



University of
Strathclyde
Business
School

Fraser of Allander Institute

Economic Commentary

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Vol 42 No 1

Foreword

As the financial year draws to a close, it is a good time to reflect on Scotland's economic performance over the past twelve months and perhaps more so, to consider the significant challenges that lie ahead.

Little has changed since December's Fraser Economic Commentary on Scotland's economic performance; there is growth, but the pace is slow with little expectation it will accelerate at any significant rate over the coming three years. As has been well established, increasing productivity has been, and remains, one of Scotland's key economic challenges.

As a relatively small and open economy, we must continue to strive to be agile and adaptable if we are to improve on our growth rate. We should seek to react positively and assertively to both the internal and external influences that shape our economy and look to seize new opportunities as they present themselves.

The biggest and most complicated challenge we face in the immediate term is Brexit. The 21 month 'status quo' transition period, whilst a welcome development for business, is still dependent on agreement being reached on the UK's withdrawal. This is not guaranteed – with a resolution still needed on the Irish border and definition on the role of the EU courts. Given the scale and complexity of some of the business issues related

to Brexit, it would be prudent for those businesses which have started to continue with their Brexit planning and for those who have not, to start now. This should help to ensure they are prepared for a range of potential outcomes. Time is short.

The final framework for Brexit has the potential to have a profound impact on many of Scotland's industries and sectors, and that impact should not be underestimated. In a year, we will leave the European Union and, on the current timetable, at the end of December 2020 we will be out of the transition period. As an illustration of the changes to come, EU Free Trade Agreements with as many as 50 countries from which we currently benefit, will no longer be available. At this stage we do not know what they will be replaced by or when.

Scotland has a robust economy and this is a challenge we can rise to under the right business environment and with the right mind-set. There are a range of steps businesses can take to prepare for Brexit effectively so they are well positioned to respond whatever the outcome. There will be opportunities and businesses need to be ready to seize them.

John Macintosh
Tax Partner
Deloitte

March 2018

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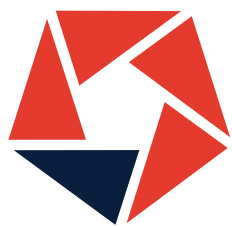
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For regular analysis on the Scottish economy and public finances please see our blog

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Summary

The Scottish economy continues to grow, but it does so at a slow pace.

Indeed, output per head in Scotland is now smaller than it was back at the start of 2015.

The key explanation for this had been the downturn in the oil and gas sector. But in recent months, there are signs that activity in the North Sea – and its supply chain – has been recovering.

Instead, it has been sluggish growth in services and a sharp decline in construction output that has acted as the brake on Scotland's economy.

Looking ahead, most indicators of business sentiment and consumer confidence suggest little possibility of a strong bounce-back in economic prospects in the near-term.

Despite this backdrop, employment and unemployment continue to perform much better than expectations. But as a result, productivity continues to be squeezed. Output per hour worked is now back at 2010 levels.

The global economy should provide a boost to growth prospects in 2018, with most of Scotland's major trading partners expected to have a strong year. Recent data suggests that Scottish exports have grown relatively strongly in 2017.

All things considered, our forecasts remain broadly the same as they were in December, with output expected to pick up this year and next.

Brexit remains the biggest challenge on the horizon. As we have argued on a number of occasions, we believe that the decision to leave the EU will damage Scotland's long-term growth prospects.

But like it or not, Brexit is happening.

Whilst it will be some time yet before we know the exact details of the UK's future economic relationship with the EU, this cannot be used as justification not to undertake appropriate preparatory and planning work.

Scotland has a strong and prosperous economy and this will continue no matter the constitutional structure. So businesses need to work now, not just on their vulnerabilities to different Brexit outcomes, but to seek new opportunities both at home and abroad.

There is arguably much more that both the Scottish and UK Governments could do to help businesses prepare for Brexit. Providing this support should not be viewed as inconsistent with Ministers' different political standpoints.

Finally, we argue that the scale of the challenge presented by Brexit – coupled with wider structural changes in our economy such as technological and demographic change – means that effective economic policymaking is more important than ever.

In 2007, the Scottish Government set out a new approach to policy centred upon a single economic strategy upon which all public sector initiatives were to align behind.

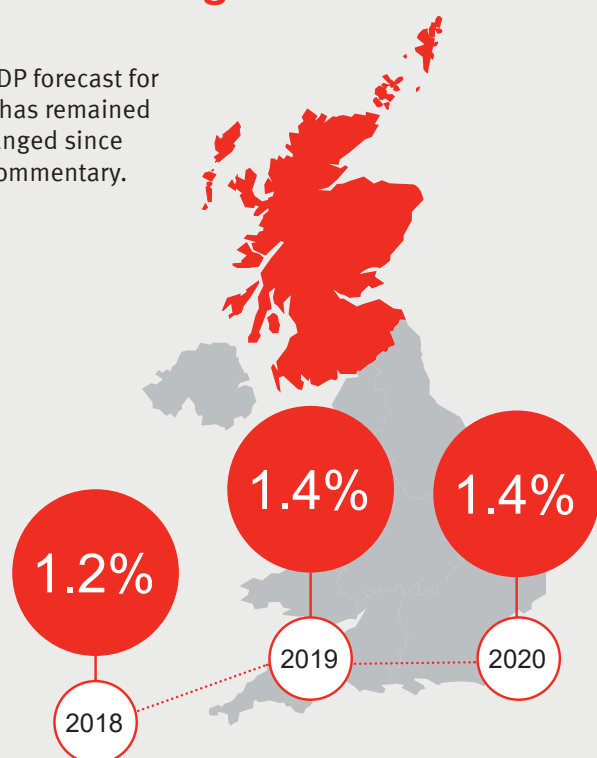
But over the past decade, this clarity of focus and delivery has arguably been lost, with a myriad of different strategies, advisory groups and bodies now cluttering the landscape.

With Brexit likely to test the resilience of the economy, rediscovering a single unified vision for economic policy might just be the most significant – and effective – step the Scottish Government could take in 2018.

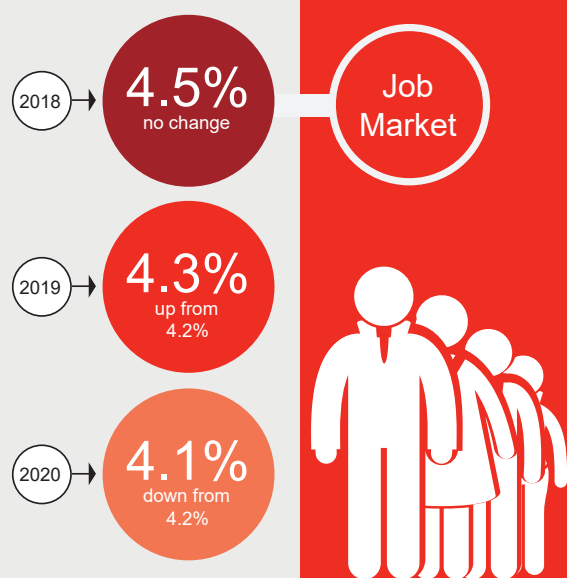
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Scottish GDP growth forecast

Our GDP forecast for 2018 has remained unchanged since last Commentary.



Unemployment forecast



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At a glance

Chart: Scottish growth (since 2013) – year and quarter

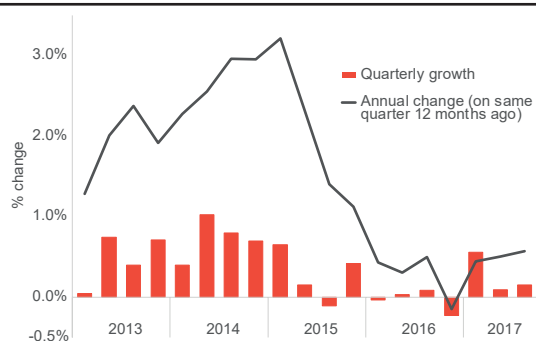


Chart: Scottish employment & unemployment rate, 2012 – 2018

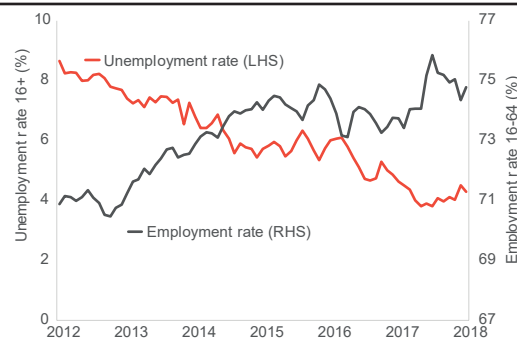


Chart: FAI forecast Scottish economic growth range

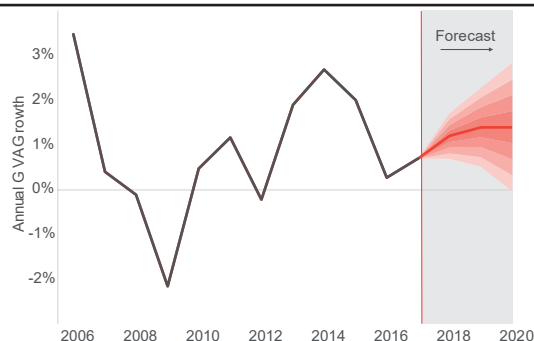


Table: FAI forecast Scottish economic growth (%), 2018 – 2020

	2018	2019	2020
GVA	1.2	1.4	1.4
Production	1.4	1.6	1.9
Construction	0.7	0.8	0.6
Services	1.1	1.3	1.4

Outlook and Appraisal

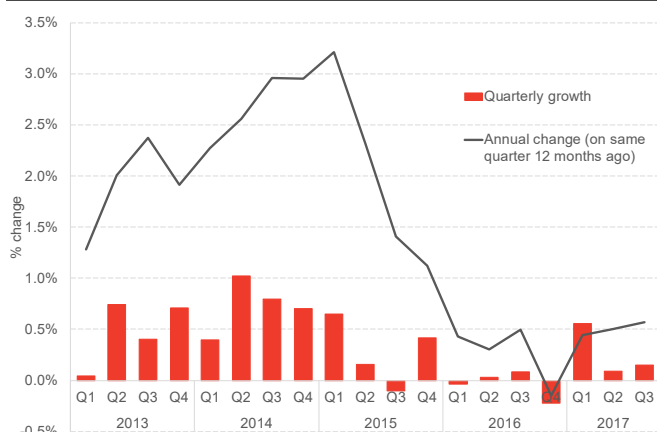
The latest data on Scotland's economic performance continue to paint a weak picture, with growth still lagging behind the UK as a whole. But unpicking the data, we see that – with the exception of the construction sector – growth is actually stronger in many key sectors than the headline figures suggest. We predict that growth will pick-up in 2018 and 2019. However, Brexit continues to dominate the medium term outlook. In such times, a clarity of purpose and alignment in the policy process is crucial.

