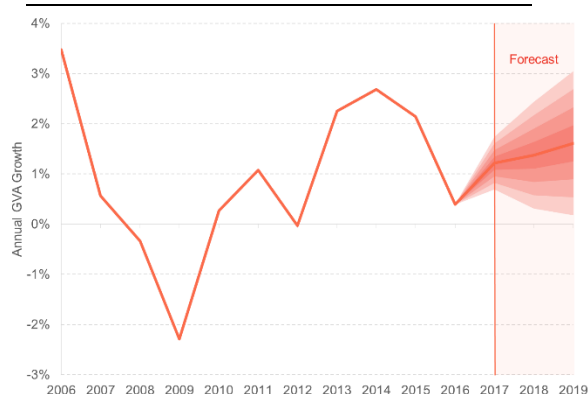
Source: Fraser of Allander Institute

FAI labour market forecast to 2019

	2017	2018	2019
Employee Jobs	2,436,450	2,476,450	2,514,700
Unemployment	117,000	134,300	143,750
Rate (%)	4.4	5.0	5.3

Source: Fraser of Allander Institute

GVA forecast range 2017 to 2019



Source: Fraser of Allander Institute

Summary

The economic news since our March Commentary has continued to paint a relatively disappointing picture of the performance of the Scottish economy.

Scotland's economy shrank in the final three months of 2016, with the slowdown evident across most key sectors.

The latest indicators of consumer confidence and business activity suggest that growth has returned during the first half of 2017 but remains fragile.

Such weakness can no longer be explained solely by the downturn in the oil and gas industry. Nor, given the relative resilience of the UK economy, can it be the result of Brexit (yet).

Instead it would appear that the economy is stuck in a cycle of low growth, weak investment and fragile confidence.

The one bright spot has been the labour market which continues to hold up remarkably well with unemployment at a record low and employment growing.

However, over the past two years there has been a movement from unemployment into inactivity, whilst the recent growth in employment has been largely in self-employment – some of which is likely to be relatively insecure.

At the same time, productivity growth remains poor not just by international standards but also by Scotland's own recent trends. This lack of improvement in productivity is feeding into weakened pay growth, putting further downward pressure on household incomes.

With the effects of any Brexit headwinds and rising inflation likely to become more significant in the coming months, the resilience of the Scottish economy is likely to be severely tested.

Whether or not Scotland formally enters recession when the next set of data are released is in the balance. We believe that the Scottish economy will still grow over the year as a whole (and more

quickly than last year) but further negative quarters of growth are highly possible.

In such challenging economic times, it is vital that businesses focus on the long-term drivers of growth including: accessing new external markets, grasping the opportunities from the rapid expansion in new technology and improving firm specific efficiency and productivity levels.

It is also right that businesses demand much more of a policy effort from government. Recent debates have understandably focussed on the general election, the constitution and Brexit.

However, what our economy needs – more than ever – is clear policy strategies backed-up by concrete action.

The Scottish economy has been flat lining for two years. The EU referendum result was known 12 months ago.

But what genuinely new policy actions – with immediate effects – have been taken in response? And what has been their impact?

To what extent have both the Scottish and UK Government's changed their economic strategies to cope with a world where we will no longer be part of the EU?

With Brexit undoubtedly adding new risks *and* new opportunities, 'policy as usual' is no longer an option.

A renewed focus on how both the Scottish and UK Governments can use the powers at their disposal to support the Scottish economy is urgently needed.

Fraser of Allander Institute
June 2017

Outlook and Appraisal

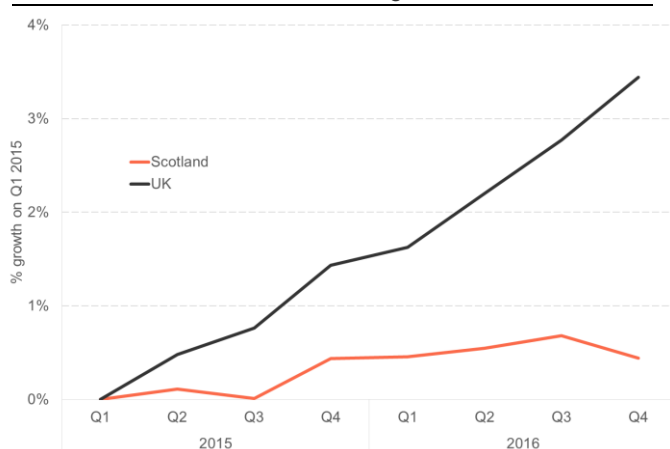
Scotland is on the brink of recession with most indicators suggesting economic activity during 2017 has been modest at best. Whether or not the data confirms a ‘technical’ recession when published next month is in itself – in our view – not especially important. Of greater concern is the lack of growth over the past two years and that what started as a downturn in oil and gas has become more widespread. All things considered, we still expect growth to pick-up this year but to remain well below trend.

Table 1: Scottish growth (%) by sector, Q4 2016

	GDP	Agriculture	Production	Construction	Services
Q4	-0.2	-0.2	-0.9	-0.8	+0.0
UK	+0.7	+1.0	+0.4	+1.0	+0.8
Annual	+0.0	+0.3	-4.6	-6.0	+1.6
UK	+1.9	+1.9	+1.9	+2.8	+2.9

Source: Scottish Government, Q4 GDP

Chart 1: Scottish & UK cumulative growth – since 2015



Source: Scottish Government, Q4 GDP

Table 2: Labour market, Feb-Apr 2017

	Employment (16-64)	Unemployment (16+)	Inactivity (16-64)
Scotland	74.1	4.0	22.7
England	75.2	4.6	21.1
Wales	72.9	4.8	23.2
N. Ire	68.8	5.4	27.2
UK	74.8	4.6	21.5

Source: ONS, Labour Force Survey

Introduction

The Scottish economy contracted in the final quarter of 2016. The poor figures were comprehensive. Production and construction output fell, whilst services remained flat.

During 2016, the Scottish economy did not grow at all, compared to growth of 1.9% in the UK.

This divergence is not new. Growth in Scotland has lagged the UK for 2 years (Chart 1).

In contrast, Scotland's labour market continues to hold up remarkably well (Table 2). Unemployment is at record lows. But we continue to urge caution against viewing these figures in isolation, particularly given recent increases in inactivity and less secure self-employment.

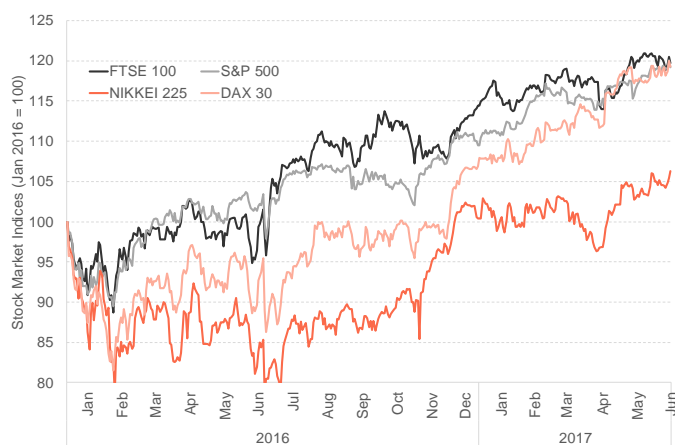
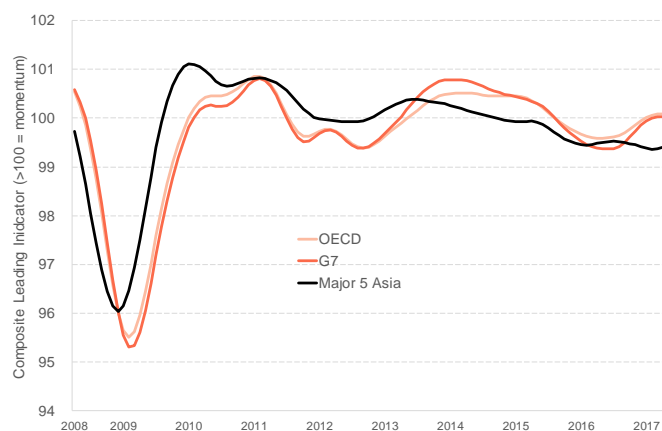
Businesses in Scotland are likely to face a tough trading environment for the foreseeable future. Weak domestic demand in Scotland, a cooling UK economy, inflation and ongoing political uncertainty, does not lend itself to a positive backdrop for growth.

In such times, seeking new opportunities in overseas markets alongside a relentless focus on the long-run drivers firms can control – such as efficiency improvements, strategic investments, staff training etc. – will be crucial.

From a policy perspective, there is an urgent need for action to support Scotland's economy. Debates over Brexit and the constitution cannot be used as an excuse not to make full use of the levers that the Scottish and UK Governments do control.

Table 3: An improving global outlook – World growth forecasts (% change on a year earlier)

	2016	2017	2018
World Output	3.1	3.5	3.6
G7	1.7	2.0	2.0
US	1.6	2.3	2.5
Euro Area	1.7	1.7	1.6
Emerging & Developing	4.1	4.5	4.8
China	6.7	6.6	6.2
World Trade	2.2	3.8	3.9

Source: IMF, World Economic Outlook**Chart 2:** Global stock markets at near record levels (Jan 16=100)**Source:** Thomson Reuters Datastream**Chart 3:** OECD composite leading indicator – above 100 = conditions above long-term trend (and vice versa)**Source:** OECD, Leading indicators and tendency surveys

The global economy

The fundamentals of the global economy are stronger than they have been for many years.

World economic activity is picking up with a long awaited recovery in investment and trade.

The IMF forecast global growth to rise from around 3% in 2016 to nearer 3.5% this year and next – not too far away from long-term average growth rates.

Encouragingly, growth in international trade is expected to move ahead – once again – of growth in the global economy. Faster trade growth is generally seen as a good indicator of robust activity.

Financial markets have also held on to gains made in early 2017 and levels of business and consumer confidence are, on the whole, positive (Chart 2).

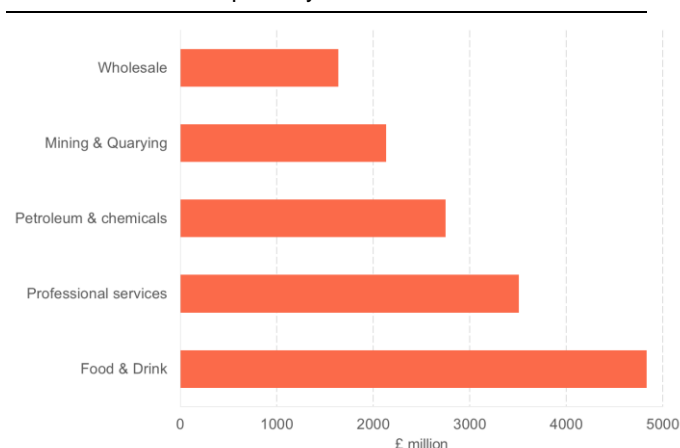
The keenly watched ‘OECD Leading Indicator’ points to the major advanced economies continuing to grow close to their long-term average in the near term (Chart 3).

In terms of Scotland’s two main international export markets, the outlook is more positive than in recent years.

Firstly, whilst the US economy has posted relatively modest results so far this year, strong job market data and an anticipated fiscal stimulus should lead to faster growth this year and next.

Secondly, the recovery in Europe continues to build and has now reached all Euro Area countries. But whilst unemployment continues its downward trend, it remains high with painful structural adjustments still needed. Even by 2018, Euro Area unemployment is still projected to be close to 8%.

The greatest risk to the global economy remains policy uncertainty, from President Trump through to Brexit. And there are also a number of imbalances and vulnerabilities in financial markets – not least in China – which pose their own risks to the global outlook.

Chart 4: Scottish exports by sector 2015

Source: Scottish Government, Export Statistics Scotland

Table 4: International exports by size of company: 2014-15 (£ million)

	2014	2015	change
Scottish International Exports	27,740	28,740	+3.6%
Large	14,910	15,585	+4.5%
Medium	7,515	8,350	+11.2%
Small	5,315	4,805	-9.6%

Source: Scottish Government, Export Statistics Scotland

Table 5: World's top 10 economies, 2016 and 2050 (GDP at PPPs): highlighted denotes E7 country

	2016	2050	
China	1	1	China
US	2	2	India
India	3	3	US
Japan	4	4	Indonesia
Germany	5	5	Brazil
Russia	6	6	Russia
Brazil	7	7	Mexico
Indonesia	8	8	Japan
UK	9	9	Germany
France	10	10	UK

Source: IMF & PWC 'The World in 2050'

On balance however, the global outlook should provide a positive source of demand for Scottish businesses over the near term.

Disappointingly, we have yet to see much evidence of this spilling over into Scottish exports and overall, our trade performance remains poor.

If we are to see a fundamental shift in Scotland's long-term economic prosperity we need to improve both the depth and breadth of our export base.

Just five sectors account for over half of all Scottish international exports, with whisky accounting for a significant chunk of that – Chart 4.

Just 100 companies are believed to account for around 60% of total Scottish international exports.

A particular challenge appears to be encouraging small businesses to seize opportunities overseas.

The most recent Small Business Survey Scotland figures show that just 12% of Scottish SMEs are exporters, compared to 19% in the UK as a whole.

Worryingly, the latest statistics reported a near 10% fall in exports from small companies in Scotland – Table 4.

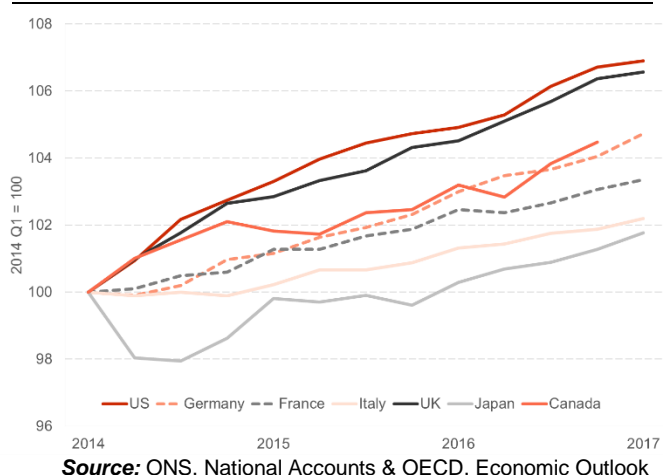
If Brexit forces policymakers and businesses to do anything, then it might be to put greater effort into seeking new opportunities in global markets.

And there is much to be gained.

Analysis by PWC (Table 5) – based upon current growth and population trends – highlights the changing global economic order over the coming decades. By 2050, 6 of the 7 largest economies in the world will be from outside the G7. If Turkey is added to complete the list of E7 countries, their combined output will be double that of the G7.

Despite their economic potential, Scotland's export record to E7 countries remains poor. Scotland's trade with Ireland is 60% more than with China and its trade with India is the same as with Luxembourg. So clearly there is potential but much still needs to be done.

Chart 5: The UK has performed well in comparison to other G7 economies in recent years



The UK Economy

The health of the UK economy has an important bearing on Scotland's economic outlook. Around £11.5bn of Scottish exports are sold to rUK each quarter – supporting around 530,000 jobs.

The UK grew relatively strongly through 2016, apparently confounding predictions of a post-EU referendum hangover.

And at first glance, many of the UK's macroeconomic fundamentals are in relatively good health. For example, employment levels continue to reach new highs.

Indeed since 2014, the UK has been one of the strongest performing G7 economies – albeit on the back of the slowest recovery since the 1920s (Chart 5). But as we have outlined before, underneath the headline figures there have been concerns about the sustainability of this growth.

In particular, recent UK growth has been almost entirely reliant on rising household consumption driven by increased borrowing and reduced savings (rather than rising incomes).

With inflation rising and earnings growth still weak – Chart 6 – it is no surprise that the growth in consumption has started to ease off. During Q1 2017, consumption grew by just 0.3% – its weakest rate since late 2014 (Chart 7).

Growth in other elements of the economy remains fragile at best. Business investment has for example, continued to flat-line since the EU referendum (Chart 8).

And the hoped for bounce in the UK's trade position in the light of a more competitive pound appears to be sporadic at best. Whilst elements of manufacturing have done well, overall the UK's balance of trade position remains poor (Chart 9).

At least in the short-run, the process of leaving the EU does not offer much hope that trade or investment will be able to pick up all of the shortfall as consumption returns to more sustainable levels.

Chart 6: UK average weekly earnings: 3-month average on same time a year ago

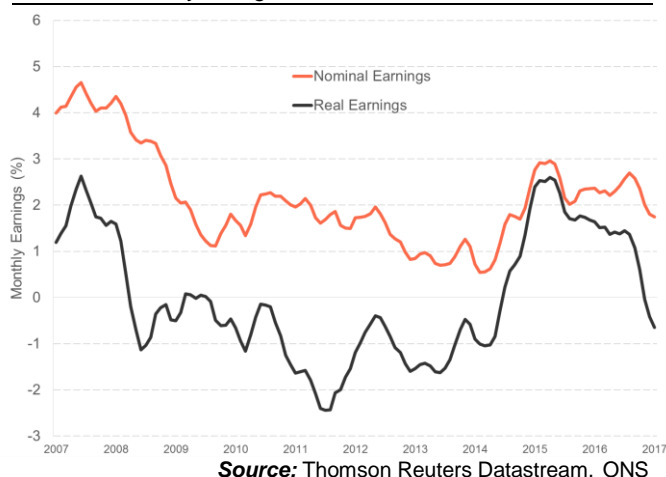


Chart 7: Strong growth in consumption beginning to ease

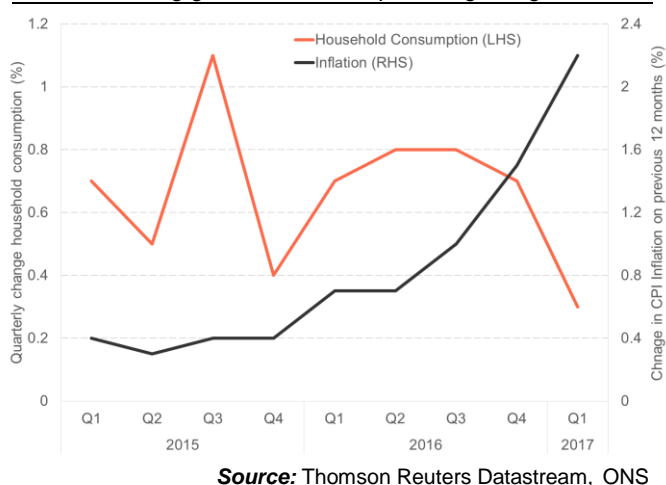
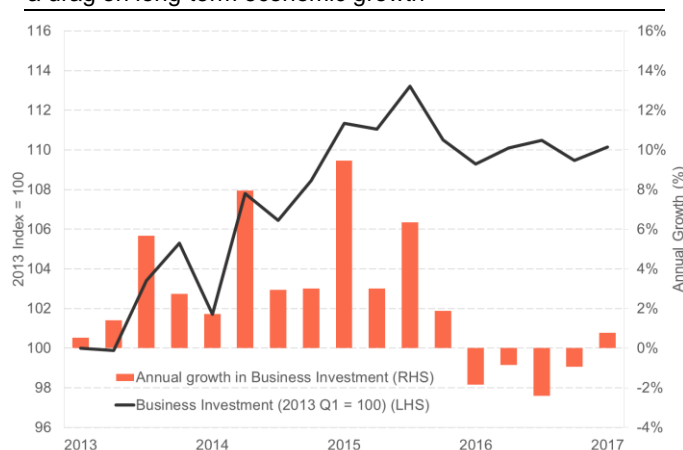
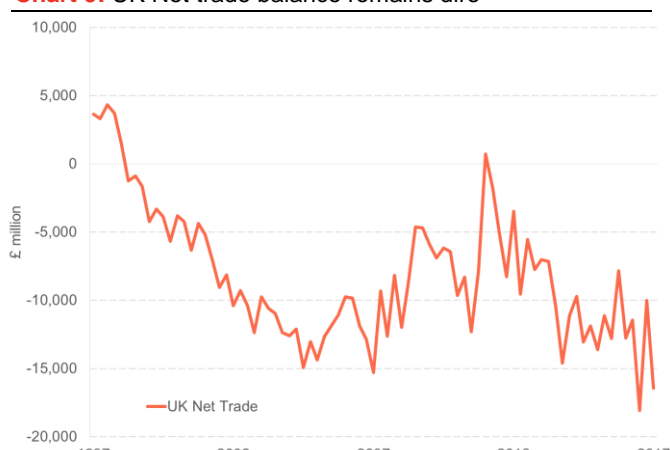


Chart 8: Weak business investment will continue to act as a drag on long-term economic growth



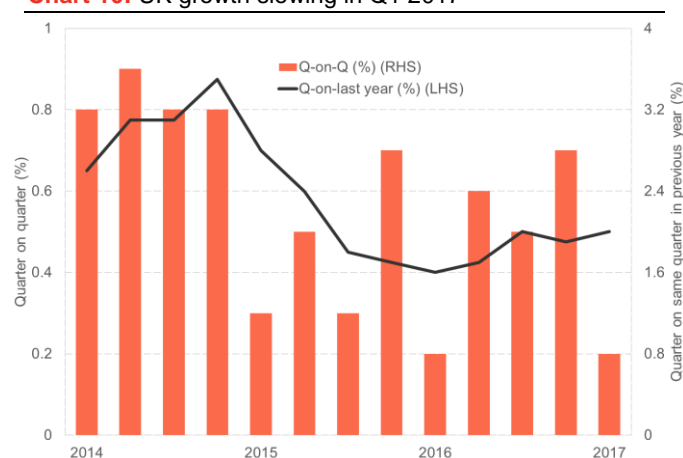
Source: Thomson Reuters Datastream, ONS

Chart 9: UK Net trade balance remains dire



Source: Thomson Reuters Datastream, ONS

Chart 10: UK growth slowing in Q1 2017



Source: Thomson Reuters Datastream, ONS

With the UK Government still keen on restoring the public finances to a degree of health, it is easy to see why there has been a cooling in the UK economy – with growth falling from 0.7% in Q4 2016, to 0.2% in Q1 2017 (Chart 10).

The UK Economic Outlook

Looking forward, there remains a fair degree of uncertainty over the immediate outlook for the UK economy.

None of this is helped by ongoing policy uncertainty.

The recent General Election has only served to add to the lack of clarity with regard to the long-term policy objectives of the UK Government.

It would appear however – and admittedly this remains a fluid situation – the prospects of a hard Brexit may have receded somewhat in the past few weeks. But there clearly remains much uncertainty about what any final deal may look like and the market access that the UK will have to its largest trading partner.

The Chancellor has also signalled an openness to ease back on levels of austerity to help support the economy in the near term but it will be the new Autumn Budget before we find out what this will mean in practice.

Most forecasters predict that the UK economy will slowdown in 2017, but will be much more healthy than initially thought immediately following the EU referendum – Chart 11.

This position is supported by most measures of business activity which continue to indicate relatively health trading conditions in both services and manufacturing.

Chart 11: Evolution of UK forecasts for 2017

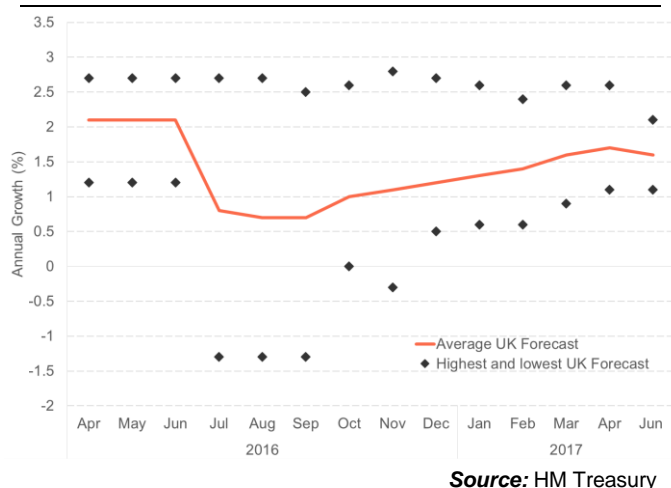
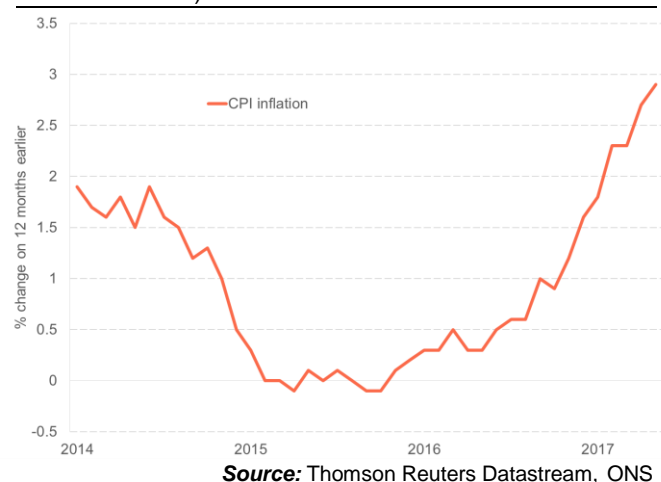


Chart 12: PMI for UK remains positive – although services have started to report a less confident outlook



Chart 13: Inflation rising (and likely to exceed 3% in the next few months)



The keenly watched IHS Markit PMI index, remains above its cut-off value of 50, which marks the boundary between expansion and contraction. The manufacturing sector appears to be particularly strong (Chart 12).