Table 1: Scottish growth (%) by sector, Q3 2017

	GDP	Agriculture	Production	Construction	Services
Q3	0.2	0.7	1.2	-2.9	0.2
UK	0.4	0.8	1.3	-0.5	0.4
Annual	0.6	1.2	2.6	-7.5	0.9
UK	1.7	0.6	2.4	4.8	1.4

SOURCE: Scottish Government

Chart 1: Scottish growth (since 2013) – year and quarter



SOURCE: Scottish Government

Table 2: Labour market headline statistics, change on same quarter year before, November 2017 – January 2018

	Employment (16-64)		Unemployment (16+)	
	Rate (%)	Year Change	Rate (%)	Year Change
Scotland	78.1%	▲	4.3%	▼
England	79.2%	▲	4.3%	▼
Wales	76.4%	▼	4.8%	▼
N. Ireland	72.2%	▲	3.2%	▲
UK	75.3%	▲	4.3%	▼

SOURCE: ONS, Labour Force Survey

Introduction

The latest data continues to show that whilst the Scottish economy is growing, it continues to do so at a relatively slow pace.

On an annual basis, growth of 0.6% is well below both Scotland's long-term trend and the 1.7% rate of growth in the UK as a whole. (Table 1)

As Chart 1 highlights, the Scottish economy has been in a cycle of low growth for over two years now. Indeed, GDP per head is now *lower* than it was back in Q1 2015.

As we discuss in the report, it is increasingly clear that the downturn in oil and gas is not the only reason for this weak performance.

More recent indicators – including surveys and our own nowcasts – suggest that business activity continues to pick up. But expectations for future growth remain weak.

Despite this, unemployment fell by 9,000 over the year. That being said, there are signs of some weakening with employment falling by 8,000 over the 3-months to Feb 2018. (Table 2)

On the one hand, the increasing strength of the global economy should offer a boost to growth over this year and next. But on the other, Brexit continues to cast a shadow over the outlook.

It is vitally important that businesses and policymakers prepare for Brexit, and for all possible outcomes of the negotiations.

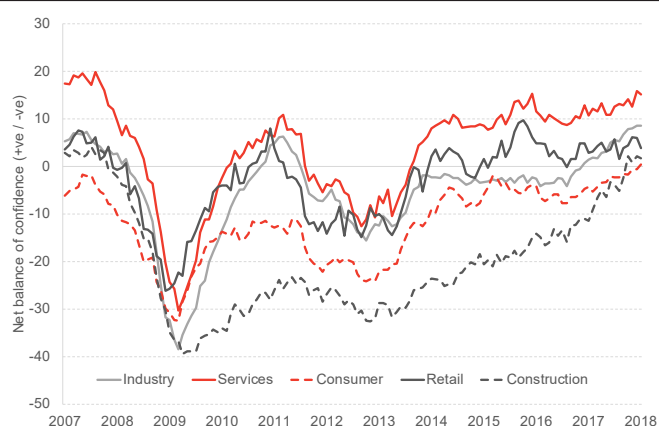
Table 3: OECD forecasts for G7 growth to 2019

	2017	2018	2019
UK	1.7*	1.2	1.1
US	2.2	2.5	2.1
Japan	1.5	1.2	1.0
Canada	3.0	2.1	1.9
Euro Area	2.4	2.2	1.9
Germany	2.5	2.3	1.9
France	1.8	1.8	1.7
Italy	1.6	1.5	1.3

* Actual.

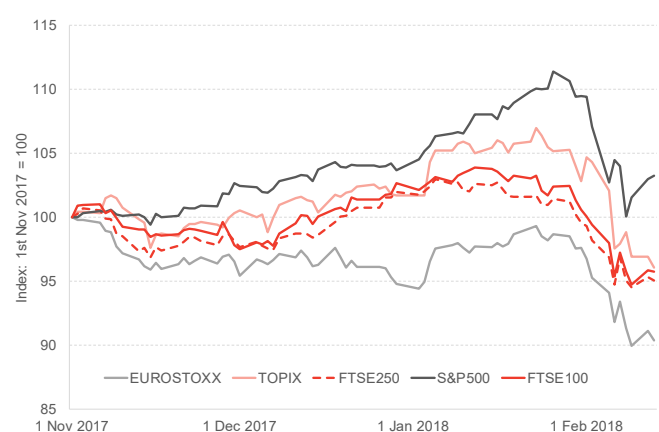
SOURCE: OECD

Chart 2: Market confidence in EU – highest since Euro crisis



SOURCE: European Commission

Chart 3: Stock market performance since November 2017



SOURCE: OBR

The global economy

Global economic activity remains relatively buoyant.

World economic output is estimated to have grown by 3.7% in 2017 – half a percentage point higher than in 2016.

The IMF estimate that some 120 economies, accounting for 3/4 of world GDP, have seen an increase in growth in 2017. This is the most synchronised upswing since 2010.

Recent indicators point to this expansion continuing into 2018 and 2019 – albeit perhaps not at the same (above trend) rate. (Table 3)

The US economy continues to perform strongly, supported by recent tax reforms.

And as discussed in December's Commentary, one particular bright spot has been the turnaround in the European economy over the past year.

Expected Euro Area growth in 2017 of 2.4% is the fastest since 2010 and employment is now back above its pre-crisis level.

Confidence is improving across all sectors of the European economy. (Chart 2)

Despite this positive outlook, global stock markets have been volatile. Following a year of gains, early February saw a sharp sell-off in assets. For example, the Dow Jones fell 10%. (Chart 3)

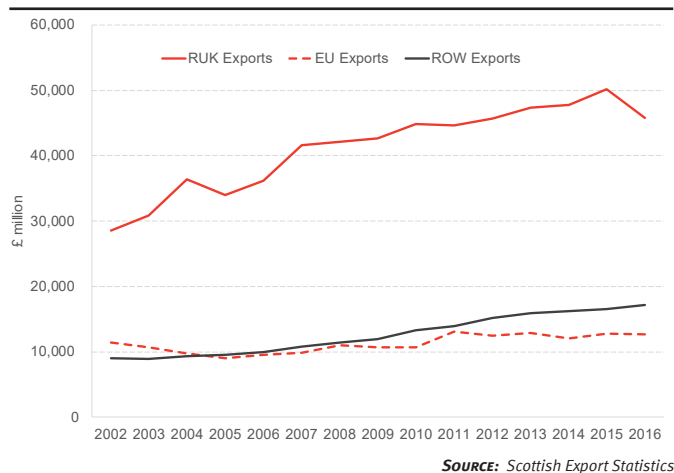
So far however, this appears to be a short-term market correction rather than a sustained deterioration in sentiment.

That being said, risks are not difficult to identify. Weak productivity growth is a challenge for many countries. And policy uncertainty remains heightened.

The decision by the Trump administration to impose tariffs of 25% on steel and 10% on aluminium has fuelled fears of a rise in protectionist sentiment across the world.

Whilst talk of a 'trade war' – most notably between the USA and China – is premature, future multi or bilateral trade deals (for any country) look less likely.

Chart 4: Scottish exports by destination, 2002 – 2016



The latest official export figures for Scotland were published in January.

Scotland's international exports amounted to around £29.8 billion in 2016. Exports to the rest of the UK were nearly £45.8 billion.

The latest figures show a fall in Scottish exports of £3.9 billion between 2015 and 2016 – driven by a sharp decline in rUK exports. (Chart 4)

Whilst Scotland has key strengths in many areas, it is widely accepted that there is a need to develop a stronger and more diverse export base.

International exports account for a lower share of overall Scottish output than for the UK as a whole (20% vs. 27%). The EU and OECD average is 44% and 28% respectively. If Scotland was to export internationally the same share of its economy as the UK does, this would be equivalent to an extra £12 billion in Scottish exports.

Looking at the experience of similar sized nation states, we also find that Scotland depends more upon one market (i.e. rUK) than they do.

Chart 5 compares Scotland with Denmark and Ireland – two countries that Scotland often seeks to emulate – both in terms of overall exports and the relative contribution of different markets.

Broadening Scotland's export base – particularly to emerging markets – offers a significant growth opportunity.

As always, the immediate outlook for Scottish growth will depend, in part, upon global oil prices.

As indicated in our December commentary, the latest assessment of the industry undertaken as part of our oil and gas survey suggests that optimism is at its highest since 2013.

Some of this reflects action taken to reduce costs, improve production efficiency and diversify to help support long-term sustainability. But it also reflects recent increases in oil prices. (Chart 6)

The OBR now expect oil revenues to raise an additional £400m on average each year up to 2022-23 compared to their November forecasts.

Chart 5: Percentage of total exports by market, 2016

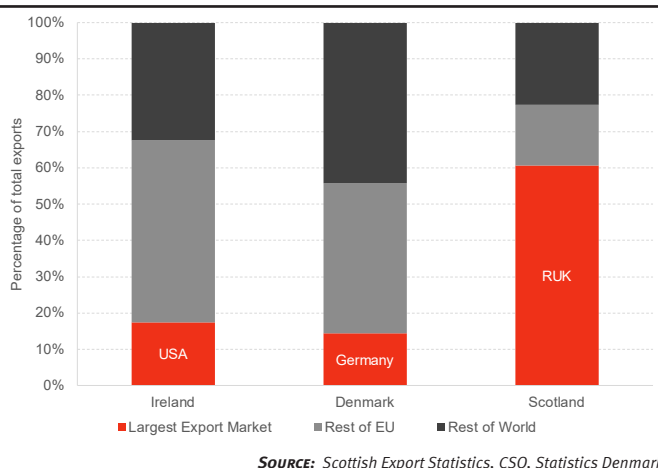
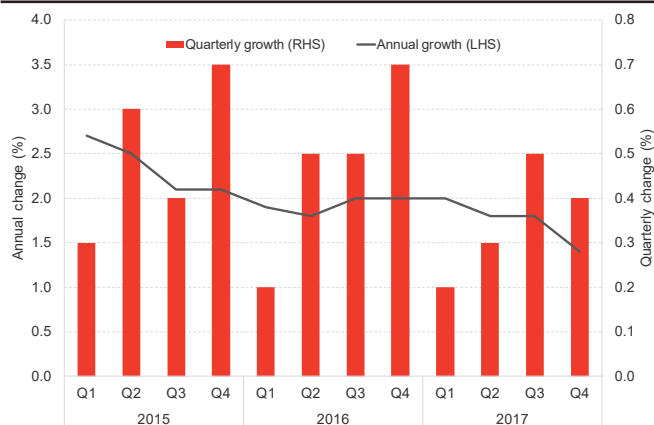


Chart 6: Crude oil prices, US\$/BBL, 2013 – 2018

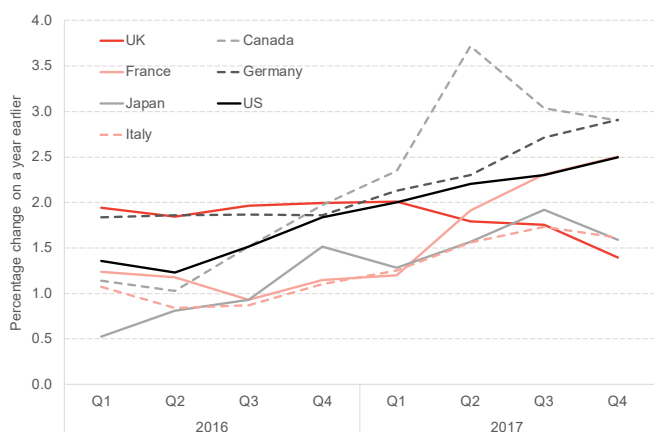


Chart 7: UK quarterly and annual economic growth, Q1 2015 – Q4 2017



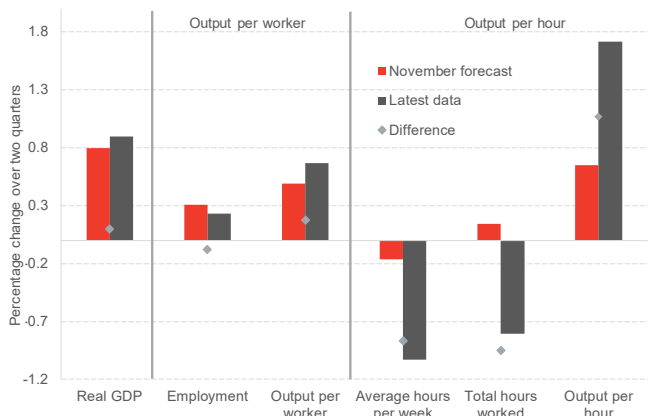
SOURCE: ONS

Chart 8: GDP growth in the UK and other G7 countries, Q1 2016 – Q4 2017



SOURCE: OBR

Chart 9: Real GDP, output per worker and output per hour, Q2 2017 – Q4 2017



SOURCE: OBR

The UK economy

The UK economy has performed slightly better than expected during the 2nd half of 2017. (Chart 7)

Output rose by 0.4% between Oct-Dec, with business & financial services (up 0.9%) and manufacturing (up 1.3%) leading the way.

Construction output fell for the 3rd quarter in a row.

Despite this somewhat better than expected performance, growth is now weaker than in many competitor countries. (Chart 8)

Whilst some of this reflects temporary factors, there are concerns that the UK is entering a slower period of growth more generally.

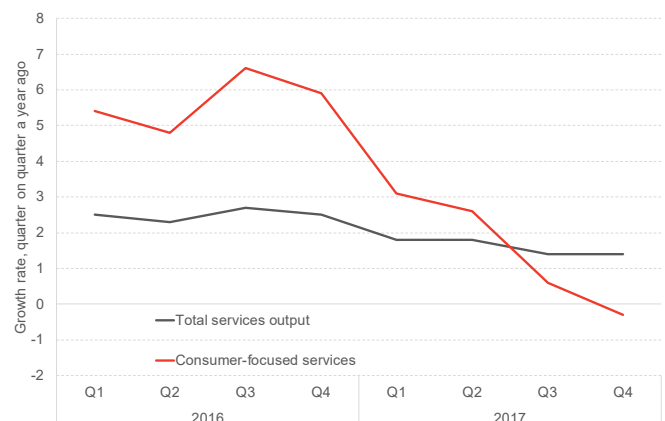
As we discuss below, the OBR remain relatively pessimistic about the outlook for UK productivity in the coming years. This is despite productivity having grown strongly – and above forecast – in recent months.

But as Chart 9 highlights, this improvement stems, not from faster output growth, but a decline in hours worked.

Weak productivity growth continues to feed through to low real earnings. Whilst nominal wages have picked up in recent months – rising 2.5% in Q4 – they continue to lag behind inflation which remains above target at 3%.

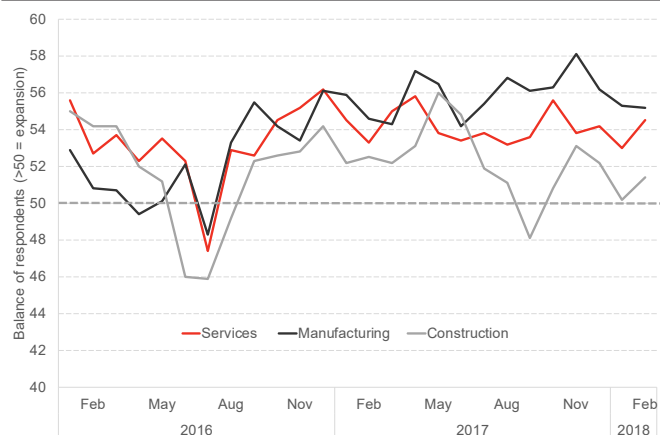
It is no surprise therefore that the parts of the economy tied to the fortunes of the consumer have been squeezed. (Chart 10)

Chart 10: Growth rate of consumer-focused services output and total services output, Q-on-Q a year ago, Q1 2016 – Q4 2017



SOURCE: ONS

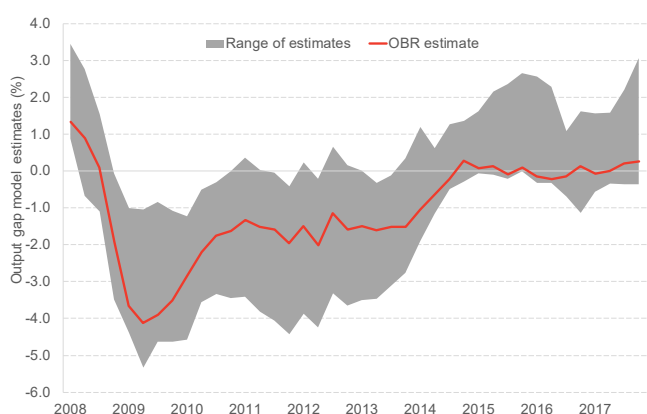
Chart 11: Purchasing Managers Index (PMI) for UK*



* >50 indicates an expansion in business activity.

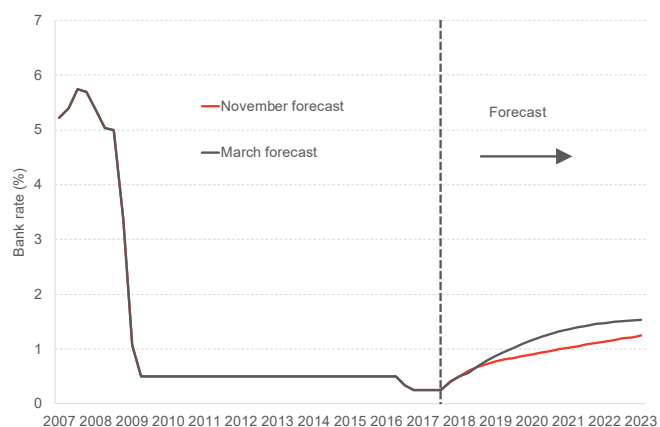
SOURCE: IHS Markit

Chart 12: Range of output gap model estimates, Q1 2008 – Q4 2017



SOURCE: OBR

Chart 13: Bank rate forecasts, Q1 2007 – Q1 2023



SOURCE: OBR

Nevertheless, indicators of day-to-day economic activity remain relatively positive.

The UK PMI's for services, manufacturing and construction, all continue to show UK businesses reporting relatively robust growth. (Chart 11)

In February, the Bank of England's team of agents found that both utilisation of machinery and recruitment difficulties (an indicator of high demand) were above their historical average.

Such evidence has led the OBR to conclude that the UK economy is operating at close to capacity. (Chart 12)

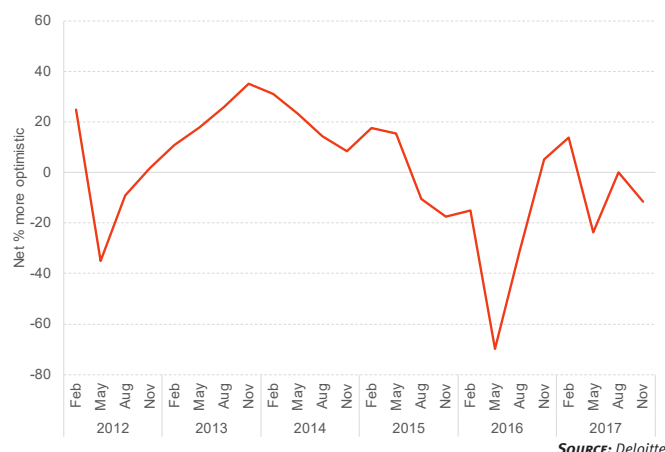
With this in mind – and with inflation still well above target – it is no surprise that speculation over further increases in interest rates have intensified. (Chart 13)

Despite this, there remains a heightened degree of nervousness about the outlook for the UK economy, particularly given ongoing Brexit uncertainty.

Indicators of *sentiment* within the business community remain skewed toward the downside.