Levels of business confidence have fallen back a little. The CBI Business Optimism index fell back significantly during Q2 2017 whilst the ZEW Economic Sentiment Index is not too far away from the lows reported at the height of the financial crisis in 2008.

However, one thing last year's reaction to the EU referendum taught us was to avoid reading too much into short-term swings in economic sentiment as these are often not reflected in the actual decisions businesses take. But if such trends were to persist then it would clearly become more of a concern.

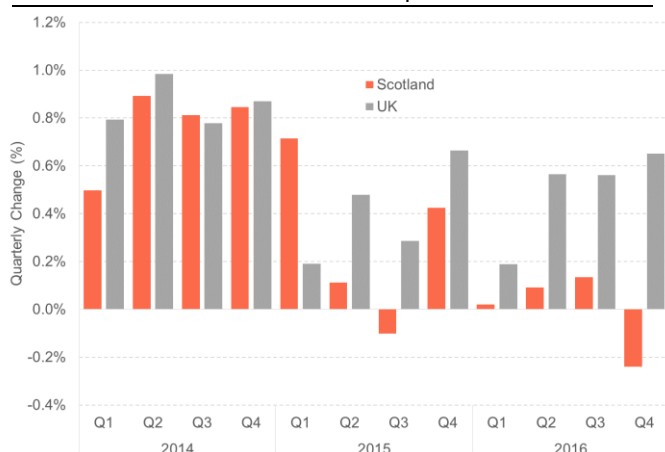
Overall, the underlying picture has not changed significantly since the OBR's economic and fiscal outlook in March 2017.

Looking ahead, there is likely to be less support from domestic demand, as further falls in real earnings – and an easing in the draw-down of savings and growth in borrowing – impact on household spending.

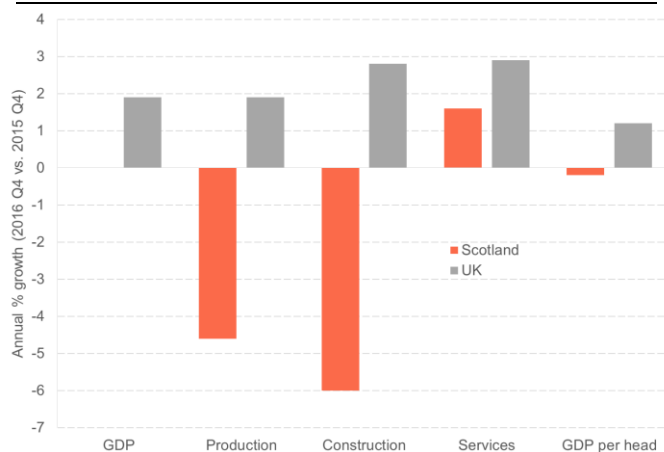
A key determinant of the future outlook will be what happens to inflation. The Bank of England now expects inflation to be even higher this year than they initially thought (Chart 13).

At 2.9% in April, inflation is well above the Bank's target of 2%. Higher inflation not only erodes real earnings but as it is largely being driven by rising producer prices from more expensive imports, and this imposes a cost on businesses.

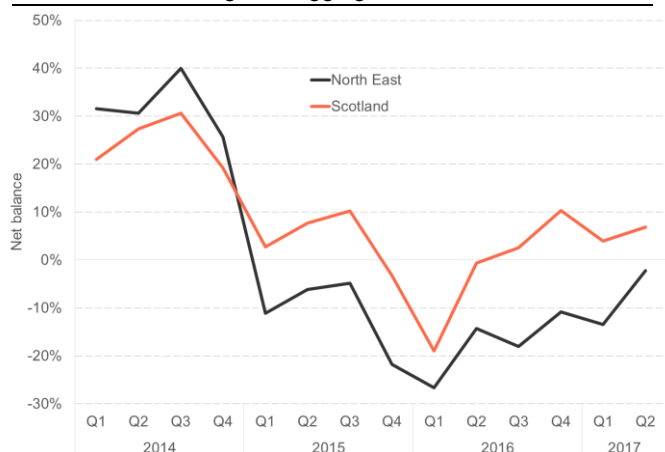
The Bank of England's MPC appears to be increasingly split on the prospects of a rise in interest rates to dampen inflationary pressures. If they do raise rates, this will be the first increase since before the financial crisis.

Chart 14: Scottish vs. UK economic performance

Source: Scottish Government, Q4 GDP

Chart 15: Weakness across sectors evident over the year in the Scottish economy

Source: Scottish Government, Q4 GDP

Chart 16: Business activity in the north east – as a result of downturn in oil and gas – lagging behind Scotland

Source: RBS/FAI Scottish Business Monitor

Recent Scottish Economy Data

The Scottish economy contracted in the final 3-months of 2016. As Chart 14 highlights, there is little doubt that the recent data is part of a sustained trend.

Of particular concern is the weakness across the economy (Chart 15). In the final 3 months of 2016, both production and construction output fell, whilst the all-important services sector remained flat.

We have now seen two years of low (or in some Q's, no) growth. Indeed, between Q4 2015 and Q4 2016, the Scottish economy did not grow at all, compared to growth of 1.9% in the UK.

As an aside, the Scottish Government now references the 4Q-on-4Q measure which shows an expansion of 0.4% over the year. The 4Q-on-4Q measure is the sum of the entire 4 quarters this year compared to last. In a period of weakening growth, this approach will initially give a more positive assessment than simply comparing the output at the same point from one year to the next.

Whatever cut of data is used, what is clear is that the Scottish economy is barely growing (if at all).

So much so that the Scottish economy now satisfies the criteria for 'emergency borrowing' that was built in to the new Fiscal Framework to unlock temporary funds during an asymmetric shock.

The conditions for this funding (via borrowing from HM Treasury) were – "*should the Scottish economy grow 1 percentage point more slowly than the UK as a whole and have growth of less than 1%*".

So what explains this lack of growth?

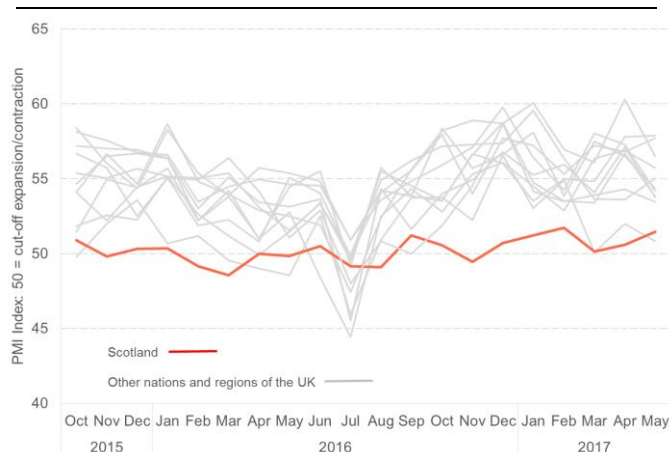
A key driver has undoubtedly been the downturn in the North Sea. Whilst North Sea output does not actually enter the Scottish figures (which only cover the onshore economy), the supply chain that supports the oil and gas industry does.

As a result, measures of economic activity in the North East have unsurprisingly been much weaker than for the economy as a whole (Chart 16).

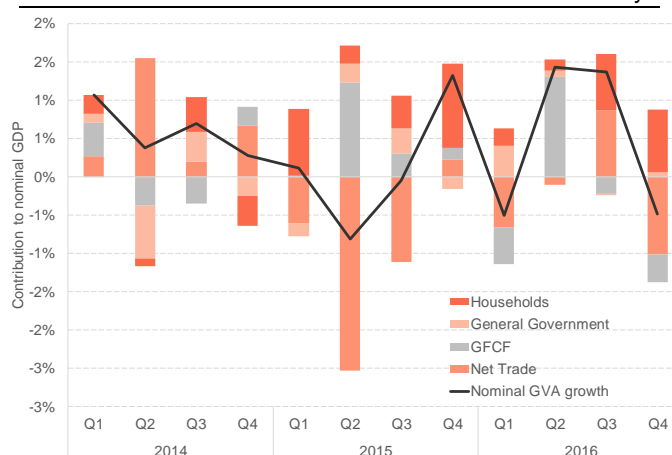
Table 6: Downturn in manufacturing – not just oil and gas

	Change over last 12 months	Change over last 24 months
Total Manufacturing	-7.3%	-10.4%
Food & Drink	-6.6%	-2.1%
Textiles	-11.6%	-10.2%
Refined petroleum & chemicals	-8.3%	-2.1%
Metals & metal products	-6.3%	-25.0%
Computer & electrical products	-5.9%	-13.3%
Transport equipment	-8.8%	-8.2%
Other manufacturing – including repair & installation	-6.7%	-11.4%

Source: Scottish Government, Q4 GDP

Chart 17: Scotland vs. the rest of the UK: PMI

Source: Markit IHS

Chart 18: Drivers of nominal GDP: households remain key

Source: Scottish Government, Q4 National Accounts

But there is increasing evidence that the North Sea is only part of the explanation of the difference in economic fortunes between Scotland and the UK.

For example, whilst engineering firms and oil support services have been hit, every single one of Scotland's principal manufacturing sectors contracted during 2016 (Table 6).

Some have suggested that Brexit may be a factor. But it is hard to argue that this explains the Scot/UK divergence. Moreover, services – around 75% of the economy and less likely to be exposed to external conditions – grew nearly twice as fast in the UK as in Scotland last year.

Others have argued that the prospects for a 2nd independence referendum may be having an impact, although there is little robust data to formally test this hypothesis (and indicators of international investment remain positive).

Taken together though, it is possible to argue that such effects may have had a greater cumulative effect on Scotland, especially to confidence.

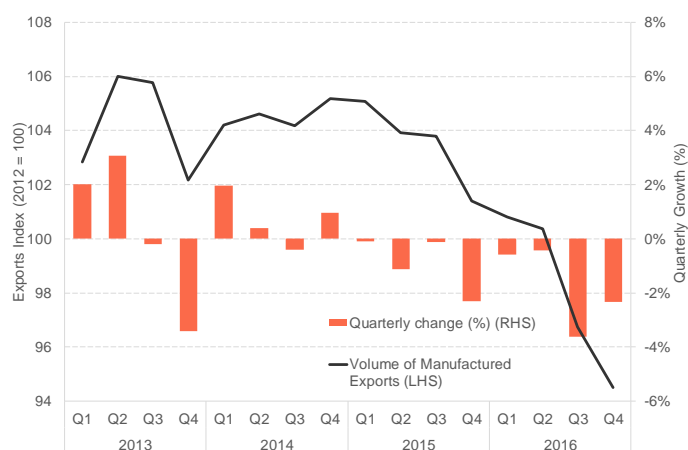
The Scottish Government has argued that the UK results might be impacted by the strength of London.

Whilst up-to-date indicators of performance within the UK are few and far between, those that do exist – such as the PMI – tend to suggest that Scotland has been lagging behind other parts of the UK and not just London (see Chart 17).

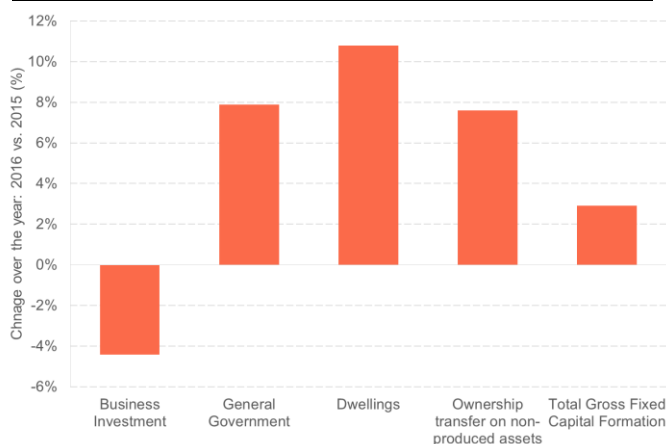
And whether you accept this argument or not, it is important to remember that the Scottish Government signed up to a new fiscal framework where what matters is Scotland's relative performance vs. the rUK as a whole (*including London*).

Drivers of growth

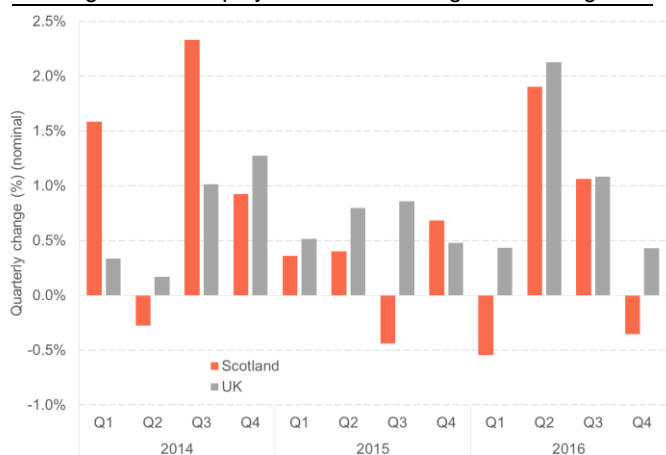
Similar to in the UK, household spending has continued to make the main positive contribution to Scottish growth in recent times. Indeed, it was by far the greatest source of nominal growth in Q4 2016 (Chart 18).

Chart 19: Ongoing challenges with Scottish exports – falling manufactured exports for 8 quarters

Source: Scottish Government, Q4 National Accounts

Chart 20: Fall in business investment over the year

Source: Scottish Government, Q4 National Accounts, Exp' Data

Chart 21: Compensation of employees weaker in Scotland – less growth in employment and slower growth in wages

Source: Scottish Government, Q4 National Accounts

In contrast, Scotland's trade balance remains weak, with the net trade position once again contributing negatively to overall growth. On this occasion, the weakness appears to be a fall-back in exports to the rest of the UK.

But international trade also remains generally weak (Chart 19).

Scotland's international manufactured exports are, for example, down 7% on the year. Engineering exports – around 1/3 of the total – have fallen by nearly 20% since the start of 2015.

The same National Accounts data reveals that one of the reasons for the slowdown in Scotland is because firms have cut back on investment.

Business investment not only has an important immediate impact on the economy through supporting demand, but also through its long-term impact on the efficiency and productivity of firms (and the overall economy).

As highlighted above, business investment has been weak across the UK. But it still did manage to increase in cash terms over the year (up by 0.1%).

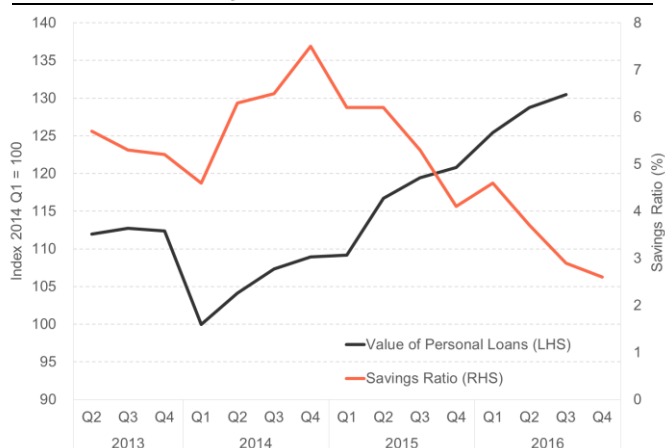
In contrast, business investment fell in Scotland over the past year – Chart 20.

Taken all together, it is clear that the little growth we have had in Scotland has been relatively unbalanced.

Growth remains largely concentrated in household spending, as Chart 18 highlights, but the income going to employees has been growing much more weakly in Scotland than in the rest of the UK (Chart 21).

This is likely to be a combination of both weaker employment growth in Scotland and lower earnings.

The reason that households have been able to support growing consumption has therefore been because they have been running down their savings (and increasing their borrowings).

Chart 22: Net savings ratio and value of personal loans

Source: Scottish Government, Q4 National Accounts and BBA

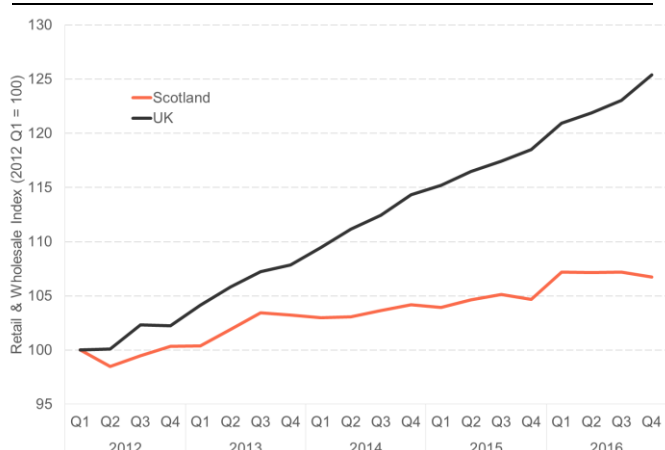
As a result, Scotland's estimated saving ratio is now at a record low (whilst personal loans are rising) (Chart 22).

With a highly uncertain outlook for the economy, the ability of households to keep using reduced savings and higher levels of indebtedness as a buffer to protect spending is a key risk to growth.

Sectoral performance

Growth across the Scottish economy has been relatively weak across the board.

One area of concern appears to be retail and wholesale which, as we discuss later, is likely to be linked to a low level of consumer confidence (Chart 23).

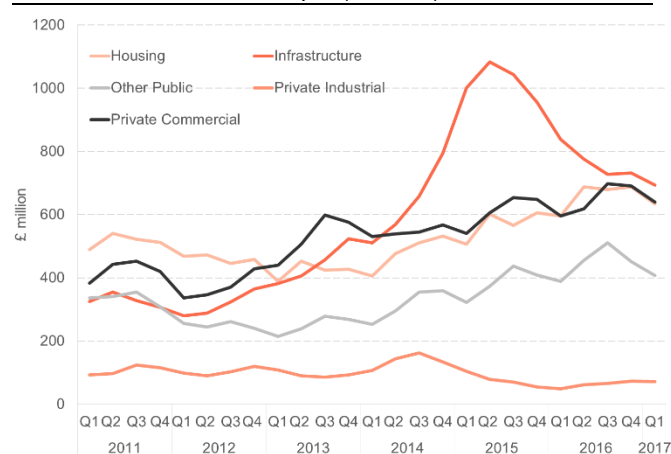
Chart 23: Retail & wholesale – Scotland vs. UK

Source: Scottish Government, Q4 GDP & ONS

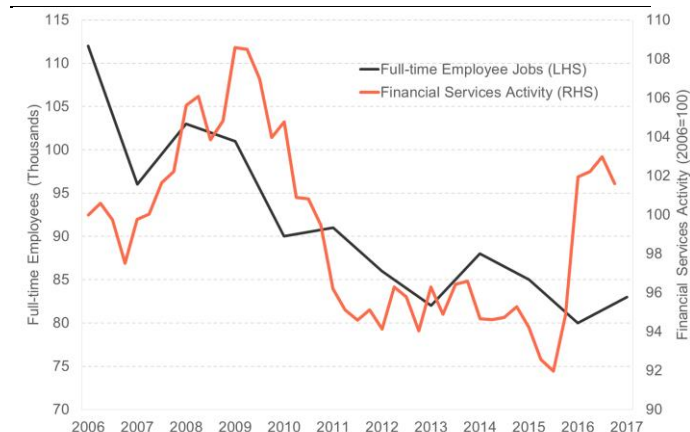
Construction has continued to act as a drag on growth – with the sector down 6% over the year. Recent data for 2017 suggests little turnaround just yet – with total construction work 2% lower in cash terms in Q1 2017 compared to a year ago (Chart 24).

As highlighted above, manufacturing has slowed down significantly (Table 6).

One bright spot has been financial services. Whilst output slipped back a little in Q4 2016, growth over the past two years has been encouraging. The sector is still 6% off its pre-financial crisis peak and jobs remain down, but given the challenges faced in recent years this is a welcome return to growth.

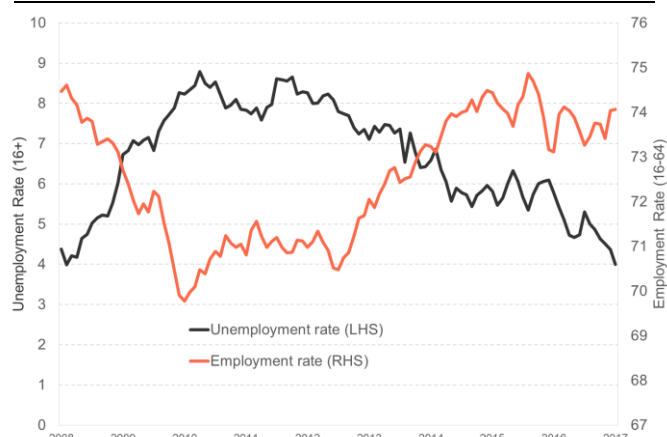
Chart 24: Construction output (nominal): New Work

Source: ONS, Output in the construction industry

Chart 25: Financial Services in Scotland

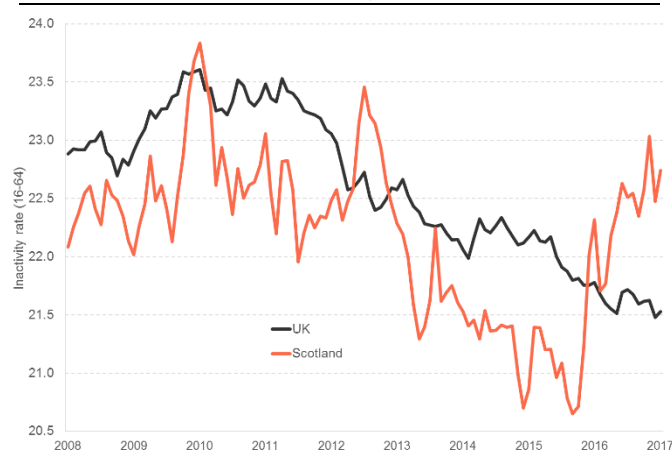
Source: Scottish Government, Q4 GDP, ONS

Chart 26: Scottish employment & unemployment rate



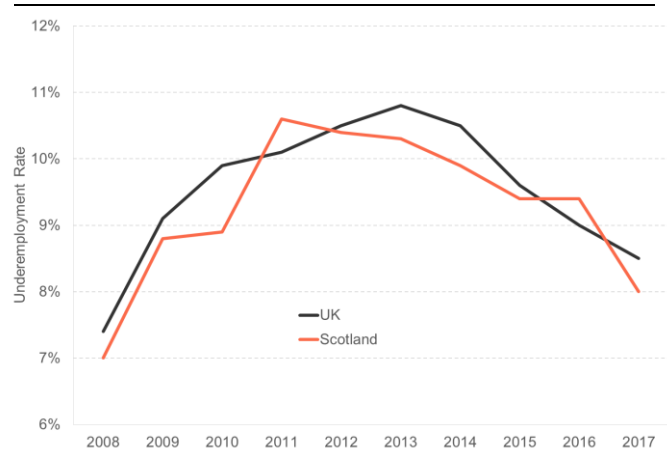
Source: ONS, Labour Force Survey

Chart 27: Scottish & UK inactivity rates since 2008



Source: ONS, Labour Force Survey and FAI calculations

Chart 28: Scottish & UK underemployment (hours) since 2008



Source: ONS, LFS Supplementary Data

The Scottish labour market

Despite apparently very little growth in the overall economy, Scotland's labour market continues to hold up remarkably well.

The 16+ unemployment rate has fallen to 4% (or 4.1% for 16-64 year olds), the lowest since May 2008, and jointly the lowest since 1992.

These improvements continue the trend since 2012 of a strengthening labour market (Chart 26).

For most of the past decade, Scotland had a better employment and unemployment rate than the UK as a whole. Now, Scotland's employment rate is 0.7% points lower than the UK rate. Against that, Scotland's unemployment rate is slightly better by a similar margin.

This apparently odd result – stronger on unemployment but weaker on employment – is explained by Scotland's higher inactivity rate (i.e. those not in work nor seeking work).

As Chart 27 highlights, Scotland had been tracking the fall in inactivity rates witnessed across the UK up to 2016.