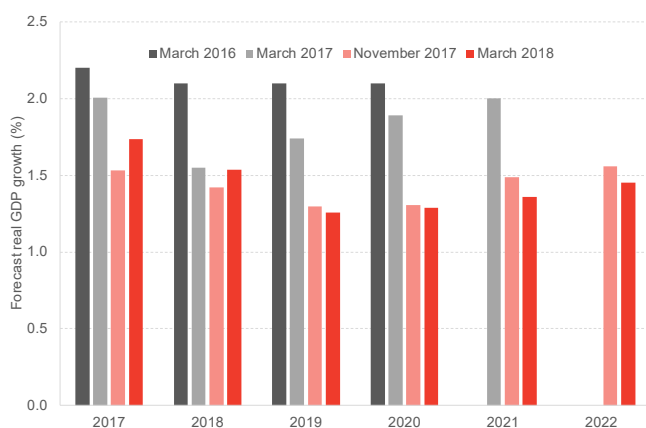
For example, a study by Deloitte of prospects as perceived by Chief Financial Officers, suggests a net balance are now relatively pessimistic about the outlook compared to just three months ago. (Chart 14)

Chart 14: Perception of prospects compared to 3 months ago – net percentage more optimistic



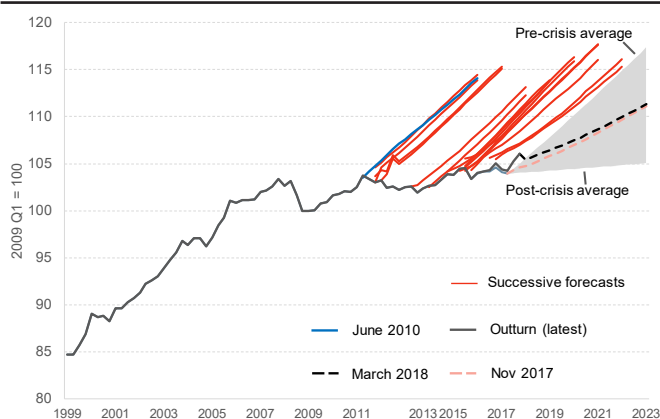
SOURCE: Deloitte

Chart 15: Changes in OBR forecasts of real GDP growth, 2017 – 2022



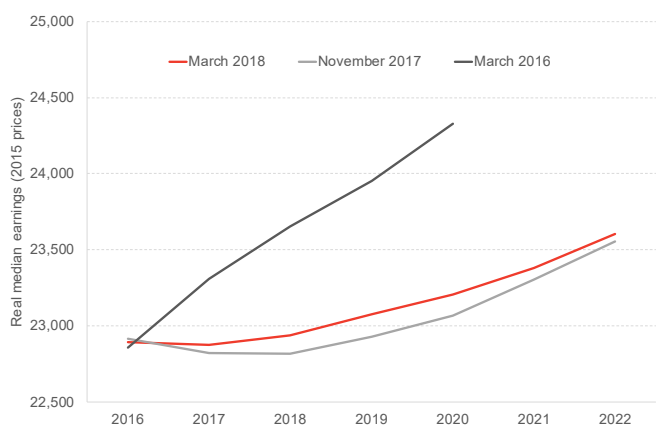
SOURCE: OBR

Chart 16: Successive OBR forecasts for productivity growth, 1999 – 2023



SOURCE: OBR

Chart 17: Changes in OBR forecasts of real, average annual employee earnings, 2016 – 2022



SOURCE: OBR, ASHE

It is against this backdrop that the Office for Budget Responsibility published their latest forecasts on 13th March.

Back in November, the OBR significantly revised down their UK economic forecasts for the next few years citing a weak outlook for productivity growth.

In the end, growth in 2017 has turned out to be slightly better than the OBR had expected – 1.7% vs. 1.5%. This has also led them to revise up their forecasts for 2018.

But these revisions in the early years of their forecast horizon are mirrored by slight declines in later years – effectively reassessing where the UK is in the ‘economic cycle’.

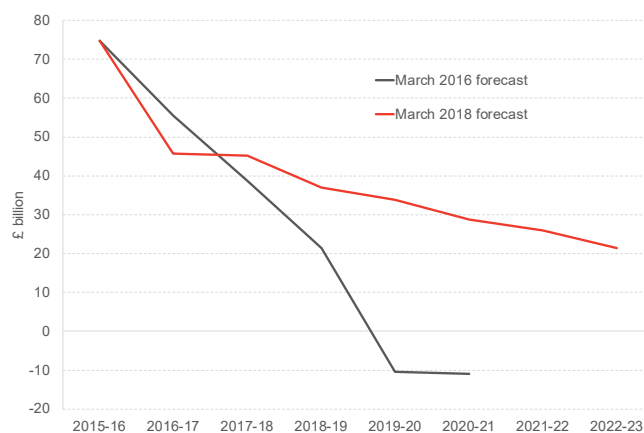
Moreover, the outlook remains much more pessimistic than the forecasts from just two years ago. Growth is forecast to be less than 1.5% per annum from next year right up to 2022 (Chart 15).

The key driver of this outlook is not Brexit, but weak forecasts for productivity. (Chart 16)

Unsurprisingly, with productivity crucial for wage growth, the date at which real earnings will return to their pre-financial crisis peak has been pushed even further back. (Chart 17)

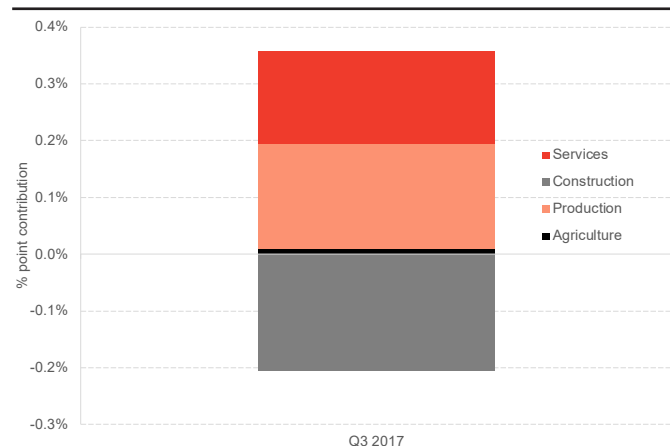
And whilst the Chancellor has been able to welcome the fact that the UK Government is – after nearly 10 years of cuts – now only borrowing to invest, the public finances remain much weaker than George Osborne had planned for in his last Budget in March 2016. (Chart 18)

Chart 18: Changes in OBR forecasts of public sector net borrowing, 2015/16 – 2022/23



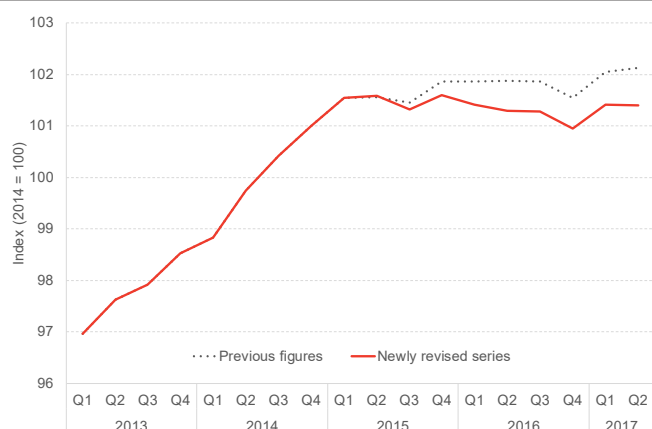
SOURCE: OBR

Chart 19: Q3 2017 GDP – contributions by sector



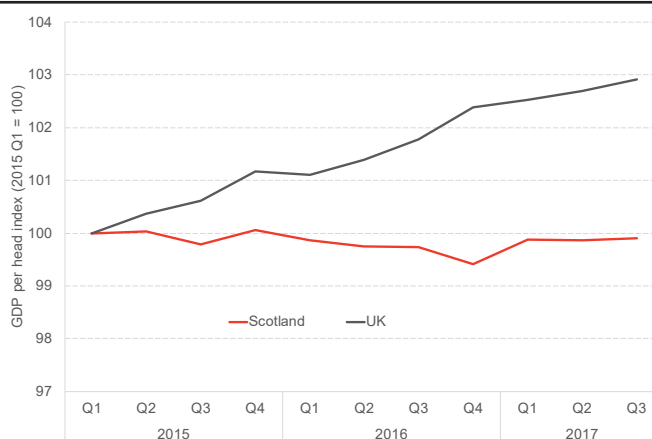
SOURCE: Scottish Government

Chart 20: Revisions to GDP – Q3 2017 publication vs Q2 2017 publication



SOURCE: Scottish Government

Chart 21: Indexed GDP per head in Scotland and UK, Q1 2015 = 100



SOURCE: Scottish Government

Recent Scottish economic data

The latest figures for Scottish GDP cover the period to Q3 2017 – and showed growth of just 0.2% over the 3-month period.

Annual growth is currently 0.6%. To put that in context, growth had been averaging between 2 to 2½% per year in the decade prior to the financial crisis.

In the most recent quarter, production grew 1.2% whilst services grew 0.2%. Construction fell once more, down nearly 3% (and by 7.5% over the year).

One interesting feature of the latest statistics were the revisions to past data releases.

As Chart 20 highlights, statisticians have revised down their assessment of how Scottish GDP per head has tracked over the past few years.

The new figures estimate that since 2015 – despite overall Scottish GDP growing 1.1% – GDP per head has actually *fallen* by 0.1%. Over the same period, UK GDP per head grew nearly 3%. (Chart 21)

What explains this weak performance?

Following the fall in the oil price, sectors tied to the North Sea supply chain – most notably manufacturing – had entered a sharp recession.

However, we have started to see some encouraging signs in these sectors. Manufacturing rose 0.4% this quarter and by 2.9% over the year. (Table 4)

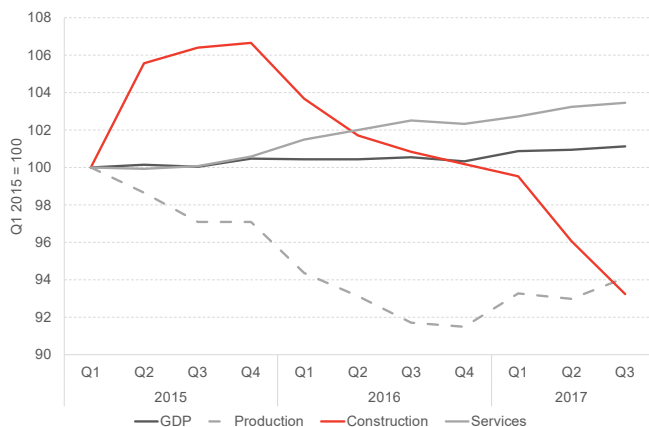
So the weak figures in recent times cannot be explained just by oil and gas.

Table 4: Growth in manufacturing, Q3 2017 on Q3 2016

Manufacturing industries	Growth over last 12 months
Food & drink	-2.9
Textiles	-0.4
Petroleum/pharma	7.2
Metals & machinery	6.8
Computers etc.	1.7
Transport	4.7
Other	5.6
Total manufacturing	2.9

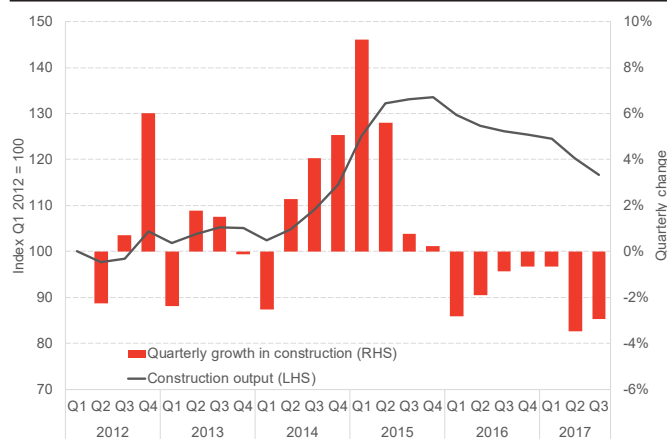
SOURCE: Scottish Government

Chart 22: Indexed sector changes since 2015, Q1 2015 = 100



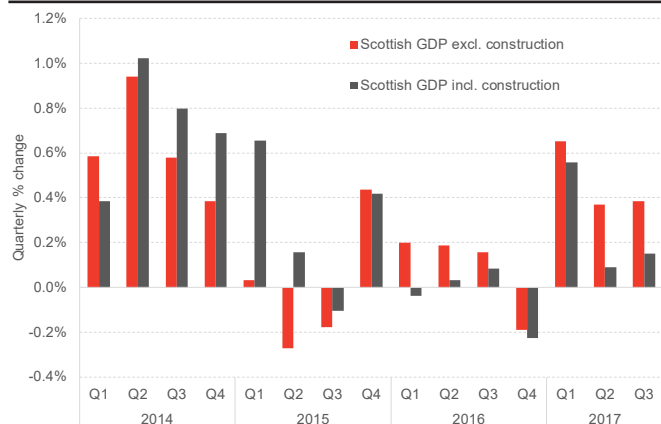
SOURCE: Scottish Government

Chart 23: Construction sector performance in Scotland since 2012, index and quarterly change



SOURCE: Scottish Government

Chart 24: Scottish GDP since sharp rise in construction in 2014 – aggregate GDP with and without construction sector series



SOURCE: Scottish Government

The biggest drag on growth in 2017 has been construction – which has fallen for 7 consecutive quarters. (Chart 22)

As we have discussed before, the Scottish construction series has been displaying some odd characteristics in recent times.

There was strong growth during 2014 and early 2015 with construction output up 30%. Since then, the series has fallen sharply as it returns to more normal levels. (Chart 23)

The Scottish Government believe that this is the result of a number of infrastructure projects being completed. But with capital budgets rising through 2017, this cannot fully explain recent trends.

Whatever the explanation – methodological or real – the volatility in the construction series has a significant impact on aggregate Scottish GDP.

In Chart 24, we strip out construction activity from the headline GDP series.

Firstly, growth in 2014 and 2015 is lower than reported.

Secondly, and perhaps of most interest, the recent performance of the Scottish economy has not been as bad as the headline figures suggest. Indeed, growth in Scotland would be much closer to trend.

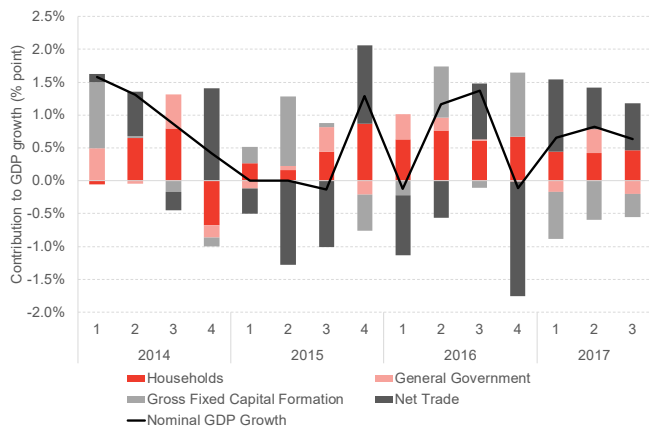
The latest ONS figures for construction activity suggest that the Q4 will continue to see a decline once more. The Scottish Government should do more to unpick this data to understand better the reason for these swings in construction output.

The Scottish National Accounts data provides a useful breakdown of changes in the expenditure components of our economy over time. (Chart 25)

The most recent figures show that, alongside household spending, net exports (both to RUK and ROW) have made the greatest positive contribution to Scottish growth in 2017.

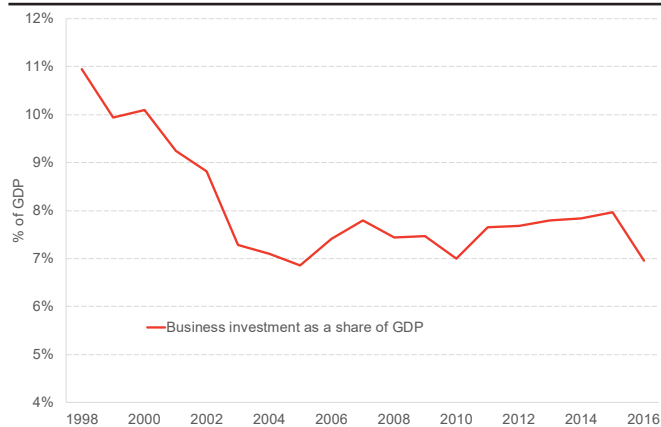
The same data however, also shows a sharp fall in business investment – down 15% over the year.

Chart 25: Expenditure components of nominal GDP, Q1 2014 – Q3 2017



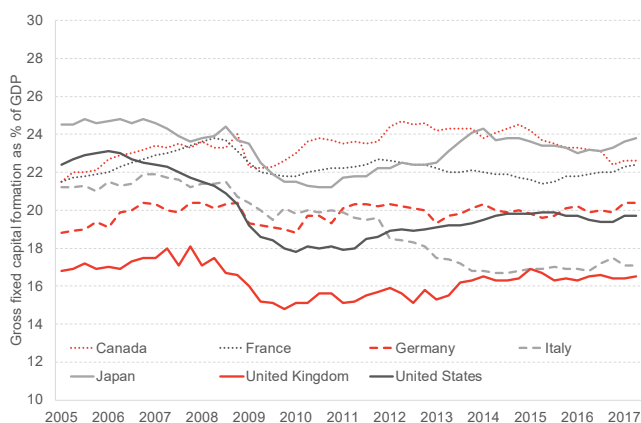
SOURCE: Scottish Government

Chart 26: Scottish business investment as a share of GDP, 1998 – 2016



SOURCE: Scottish Government

Chart 27: G8 Gross fixed capital formation as a percentage of GDP, Q1 2005 – Q2 2017



SOURCE: ONS

Is this a Brexit effect?

Possibly. But falling investment has been a feature of the Scottish economy for years. (Chart 26)

And Scotland is not alone.

Total investment in the UK by business, government and households (i.e. Gross Fixed Capital Formation) lags behind our key competitors. (Chart 27)

This impacts upon a number of economic outcomes. For example, whilst business R&D has risen in recent years, Scotland still ranks only 9th in the UK in terms of R&D spend per head. (Chart 28)

The Scottish Government's National Investment Bank is the latest initiative to try to tackle this.

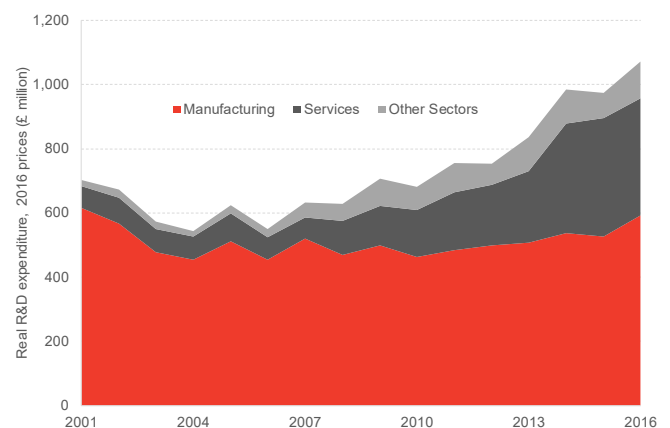
Whilst welcome, we should be wary of expecting too much from the new institution early on.

Clearly there can be a role for a state led investment vehicle – to plug gaps in the market and to support patient capital – but it needs to be matched by demand. Past initiatives, like the Scottish Growth Fund, have struggled to find companies in Scotland willing to put forward proposals for investment.

And even if this is the case, the planned capitalisation of £350 million over two years is modest. Although, if successful it should leverage in further monies.

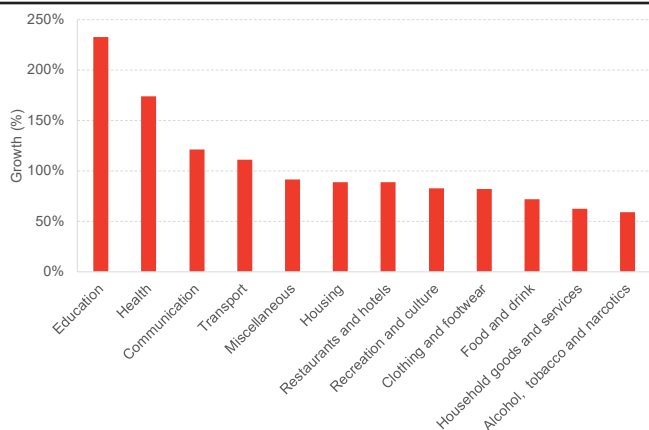
One quick-win for the new Bank should be the creation of a single gateway through which firms can access funds and receive joined up advice on finance options.