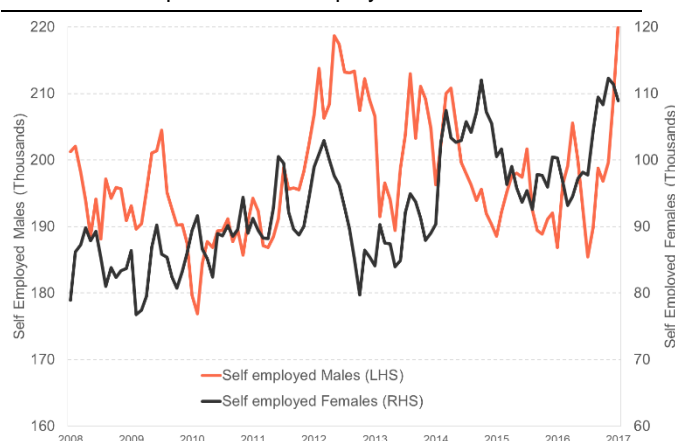
However, since then, inactivity rates have increased in Scotland. Whilst this rise has stabilised in recent months, Scotland's inactivity rate is now over a full percentage point higher than that of the UK.

Levels of underemployment – that is people in work but who would prefer to work longer hours – have fallen back towards pre-recession levels (Chart 28).

And Scotland's youth unemployment rate continues to outperform all other parts of the UK and compares favourably internationally.

However, as we highlighted in our most recent Scottish Labour Market Trends report, the headline figures do hide some challenges.

Firstly, the type of employment being created appears to be less secure in many instances.

Chart 29: Sharp rise in self-employment

Source: ONS, Labour Force Survey

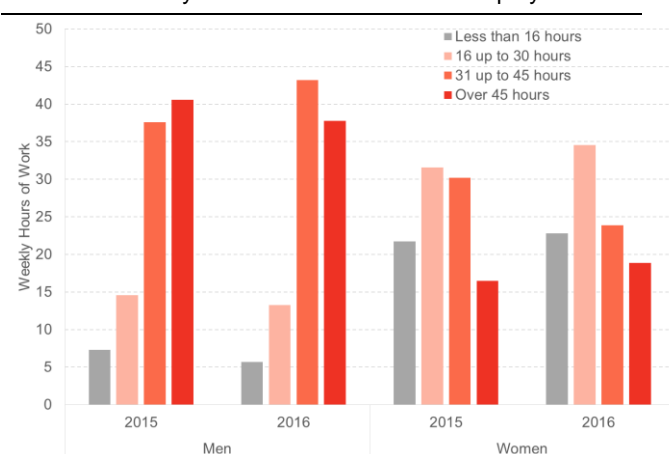
Since the financial crisis there has been a rise in part-time employment (up around 8% over the past decade). Within this, there has been a 45% increase in the number of people who say the reason they are working part-time is that they cannot find a full-time job.

Self-employment has also risen – up around 29%. This trend appears to be continuing. Indeed, nearly all of the Scottish employment growth over the past year was in the form of self-employment – and concentrated amongst men.

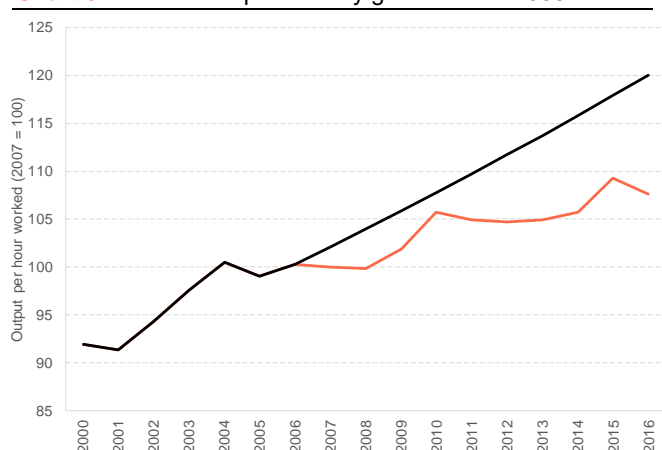
Sometimes when thinking about self-employment people have in mind someone starting businesses and creating jobs. However, partly as a result of technological innovation, the self-employed are now a much more diverse group.

A concern that exists about this increase is that whilst, for some, the greater flexibility that self-employment brings is welcome, for others, it may come with less stable and rewarding opportunities and fewer employment protections.

More work needs to be done to understand the characteristics of this surge in self-employment (e.g. by skill level and age), and to understand the types of work being entered into.

Chart 30: Weekly hours of work of the self-employed

Source: ONS, Labour Force Survey

Chart 31: Scotland's productivity growth since 2008

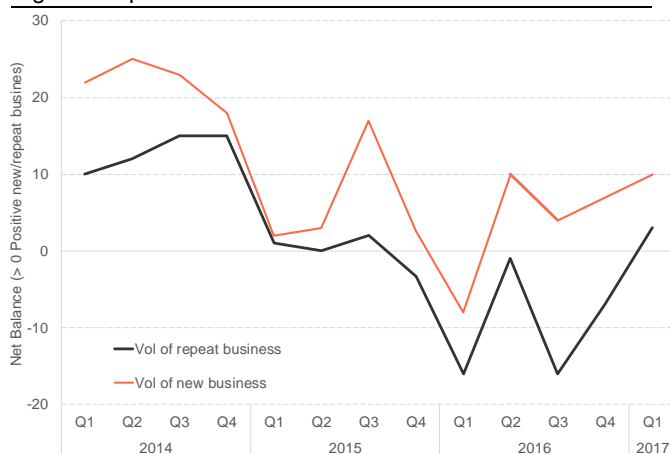
Source: Scottish Government & FAI calculations

One consequence of rising employment in an environment of weak economic growth is that the amount produced per worker will be stagnant or falling.

Productivity in Scotland – as measured by output per hour worked – fell 1.5% during 2016. This was on the back of strong growth in 2015 (of 3.4%).

Scottish and UK productivity has been weak since the financial crisis. Between 1998 and the end of 2006, productivity in Scotland grew by an average of 1.8% per annum. Since then, growth has averaged half that at 0.7% (Chart 31).

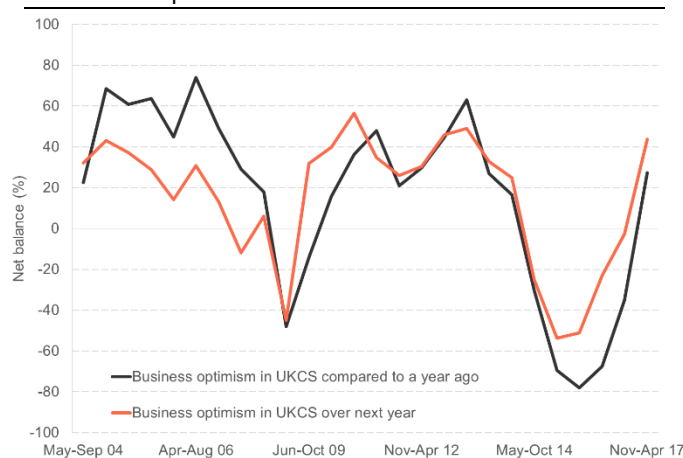
Productivity is not only crucial for long-term growth but also household income. Whilst a tight labour market can put upward pressure on wages, if there is little wealth created more generally, the scope for businesses to award pay increases is limited

Chart 32: RBS/FAI Business Monitor shows some tentative signs of improved conditions

Source: FAI/RBS Scottish Business Monitor

Chart 33: Net balance of firm responses to costs

Source: FAI/RBS Scottish Business Monitor

Chart 34: Oil and Gas sector optimism 2010-2016: Grounds for cautious optimism?

Source: FAI/A&GCC

Outlook

If the data for the tail-end of 2016 was disappointing, more up-to-date indicators suggest that the economy did grow in early 2017, albeit at a slow pace.

The FAI-RBS Business Monitor for Q1 2017 shows an increase in the net balance of firms reporting improving repeat business and new business volumes. That being said, the net balance figures of below +10 are still low by historical standards (Chart 32)

As Chart 17 highlighted, the Bank of Scotland PMI has continued to remain positive but well behind the UK. Similarly, the Federation of Small Business confidence index, whilst improving in Scotland, was still negative overall, and at -3.8 points was below the UK value of +15 points.

In manufacturing, the latest CBI Industrial Trends survey pointed to relatively robust growth in output but cost pressures from rising prices are beginning to pose a concern.

This is now a common theme. The upcoming FAI-RBS Scottish Business Monitor for Q2 2017 indicates rising costs for 56% of businesses while only 6% reported a fall. Cost pressures were most acute in tourism and distribution – see Chart 33. A net balance of 49% of firms expect costs to increase in the next six months.

The outlook for oil and gas companies is a little more positive than in recent months.

We are now well into the third year of the current low oil price cycle. Investment has fallen significantly and exploration levels remain low.

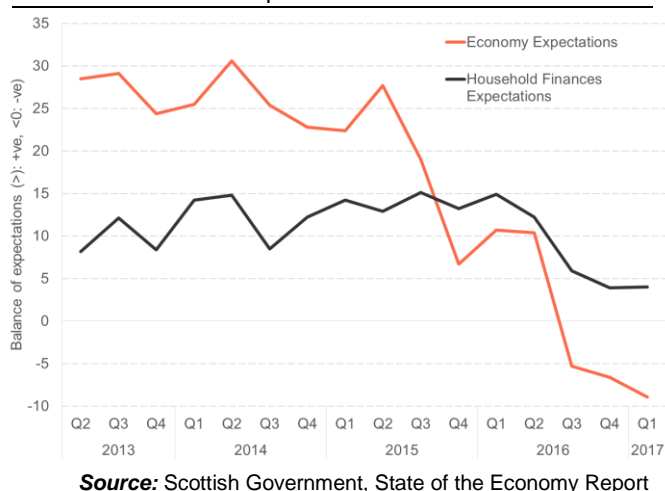
There are signs however, that the restructuring in the sector has led to some modest improvements in sentiment – as demonstrated by the latest results from our regular Oil and Gas Survey. Our judgement is that the outlook for the North Sea is slightly more positive – or at least less negative – than 12 months ago (Chart 34).

Chart 35: Consumer Confidence remains negative in Scotland and gap with UK remains wide



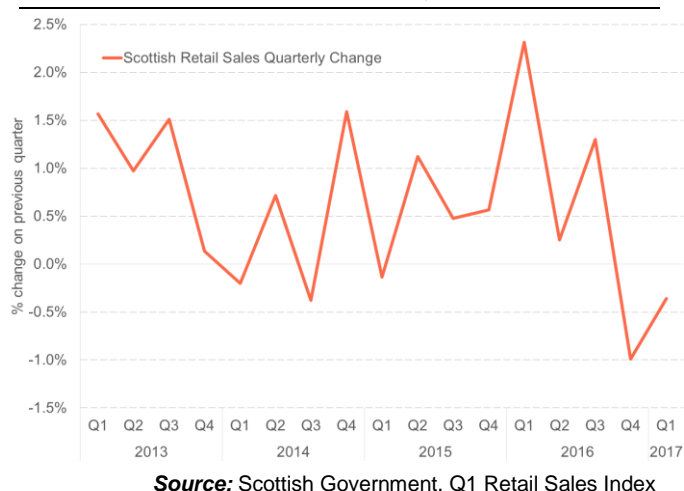
Source: GfK

Chart 36: Key driver of lower consumer confidence appears to be deterioration in expectations for economic outlook



Source: Scottish Government, State of the Economy Report

Chart 37: Fall in retail sales index – Q4 2016



Source: Scottish Government, Q1 Retail Sales Index

In contrast to the slightly more positive sentiment within the business community, levels of consumer confidence in Scotland have continued to slide.

The GfK Consumer Confidence Index (where 0 = balance) was -13 in May, well below the UK index (which whilst also negative was -5).

The Scottish Government's own indicator of confidence fell again in Q1 2017 (Chart 36).

As mentioned above, this does not just appear to be a London factor. Lord Ashcroft included questions of economic confidence in an opinion poll of around 40,000 households across the UK - 3,500 in Scotland – during the UK General Election. Scotland had the lowest proportion of respondents positive about the economic outlook of any part of GB (NB: the survey did not include Northern Ireland).

It's therefore unsurprising that retail sales figures for Scotland – one early component of the Scottish GDP series – declined in early 2017 pushing that sector into recession for the first time since 2012 (Chart 37).

Uncertainty will continue to have an impact on the performance of the Scottish economy. How the big political issues – and in particular, the Brexit negotiations and prospects of an independence referendum – play out will have a material impact on the outlook.

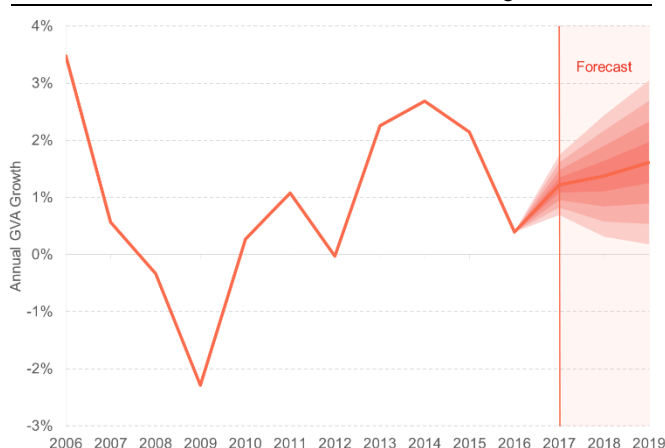
This is not to say that one particular outcome is better than the other. It is simply that with uncertainty of such a magnitude in play, we cannot expect the processes themselves not to have an impact, irrespective of the end result.

Our latest nowcast – which utilise the most up to date 'hard' and 'soft' data on the Scottish economy – currently estimates growth in 2017 Q1 of between 0.2% and 0.3%. That is within the margin by which our nowcast model has tended to be more optimistic than the 1st estimate of GDP produced by the Scottish Government during 2016. If this continues to hold, this would suggest that next week's GDP estimate for Q1 could well be pretty close to zero.

Table 8: FAI forecast Scottish GVA growth (%) 2017 to 2019

	2017	2018	2019
GVA	1.2	1.4	1.6
Production	1.4	1.6	1.8
Construction	0.7	0.8	1.0
Services	1.2	1.3	1.6

Source: Fraser of Allander Institute

Chart 38: Growth to remain below trend through forecast

Source: Fraser of Allander Institute

* Actual data to Q4 2016, central forecast with forecast uncertainty for 2017 – 2019

Uncertainty bands sourced from accuracy of past forecasts at different forecast horizons

Table 9: FAI revised forecast %-point change from March 2017 forecast by sector, 2017 to 2019

	2017	2018	2019
GVA	+0.08	+0.09	+0.03
Production	+0.03	+0.12	+0.04
Construction	+0.09	+0.07	+0.02
Services	+0.10	+0.08	+0.03

Source: Fraser of Allander Institute

More in depth forecasts – including by sector and region – are available as part of our new FAI Membership Scheme. Email: fraser@strath.ac.uk for more info.

Our forecasts

As in the past, we report a central forecast but calculate uncertainty bands to set out a likely range within which we predict Scottish economic growth will lie. In our view, it is this range that should be just as much the focus of discussion as specific point estimates.

In other words, it is entirely possible that the Scottish economy could grow close to 2% this year, but our assessment is that the probability of that happening is lower than our central projection.

Overall, our forecasts are little changed on March.

Our assessment is still the same - we believe that the Scottish economy will grow this year, but predict that such growth will remain below trend for the foreseeable future.

We expect that growth figures for 2016 are likely to be revised up slightly when new data becomes available to be more in line with business surveys and other indicators of activity.

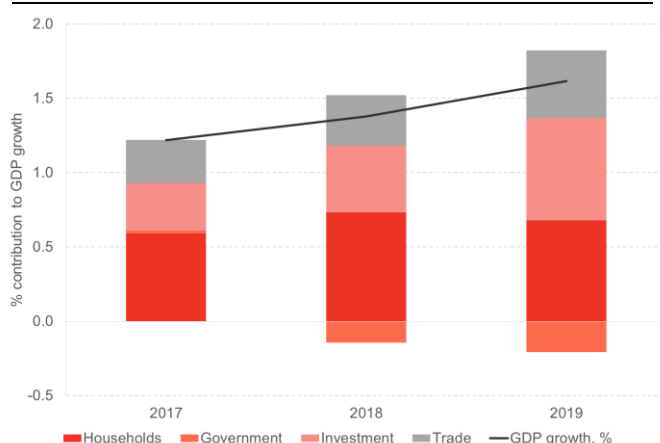
The two major judgement calls continue to be the outlook for the oil and gas sector and the impact of any Brexit-induced uncertainty impacting more sharply on investment and economic confidence.

A technical adjustment means that we now expect 2017 growth to be marginally stronger than we forecast in March as the economy makes up some lost output from a weaker 2016 than anticipated.

Our central forecast is for growth of around 1.2% this year.

Services will continue to make the greatest overall contribution to growth over the next few years. Financial services and business services in particular should benefit. Tourist facing services – such as hotels – should also do well from both increased overseas visitors and a rise in staycations. In contrast, retail is likely to continue to be squeezed by falling household incomes.

We also expect a pick-up in production as both the oil and gas supply chain stabilises and the recent downturns in manufacturing begin to ease off.

Chart 39: Contribution to forecast – growth picking up toward end of forecast horizon

Source: Fraser of Allander Institute

Table 10: Latest growth forecasts for the UK economy

	2017	2018	2019
Bank of England	1.9	1.7	1.8
OBR	2.0	1.6	1.7
NIESR	1.7	1.9	2.0
European Commission	1.8	1.3	n/a
IMF	2.0	1.5	1.6
Oxford Economics	1.7	1.4	1.6
ITEM Club	1.8	1.2	1.4
CBI	1.3	n/a	n/a

Source: HM Treasury

Table 11: FAI labour market forecast to 2019

	2017	2018	2019
Employee Jobs	2,436,450	2,476,450	2,514,700
% employee job growth over year	+0.3%	+1.6	+1.5
ILO unemployment	117,000	134,300	143,750
Unemployment Rate (%)¹	4.4	5.0	5.3

Source: Fraser of Allander Institute

Notes:

Absolute numbers are rounded to the nearest 50.

¹ Rate calculated as total ILO unemployment divided by total of economically active population aged 16 and over.

Food and drink should continue to perform strongly as the low value of Sterling continues to help support competitiveness.

We have broadly maintained our central forecast for growth of 1.4% in 2018 (up from 1.3%) and revised up slightly our outlook for 2019 to 1.6% (from 1.4% in March). Some of the revisions for later years are driven, in part, by more positive projections for the UK economy (Chart 11) which spill-over into Scotland and a slightly more positive outlook for investment and exports toward the end of the forecast horizon.

We expect the growth gap between Scotland and the UK to remain over the next three years, but to close slightly as the effects of the slowdown in oil and gas are reduced (Table 10).

On the components of demand, we continue to expect uncertainty to dampen investment this year but by slightly less than previously thought. Some of this will reflect delayed plans as firms await the details of the Brexit negotiations. Once this is resolved, a pick-up is likely.

Consumption will remain the biggest contributor to growth, although it will not be as healthy as in the last couple of years as higher inflation, combined with low earnings growth, feeds through to lower household spending.

Net exports will continue to benefit from the depreciation in Sterling, although, as we highlighted above, the scale of any pick-up will depend upon able Scottish companies are to take advantage of the opportunity that this provides.

We expect unemployment to rise slightly toward a level consistent with the medium-term trend of around 5%. Growth in the number of jobs is forecast to continue, but to be weak compared to historical levels.

As we highlight above, recent unemployment numbers have been driven by a sharp rise in inactivity. To the extent that this is reversed, the unemployment rate may rise more sharply.

Policy Context

The Scottish Parliament enters recess at the end of June. When it returns it will face a number of important policy decisions, not least in the Programme for Government and the Budget to follow later on in the year.

As we have highlighted, these decisions will take place at a time of ongoing economic challenge, not just here in Scotland but across the UK as the negotiations for Brexit reach a crucial phase.

During such times, it will be easy for the debate about Scotland's economy to be side-tracked by constitutional wrangling.

This cannot be used as a justification – from across the political spectrum – for not undertaking an urgent and frank assessment of the best policies to support the Scottish economy.

The fragile economic backdrop means that this is a necessity. But even more importantly, in our view, debate over the long-term economic challenges and opportunities facing Scotland has been pushed to the side-lines.

And this is a concern. Over the last ten years, output per head in Scotland increased by just 1.2% (that is in total not per year). In the preceding seven years, it had grown 17%.

Moreover, Holyrood's new powers means that Scotland's economic performance matters more than ever before. Even small variations in relative performance will translate into hundreds of millions of pounds in tax revenues within a short period of time.

Scotland is without question a successful nation. It is in the OECD top 20 in terms of income per head and near the top in the UK on most long-term indicators behind London and the South East.

The country has substantial natural resources, a skilled workforce and strengths in many sectors.

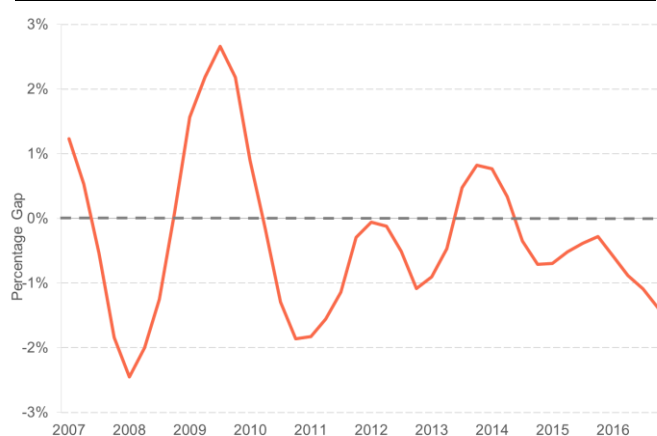
But it has been widely recognised by successive Scottish administrations that we lag our competitors in key areas.

Back in 2007, the Scottish Government published an economic strategy which aligned the public sector toward sustainable economic growth.

It contained a series of targets – for growth, productivity, participation and population; and for levels of inequality and sustainability.

10 years on, on most targets – with the exception of population where we now have a record number of people living in Scotland and climate change – the economy is arguably treading water.

Chart 40: Scotland vs. UK growth differential – above line = Scotland growing more quickly than UK



Source: Scottish Government/FAI calculations

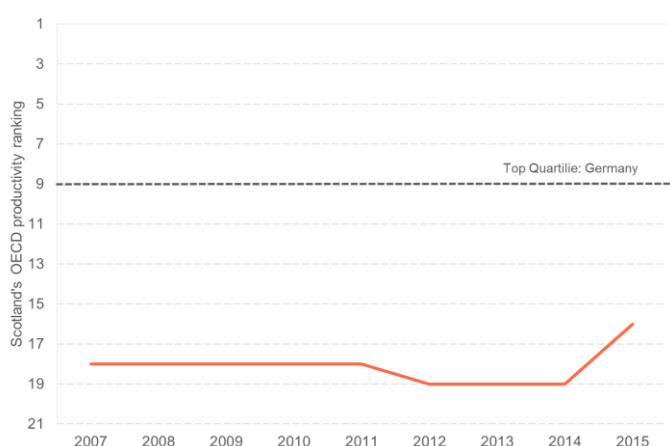
For example, in terms of the key target to match the UK's growth rate, this has only been achieved 30% of the time since 2007.

We see little evidence that productivity in Scotland has fundamentally improved. Yes, the gap with the UK has narrowed but this is down to the UK's exceptionally weak performance and the fact that Scotland has created fewer jobs in recent years. And whilst we have 'moved into the 2nd quartile' in the OECD, this is simply because we fell into the 3rd quartile a few years ago.

Scotland is likely to fall back down the ranking with productivity falling in 2016. And even then, the gap with the top performing OECD countries is still 20%.

Whilst we have seen a rise in innovation activity, on business R&D, Scotland ranks 9th out of the 12 English regions or devolved nations in the UK and 9th in terms of new business registrations.

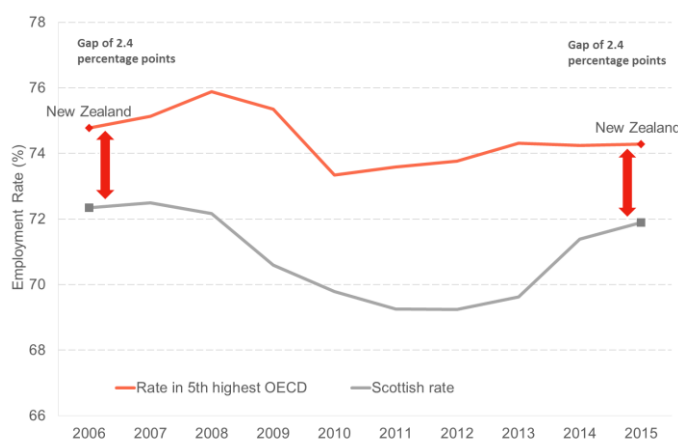
Chart 41: Scotland's productivity ranking in the OECD



Source: Scottish Government, OECD/FAI calculations

On the labour market, the gap between the top and worst performing local authorities is still a massive 15%-points and the gap with the top performing countries in the OECD remains.