Chart 28: Business research & development real expenditure in Scotland, 2001 – 2016



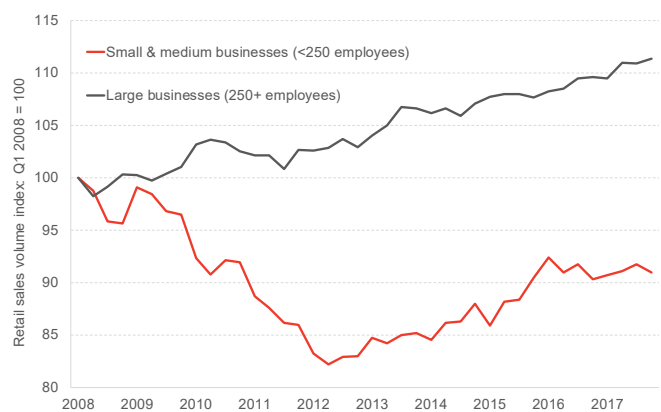
SOURCE: Scottish Government

Chart 29: Household final consumption growth by expenditure, 1999 – 2016



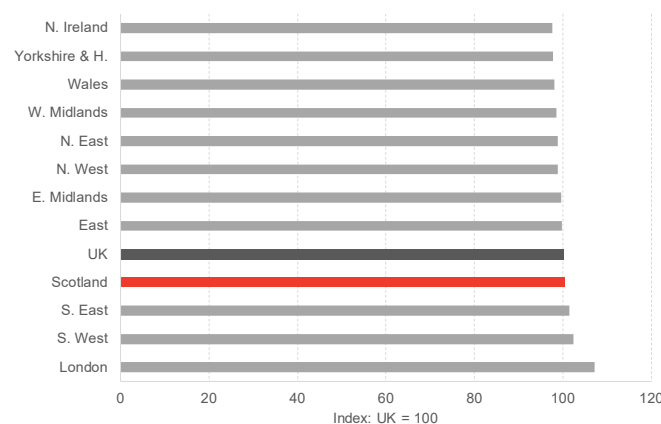
SOURCE: Scottish Government

Chart 30: Indexed Scottish retail sales volume by size of company, Q1 2008 = 100



SOURCE: Scottish Government

Chart 31: Price level index in different parts of the UK, UK 2016 = 100



SOURCE: ONS

Trends in consumer spending in Scotland

In previous commentaries we have discussed the challenges faced by the retail sector.

These can be summarised as follows.

Firstly, the trend in Scotland – as in other parts of the UK – has been for faster growth in spending on items like health and education than on traditional retailers. (Chart 29)

Secondly, we have seen a significant rise in online sales – which has changed both the way we shop and the profitability of many retail outlets.

Overall, it would appear that these trends have had a greater impact on smaller retailers as opposed to larger stores. (Chart 30)

In a related development, last month the ONS published updated figures on relative price levels across the UK.

The results found that Scotland – alongside the SE, the SW and London – has an overall price level higher than the UK average.

Very simply, this means that every £1 someone earns in Scotland, on average, purchases fewer goods and services than it would if they spent that same £1 in Wales (for example).

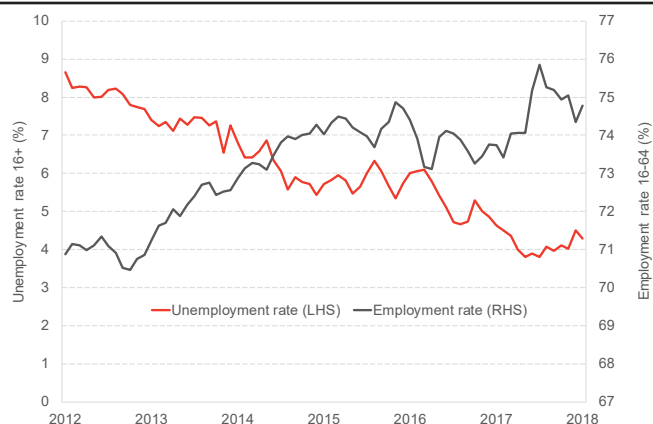
Table 5 shows the breakdown of spend by activity as per the ONS study. A number of interesting points emerge including the fact that Scottish households spend a larger share of their expenditure on transport than elsewhere, including London.

Table 5: Household budget shares of different goods/ services, 2016

Division	London	England ex. London	Scotland
Food & non-alc drink	15.1	15.6	15.5
Alcohol & tobacco	2.3	3.2	4.0
Clothing & footwear	6.3	6.1	6.0
Housing & housing services	11.6	11	11.6
Furniture & household goods	10.1	9.2	8.6
Transport	19.4	21.6	22.3
Communication	4.2	4.1	3.9
Recreation & culture	10.0	10.4	10.2
Restaurants & hotels	17.1	14.8	14.1
Misc. goods & services	3.9	3.9	3.9

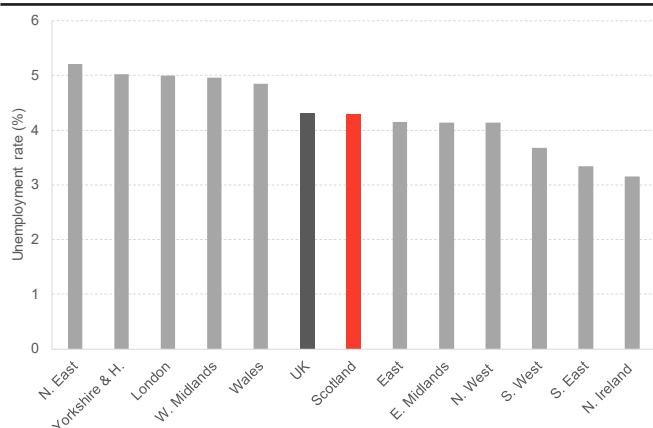
SOURCE: ONS

Chart 32: Scottish employment & unemployment rate, 2012 – 2018



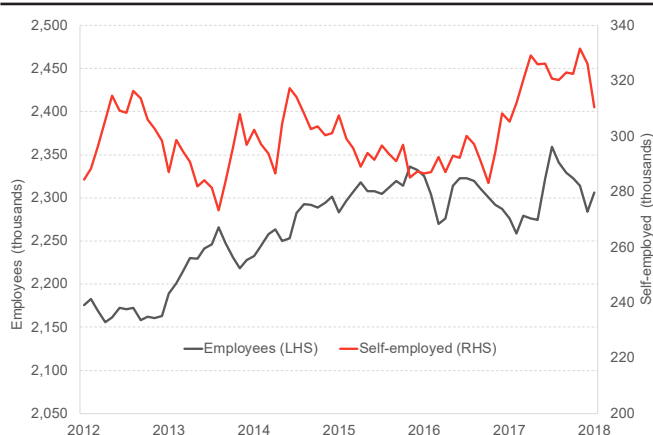
SOURCE: ONS, LFS

Chart 33: Unemployment rate in different regions and devolved nations in the UK, November 2017 – January 2018



SOURCE: ONS, LFS

Chart 34: Scottish employment & self-employment, 2012 – 2018



SOURCE: ONS, LFS

The labour market

As we have written in past commentaries, Scotland's labour market has held up relatively well despite a challenging growth environment.

Unemployment – at 4.3% – remains low by historical standards and there are 9,000 fewer people unemployed than this time last year. (Chart 32)

This is a trend evident across the UK, and Scotland remains in the middle in terms of its UK rank by unemployment. (Chart 33)

The most recent data shows something of a fall-back, however, in outcomes. Employment fell by 8,000 whilst unemployment rose by 5,000 during the 3 months Nov-Jan.

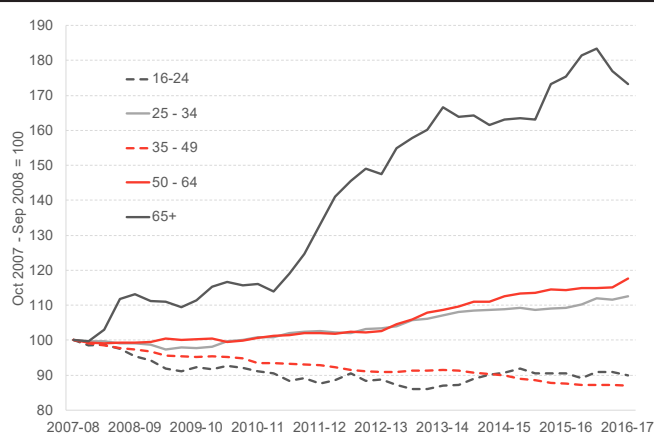
It is *possible* that this represents some early signs of Scotland's weak growth performance starting to feed through to the labour market.

But given the volatility in the data, it is too early to judge with confidence – at this stage – if this is a blip or the start of a trend.

As we have discussed in our companion report – [Scottish Labour Market Trends](#) – our labour market continues to change markedly over a longer time horizon.

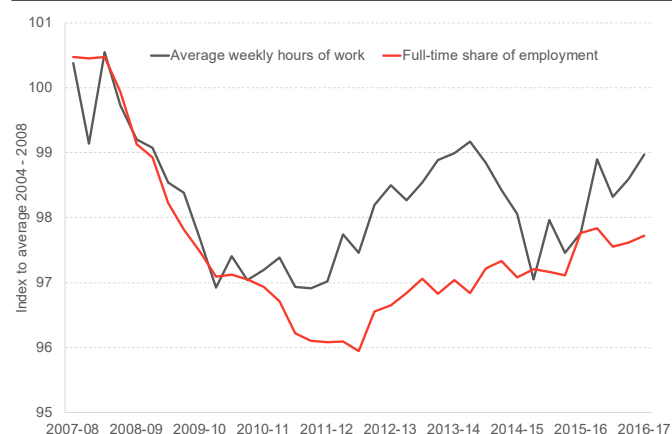
Whilst there 86,000 more people in employment now than a decade ago, 52% of that increase has been in self-employment. How much of this reflects a positive choice or a response to less secure employment opportunities is still unclear.

Chart 35: Employment rates by age, 2008 – 2017



SOURCE: ONS, Annual Population Survey

Chart 36: Average hours worked and full-time share of employment, indexed to pre-recession average, 07/08 – 16/17



SOURCE: ONS, Annual Population Survey

Similarly, our labour market is ageing quite markedly.

One reason – perhaps – why the growth in the number of people in work has eased off in recent times has been because the amount of hours being worked by people already in employment has been rising. (Chart 36)

Rising employment and/or rising hours worked has meant that productivity in Scotland has continued to be squeezed.

Labour productivity – output per hour – fell by 0.7% during the 3 months Jul-Sep 2017. (Chart 37)

This was the 8th quarter in a row of falling productivity. On this measure, Scottish productivity is back at 2010 levels.

Why is this the case?

Labour productivity measures how well output is performing relative to changes in how much labour is being used to produce that output.

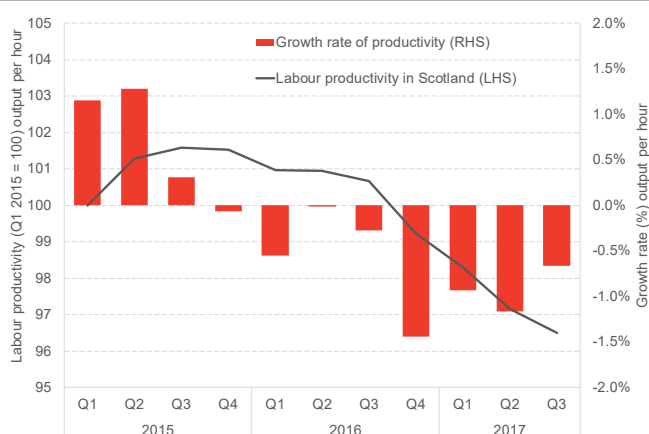
If we are able to produce more for the same number of hours worked then we are '*more productive*'. On the other hand, if we are working longer but not producing much more, then our productivity has fallen.

Chart 38 compares growth in the economy with the growth (inverted) in hours worked. It shows that the growth in hours has significantly outpaced that in the overall economy in recent times.

So in other words, the strong labour market results observed in recent times has come at the expense of falling productivity.

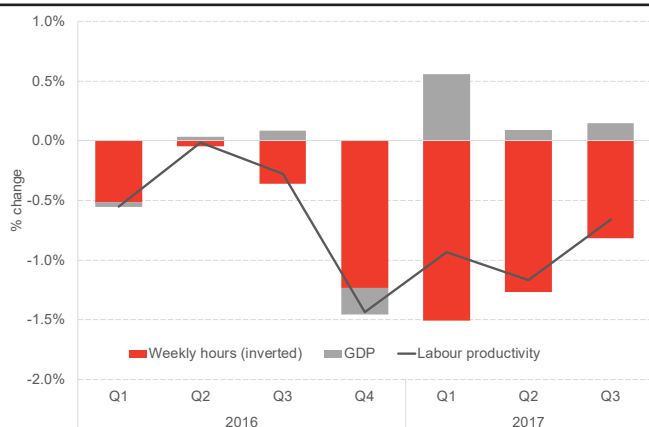
In a recent blog (www.fraserofallander.org) we argued that government targets for productivity have become increasingly irrelevant. Back in 2007, the target was for Scotland to be in the top OECD quartile by 2017. As at 2016, Scotland remains in the third quartile. (Chart 39)

Chart 37: Labour productivity in Scotland since 2015



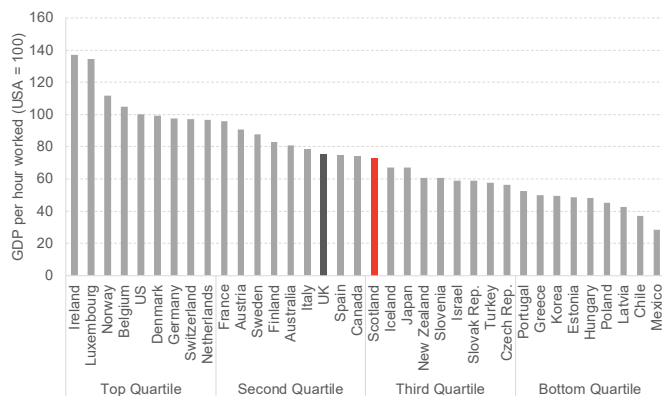
SOURCE: Scottish Government

Chart 38: Changes in hours worked and output in Scotland since Q1 2016



SOURCE: Scottish Government

Chart 39: International productivity levels 2016 (USA = 100)



SOURCE: Scottish Government

Policy discussions have tended to focus upon how best to generate high value productivity jobs and investment – i.e. in firms at the cutting edge of innovation and technology.

But increasingly, policymakers at both the UK and Scottish level are realising the importance of boosting productivity across the economy more generally.

As Chart 40 highlights, taking Glasgow and Edinburgh as an example, we see that vast majority of firms in the economy are in the middle to low end of the productivity spectrum. There are far fewer firms in the high-end of the spectrum.

Finding ways to shift the entire distribution up the value chain will be crucial. A focus on better management, skills across the workforce, process and workforce innovation, fair work and adoption of technology will be key.

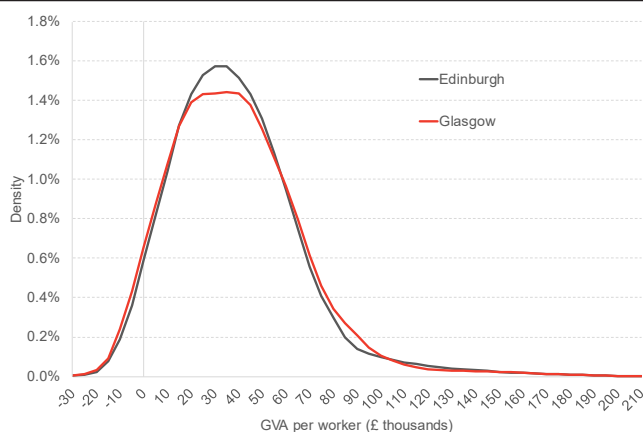
Current economic conditions

The most up to date economic data for Scotland has remained relatively mixed.

On the one hand, the FAI-RBS Business Monitor for Q4 2017 showed an increase in the net balance of firms reporting a rise in new and repeat business. (Chart 41)

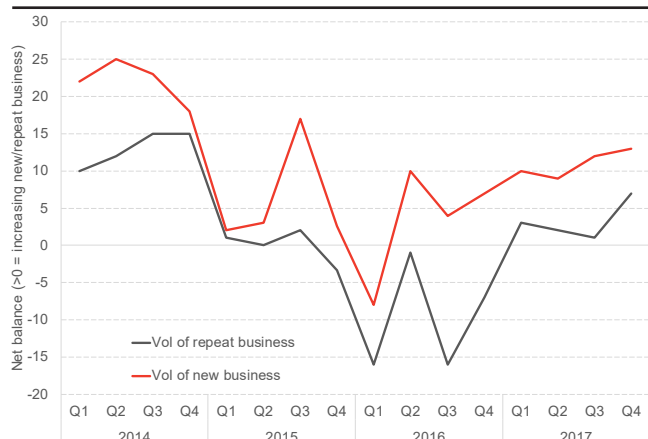
Indeed, the figures for new business are the highest since 2015.

Chart 40: Distribution of firm productivity in 2014



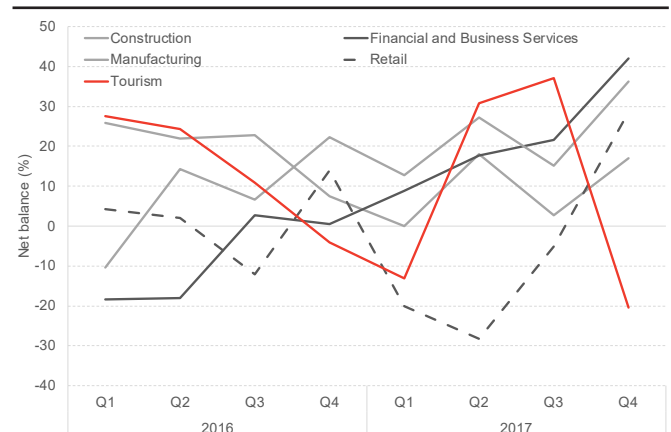
SOURCE: ONS

Chart 41: Scottish Business Monitor suggests growth continuing in Q4



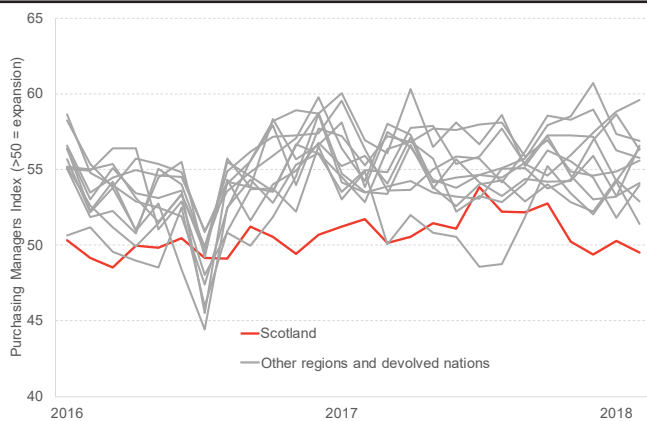
SOURCE: FAI/RBS Business Monitor

Chart 42: Business optimism by sector, Q1 2016 – Q4 2017



SOURCE: Scottish Chambers of Commerce

Chart 43: Scottish PMI continues to lag other parts of the UK



SOURCE: Lloyds PMI

The latest Scottish Chambers of Commerce Quarterly indicators have also been positive with most sectors – with the exception of tourism – reporting an upturn. Some slippage in the tourism sector was not unexpected given the strong performance in early 2017.

In contrast, the latest PMI indicator points to a more negative outlook. The indicator (where above 50 marks an expansion and below 50 a contraction) fell to 49.5 – the 2nd time in 3 months that this measure has shown private sector activity declining. Scotland once again lags behind other parts of the UK. (Chart 43)

As highlighted above, low levels of business investment has been a feature of recent times.

The latest Scottish Business Monitor shows that capital investment intentions of Scottish firms have remained negative throughout 2017.

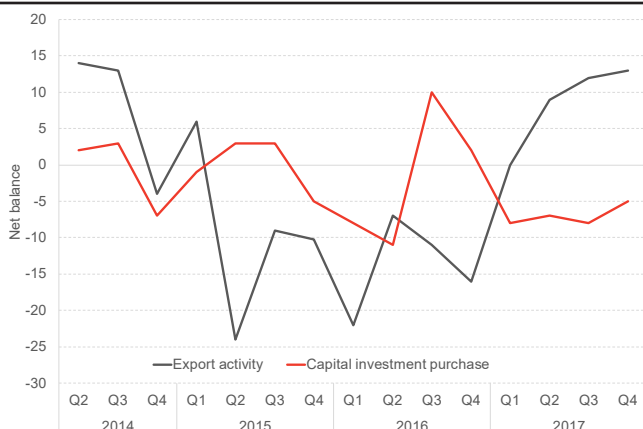
Export intentions have, however, become much more buoyant no doubt fuelled by the ongoing competitive value of Sterling. (Chart 45)

Overall, levels of consumer confidence remain weak.

The GfK consumer confidence indicator for Scotland was -13 in February and remains well below the UK (Chart 46).