Chart 42: Scotland's labour market ranking



Source: Scottish Government, OECD/FAI calculations

Given recent challenges – from the upheaval in financial services and oil and gas – the fact that Scotland has maintained its position on many international rankings can be viewed as a success.

But the ambition must be to do better than that.

A renewed focus on how the Scottish and UK Governments can use the powers at their disposal to support the economy is needed.

We also need a robust evaluation of existing policy priorities and their success (or otherwise).

Government action plans and strategies are all well and good, but we often struggle to really know 'what works'.

And even when we do, the task of delivery and, quite often, the need to shift scarce resources from one area to the next, is a challenge

In our view, a greater role for independent analysis will help. The Scottish Government's recent proposals as part of Phase 2 of its Enterprise and Skills Review to improve analytical capacity across the enterprise and skills system is welcome, up to a point.

Better sharing of data and coordination of research will clearly be beneficial.

But the current proposals come with a risk of duplication and/or simply re-presenting existing material in a new way, in a new format to a new body. What bite will it have?

In our view, the policy making process should be improved by insisting that every policy intervention – not just those of agencies but of the Scottish Government itself – be underpinned, as a matter of course, by a transparent evaluation framework.

This would help avoid policies being designed, expanded, and defended upon assertion rather than evidence.

At the same time, as every major policy is developed, policymakers should set out how progress will be monitored and assessed (with a dedicated budget ring-fenced for such purposes).

Having better data is one thing, what you do with it is even more important. Productivity commissions – such as in Australia and New Zealand – are designed to do just that with more independent research, advice and performance monitoring than we do in Scotland.

With the right ambition there is an opportunity to take a fresh look at how best to address Scotland's long-term economic challenges (and to take advantage of new opportunities that will emerge).

For regular analysis on the Scottish economy and public finances please see our blog:

www.fraserofallander.org

Economic Perspectives

A primer on the Scottish Parliament's new fiscal powers: what are they, how will they work, and what are the challenges?

David Eiser, Fraser of Allander Institute, University of Strathclyde

Abstract

This article provides an overview of Scotland's new Fiscal Framework. The Fiscal Framework sets out how the new powers devolved to the Scottish Parliament in the Scotland Acts 2012 and 2016 will be made operational. It provides a brief overview of the history of fiscal devolution to Scotland since the establishment of the Scottish Parliament in 1999. From relying on a Block Grant from Westminster to fund virtually all its expenditure, the Scottish Parliament now has a range of revenue raising powers including substantial flexibility to vary income tax rates and thresholds; moreover the Scottish budget will in future be much more closely linked to the performance of the Scottish economy. In addition, the Scottish Parliament will gain a range of powers in relation to social security. The mechanisms and method(s) for adjusting Scotland's Block Grant – Block Grant Adjustments (BGA's) – the forecasting role of the new Scottish Fiscal Commission and Scotland's new capital borrowing, resource and cash management powers are all outlined. Finally, the implications for Scotland's budget process and what the new arrangements could mean for the Scottish Government's ability to impact on Scotland's economy and growth rate is discussed.

I Introduction

Substantial new fiscal powers are being devolved to the Scottish Parliament, as a result of the Scotland Acts 2012 and 2016. These powers include the devolution and assignment of significant tax revenues, and devolution of new social security powers.

The devolution of these powers requires changes to be made to the way that the Scottish block grant is calculated. New arrangements for fiscal forecasting have to be put in place. And the Scottish Government requires more extensive borrowing and cash management tools to manage budget volatility and uncertainty. These arrangements are set out in Scotland's Fiscal Framework, published in 2016¹.

Implementing the new powers also requires substantial technical and administrative work, much of which is ongoing. And it will require changes to the way in which Scottish budgets are presented to and scrutinised by the Scottish Parliament.

¹ <https://www.gov.uk/government/publications/the-agreement-between-the-scottish-government-and-the-united-kingdom-government-on-the-scottish-governments-fiscal-framework>

This paper outlines the Scottish Parliament's new powers, the key elements of the Fiscal Framework that enable the implementation of these new powers, and the technical and administrative issues that are still ongoing. It describes some of the budgetary opportunities that the new fiscal arrangements present, and also some of the risks to which the Scottish budget is now exposed.

II Background to tax devolution in Scotland: how did we get to where we are?

When the Scottish Parliament was established it had substantial spending responsibilities but limited responsibility for revenue raising (i.e. taxation). On spending, the parliament has substantial responsibilities in relation to health, education, justice and policing, economic development, the environment, and culture and sport. On tax however, only two relatively small property taxes were determined in Scotland – the Council Tax (a tax on domestic property) and Non-Domestic Rates, a tax on business property.

Revenues from these two taxes amounted to around 10 per cent of the Scottish Parliament's spending budget, with the remainder of the budget provided by the block grant from the UK Government.

The Calman Commission report, published in 2009, argued that this imbalance between spending responsibility and revenue raising responsibility was problematic. It noted² *'Funding by block grant alone means that while the Scottish Parliament is completely accountable for the spending of its budget, it is not accountable for the total of that budget or how it is raised; it has no fiscal powers that can be used as policy instruments and it does not have a direct financial stake in the performance of the Scottish economy'*. .

The Calman Commission recommended that this imbalance should be addressed through the partial devolution of income tax to the Scottish Parliament, alongside devolution of stamp duty land tax (a tax on property transactions) and landfill tax (a tax on waste to landfill). These recommendations were passed into legislation through the Scotland Act 2012. Scottish Landfill Tax and the Land and Buildings Transaction Tax (LBTT, the replacement for Stamp Duty in Scotland) came into operation in April 2014. The arrangements for the partial devolution of income tax only operated for one year, 2016/17, before being superseded by subsequent legislation.

Following the 2014 Scottish Referendum, the Smith Commission was established to agree which fiscal powers to devolve to the Scottish Parliament. The Smith Commission³ argued that tax decentralisation would make the Scottish Parliament 'more accountable and responsible for the

² Commission on Scottish Devolution, 2009, para 3.87

³ http://webarchive.nationalarchives.gov.uk/20151202171017/http://www.smith-commission.scot/wp-content/uploads/2014/11/The_Smith_Commission_Report-1.pdf

effects of its policy decisions and their resulting benefits or costs’ and that it would ‘strengthen the Scottish Parliament’s ability to pursue its own vision, goals and objectives’.

The Smith Commission recommended:

- That ‘Non Savings, Non-Dividend’ (NSND) income tax revenues should be transferred to the Scottish Parliament. NSND income tax revenues account for around 92% of all income tax revenues raised in Scotland (and include the tax paid on income from earnings, self-employment, pension income and property income). The Commission recommended that the Scottish Parliament be able to vary income tax rates and bands in Scotland without constraint. But the UK Government will retain authority to determine the income tax base. This means that the setting of the Personal Allowance, and the way in which the pensions tax relief is defined for example, are determined by the UK Government.
- That Air Passenger Duty (APD) should be devolved in full.
- It also recommended that a share of VAT collected in Scotland should be assigned to the Scottish Parliament. Specifically, the first ten pence of Standard Rate VAT and the first 2.5 pence of reduced rate VAT to be assigned to the Scottish Parliament. Given that the Standard and Reduced rates of VAT are currently 20% and 5% respectively, this means that under current policy, half the VAT revenues raised in Scotland will be assigned to the Scottish budget.
- It also recommended the devolution of Aggregates Levy, in full.

The Smith Commission’s recommendations were enacted through the Scotland Act 2016.

III Summary of the Scottish Parliament’s evolving revenue responsibilities

The Scottish Parliament’s new tax powers are being implemented on a staged basis over the next few years. NSND income tax will be devolved to the Scottish Parliament from April 2017, with APD being devolved in 2018 and VAT in 2019. The staging of the introduction of the tax powers largely reflects the time taken to resolve various administration and implementation issues specific to each tax.

Table 1 summarises the extent of existing and planned tax devolution to the Scottish Parliament.

Table 1: Devolved, shared and assigned tax revenues in Scotland

Tax	Date of transfer/ devolution	Revenues raised 2015/16 (£m)	Degree of control by Scottish Parliament	Responsibility for collection
Council Tax	1999	£2,100	Fully devolved; complete autonomy.	Local government
Non-Domestic Rates	1999	£1,900	Fully devolved; complete autonomy.	Local government
Land and Business Transactions Tax (LBTT)	2015	£416	Fully devolved; complete autonomy.	Revenue Scotland
Landfill Tax	2015	£147	Fully devolved; complete autonomy.	Revenue Scotland
Income tax	2017	£11,214	The Scottish Government can set the rates and bands. But the UK Government defines the tax base and sets allowances.	HMRC
Air Passenger Duty	2018	£275	Fully devolved; complete autonomy	Revenue Scotland
VAT	2019	£5,000	Assigned revenues; no autonomy	HMRC
Aggregates Levy	tbc	£53	Fully devolved; complete autonomy	Revenue Scotland

Source: Government Expenditure and Revenue Scotland (GERS); author analysis

A new Scottish tax agency, Revenue Scotland, has been established to collect revenues for the fully devolved Scottish taxes (LBTT, Scottish Landfill Tax, Aggregates Levy, and Air Passenger Duty, which the Scottish Government has announced will be renamed 'Air Departure Tax'). Revenues from the partially devolved income tax and the assigned VAT in Scotland will continue to be collected by HMRC.

IV The Scottish Parliament's new social security powers

In addition to tax devolution, some devolution of social security benefits is also taking place. A number of UK-administered benefits, mainly related to ill-health, disability and care are being devolved to the Scottish Parliament. Spending on these benefits in Scotland by the UK Government in 2015/16 totalled around £3bn (Table 2).

Table 2: Expenditure on social security benefits being devolved to the Scottish Parliament

	Expenditure, £m
	2015-16
Disability Living Allowance	1,399
Attendance Allowance	487
Carer's Allowance	224
Winter Fuel Payment	180
Personal Independence Payment	315
Industrial Injuries Disablement Benefit	91
Severe Disablement Allowance	49
Discretionary Housing Payments	13
Cold Weather Payment	3
Funeral Payment	4
Sure Start Maternity Grant	3
Total expenditure on social security benefits to be devolved	2,768

Source: Government Expenditure and Revenue Scotland 2015/16

A new Social Security Bill will be introduced in the Scottish Parliament imminently. This will provide the framework for the establishment of a new social security system in Scotland. The implementation dates for any new powers will be agreed by the Joint Ministerial Group on Welfare.

Additionally, the Scottish Government has already gained the power to:

- create new benefits (except pensions) in areas not otherwise connected with reserved matters
- top up reserved benefits
- make discretionary payments or provide discretionary assistance to meet certain needs
- amend some employment support schemes

- make changes to the amount of Universal Credit (UC) for the costs of rented accommodation, and the timing and recipients of payments.

Since 1 April 2017, Discretionary Housing Payments have also been devolved.

V Adjustments to the block grant for tax

The Scottish Government's block grant from Westminster will continue to be determined by the Barnett Formula.

However, the block grant will be adjusted (i.e. reduced) to take account of the new taxes being devolved to the Scottish Parliament.

How will this happen? For each of the devolved (and assigned) taxes, a 'block grant adjustment' (BGA) will be calculated. The BGA is effectively a measure of the tax revenues that the UK Government has foregone as a result of transferring the tax in question to the Scottish Parliament.

The process for calculating the BGAs is set out in detail in the Fiscal Framework⁴.

The BGA is calculated for each tax separately, and consists of two elements: an initial deduction and an indexation mechanism.

The initial deduction is simply equal to the tax revenues collected in Scotland in the year immediately prior to the devolution of the tax power. For example, if income tax is devolved in 2017-18, the initial deduction is equal to income tax receipts in Scotland in 2016-17.

But what should the BGA be in 2017-18 and any year thereafter? This is where the indexation mechanism comes in. Its purpose is to provide a measure of the rate at which 'comparable revenues' have grown (or declined) in the rest of the UK between 2016/17 and 2017/18 (or any subsequent year).

The basic idea is that the BGA should grow at the same rate as the growth in comparable revenues in rUK.

To calculate the BGA for income tax in 2017/18, the indexation mechanism (i.e. the growth rate of the rUK tax) is applied to the initial deduction. The BGA in 2017/18 thus provides an estimate of the level of income tax revenue that would have been raised in Scotland in 2017/18, had tax

⁴ <https://www.gov.uk/government/publications/the-agreement-between-the-scottish-government-and-the-united-kingdom-government-on-the-scottish-governments-fiscal-framework>

policy been the same in Scotland as in rUK, and had income tax revenues grown at the same rate in Scotland as in rUK between 2016/17 and 2017/18.

How is the indexation mechanism actually calculated? During the development of the Fiscal Framework, there was some disagreement between the Scottish and UK Governments over the best way to calculate the indexation mechanism. In the end, a compromise was reached. Over the period to 2020/21, the indexation mechanism will be calculated according to the so-called 'Indexed per capita' (IPC) method. But the results from a second method, the 'Comparable Method' will also be published alongside the IPC estimates⁵.

Under the Comparable Method, the change in Scotland's BGA is determined by a *tax-capacity adjusted population share of the change in rUK revenues*. The *population share* is Scotland's share of the UK population. *Tax capacity* is the amount of tax raised per person by a given system of tax rates and thresholds. Scotland's tax capacity for income tax (set out in the Fiscal Framework) is 87.5% of rUK's.

So under the Comparable Method, if rUK income tax revenues increase by £10 billion between any two years, and if Scotland's population share is 9%, and Scotland's tax capacity for income tax is 87.7% of rUK's, then Scotland's BGA would increase by £789.3m ($£10\text{bn} \times 9\% \times 87.7\%$).

The IPC method indexes the BGA to the growth in tax revenues per capita in rUK and the rate of population growth in Scotland. For example, if rUK revenues per capita grow by 5% and the Scottish population grows by 1%, the BGA grows by approximately 6%⁶.

What is the difference between IPC and CM?

The principle difference between the CM and IPC indexation mechanisms is the way that they treat differences in relative population growth between Scotland and rUK.

The IPC method has the feature that, if tax revenues per capita grow at the same rate in Scotland and in rUK, then the Scottish budget will be identical to what it would have been without tax devolution⁷, even if the Scottish population grows more slowly than the rUK population. In contrast, the implication of the Comparable Method is that the Scottish budget loses out if Scotland posts a relatively slower rate of population growth than rUK.

To see this, suppose that revenues in rUK are growing only due to population growth – revenues per capita are constant – and Scotland's population and revenues are constant. The Comparable Method increases Scotland's BGA by a population share of the rUK tax revenue increase. But

⁵ For further details about how these methods work, see <https://www.ifs.org.uk/uploads/publications/wps/wp201605.pdf>

⁶ The precise rate of growth of the BGA is 6.05%, calculated as $(1.01) \times (1.05) \times 100 - 100$.

⁷ This is because, with equal growth rates of per capita revenues, the amount of tax raised in Scotland is equal to the BGA, so the two effects cancel out.

the IPC method would not increase Scotland's BGA at all (as there has been no increase in rUK revenues per capita, and no change in Scottish population).

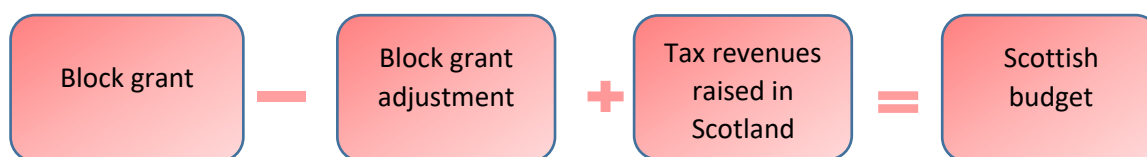
Over the period to 2020/21, the block grant adjustments will be calculated by both the CM and the IPC methods. Thus it will be possible to compare Scotland's BGAs under both indexation methods. Over the period to 2020/21 however, it is the IPC mechanism which will ultimately determine the BGA.

The method for indexing the BGAs after 2021–22 will be negotiated after the 2021 Scottish Parliamentary elections.

VI Implications of the risk and reward structure in Scotland's Fiscal Framework

What are the implications of these BGAs?

Remember that the BGAs for each tax are deducted from the Scottish Government's block grant. What is added back into the Scottish budget are the revenues that are actually raised from each tax in Scotland.



The key implication of the BGA arrangement is that, if the sum of the revenues raised from the devolved/ assigned taxes is greater than the sum of the BGAs, then the Scottish budget will be better off than it would have been without tax devolution.

This could happen under two circumstances: if the tax base grows relatively more quickly in Scotland than in rUK; or if tax rates in Scotland increase relative to those in rUK.

Of course the reverse could happen – Scottish revenues may grow relatively more slowly than those in rUK, in which case the Scottish budget will be worse off than it would have been without tax devolution.

The principle of the new fiscal arrangements is that the Scottish budget should '*benefit in full*' from policy decisions by the Scottish Government that increase revenues, and conversely bear the costs in full of policy decisions that reduce revenues. This is fine as a principle but the reality of the arrangements is that the Scottish budget bears in full the effects of any differential growth in Scottish revenues relative to rUK revenues, regardless of the causes of any differential growth. Whilst the Scottish Government would certainly hope to be able to implement policy to grow the Scottish economy and tax base, the link between policy and growth is often weak, and many of the factors determining tax revenue growth are only dependent on policy to a limited extent.

At a time when there are structural weaknesses in the Scottish economy (arising in part from developments in the offshore oil and gas sector and its Scottish supply chain), these risks are stark.

Analysis using the Fraser of Allander's microsimulation model of the Scottish economy for example shows that, if wages in Scotland grew just a third of a percentage point more slowly than those in rUK in one year, then income tax revenues raised in Scotland would be £50 million lower than the income tax BGA. If wages in Scotland grow one percentage point more slowly than those in rUK in one year (which is certainly not outwith the realms of the historic experience), the difference between Scottish revenues and the BGA would be £150 million. And of course if these differences were to persist over time, then the revenue differential would increase exponentially.

Similar issues arise with the smaller taxes too. Imagine that Scotland's LBTT revenues per capita grow at 10% per year. This sounds great. But if the equivalent rUK Stamp Duty revenues per capita grow at 15% per year driven by a boom in London's high-end property market, the BGA for LBTT will increase more quickly than Scottish revenues. Hence, the Scottish budget would be worse off than it would have been without tax devolution.

Of course, the Scottish Government doesn't just have to sit back and hope for faster revenue growth. It can choose to implement policies – relating to the devolved taxes specifically or under any of its other devolved competences more generally – to grow the Scottish tax base (or to achieve other policy goals, such as a different distribution of income).

This additional policy flexibility provides new opportunities to the Scottish Government to pursue an alternative policy agenda. But a clear complication is that there is a large degree of uncertainty about how particular policies might influence the future growth of Scottish revenues. Some will inevitably argue that reductions in the burden of taxation will stimulate growth and increase revenues in the long term, while others will argue that the most effective way to raise tax revenue is to raise tax rates.

There are a large number of uncertainties about how individuals and businesses in Scotland might respond to particular tax policy changes. One of the impacts of the devolved tax powers is that we can expect more debates about the revenue effects of tax changes in future!

VII Adjustments to the block grant for social security powers

As well as making deductions to the Barnett-determined block grant for the new taxes, additions will also be made to the block grant to reflect the new social security powers.

The 'block grant adjustments' for social security are intended to reflect the expenditure foregone by the UK Government as a result of transferring each social security power to the Scottish Parliament.

Similarly to the BGAs for tax, the BGA for social security powers involves a 'baseline addition' to the Scottish budget (which is equal to UK Government spending on the benefits to be devolved in the year prior to devolution), and an indexation mechanism.

The indexation will normally be based on the 'Barnett Formula', whereby the BGAs in such a way that the Scottish budget will be increased by a population share of the spending on 'comparable' benefits in rUK.

But for a transitional period to 2020/21, the BGAs for social security will be calculated according to the IPC indexation mechanism. This will calculate the change in Scotland's grant for devolved welfare based on the percentage change in per capita spending on the 'comparable' benefits in rUK, and the change in Scotland's population.

VIII Forecasting revenues

As we have just seen, the determination of the Scottish budget will in future be significantly more complex than it has been in the past. In the past the resources available to the Scottish Government essentially depended on the block grant from Westminster. In future, in addition to the block grant itself, the resources available to the Scottish Government will depend on a complex interaction between the revenues from taxes transferred to the Scottish Government, and the revenues from the equivalent taxes in the rest of the UK.

In order to set its budget each year, and in order to undertake medium term financial planning, the Scottish Government will need forecasts of the Scottish revenues.

The Scottish Fiscal Commission (SFC) has been established to make the Scottish forecasts. Twice each year, the SFC will make a 5-year forecast for each of the Scottish revenues, and for spending on the social security benefits being transferred to Scotland. The SFC will also make a forecast for growth in Scottish onshore GDP.

The SFC was established as a statutory, non-Ministerial Department in April 2017 and is operationally independent of the Scottish Government. It will produce its first official forecasts later this year (2017), alongside the Scottish Budget.

It is important to note that the SFC is only mandated to produce a single forecast for each tax. This will be based only on stated Scottish Government policy. In other words, the SFC cannot produce different forecasts to reflect alternative policy scenarios.

Of course the Scottish budget is not only determined by Scottish revenues. It is also determined by the BGAs, which are themselves determined by growth in comparable rUK revenues and social security spending.

In order to set its budget each year, the Scottish Government will not only need forecasts for Scottish revenues, but also need forecasts for the BGAs. The BGA forecasts will be determined by the UK Office of Budget Responsibility's (OBR's) tax forecasts for rUK, and DWP expenditure forecasts for social security benefits.

In its budget documentation, the Scottish Government will need to set out the forecasts for the Scottish taxes alongside the forecasts for the BGAs.

IX Reconciliation

Although income tax is being transferred to the Scottish Parliament, collection of income tax from Scottish taxpayers will continue to be undertaken by HMRC. How then will income tax revenues raised from Scottish taxpayers be transferred to the Scottish budget?

In drawing up its draft budget in any given year, the Scottish Government will rely on forecasts of the revenues raised from the Scottish taxes (to be made by the Scottish Fiscal Commission), and a forecast of the block grant adjustments for each tax (which will be based on forecasts for the growth in rUK revenues made by the OBR).

The UK Government will transfer to the Scottish Government the SFC's *forecast* for income tax revenues; these will be drawn down throughout the financial year, whilst the UK Government will deduct from the block grant the *forecast* of the income tax BGA.

Once outturn data on income tax revenues are available, the forecasts of both Scottish tax revenues and the income tax BGA will be reconciled to that outturn. These reconciliations might work in the same direction and offset each other; for example, outturn Scottish revenues that are lower than those forecast may simply be offset by lower than forecast rUK revenues, and hence a lower than forecast BGA. Of course it is possible that the reconciliation of Scottish revenues and BGA works in opposing directions, resulting in either a windfall gain or loss for the Scottish budget once reconciliation occurs.

A key point however is that outturn data for income tax is not available until 15 months after the end of a financial year. Outturn data for 2017/18 for example will not be available until June 2019. These outturn figures for 2017/18 will then not be 'reconciled' with the forecast until the Scottish Government's budget of the subsequent financial year, i.e. 2020/21.

Two points are worth making:

- First, these long (3-year) lags involved in reconciliation mean that accountability for the fiscal effects of policy decisions will often spill across parliamentary terms.
- Second, note also that the Scottish budget bears the risk of forecast errors made by the OBR for rUK income tax. For example, consider the case where the SFC's forecast for Scottish revenues corresponds exactly to outturn, but where the OBR forecast for rUK income tax revenue substantially underestimates subsequent rUK outturn figures. In this case, an upward reconciliation of the BGA would have to be made to a subsequent Scottish budget.

A similar reconciliation process will be required in the case of VAT, once this is assigned to the Scottish budget.

For the 'fully devolved' revenues that are collected by Revenue Scotland, reconciliation happens slightly differently. Because the revenues from these taxes are collected in Scotland by Revenue Scotland and made available directly to the Scottish Government, 'reconciliation' happens continuously throughout the year, rather than as a one-off event. For the BGAs, there will be reconciliations between the forecast for the BGAs and the actual BGAs (based on actual rUK outturn data). These reconciliations will happen on a monthly basis.

X Resource borrowing and cash management

The devolution of revenue (and welfare spending) responsibility clearly exposes the Scottish budget to the risk of greater budget volatility. As we have seen, the complex process by which the Scottish budget is based on forecasts of Scottish revenues and BGAs, both of which are then reconciled to outturn, means that the Scottish Government may face a number of cash management issues.

The Scottish Government has gained additional borrowing and cash management powers to deal with this uncertainty and volatility.

Under the Fiscal Framework Agreement, the Scottish Government will have the ability to borrow up to £600m each year within a statutory overall limit for resource borrowing of £1.75 billion. A fairly complex set of rules govern how these powers can be used in these different circumstances:

- There is an annual limit of £500 million on borrowing for in-year cash management (such borrowing allows the Scottish Government to deal with the fact that the timing of the

collection of its devolved revenues and its spending commitments within a year may differ);

- There is an annual limit of £300 million on borrowing to account for errors in forecasts of devolved taxes or welfare spending, and error in the forecasting of the BGAs;
- There is an annual limit of £600 million on borrowing to address any observed or forecast shortfall in revenues or welfare expenditure where there is, or is forecast to be, a Scotland-specific economic shock (although there is scope to increase this limit, subject to agreement between the Scottish and UK Governments). The Fiscal Framework defines such a shock as periods when (on a rolling 4-quarter basis), Scotland's GDP grows (or is forecast to grow) by less than 1% and is also more than 1 percentage point less than growth in UK GDP growth.

The Fiscal Framework also makes provisions for a cash reserve – the Scotland Reserve –which can be used to smooth spending and manage tax revenue volatility. The Scottish Government will be able to pay into reserves up to a total of £700 million and draw these down at a rate of up to £250 million a year for resource spending, and £100 million a year for capital spending.

XI Capital borrowing

The Fiscal Framework also specifies that the Scottish Government will now be able to borrow up to £450m annually for capital expenditure (the previous limit was £300m), within an overall statutory cap of £3bn. The Scottish Government may borrow through the UK Government from the National Loans Fund, by way of commercial loan, or through the issue of bonds.

XII Administration and set-up costs

The Scottish and UK governments are incurring costs in implementing and then managing the financial powers in the Scotland Acts. The revised fiscal framework sets out how the Scottish and UK governments will share the cost of implementing these powers.

The UK Government will make a one-off payment of £200 million to the Scottish budget as a contribution towards costs, and transfer up to £66 million each year to the Scottish budget to cover ongoing administration costs.

The Scottish Government is responsible for meeting HMRC's costs in setting up and operating the income tax powers. The lifetime estimate of these costs is now forecast to be around £20-25m, in addition to which there are likely to be annual implementation costs.

The Scottish Government is responsible for meeting all costs associated with establishing the Scottish Fiscal Commission (SFC), setting up the devolved taxes, and all administration and programme costs it incurs in creating new social security benefits or making discretionary payments.

According to Audit Scotland⁸, by the end of 2015/16, the Scottish Government had spent £18.5 million on programmes to implement the financial powers in the Scotland Acts. Most of this was to cover HMRC's costs in setting up and operating the Scottish rate of income tax. The Scottish Government budgeted a further £18 million for 2016/17 and £92 million for 2017/18.

The Scottish Government expects that implementation will cost more than the £200 million than the UK Government will transfer to the Scottish budget, although it has not identified how much more.

XIII Fiscal Framework implementation issues

The transfer of revenue and social security responsibilities to the Scottish Government poses a number of technically difficult administrative challenges. Here we consider three of the main ones, relating to social security, VAT revenue estimation, and identification of Scottish income taxpayers.

Perhaps the biggest challenge will be to transfer the social security benefits in a way that ensures that no Scottish recipients lose access to benefit payments, or see their payments delayed. The fiendish complexity of untangling the Scottish elements the DWP's databases should not be underestimated. Indeed the Scottish Government has noted that⁹, '*transferring the devolved benefits safely presents a challenge on a scale unlike anything the Scottish Government has faced since devolution [i.e. the establishment of the parliament in 1999]*'.

Assignment of VAT to the Scottish budget will begin in 2019/20. Assigned VAT will form a significant part of the Scottish budget, so it is essential that estimates of VAT raised in Scotland are robust and reliable. But how will Scottish VAT revenues be estimated? The estimation will likely involve large scale surveys of household spending in Scotland (from which estimates of VAT revenues can be derived), combined with expenditure surveys of visitors to Scotland. As with any survey-based approach, the estimates will be subject to a degree of error. And the calculations will be complex, given the significant range of products and services that are subject to reduced rates, zero-rates and exemptions (including financial services). A VAT-assignment

⁸ http://www.audit-scotland.gov.uk/uploads/docs/report/2017/nr_170323_managing_financial_powers.pdf

⁹ <http://www.gov.scot/Publications/2017/04/9266> (Para 89)

working group has been established to consider these issues, and is expected to release its first report later in 2017.

Working out Scottish income tax revenues requires a clear and up-to-date assessment of who is a 'Scottish' income taxpayer and who is not. HMRC has undertaken significant work to identify Scottish income taxpayers for 2017/18. But this is not a one-off task. Each year, as people relocate between Scotland and rUK (or between Scotland and overseas), records will need to be kept up to date. This in part relies on taxpayers maintaining their up-to-date address details with HMRC.

XIV Changes to the Scottish budget process

The Scottish budget is clearly becoming more complex and is exposed to greater risk. As we have seen, it will involve revenues and block grant adjustments, forecasts and reconciliations, borrowing and cash management, and so on.

This additional complexity will require changes to the way in which the Scottish Government presents its budgets, and the information and data it includes. It will require greater awareness of the medium term budgetary risks and opportunities facing the Scottish budget. And it will require changes to the way in which parliament scrutinises Scottish budgets and associated documentation.

Recognising this, a Budget Review Group was set up by the Cabinet Secretary for Finance Derek MacKay MSP and the Convenor of the Finance Committee Bruce Crawford MSP to consider how the Scottish budget process should evolve in light of the parliament's new fiscal powers.

The Group is due to issue its report in July 2017. The report will set out how the vast amount of budgetary data should be presented in future budgets, and is expected to recommend that the parliament adopts a more 'year round' approach to scrutinising this information.

XV Conclusions

Scotland's new fiscal powers bring substantial opportunities to the Scottish Parliament. These range from the possibility of radical reform – for example in the way that land and property are taxed, or in the way in which disability is assessed in the social security system – to the scope for more minor tweaks (such as the Scottish Government's decision in 2017/18 to set a somewhat lower threshold at which income taxpayers become liable for the Higher Rate of tax).

One of the big challenges that the new powers pose is the substantial uncertainty that exists around how some types of tax (or social security) changes might influence behaviours, and thus affect revenues or expenditure.

But even if the Scottish Government chooses not to vary tax policy in Scotland, the way that the Fiscal Framework is designed means that the new fiscal powers are likely to affect the size of the Scottish budget. The growth of Scottish revenues per capita must match the growth of equivalent rUK revenues per capita if the Scottish budget is to be at least as well off as it would have been without tax devolution.

This structure is intended to incentivise the Scottish Government to implement policies that will grow the Scottish economy and tax base. But the nature of this set-up comes with risks. The relative growth of Scottish revenues will be determined by many things that are outwith direct control or influence of the Scottish Government. This ranges from global developments in the offshore oil and gas sector, to a booming housing market in London and the southeast of England, to the long-term effects of policies administered by previous devolved administrations.

The new Fiscal Framework arrangements also introduce a range of complexities into the budget process. A large number of factors will determine the resources available to the Scottish Government, including not only the Scottish revenues but also the BGAs, the repayment implications of previous borrowing, the position of the Scotland reserve, and so on. And there will be a corresponding expansion in the number of organisations with some role to play in the implementation and delivery of the devolved powers, including forecasting organisations like the SFC and OBR, tax collection agency Revenue Scotland, and the new Social Security Agency.

There is still some way to go before some of the fiscal powers are ready for implementation. This is particularly the case for VAT and the social security powers. Effective inter-governmental and cross agency working will be crucial to enable a smooth implementation.

The increased level of media and public interest in the Scottish budget and Scottish fiscal policy in the past couple of years suggests that one of the supposed benefits of fiscal devolution (greater scrutiny and accountability for budgetary decisions) has already been realised. However, it is likely to be some time until we have a clearer picture about whether the Scottish Parliament's additional fiscal responsibilities have led to better policy outcomes in Scotland.

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Carbon emissions and the economic impact of healthy eating in Scotland

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Abstract

This article uses on-going research at the Fraser of Allander Institute that explores the possibility of a policy “triple win” in the area of healthy eating. It shows that were food consumption in Scotland to follow healthy eating guidelines, it would not only improve the health of the population, but also have positive environmental impacts and may even be associated with positive economic impacts as well. We demonstrate that were healthy eating in Scotland to become more prevalent it would impact positively on several stated Scottish Government policy objectives in health, environment and the economy.

Introduction and background

It is well known that red meat is a particularly inefficient and carbon intensive way of generating calories for human consumption. For each calorie of meat produced, many calories of grain and other vegetable crops have to be grown to feed livestock. To the extent that arable farming has a certain emissions consequence per human calorie supplied, livestock production clearly multiplies these emissions per calorie produced. And, this is before we take into consideration the methane produced by livestock, which further adds to climate change emissions.

So, red meat consumption matters for climate change. It also matters for health, with high red meat diets associated with increased incidence of type II diabetes, heart disease and certain kinds of cancer. This immediately suggests the prospect of a policy win-win: if, somehow, we can eat in accordance with healthy eating guidelines (reducing calorie intake generally, but especially from red meat consumption) then not only will it help meet health policy outcomes, it may also reduce climate change emissions with consequential environmental benefit.

In a study conducted by researchers at the Oxford Martin School, Springmann et al (2016) found that “*transitioning toward more plant-based diets that are in line with standard dietary guidelines could reduce global mortality by 6–10% and food-related greenhouse gas emissions by 29–70% compared with a reference scenario in 2050*”. So such a dietary shift would have positive health and environmental benefits, but what might be the economic impacts?

Springmann et al (2016) do not consider the economic impact of such a dietary shift. If demand for food, and especially red meat, falls then, in the absence of any increases in demand for other goods, GDP and employment are likely to fall too. As part of a project now underway at the Fraser of Allander Institute, we consider the climate change and macroeconomic impacts of such

a change in consumer demands toward a more healthy diet in Scotland on the Scottish environment and economy.

The Scottish Government aims (see Scottish Government, 2015) to create “a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth”. This is underpinned by the recently released Climate Change Plan (currently under consultation, see Scottish Government, 2017), which recognises the role of agriculture in emissions and noted the possible economic benefits of a reduction in emissions from agriculture. To what extent can a shift in consumer demand for food and red meat contribute to achieving these policy objectives?

1. Red meat and the food industry in the Scottish economy

Table 1: SIC industries that constitute the Food & Drink sector in Scotland

	GVA (£m)		Employment (no. of employees)		Exports (£m)		Other Final Demand (£m)	
		%Scot		%Scot		%Scot		%Scot
Agriculture	1,142	0.9%	39,778	1.8%	889	1.4%	931	0.9%
Fishing	74	0.1%	3,410	0.2%	157	0.2%	6	0.0%
Aquaculture	120	0.1%	4,049	0.2%	337	0.5%	4	0.0%
Meat processing	201	0.2%	5,743	0.3%	864	1.3%	230	0.2%
Fish & fruit processing	305	0.2%	7,361	0.3%	938	1.4%	241	0.2%
Dairy products, oils & fats processing	130	0.1%	2,670	0.1%	346	0.5%	237	0.2%
Grain milling & starch	19	0.0%	251	0.0%	63	0.1%	8	0.0%
Bakery & farinaceous	408	0.3%	10,928	0.5%	704	1.1%	290	0.3%
Other food	214	0.2%	4,829	0.2%	397	0.6%	124	0.1%
Animal feeds	55	0.0%	975	0.0%	134	0.2%	26	0.0%
Spirits & wines	2,205	1.8%	9,335	0.4%	3,628	5.6%	179	0.2%
Beer & malt	107	0.1%	1,178	0.1%	141	0.2%	41	0.0%
Soft Drinks	170	0.1%	2,038	0.1%	321	0.5%	77	0.1%
Total	5,149	4.2%	92,544	4.2%	8,919	13.8%	2,393	2.3%

Source: Scottish Government (2016)

Scotland's Economic Strategy (see Scottish Government, 2015) identifies ‘key sectors’ where Scotland has a distinct comparative advantage, ‘Food & Drink’ is one of them. In terms of standard industrial classifications (SIC), the Food and Drink sector includes : Agriculture; Fishing; Aquaculture; Meat Processing; Fish & fruit Processing; Dairy Products, Oils & Fats Processing;

Grain Milling & Starch; Bakery & Farinaceous; Other Food; Animal Feeds; Spirits & Wines; Beer & Malt; and, Soft Drinks (refer Table 1). Using 2013 data (see Scottish Government, 2016), the Food and Drink sector generates 4.2% of Scottish Gross Value Added (GVA) and employment, 13.8% of exports (defined as exports both to the rest of the UK and international destinations), and supplies 2.3% of Scottish final demand.

The Scottish Government produces economic accounts, known as Input-Output (IO) tables, that describe the structure of production and the components of final demand in the Scottish economy, at a highly disaggregated level. The Scottish economy is disaggregated into 98 different industrial sectors, including the 13 industrial sectors that comprise Food & Drink. The full IO tables show, in columns, what firms in each sector buy from all other sectors and what they import for use in production, plus the wages, profits and taxes that these firms pay. Across rows, the IO tables show what firms in each of sector sell to all other sectors for use in production, and also what they sell to households, governments, and what they export. The interconnectedness of the Scottish economy, and the input/output relationships between different industrial sectors and their contribution to final demand within the Scottish economy is thus shown in these Input / Output (IO) economic accounts.

The Scottish IO tables shows that there are strong links between the industries which make up the Scottish Food & Drink sector. For example, Meat Processing purchases inputs from Agriculture (e.g. meat), which in turn purchases inputs from Animal Feeds, which in turn purchases inputs from Agriculture (plant foods). But there are also links between the industries that constitute the Food & Drink sector and the wider economy. For example, Food and Drink industries use the haulage industry to transport their output to final markets and destinations. Hence, this means that any reduction in consumer expenditure on the output of one industry – such as Meat Processing - will have spillover effects on the levels of activity in other industries, especially (but not limited to) the other industries of the Food & Drink sector (e.g. in transport).

Given the differential carbon intensity of red meat consumption as compared to the consumption of other foods, it would be useful to be able to disaggregate the agriculture sector in the IO table into “red meat” and “other agriculture” sub-sectors. Fortunately, Moxey (2016) has done much of the work to do this in a report for Quality Meat Scotland. This research uses Moxey’s disaggregation of the Agriculture sector, to help allocate food and drink carbon emissions to red meat consumption and to other food and drink consumption.

2. Carbon emissions

Carbon emissions at a national level can be considered using two alternative perspectives: production-oriented territorial emissions and the consumption-oriented carbon footprint. Territorial emissions are those actually produced within a territory and therefore include the emissions generated from the production of goods which will be exported and consumed outside

a territory. The carbon footprint conversely seeks to measure the emissions associated with the production of all goods consumed by the residents of a territory, wherever in the world they are actually emitted. All goods and services imported into Scotland for consumption by Scottish residents will have emissions associated with their production which appear in the territorial emissions of another country – the carbon footprint metric allocates these emissions to Scotland; while all goods and services produced in Scotland but exported for consumption by the residents of other countries will have emissions associated with their production which appear in Scottish territorial emissions – the carbon footprint metric does not allocate these emissions to Scotland. Scotland's estimated carbon footprint, at 95MtCO₂e (Scottish Government, 2017b), is much higher (almost twice as high) than its territorial emissions of 51MtCO₂e (National Atmospheric Emissions Inventory, 2016). This reflects the facts both that Scotland imports more than it exports (where exports and imports are both to/from the rest of the UK and to/from international destinations), and that its imports are much more carbon intensive than its exports, as is normally the case for an advanced, service sector dominated economy, like Scotland.

Table 2: Scotland's Territorial Carbon Emissions and Carbon Footprint

	Values (£m)	Emissions (MtCO ₂ e)	
Production	232,964	47.1	
International Transport		2.3	
Land Use Changes		1.7	
Gross Output	232,964	51.1	Territorial Emissions
rUK Intermediate Imports	28,476	8.6	
International Intermediate Imports	16,588	28.9	
Less Total Intermediates	(105,987)		
Total Final Goods	172,042	88.6	
Exports	(67,931)	(20.8)	
rUK Final Good Imports	19,707	5.3	
International Final Good Imports	13,172	22.3	
National Income	136,991	95.4	Carbon Footprint

Table 2 shows how we can reconcile Scotland's territorial emissions with its carbon footprint, under the assumption that Scotland's exports are as carbon intensive as its consumption from domestic production, and assuming that economic activity in the rest of the UK is as carbon intensive as it is in Scotland. Productive economic activity in Scotland takes place and (in

combination with international aviation and shipping emissions and emissions from land use changes) is associated with Scotland's territorial emissions of 51MtCO₂e. This activity relies on imported intermediate goods which also have caused emissions in their production outwith Scotland, and these emissions must be added as being associated with Scottish production. However, not all Scottish production is consumed by Scottish consumers, and so we can subtract the emissions associated with Scotland's exports. Conversely, we must add the emissions associated with final goods imports into Scotland in order to reach the Carbon Footprint total of 95MtCO₂e.

The territorial emissions, and the emissions associated with imported intermediate goods and services, can then be allocated to economic activity in specific sectors, while emissions associated with final goods imports can be associated with consumer demand for specific goods.

3. Scenarios and results: environmental and economic impacts of healthy food consumption

In this section we are interested in the impact of a change in consumer expenditures on Food & Drink, in line with healthy eating guidelines, on economic activity and carbon emissions in Scotland. We model this using the Input-Output framework, and as described below, we create two scenarios that represent the extremes of what households can do with the money that they now do not spend on food and drink: that is they either entirely save this money or they entirely spend it on other goods and services. Both scenarios, however, feature the same reduced expenditure on the output of the Food & Drink sector.

We use the healthy eating guidelines described in Springmann et al (2016) which approximate to a 39% reduction in calories from red meat, and a 3% reduction in calories from other foods and drinks. Assuming that there is a one to one correspondence between expenditure and calories, the healthy eating scenario is assumed to be a 39% reduction in household expenditure on the output from the Red Meat and Meat Processing industries, and a 3% reduction in household expenditure upon the output of all the other Food & Drink sector industries.

The two scenarios differ in terms of what these consumers are assumed do with the money they have saved from their reduction in food and drink expenditures. In the first scenario, household expenditure on food and drink is reduced as described and nothing else changes (i.e. the money is saved). The second scenario assumes that household expenditure in total is unaltered, and the reduction in food expenditure is compensated by an increase in expenditure across all other discretionary goods (in proportion to current households' expenditure on these items – this turns out to require a 0.5% increase in such expenditure). Discretionary goods are identified as all those goods in the economy other than public services, accommodation costs and legal and financial services (i.e. the assumption is that, just because food expenditure has gone down, this does not mean that, for example, rent or insurance costs have gone up, or that the government

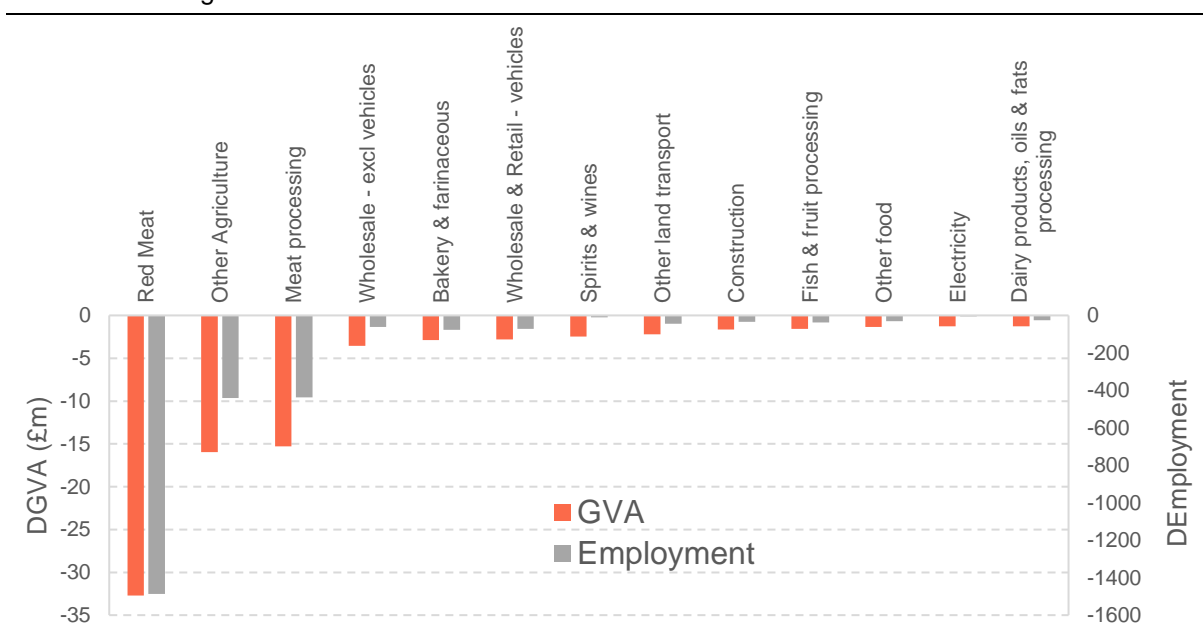
starts taxing households more in order to fund and spend more on public services). Both of these scenarios are modelled using an Input-Output framework as previously described.

Table 3: Scenario results

Households	GVA		Employment		Incomes		Emissions Territorial		Footprint
	(£m)	%	(no e'ees)	%	(£m)	%	(ktCO ₂ e/%)		
Save the money	-103	-0.1%	-3076	-0.1%	-51	-0.1%	-1.0%	-338	-0.9%
Spend it on other goods	-7	0.0%	-899	0.0%	+5	0.0%	-0.9%	-218	-0.7%

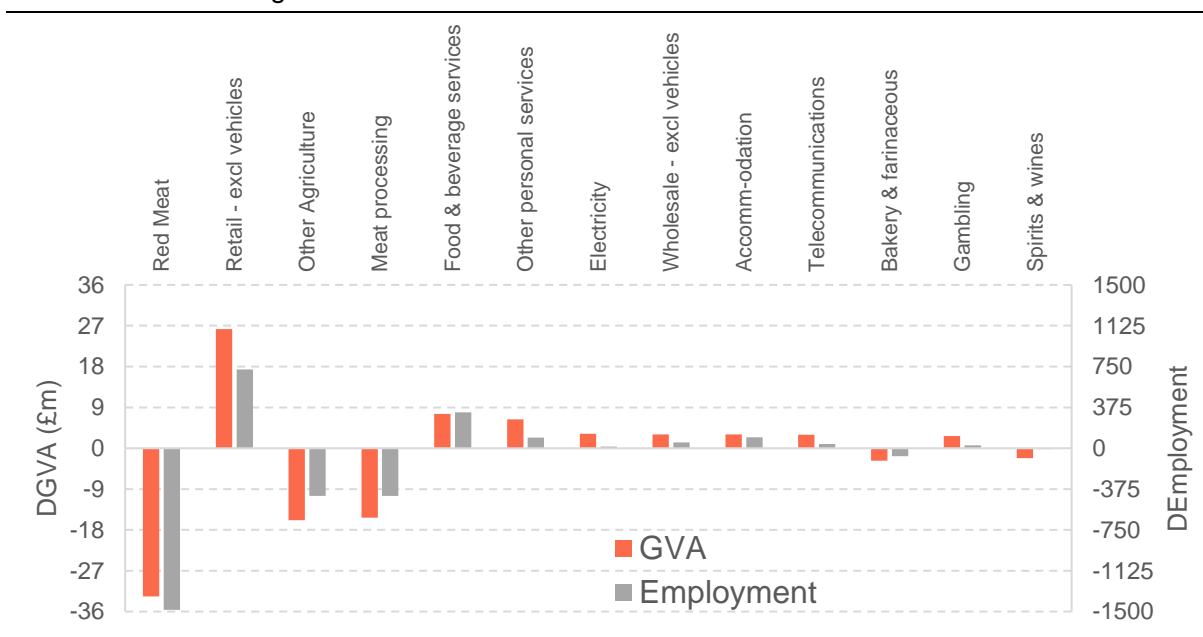
In the first scenario, households save all the money that they no longer spend on food and drink, and this leads to a reduction in GDP and employment associated with the food sectors, and in the sectors which supply inputs to the food sectors. Looking at the whole economy, GDP falls by 0.1%, employment falls by 0.1% (around 3,000 FTE jobs), and carbon emissions generated within the Scottish economy fall by 1.0% (around 0.5MtCO₂e). Exports are assumed to be unchanged, but various sectors of the Scottish economy now have reduced import demand (because of the reduced economic activity) and consumers have reduced their expenditure on food imports. The combination of these two effects improves Scotland's trade balance by £145m, and reduces the emissions generated outwith Scotland, but on behalf of Scottish residents, by 0.3MtCO₂e. The combination of reduced emissions within and outwith Scotland is to reduce Scotland's carbon footprint by 0.9%.

Figure 1: Changes in GVA & Employment in Scenario 1 for 13 sectors with biggest absolute GVA changes



In the second scenario, the unchanged total household expenditure is reallocated away from food and drink, and results in approximately unchanged GDP, employment and trade balance (all changes are $\pm 0.0\%$ to this level of accuracy). Carbon emissions generated within the Scottish economy fall by 0.9% (around 0.5MtCO₂e), and emissions generated outwith Scotland but on behalf of Scottish consumers are reduced by 0.2MtCO₂e. Scotland's carbon footprint falls by 0.7%.

Figure 2: Changes in GVA & Employment in Scenario 2 for 13 sectors with biggest absolute GVA changes



As can be seen in Figure 2, households substitute their spending away from food and drink towards other sectors, and as a result we see large gains in activity and employment in Retail especially. This additional economic activity is associated with increased carbon emissions from these sectors. But the result of this shift in aggregate demand is that value added (wages and profits) and employment are largely unchanged – they just move sectors; but total carbon emissions fall, because activity has moved from high emission sectors (red meat production etc.) to lower emission sectors (e.g. retail).

4. Conclusions

The results of the second scenario shows that the potential exists in Scotland to shift consumer spending away from food and drink, and especially away from red meat, in line with healthy eating guidelines, and to reduce carbon emissions without harming Scotland's overall economic performance. This result is before taking into account the economic benefits arising from the health impacts that we would expect to see from such a change, such as reduced healthcare costs and improved workforce productivity. Such a conclusion is clearly of interest to

policymakers as it aligns well with the Scottish Government's aims to create "a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth".

Across the two extreme scenarios considered, the carbon emission benefits are clear. The difference between the economic impacts across the two scenarios highlights that the final economic impact of spending decisions depends not only upon the level of spending, but also upon to where this spending is directed. When we consider that the (unanalysed) health impact is also likely to be positive, this analysis suggests that a policy "triple win" to improve economic, health and environmental outcomes is possible.

However, it should be noted that in our analysis we have assumed and imposed a simple change in household spending patterns; however, as big a policy question is why would households make such a change? Government could, in principle, persuade households via healthy eating advertising, but the success of such a policy is highly uncertain. In future developments to this work we will look at other policy options, such as taxing red meat. This would cause price changes that mean that consumers may respond by reducing their consumption in line with healthy eating guidelines. Such an analysis not only describes a policy which may well have more certain effects, but it also provides for another margin for this policy impact positively: the tax revenues could perhaps be recycled into increased public spending, or used to reduce other taxes, both of which may provide economic stimulus.

Acknowledgements

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Scotland's gender pay gap; latest data and insights

Neil Hamilton and Kenny Richmond, Scottish Enterprise¹

Abstract

Women working full-time in Scotland earn less on average than men. Scotland's gender pay gap at 6.2% in 2016 is smaller than the UK average and is generally declining. However, key sectors and occupations continue to post substantial pay gaps. Occupational segregation, across sectors, is a major factor in explaining Scotland's gender pay gap, but the underlying causes are the career disruptions of female workers plus some combination of other harder to measure factors such as discrimination and gender bias. The potential economic benefits from closing Scotland's gender pay gap are substantial; a more engaged, inclusive and productive workforce, an increase in consumer spending and an easing of skills shortages.

1. Introduction

Everyone has a right to participate in, and benefit from, economic opportunities equally. Gender pay differences are a measure of how well an economy is succeeding at delivering inclusive growth to its citizens. Inclusion is an important driver of economic performance, and a range of evidence highlights that economies that are more inclusive are more productive and grow faster².

Like nearly all other developed economies, Scotland has a gender pay gap with women who work full-time earning on average less than men. This is despite UK legislation (the Equalities Act 2010) that gives women (and men) a right to equal pay for equal work³. Although Scotland's gender pay gap is below the UK average and is generally declining, there are some sectors and occupations where the pay gap is substantial and rising, negatively affecting productive potential.

This paper reviews the latest data and evidence on Scotland's gender pay gap and considers its underlying causes. It then explores the potential economic benefits of reducing the gender pay gap, and considers appropriate policy responses.

There are many different ways to measure and present the pay gap⁴. In this analysis, we mirror the approach of the Scottish Government and use the *full-time employment median pay gap*

¹ *Scottish Enterprise* is Scotland's main economic development agency.

² See for example *The Productivity-Inclusiveness Nexus*, OECD 2016 and *Redistribution, Inequality and Growth IMF Staff Discussion Note*, IMF 2014

³ *Equalities Act 2010*. The provisions of the Equality Act relating to equal pay set out that an individual can claim equal pay when she or he, when compared with a comparator of the opposite sex, is employed in:

- Like work: work that is the same or broadly similar, regardless of whether the job title is the same.
- Work rated as equivalent: work that has been rated as equivalent under a job evaluation scheme.
- Work of equal value: work that requires the same levels of effort, skill, knowledge and responsibility.

⁴ For a full discussion on the complexities of measuring and reporting on Scotland's pay gap see *Close the Gap Working Paper 17: Gender Pay Gap Statistics*

measure, which allows a direct comparison of earnings between women and men working full-time only and removes the effect of differences in working patterns⁵.

2. Why Scotland's gender pay gap matters

Traditionally, gender pay differences have been considered primarily as an issue of equality. This has fundamentally shifted over the past few years and there is now a growing policy recognition that pay parity is not simply an issue of fairness but also one of economic efficiency. Gender pay differences represent the untapped potential of women's talents and skills. The gender pay gap represents a productivity as well as fairness gap, and there are real economic gains to be made from closing it⁶.

Scotland's Economic Strategy (SES) recognises that maximising economic opportunities for women to participate fully in the economy is key to improving economic performance and tackling inequality. SES highlights that supporting women to overcome the barriers and structural challenges they face in the labour market is good for women and families, good for business and good for the Scottish economy⁷. The full-time employment gender pay gap is a National Performance Framework indicator monitored by the Scottish Government⁸.

3. Latest data and trends

The Office of National Statistics (ONS) calculates the gender pay gap as the difference between the median full-time hourly earnings (excluding overtime) of men and women as a proportion of the median full-time hourly earnings of men. A positive pay gap indicates that men are earning more than women; a negative pay gap means that women are earning more than men.

In 2016, Scotland's pay gap was 6.2 percent. Men working full-time earned an average of £13.85 per hour compared to an average of £13.00 for women.

Over the past two decades, Scotland's pay gap has fallen from a high of 19.1 percent in 1998 to 6.2 percent. The narrowing gap is mainly due to female wages rising faster than that of males. This has been driven by the longer term trend of women's educational qualifications increasing more quickly than men's (higher qualification levels are associated with higher pay), and recent rises to the minimum wage that have disproportionately benefited women⁹.

⁵ However, we recognise that a focus on full-time earnings excludes a large proportion of women in the workforce. Though women represent 52 percent of the Scottish workforce, only 57 percent of female workers are in full-time employment. Excluding almost half the women in the labour market from these pay gap calculations ignores the many challenges and constraints faced by women who work part-time.

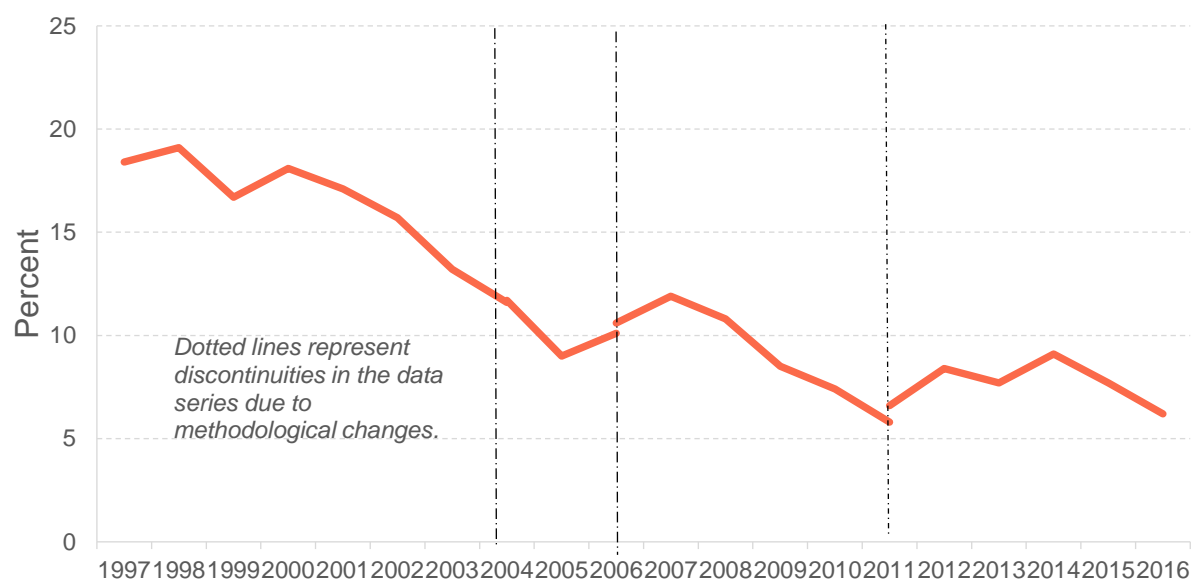
⁶ The *UK Commission for Employment & Skills* points to research estimating the under-utilisation of women's skills costs the UK economy between 1.3 percent and 2 percent of GDP every year

⁷ *Scotland's Economic Strategy*, Scottish Government, 2015

⁸ *Scotland Performs*, Scottish Government

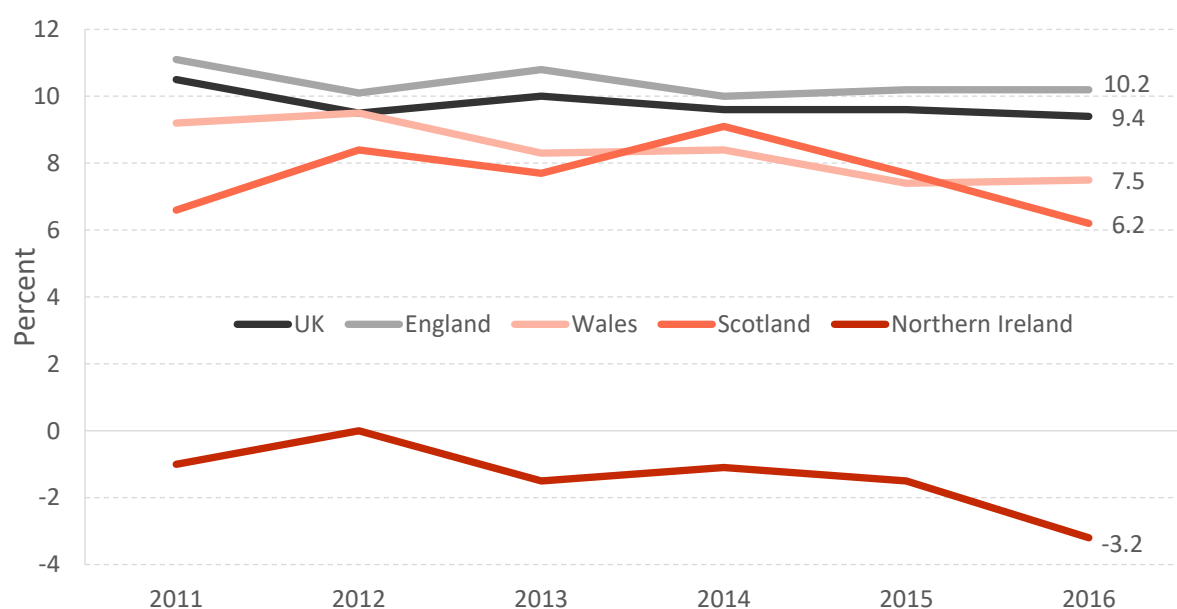
⁹ Sectors with the most 'minimum wage jobs' are hospitality, social care, cleaning and employment agencies, and these have high proportions of female workers.

Figure 1: Gender pay gap (%), Scotland, 1997-2016



Source: Annual Survey of Hours & Earnings, Office for National Statistics

Figure 2: Gender pay gap, by UK nation, 2011-2016



Source: Annual Survey of Hours & Earnings, Office for National Statistics

Scotland's gender pay gap is smaller than the UK average, and smaller than any other UK nation except Northern Ireland¹⁰. However, as of 2014, the UK had the 11th highest gender pay gap of 33 OECD countries, so Scotland's gap is also likely to be above the OECD average¹¹.

4. Causes of Scotland's gender pay gap

There are a range of causes of the gender pay gap. Discrimination, unconscious gender bias (assumptions about women's skills and preferences), the undervaluing of female-dominated work and stereotyping may all be factors, although there are no specific Scottish data or research on these¹².

Two potential causes of Scotland's gender pay gap where data is available are presented below.

i. Career disruptions of female workers

A common reason for gender pay gaps worldwide is the disproportionate career disruptions that many female workers bear in order to take on caring responsibilities, most often raising children and increasingly looking after elderly parents / family members. This is often because women are stereotypically believed to be better at caring-type work.

In Scotland, a widening pay gap in older age groups lends support to this. Figure 3 shows that in Scotland the pay gap was close to zero for the 25 to 34 age group in 2016, but widened for older age groups (the pay gap for the 16 to 24 year olds, which covers a period of education, has historically proven difficult to measure and understand¹³).

The wider pay gap in latter-career age groups is largely consistent with women leaving the labour market temporarily and then re-entering at a lower salary than had they remained working, or indeed at a lower salary than men who continued working¹⁴. That is, spending time out of the workforce to care for their families is resulting in women missing out on pay progression. Similar trends can be seen across the world¹⁵. The pay gap is largest for women in the oldest age group, and this is likely to be in part due to the 'glass ceiling' effect that sees fewer women reaching senior management positions¹⁶.

¹⁰ Northern Ireland is an interesting case where female average wages are actually higher than male average wages. Two possible reasons are the greater proportion of women who work in the public sector, which carries a significant wage premium compared to the private sector in Northern Ireland, and a lower overall female employment rate.

¹¹ It is not possible to directly compare Scotland's pay gap with OECD statistics due to different definitions used and data availability.

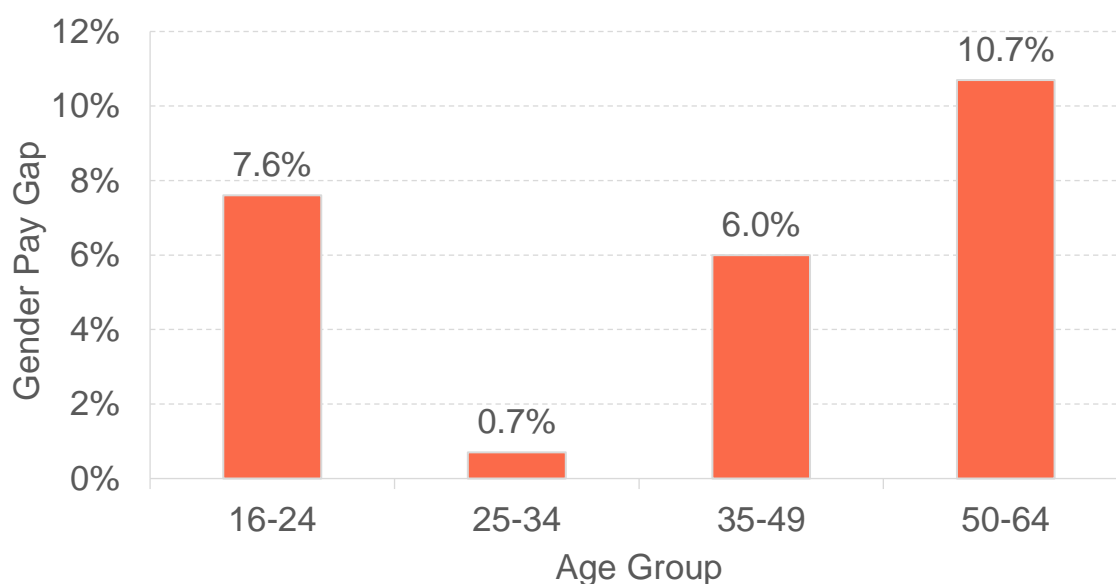
¹² For an overview of causes at the UK level, see for example *The Gender Pay Gap: Facts, Causes and Solutions*, Fawcett Society 2016, and *The Women and Equalities Committee*, UK Parliament, 2016.

¹³ However, UNESCO data indicates UK women stay in education an average of 0.9 years longer than men, so it may also be the case they do not enter the labour market until later.

¹⁴ Women leaving the labor market is often a by-product of inflexible working practices that make it difficult to combine employment and caring responsibilities

¹⁵ See for example *EU data*

¹⁶ Gender Pay Gap report, *Written evidence submitted by The Chartered Management Institute (CMI)*, UK Parliament, 2016.

Figure 3: Gender pay gap, by age cohort, Scotland, 2016

Source: Annual Survey of Hours & Earnings, Office for National Statistics

ii. Occupational segregation

There is evidence that Scotland's overall pay gap is also linked to the occupational composition of the country's workforce, with full-time female workers disproportionately concentrated in lower paying occupations.

Figure 4 shows the distribution of men and women across Scotland's full-time workforce. Women are over-represented in lower paid occupational groups such as caring and customer service occupations¹⁷.

Although women are also well-represented in higher paid groups, this is predominantly because they hold more than two-thirds of all jobs considered 'professional' in the education and healthcare sectors. This masks significant under-representation in other higher paying occupational groups, particularly managerial roles (where men hold 66 percent of all positions).

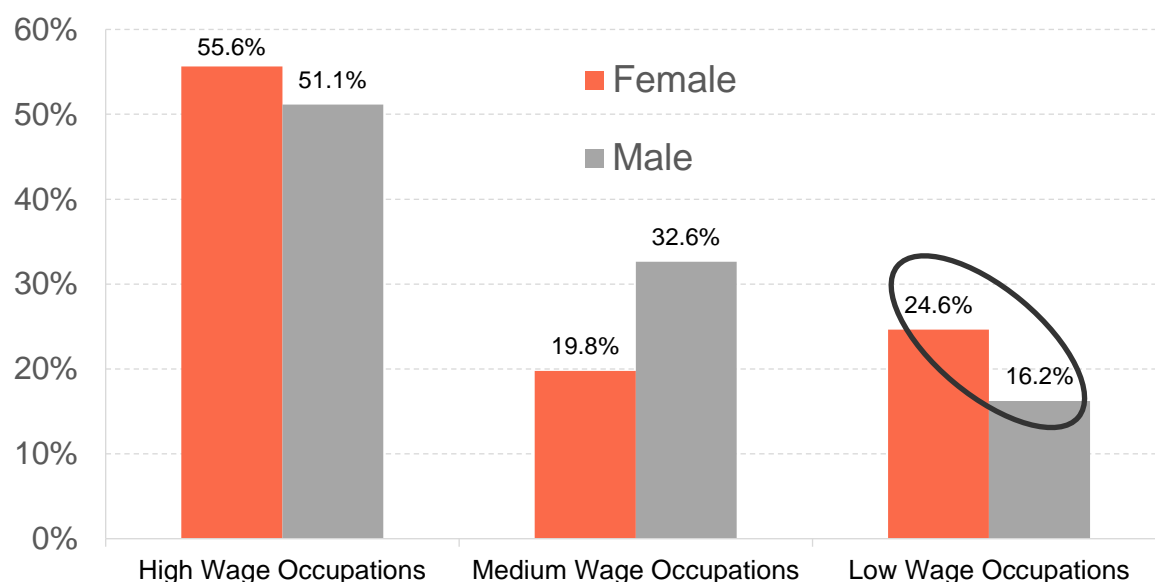
Evidence of the dominance of one gender in certain jobs and occupations (often reflecting stereotypes about the skills and attributes associated with that gender¹⁸) along with men being more likely than women to be found in management, points to two distinct layers of occupational segregation in Scotland – **horizontal** (where men and women are clustered in different kinds of

¹⁷ See Appendix A for full clarification of the wage tiers used.

¹⁸ For example, men in skilled trades and women in caring occupations

roles), and **vertical** (where men and women cluster at different levels of seniority in the same kind of role)¹⁹.

Figure 4: Gender occupational distribution, by high, medium and low wage occupations (% of male and female full-time employment), Scotland, 2016



Source: *Annual Survey of Hours & Earnings, Office for National Statistics*

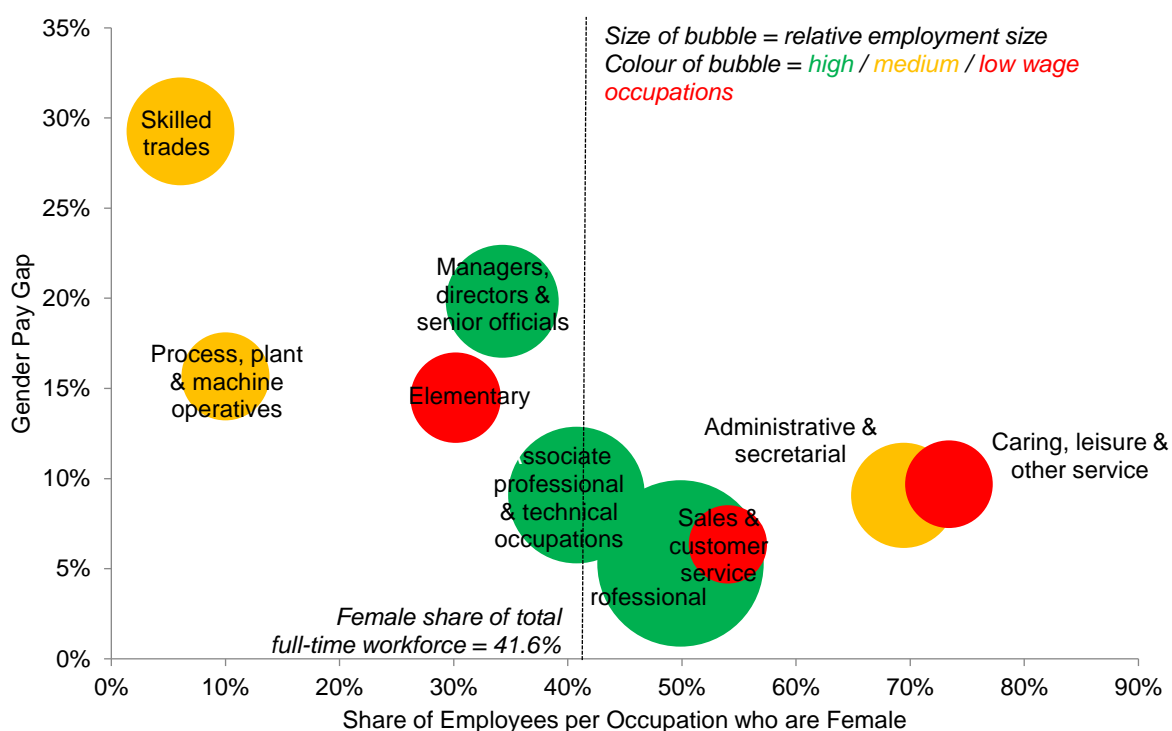
Gender pay gaps exist in all occupational groups in Scotland, illustrated in Figure 5 (and in more detail in Appendix B). The pay gaps are most pronounced in the skilled trades and in management occupations (gaps of 29.3 percent and 19.8 percent, respectively). Gender pay gaps persist even though women have a higher educational profile than men.

A key individual contributor to the overall pay gap is professional occupations, which have a relatively small pay gap of 5.3 percent, a high proportion of employees who are women (49.9 percent) and a large share of the total workforce (24.8 percent). Associate professional occupations, which represent a lower skill level than professional occupations, also stand out as a large occupational group with a relatively large pay gap.

Although imperfect, there does appear to be a relationship between the gender parity of an occupational group and the extent of the gender pay gap in that group. That is, the more gender balanced an occupational group, the lower is its pay gap²⁰.

¹⁹ Of the two, vertical segregation is the more difficult to measure because it refers to hierarchies within individual occupations.

²⁰ Male-dominated industries are generally less likely to have pay transparency, undertake equal pay reviews, and have good equalities practice.

Figure 5: Gender pay gap, by occupation and scale of occupation, Scotland, 2016

Source: Annual Survey of Hours & Earnings, Office for National Statistics

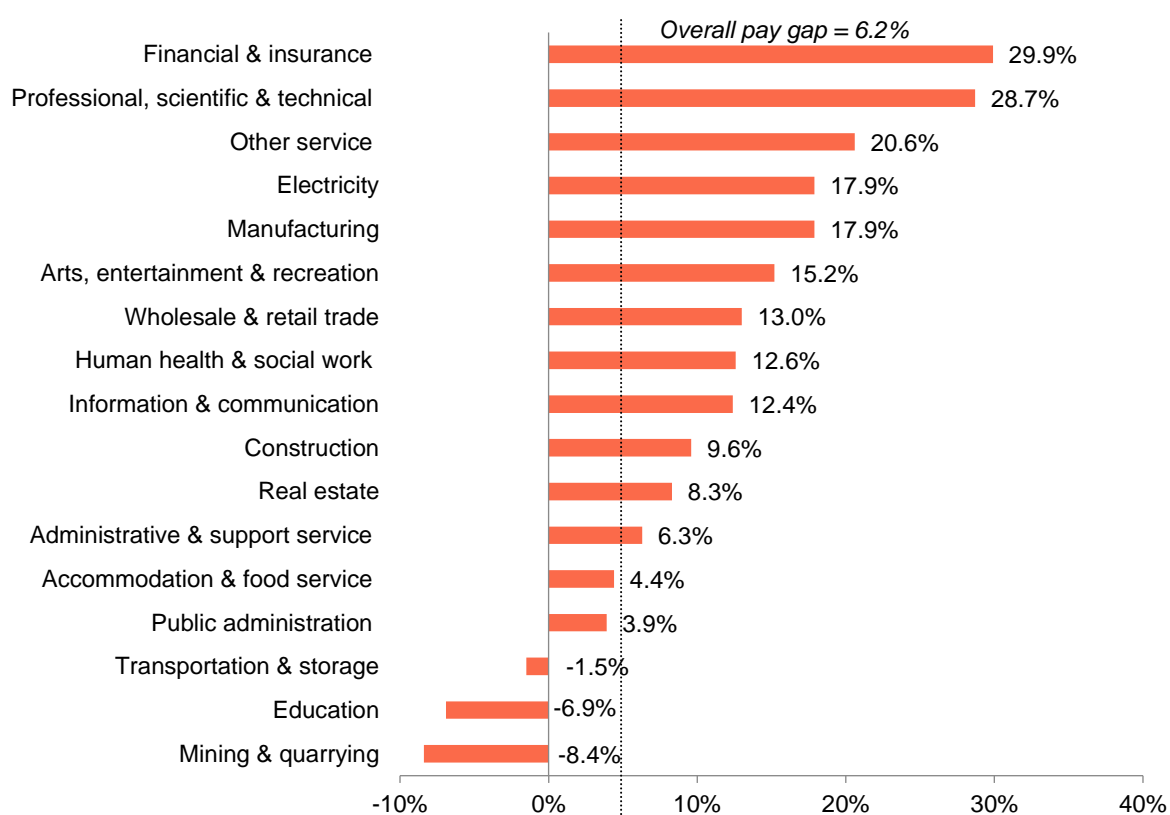
There has been a mixed performance in closing occupational pay gaps since 2011, the first year of the most recent and consistent time series data. While several occupational groups have recorded a decline in their pay gap over the period, there has been a notable lack of progress for 'managers, directors & senior officials' (one of the highest paid groups). There has also been an increase in the gender pay gap for 'caring, leisure & other service occupations', an area where there is a high proportion of women workers – both full time (as used in this analysis) and in part-time employment.

In fact, gender pay gaps exist in the overwhelming majority of sectors, as illustrated in Figure 7. The most pronounced pay gaps are in the financial & insurance and professional & scientific sectors (29.9 percent and 28.7 percent respectively) as well as the energy and manufacturing sectors (each 17.9 percent). Some public sector focused sectors, such as public administration and education, have lesser pay gaps (or even negative pay gaps), though health & social work still has a substantial pay gap (12.6 percent).

Figure 6: Gender pay gap, by occupation and percentage point change (ranked by 2016 pay gap), Scotland, 2011-2016

Occupation	Gender Pay Gap		
	2011	2016	PP Change
Skilled trades	28.9%	29.3%	0.4%
Managers, directors & senior officials	18.5%	19.8%	1.3%
Process, plant & machine operatives	24.3%	15.7%	-8.6%
Elementary	16.4%	14.5%	-1.9%
Caring, leisure & other service	2.7%	9.7%	7.0%
Associate professional & technical	10.8%	9.1%	-1.7%
Administrative & secretarial	11.4%	9.1%	-2.3%
Sales & customer service	4.7%	6.3%	1.6%
Professional	6.0%	5.3%	-0.7%

Source: Annual Survey of Hours & Earnings, Office for National Statistics

Figure 7: Gender pay gap, by industry (ranked by 2016 pay gap), Scotland

Source: Annual Survey of Hours & Earnings, Office for National Statistics

Evidence suggests that industry pay gaps are largely due to each industry's occupational make-up²¹. Within most industries, women tend to be in the lower paid occupations. For example, in financial services women account for 76 percent of lower paid administrative and secretarial occupations and 56 percent of sales and customer services occupations (both lower paid), and less than 40 percent of managerial and professional occupations (both higher paid).

In summary, the evidence suggests that:

- the causes of pay gaps within occupations are likely to be due to the career disruptions of female workers plus some combination of other harder to measure factors such as discrimination and gender bias;
- it is a combination of women tending to be in lower paid occupations within each industry, plus women getting paid less than men within each occupation, that drives industry pay gaps;
- to address Scotland's gender pay gap two things need to happen. One, more women need to have the opportunity to be employed in higher paid occupations across all industries and, two, pay gaps within individual occupations need to be addressed.

5. Potential economic benefits of reducing Scotland's gender pay gap

Though often viewed as an issue of equality or fairness, the reduction or even elimination of Scotland's gender pay gap would deliver significant benefits to the Scottish economy. These potential economic benefits can be considered in three key areas.

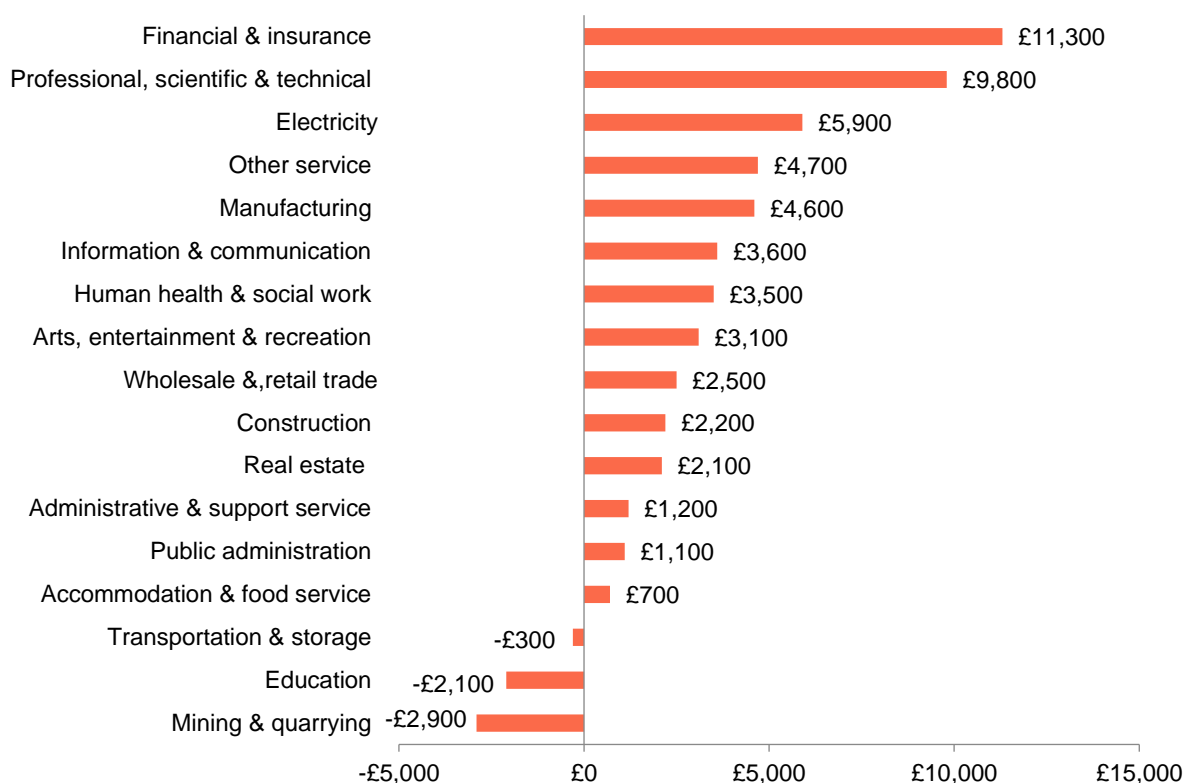
i. Increased consumer spending

At a very simple level, reducing or eliminating the gender pay gap by raising women's pay to that of men would generate additional spending in the Scottish economy²². Fully closing the full-time gender pay gap in Scotland would increase total female earnings by an estimated £1.9 billion per year²³, with women standing to gain up to £11,000 in earnings per year depending on the sector in which they work.

²¹ It is not currently possible to examine levels of full-time male and female occupational employment within industries in Annual Survey of Household Earnings (ASHE) data. However, the Annual Population Survey, while not allowing for the same delineation of working patterns or industry detail, does provide a good proxy and is shown in Appendix C.

²² This assumes reducing the pay gap by increasing female incomes rather than decreasing male incomes

²³ Based on full-time female workers receiving an hourly raise in each industry to bring earnings in line with men, and assuming a 35-hour workweek. Note - this is a highly conservative figure that only takes into consideration women currently employed full-time, so excludes part-time workers' pay gaps.

Figure 8: Potential increase in annual earnings, per woman from eliminating Scotland's gender pay gap, 2016

Source: Scottish Enterprise calculations; Annual Survey of Hours & Earnings, Office for National Statistics

ii. Easing of skills shortages

Gender pay differences may be reducing the supply of qualified female labour Scotland, contributing to recruitment challenges and skills gaps. Closing the gender pay gap may lead to a more efficient labour market in two ways.

First, raising the pay of women across occupations may encourage more women to enter the labour market and/or work more, or reduce the likelihood of them leaving the labour market. Many of Scotland's industries regularly report difficulty retaining staff²⁴, and there is evidence that female employees who believe they are fairly paid would be less likely to quit their jobs²⁵.

Second, companies who show a commitment to gender pay equality will be able to better address skills shortages with qualified female talent²⁶. The occupational groups with the highest

²⁴ *Employer Skills Survey 2015*, UKCES

²⁵ *Payscale's Compensation Best Practices Report* each year indicates that inadequate pay is the number one reason people leave an organisation

²⁶ In a 2015 survey of 1,000 UK employees, when trying to decide between two employers, more than half of female respondents would favour the company with the smallest pay gap or the one that is more proactive in closing it

density of skill-shortage vacancies in Scotland (skilled trades and machine operatives²⁷) are also the two most male-dominated and have high gender pay gaps. There is also evidence that a majority of women with science, technology, engineering and mathematics (STEM) qualifications in Scotland do not go on to work in STEM areas²⁸. Closing the gender pay gap can help companies that employ these occupations access *all* skills in the workforce²⁹.

iii. Enhanced employee engagement & diversity

Levels of employee engagement in the UK, and by implication Scotland, are relatively low compared to other countries. In a 2015 survey of 20 countries, the UK ranked only 12th in terms of employee engagement, below the global average³⁰.

There is strong evidence employees who believe that they are fairly paid are more engaged³¹. It follows, then, that closing Scotland's gender pay gap could result in a more engaged workforce. Businesses with high employee engagement are more productive, more profitable, more innovative and have significantly lower employee turnover and absenteeism³².

Reducing the pay gap may also improve gender diversity in some male-dominated sectors and companies, such as in manufacturing. There is a range of evidence that shows that a more gender balanced workforce is more innovative and productive³³.

6. Conclusions and policy implications

This paper has highlighted both the extent and negative consequences of Scotland's gender pay gap and that wage inequality is a barrier to economic and inclusive growth in Scotland. However, it also highlights the potential productivity and economic growth benefits of closing the gender pay gap, as well as equality benefits.

The evidence highlights that Scotland's overall pay gap is driven by a mix of the gender occupational make-up within sectors, and pay gaps within occupations caused by female career disruption and other harder to measure factors such as stereotyping and discrimination. The evidence also highlights that across many industries, women make up less than half of higher paying occupations.

Scottish Enterprise (SE) has supported efforts to reduce Scotland's gender pay gap. For example, SE is a long-standing advisory group member of **Close the Gap**, a charity focused on

²⁷ *Employer Skills Survey 2015*, UKCES

²⁸ *Tapping All Our Talents*, The Royal Society of Edinburgh, 2012

²⁹ This assumes there are sufficient women in the labor market with the desired skills

³⁰ *Global Perspectives 2015*, ORC International

³¹ *World at Work*, 2013

³² *Gallup*, 2016

³³ See for example *Women Matter*, McKinsey and *The Business Benefits of Gender Diversity*, Gallup 2014

female participation in the Scottish labour market. In addition, SE extensively promotes the **Scottish Business Pledge**³⁴, which helps to highlight the benefits of a balanced workforce, fairness and workforce engagement as well as adoption of the living wage.

The evidence presented in this paper lends support to these initiatives, and also provides for the exploration of additional policies and approaches that would help minimise the impact of career disruption and support women returning to work. These may include improving access to affordable childcare, as well as stronger incentives to encourage adoption of shared parental leave.

However, this paper also makes clear that the underlying causes of Scotland's gender pay gap are such that an appropriate response must also involve industry.

To address possible discrimination and gender bias, businesses can look to new UK gender pay reporting requirements³⁵ as a potential incentive to ensure that all employees are paid fairly and developed equally. Promoting flexible working options is also a key opportunity for businesses to fully leverage the talent of its female employees, and this should be accompanied by a revised performance management framework that is free from gender bias and that focuses increasingly on results and outcomes and less on physical presence in the workplace.

Initiatives such as SE's workplace innovation and organisational development programmes support companies to grow in a way that also helps close the gender pay gap and improve equality. Recent sector productivity plans for Food & Drink and Tourism have both included equality components, and Scotland's large finance sector (with the largest gender pay gap of any industry in Scotland and a sizable female workforce) may be an important area of future focus.

However, by establishing Scotland's gender pay gap as predominantly an *occupational* rather than simply a *sectoral* one, this paper also suggests that other approaches are necessary to tackling gender pay differences. The most impactful future interventions are likely to come from efforts to diversify and advance women's role in all workplaces across all occupations. Improved access to data surrounding the occupational distribution of women within industries will help build an appropriate evidence base by which policy interventions can be both measured and developed.

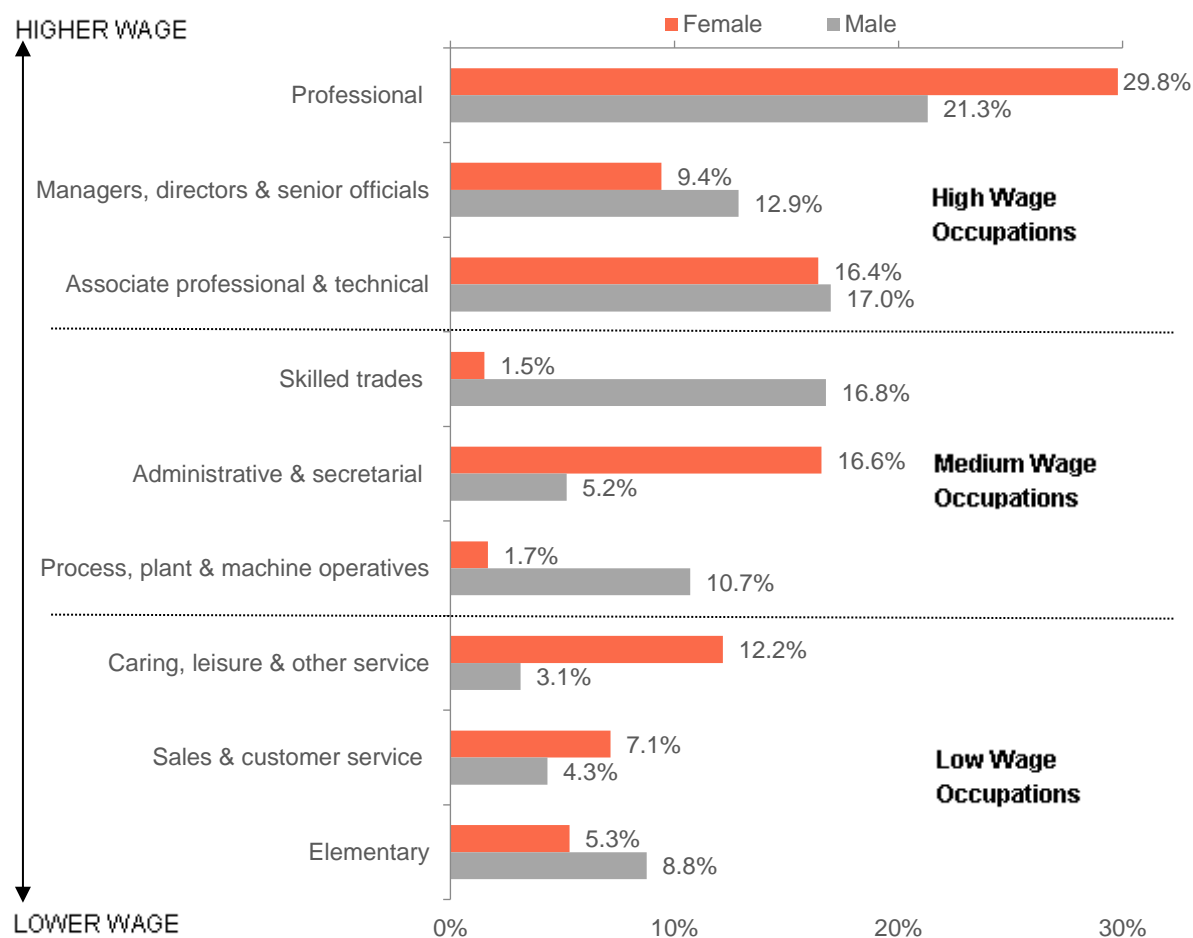
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³⁴ <https://scottishbusinesspledge.scot/>

³⁵ From 2017, UK businesses with 250 or more employees are required by law to report their pay gap

Appendix A: Occupational distribution by gender (% of male and female full-time employment), Scotland, 2016



Source: Annual Survey of Hours & Earnings, Office for National Statistics

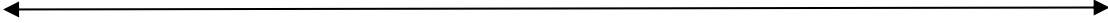
Appendix B: Gender pay gap by detailed occupation, Scotland, 2016

Occupation (descending wage order)	Employment (000s)	Employment Share	Female Employment Share	% of Employees Who Are Female	Pay Gap
Professional	393	24.8%	29.8%	49.9%	5.3%
Science, research, engineering and technology	97	6.1%	2.9%	19.6%	11.0%
Health	113	7.1%	12.3%	71.7%	17.2%
Teaching and educational	93	5.9%	9.0%	63.4%	4.2%
Business, media and public service	91	5.7%	5.6%	40.7%	2.2%
Managers, directors & senior officials	181	11.4%	9.4%	34.3%	19.8%
Corporate managers and directors	148	9.3%	7.0%	31.1%	19.7%
Other managers and proprietors	34	2.1%	2.4%	47.1%	12.0%
Associate professional & technical	265	16.7%	16.4%	40.8%	9.1%
Science, engineering and technology	56	3.5%	1.8%	21.4%	6.6%
Health and social care	26	1.6%	2.6%	65.4%	15.6%
Protective service	42	2.7%	1.7%	26.2%	-3.4%
Culture, media and sports	11	0.7%	0.6%	36.4%	7.8%
Business and public service	129	8.1%	9.6%	48.8%	12.2%
Skilled trades	165	10.4%	1.5%	6.1%	29.3%
Skilled agricultural	11	0.7%	0.2%	9.1%	8.9%
Skilled metal, electrical and electronic	88	5.6%	0.2%	1.1%	7.9%
Skilled construction and building	37	2.3%	0.0%	0.0%	21.4%
Textiles, printing and other	28	1.8%	1.1%	25.0%	4.0%
Administrative & secretarial	157	9.9%	16.6%	69.4%	9.1%
Administrative	134	8.5%	13.5%	66.4%	7.3%
Secretarial	23	1.5%	3.0%	87.0%	8.3%
Process, plant & machine operatives	110	6.9%	1.7%	10.0%	15.7%
Process, plant and machine operatives	50	3.2%	1.5%	20.0%	26.6%
Transport and mobile machine drivers	60	3.8%	0.3%	3.3%	-3.2%
Caring, leisure & other service	109	6.9%	12.2%	73.4%	9.7%
Caring personal service	85	5.4%	10.3%	80.0%	8.2%
Leisure, travel and related personal service	24	1.5%	1.8%	50.0%	15.9%
Sales & customer service	87	5.5%	7.1%	54.0%	6.3%
Sales	51	3.2%	3.8%	49.0%	9.1%
Customer service	37	2.3%	3.2%	56.8%	1.0%
Elementary	116	7.3%	5.3%	30.2%	14.5%
Elementary trades and related	29	1.8%	0.8%	17.2%	9.7%
Elementary administration and service	87	5.5%	4.6%	34.5%	15.2%

UK data used as proxy

Source: Annual Survey of Hours & Earnings, Office for National Statistics

Appendix C: Female share of occupational employment by industry, Scotland, 2016

HIGHER WAGE					LOWER WAGE				
									
Industry	Prof	Managers, directors & senior officials	Associate prof	Skilled trades	Admin & secretarial	Process, plant & machine operatives	Caring, leisure & other service	Sales & customer service	Elementary
Agricuture & fishing	N/A	22.0%	N/A	8.5%	86.1%	N/A	N/A	N/A	17.3%
Energy & water	10.4%	15.8%	28.3%	N/A	71.4%	N/A	N/A	51.6%	11.8%
Manufacturing	20.2%	24.9%	30.6%	9.7%	71.7%	20.8%	N/A	41.7%	28.3%
Construction	10.8%	16.8%	27.2%	1.3%	91.5%	N/A	N/A	N/A	5.6%
Distribution, hotels & restaurants	43.9%	40.2%	45.1%	22.4%	73.1%	15.5%	79.2%	68.6%	54.3%
Transport & communication	19.2%	32.5%	32.7%	8.2%	71.3%	3.7%	76.2%	77.7%	21.2%
Banking finance & insurance	35.3%	39.3%	45.3%	8.8%	76.2%	11.7%	63.5%	56.6%	46.8%
Public admin,education & health	70.6%	54.3%	54.0%	39.7%	82.2%	12.3%	84.3%	60.6%	63.3%
Other services	40.8%	49.2%	48.1%	18.8%	74.7%	N/A	72.2%	79.7%	55.9%

N/A - data unavailable

Source: Annual Population Survey, Office for National Statistics

Self-employment in Scotland: trends and its implications for productivity

Kenny Richmond and Jonathan Slow, Scottish Enterprise¹

Abstract

Self-employment in Scotland has grown significantly in recent years, faster than in many other countries. It has accounted for almost half of overall employment growth over the past decade and over 80% of the growth in the number of businesses in Scotland. Self-employment in Scotland, however, accounts for just over 1 in 10 jobs, lower than in many other countries. This paper outlines recent trends in the growth in self-employment in Scotland, summarises the likely reasons, highlights the characteristics of the self-employed and considers the implications for productivity and economic growth. It notes that productivity levels of self-employed businesses are significantly lower than larger businesses, as are earnings of the self-employed vis-à-vis employees. The fast growth in the number of low productivity, self-employed businesses in Scotland may, in part, explain Scotland's overall mediocre productivity performance.

1. Introduction

Self-employment has increased significantly over recent years in Scotland, and has contributed to almost half of total employment growth. This paper outlines recent trends in the growth in self-employment, summarises the likely reasons, highlights the characteristics of the self-employed in Scotland and considers the implications for productivity and inclusive growth².

2. Trends in self-employment

The number of people classified as self-employed in Scotland has risen from 242,500 in 2005 to 304,400 in 2016³ (+26%). The rate of growth, however, has been lower than in the UK as a whole (+29%). Self-employment in Scotland now accounts for 11.8% of all employment, again lower than the UK rate of 14.9%. Over the period 2005-2016, total employment in Scotland rose by 137,000 or 5.6%, with almost half of this (45%) accounted for by the growth in self-employment.

Compared to other countries, Scotland has a lower self-employment rate; however, it has one of the highest rates of growth in self-employment.⁴

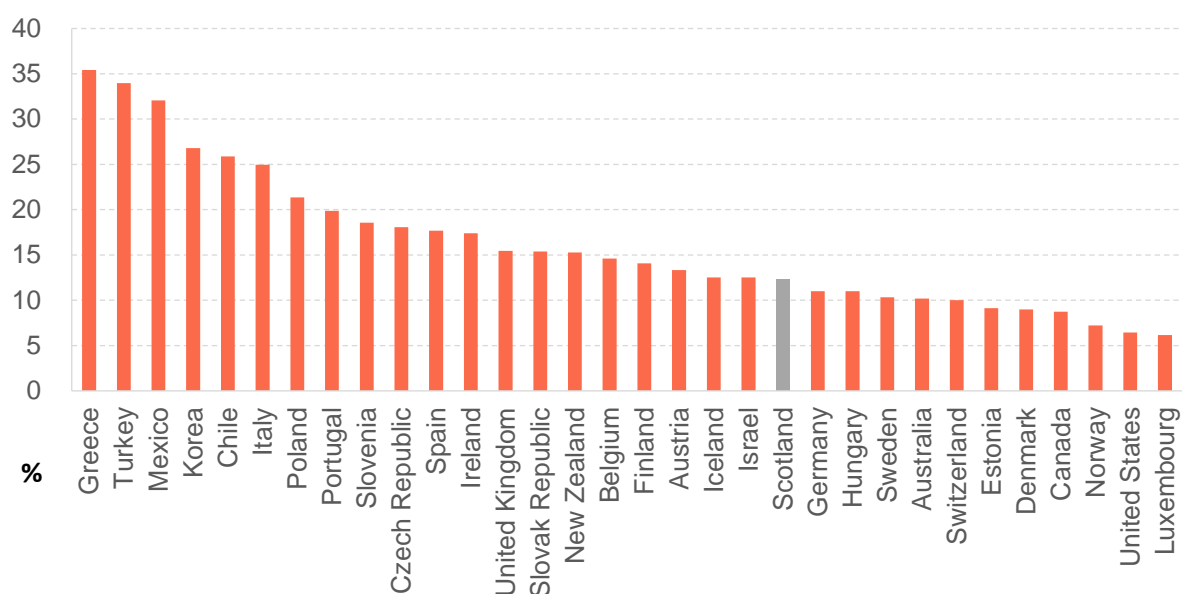
¹ *Scottish Enterprise* is Scotland's main economic development agency

² *There is a large body of research on self-employment and this paper is not intended to be exhaustive overview or analysis.*

³ *Source: Annual Population Survey (for the 12 months to June each year)*

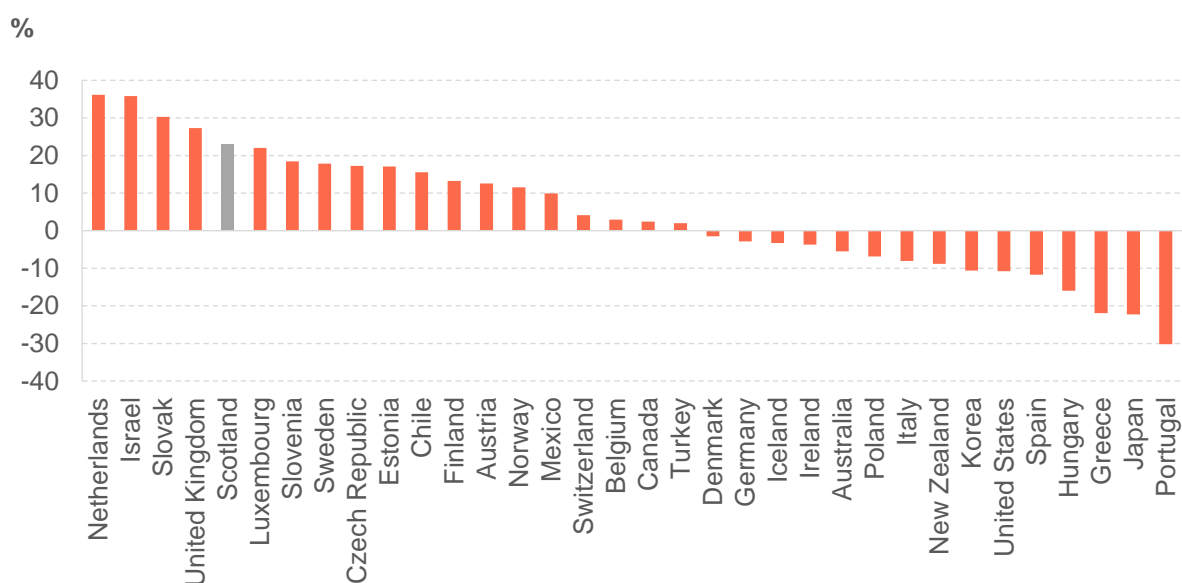
⁴ *2014 is the latest available data for OECD countries.*

Figure 1: Percentage in employment who are self-employed, OECD countries, 2014



Source: ONS, OECD

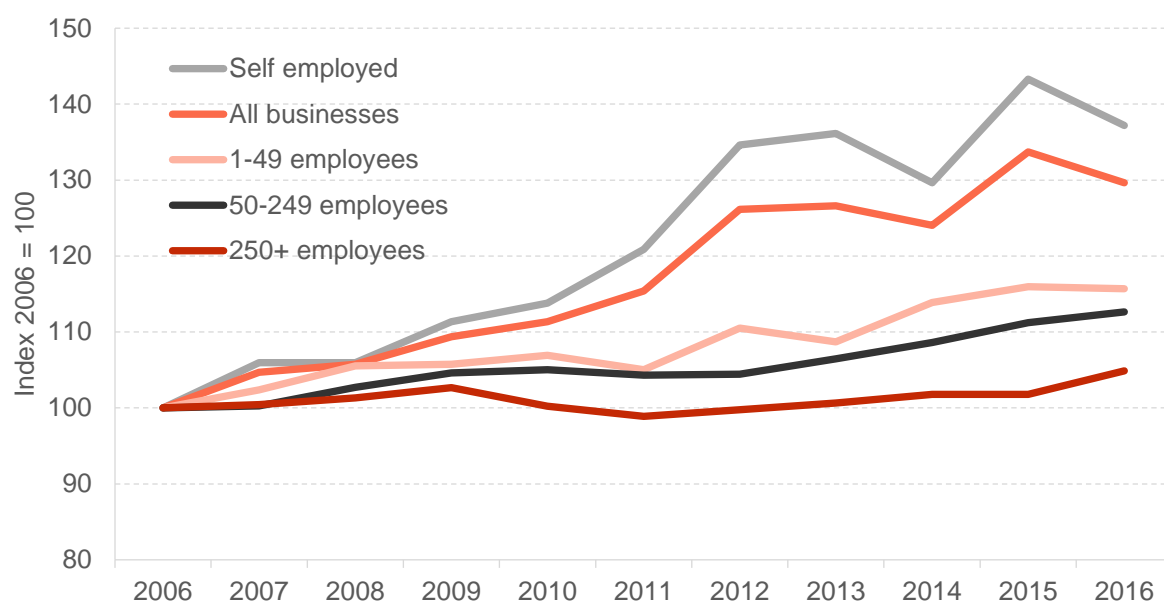
Figure 2: Percentage change in number of self-employed, OECD, 2005-2014



Source: ONS, OECD

The growth in self-employment has boosted the number of businesses in Scotland over the past decade, with the total number rising by 30% from 270,250 to 350,410 (+80,160). Self-employed businesses accounted for 82% of this rise (+65,950).

Figure 3: Growth in the number of businesses in Scotland, index 2006 = 100



Source: Scottish Government

3. Reasons for the growth in self-employment in Scotland

Self-employment can take a number of forms, including:

- owning or running a business (which could be described ‘genuine entrepreneurship’⁵)
- working for multiple businesses often via short term contracts (sometimes described as the freelance or ‘gig economy’)
- working for a single business as a self-employed contractor.

Most self-employed people in the UK consider themselves as running a business (around 65%), with 20% doing freelance work and around 10% stating they are contractors⁶. A similar pattern is likely for Scotland.

What is the ‘gig economy’?

The ‘gig economy’ has received a lot of coverage recently. The Work Foundation defines it as: *“the economic sector consisting of freelance workers who survive by taking on a series of small jobs, particularly when those jobs are arranged using a website or app”*⁷.

⁵ For example see Department for Business, Energy & Industrial Strategy ‘Business Population Estimates For The UK And Regions, 2016 Methodology Note P5’ and Self-employment, Small Firms and Enterprise, Institute of Economic Affairs, (2011)

⁶ Understanding self-employment, UK Government (2015)

⁷ ‘In search of the gig economy’ Work Foundation (2016)

The gig economy can also be defined as 'portfolio working', where people work on a number of different projects for different organisations, sometimes combining this with other more formal employment⁸.

The gig economy includes workers across a range of skills levels, for example web and software designers (higher skilled); construction workers (medium skilled); and delivery/taxi drivers and personal services (lower skilled).

Being self-employed can often be by choice (proactive); for example, identifying a market opportunity to provide goods/services; choosing to work as a contractor for another business due to the benefits of flexibility; or, as a way to supplement income.

However, self-employment can also be through 'necessity' (reactive or imposed); for example, if there are no other 'suitable' employment opportunities available (in terms of job type or job flexibility), or if an employer changes its business model to outsource functions and re-hires former employees as self-employed contractors⁹.

Data from ONS show that the proactive reasons for self-employment (e.g. identifying a market opportunity, moving to a chosen career or for better work conditions or job satisfaction) outweigh the reactive or imposed (e.g. redundancy or could not find other employment) across all age groups¹⁰.

Similarly, UK Government research reported that 87% of people surveyed stated positive reasons as their motivation for becoming self-employed, with the most frequently cited reason being the freedom, flexibility and independence of being self-employed compared to working for someone else¹¹.

Research at the UK level – and it is assumed to be the same for Scotland - shows that¹²:

- self-employed workers are broadly content with their labour market status;
- the main reported benefits of being self-employed are increased flexibility over working patterns, independence, and job satisfaction - the main motivations are opportunity-based, not financial
- many expect to be in self-employment in three years' time;

⁸ *What does the gig economy mean for HR? Personnel Today*

⁹ See *'Independent work: choice, necessity and the gig economy'*, (McKinsey) for a discussion

¹⁰ *Trends in Self Employment in the UK: 2001-2015 ONS (2016)*

¹¹ See *Self Employment Review BIS (2016)*

¹² ONS (2016) *'Trends in self employment in the UK 2001-2015'* and ERC (2016) *'Understanding self employment – a report from a seminar held at Middlesex University Business School'*

- very few have any ambition to be employers or significantly increase the scale of their operations (86% of Scottish self-employed people in 2015 did *not* expect to recruit over the next year¹³);
- there is little evidence that large numbers want to stop being self-employed; less than a fifth planned to leave in the next three years and, of these, for over half they wished to simply retire;
- most of the self-employed feel their lives are 'better off' overall compared to being an employee, and half believe they are better off financially (although evidence shows earnings are significantly lower relative to larger businesses).

Overall, therefore, it seems that self-employment is viewed as a 'positive choice' by most, despite relatively low incomes; people appear to value independence and flexibility over financial returns.

4. Possible drivers for self-employment

There are a variety of reasons for and drivers of the growth in self-employment¹⁴:

The economic cycle - difficulties in finding a job has pushed some unemployed workers to become self-employed, and low wage growth has led to some people choosing self-employment as a way to supplement household income.

Less stable working arrangements for employees - following the financial crash, many businesses have been forced to make organisational changes and cut-backs through redundancies, freezing pay and offering less financial rewards to employees. This, combined with the increase in other workplace practices such as zero hours contracts, have likely led some to view working for an employer as less stable or advantageous. In such circumstances, self-employment becomes more attractive.

Demographics – in many developed economies the population is ageing, and older workers are more likely to be self-employed than younger ones (perhaps as they have more knowledge, funding or experience to start businesses¹⁵). Wealth losses following the financial crisis (for example, lower pension values) may have led to some older self-employed workers to choose to work longer, and older employees postponing retirement from the labour market and becoming self-employed in order to boost their retirement income. Some older employees are also

¹³ Source: *Small Business Survey*, UK Government

¹⁴ See for example *Self-employment: what can we learn from recent developments?* Bank of England (2015); *The self-employment boom: Key issues for the 2015 Parliament*; UK Parliament 2015, *Trends in Self Employment in the UK: 2001-2015* ONS (2016)

¹⁵ See for example *Going solo Does self-employment offer a solution to youth unemployment?*, The Work Foundation

choosing to continue work through self-employment beyond retirement due to better health and/or a simple wish to work.

Flexibility, particularly for female workers – the choice of self-employment to seek more flexibility is a key driver in the rise of self employment. Women tend to take on the majority of family caring responsibilities, and self employment offers the opportunity to work around these obligations. Self-employment also allows highly trained female workers to retain their skills without dropping out of the labour market completely, until such times as they are able to re-enter should they wish to do so.

Autonomy – increasingly, workers are not solely driven by financial incentives, and other factors such as independence and autonomy are becoming more important. In essence, more people want to 'be their own boss'.

Changing business models – some companies have been seeking to reduce their labour costs by using consultants and contractors to deliver services (outsourcing) rather than employing people directly. This has increased the market opportunities for self employment.

Technology – in recent years it has become easier and less costly to start a business. The costs of IT equipment have fallen substantially, while the use of the internet and social media has expanded, making it easier and less costly for self-employed businesses to advertise and market. New online 'apps' (such as Uber and Deliveroo) make it easier to access customers. Also, the growing use of online procurement marketplaces by companies allows self-employed people to more easily bid for contracts.

The significant rise in self-employment in Scotland is likely due to a combination of the factors above, although there is no specific research available that has considered in detail which may be the most important. However, as is discussed in the next section, most of the growth of self-employment in Scotland is by females, and by males and females aged over 65. This suggests that demographics, a desire for greater flexibility, and becoming self-employment to boost household income may be the key drivers.

5. Characteristics of self-employment in Scotland: gender, place and sectors

Key characteristics of self employment in Scotland include:

- Women have accounted for 70% of the growth in the number of self-employed (+29,400) in Scotland since 2006, although they still only account for around one third of all self-employed

- People aged 65+ accounted for 20% of the increase (+16,300), although still account for just 10% of all self-employed.
- Rural areas tend to have higher self-employment rates, for example around 20% of people in employment in Scottish Borders and Dumfries & Galloway are self-employed compared to 12% for Scotland as a whole. This is likely due to a high level of self-employment in agriculture.

Potential reasons for the significant growth in female self-employment include:

- Increasing overall female participation rates¹⁶
- (as discussed in the previous section) self-employment allows women greater flexibility (e.g. to work around care responsibilities) and an opportunity to increase household incomes
- the growth in opportunities in parts of the service sector that are more suited to flexible working (e.g. childminding and personal services)¹⁷.

Figure 4: Self employment in Scotland by age and gender (2016)

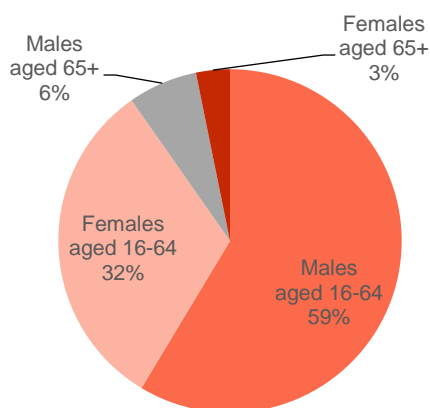
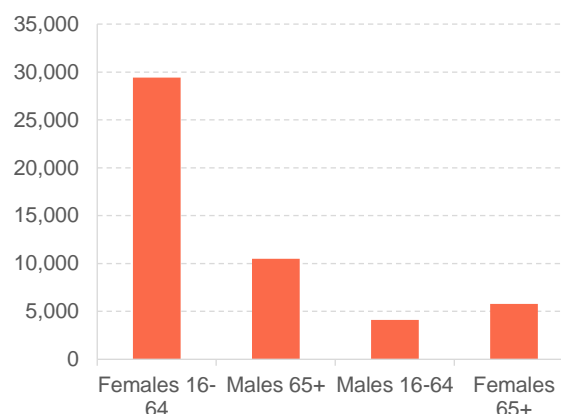


Figure 5: Growth in the number of self employed in Scotland by age and gender (2006-2016)



Source: Annual Population Survey

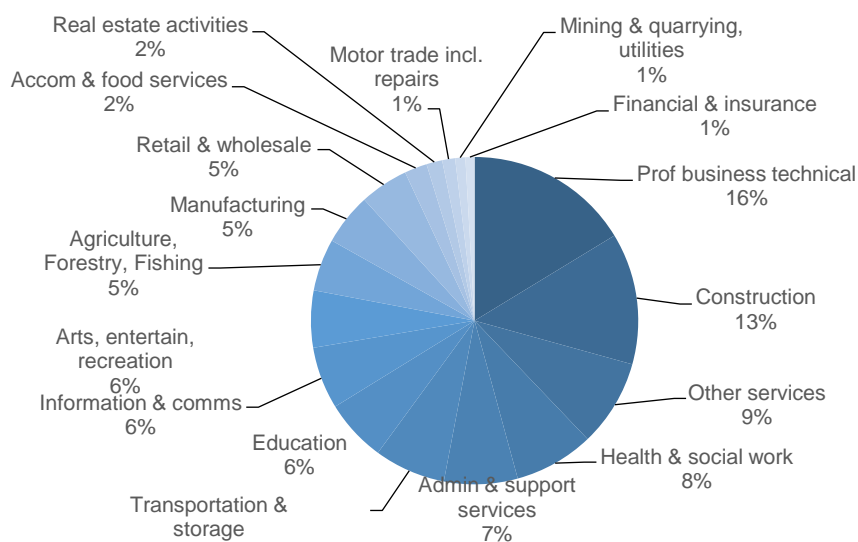
The two largest sectors for self-employment are 'Professional business & technical' (which include business and management consultants) and Construction. Since 2010, the fastest

¹⁶ Over the same period male rates have decreased

¹⁷ The top three occupations for self-employed women are cleaners, childminders and hairdressers/barbers
http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171776_374941.pdf

growing sectors for self-employment have been Professional business & technical (+13,420); Other services (+7,030); and, Information/communication activities (+5,910).

Figure 6: Self-employed businesses in Scotland, by sector, 2016 (%)

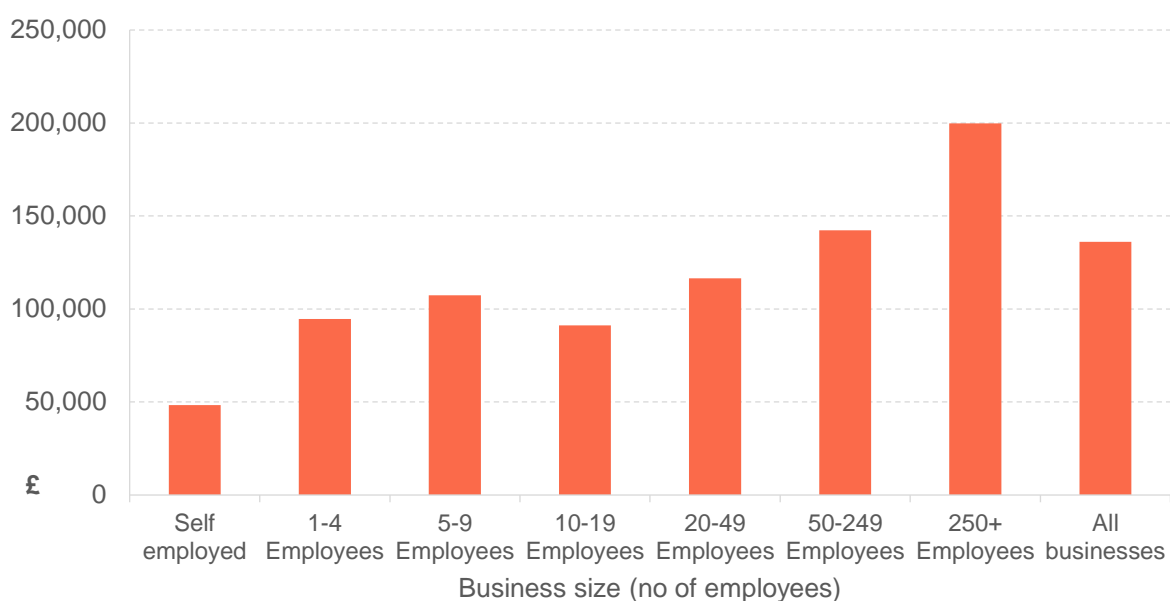


Source: Scottish Government

The growth in the 'Professional business & technical' and 'Information communications' sectors is likely to be largely driven by consultants, freelancers and self-employed contractors. Growth of self employment in 'Other services', which includes activities such as hairdressing & beauty treatment, fitness & wellbeing and repair services, is likely to be driven by low cost of setting up businesses (for example in terms of required equipment), and that the types of activities are suitable for flexible working. It is also worth noting the emergence of 'new' sectors and jobs, for examples digital marketing specialists and data managers, which, because they can be undertaken from home, may be accessible to self-employed people.

6. Impact of the growth in self-employment on Scottish productivity

On average, self-employed businesses have significantly lower levels of productivity than businesses with employees (as measured by turnover per employee), and this is true for all sectors, bar wholesale. Self-employment productivity varies significantly from a high of £148,000 per employee in wholesale to a low of £22,500 in education.

Figure 8: Turnover per employee (£), by business size, Scotland 2016

Source: Scottish Government

Low productivity may reflect that the self-employed do not benefit – generally - from ‘economies of scale’ as do larger businesses. Also, self-employed people may generate less output if a significant amount of time is spent ‘pitching’ for work.

In addition, evidence shows that self-employed businesses perform slightly less well on the key drivers of productivity, such as innovation, internationalisation and significantly worse in terms of capital investment, as compared to businesses with employees.

Figure 9: Scottish self-employed business performance, by drivers of productivity (2015)

	Self employed businesses	Businesses with employees
Innovation: % introducing any new or significantly improved	43%	47%
Internationalisation: % exporting goods or services	10%	12%
Investment: % planning capital investment over the next 3 years	31%	45%

Source: Small Business Survey

Low productivity levels in self-employed businesses are reflected in lower earnings. For the UK as a whole, the median annual gross earnings of self-employed people was £12,200 in 2014/15, considerably lower than that for employees (£20,450), and it is likely that the situation is similar in

Scotland¹⁸. Research suggests that hourly earnings of almost half of self-employed people are below the level of the National Living Wage¹⁹ (which does not cover the self-employed).

At the UK level, median annual earnings (in real terms) from self-employment have declined by 16% since 2007/08, much faster than for employees (-10%)²⁰. The reasons for this are unclear, but it could be due to the growth.

6. Conclusions and implications for Scotland

Self-employment has been growing strongly in recent years, accounting for almost half of Scotland's overall employment growth since 2005, and for most of the increase in the number of businesses. The self-employed, however, still constitute a low proportion of overall total employment in Scotland.

There are a range of drivers for this increase in self-employment, including the economic environment, demographics, technology and changing business models of employers.

The average productivity level of self-employed businesses is significantly lower than larger ones, likely due to a lack of 'economies of scale', and due to weaker performance on a number of drivers of productivity such as innovation, internationalisation and especially investment. It is not possible to assess whether there are productivity benefits to businesses that use self-employed workers (e.g. through contractors), and this could be an area for future research.

Lower earnings amongst the self-employed are likely to reflect lower productivity as well as the strong growth in *part-time* self-employment. Notwithstanding this, most self-employed people are content with their working status, including their financial status and reward.

It is likely that the relatively slow growth in Scotland's productivity in recent years is in (small) part due to the increase in self-employment. It is not possible, however, due to data availability to estimate the specific contribution of self-employment growth to weak productivity growth as compared to other factors such as innovation, investment, internationalisation and management practices²¹.

A key challenge is whether the productivity levels, and therefore the earnings, of self-employed people can be increased. Potential ways include raising the awareness of the benefits of:

¹⁸ *Family Resources Survey (DWP)* Scottish data not available.

¹⁹ *Tough gig: Low paid self-employment in London and the UK*, Social Market Foundation (2016)

²⁰ *The income of the self-employed*, Department of Business, Innovation and Skills (2016)

²¹ *Other reasons for Scotland's relatively low productivity growth are discussed in the Scottish Enterprise paper 'Scotland's productivity performance: latest data and insights'.*

- investing in developing the skills needed to run and grow a successful self-employed business (including how to market and bid for contracts)
- using the right technology, for example to market services, sell online, bid for contracts etc.
- collaborative working with others as part of a consortium (for example, to bid for larger contracts and achieve economies of scale)²².

For businesses that use the self-employed as contractors or consultants, adopting 'fair work' practices (e.g. not using exploitative zero hours contracts and offering a safe and supporting working environment etc.) can provide productivity gains for both the business and the contractor, for example in terms of greater engagement and motivation to provide value-added services.

Also, raising the ambition of more self-employed people to grow their businesses and become employers is a further potential way to help boost Scotland's productivity.

However, a significant number of people choose self-employment for lifestyle reasons (e.g. to maintain or increase income or as a job after retirement from full time employment). In these circumstance, they may not have the motivation, ambition or incentive to significantly invest in productivity-enhancing activities or to grow their business and become employers.

To develop further our understanding of the current and future implications of the growth in self-employment, there are a number of areas for potential research. These include:

- developing a better understanding of the potential to increase the productivity of self-employed workers in different sectors, and the policies and levers required to achieve this;
- whether and how the ambitions and skills of 'lifestyle self-employed' can be raised to encourage productivity growth;
- the scale, nature and implications of future self-employment growth, taking into account trends such changing demography (aging population), technology developments (including the further roll-out of broadband), and increased automation (and the opportunities this may provide); and
- the degree to which the prevalence of business models that drive self-employment (such as Uber) will increase and become more common in different sectors, and their productivity implications.

²² See for example *Co-operative Development Scotland*

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