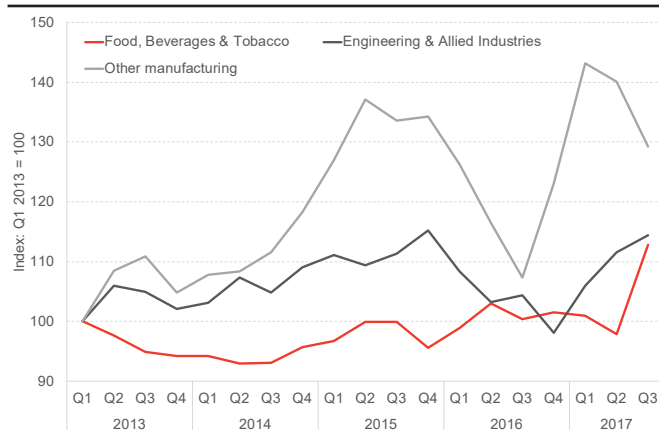
A similar story emerges in the Scottish Government's consumer sentiment measure. (Chart 47)

Chart 44: Net balance of firms investing and/or increasing exports (>0 = expansion), Q2 2014 – Q4 2017



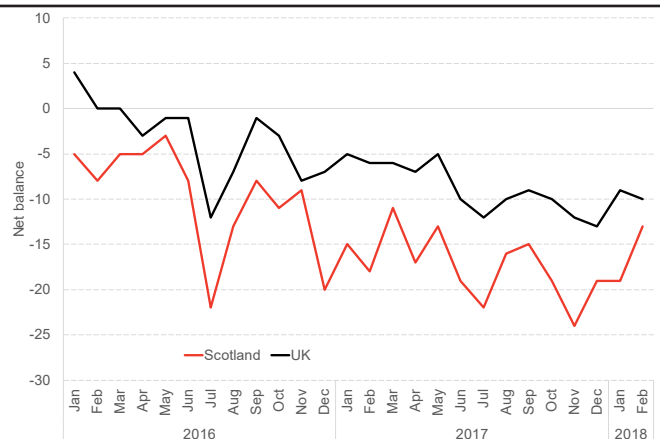
SOURCE: FAI/RBS Business Monitor

Chart 45: Index of manufacturing exports, Q1 2013 = 100



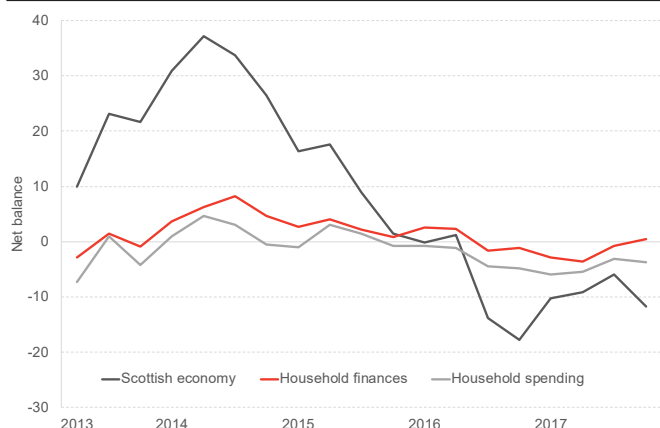
SOURCE: Scottish Government

Chart 46: Consumer confidence remains negative and worse than for the UK as a whole (>0 = more optimistic)



SOURCE: GfK

Chart 47: Consumer sentiment in Scotland, Q2 2013 – Q4 2017



SOURCE: Scottish Government

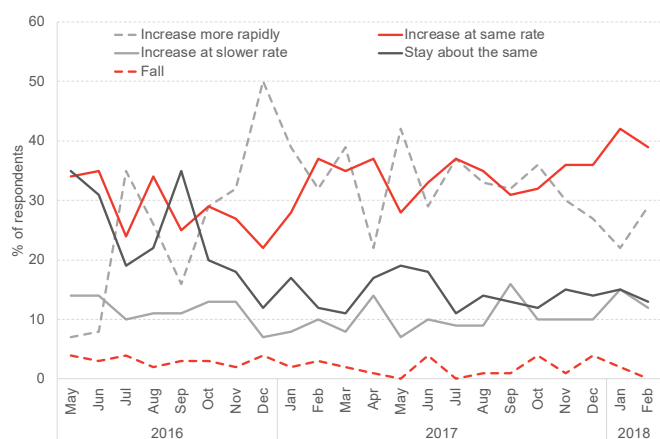
Some of this concern appears to stem from the rise in inflation over the past year.

Most surveys continue to point to households citing rising costs, particularly on food and fuel, as a key drag on spending. (Chart 48)

Although inflation is likely to remain elevated for some time yet, it should start to fall back as the spike in import prices caused by the sharp fall in Sterling continues to dissipate. This should help ease the pressure on households and help to restore confidence.

Like the wider economy, house prices have been growing in Scotland but at a relatively slow pace. Prices are up 2.6% over the past year. (Chart 49)

Chart 48: Household expectations for prices over the next 12 months



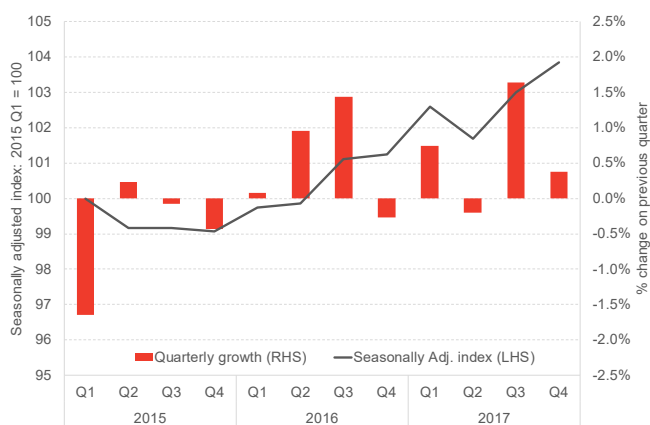
SOURCE: GfK

Despite these challenging conditions for households, the demand for labour remains strong. (Chart 50)

The Bank of Scotland's labour market barometer – which captures various measures of activity in the Scottish jobs market such as demand for new staff etc. – continues to perform well above its long-term average and to track the UK.

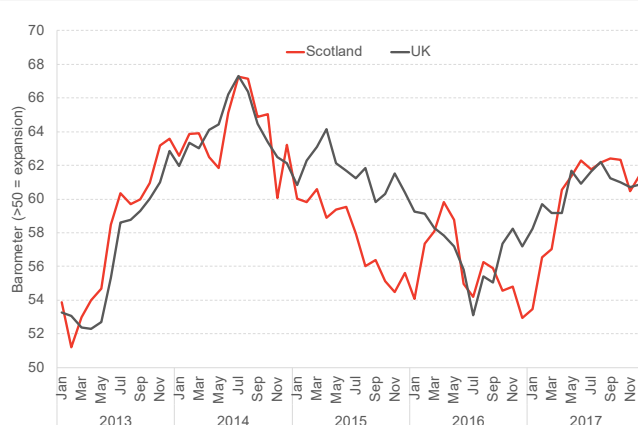
This suggests that the apparent disconnect between a resilient labour market and a weaker economic outlook is likely to continue for some time yet.

Chart 49: Index and annual change in Scottish house prices, 2015 Q1 = 100



SOURCE: Nationwide

Chart 50: Bank of Scotland employment indicator – continues to show robust labour market demand



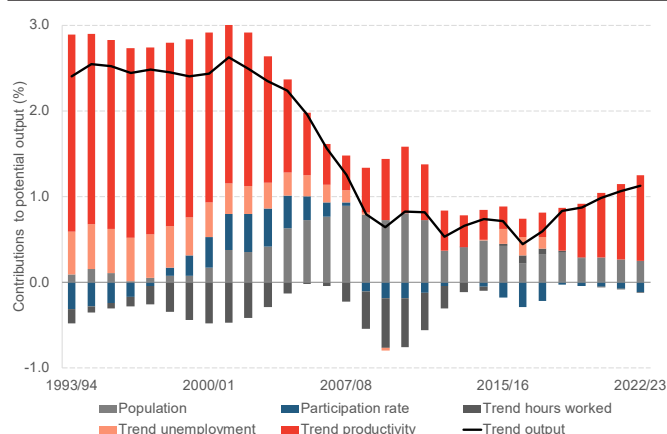
SOURCE: IHS Markit/ Bank of Scotland

Chart 51: Scotland and UK GDP growth forecasts, 2018 – 2022



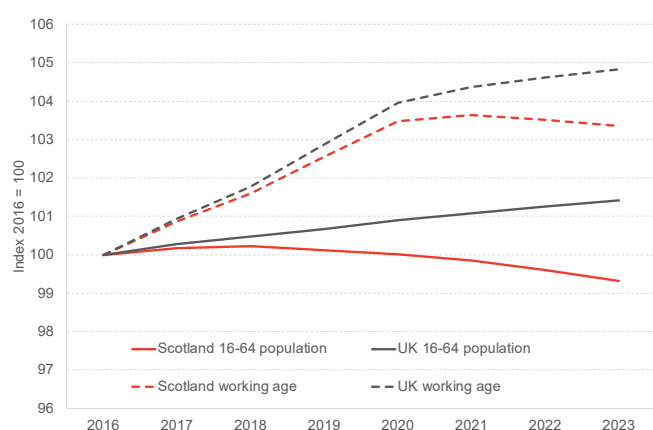
SOURCE: Fraser of Allander Institute

Chart 52: Contributions to SFC GDP growth forecast, 1993/94 – 2022/23



SOURCE: Scottish Fiscal Commission

Chart 53: Scottish and UK 16-64 and working age population projections, 2016 – 2023



SOURCE: Scottish Fiscal Commission

Scottish Fiscal Commission forecasts

Before our own forecasts, it is worthwhile reflecting on the projections of the new Scottish Fiscal Commission (SFC).

As is now well known, the SFC are predicting a weaker outlook for Scotland than most other forecasters. (Chart 51) On their projections, growth will not rise above 1% per year until 2022.

If this forecast turns out to be correct, this will be weakest run of growth in 60 years.

Why are the SFC more pessimistic?

Firstly, they estimate that – despite recent weak growth – the economy is currently operating at close to capacity.

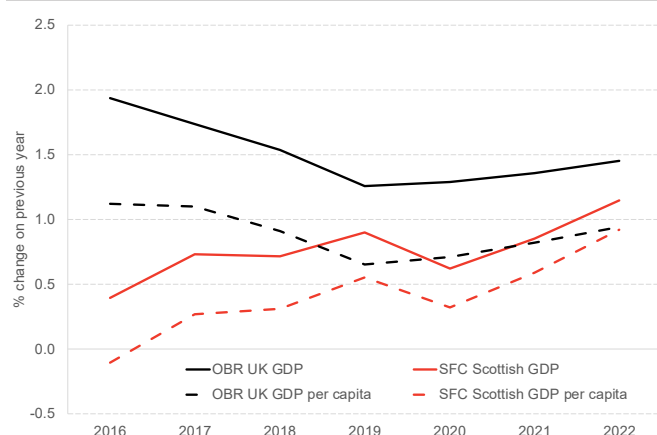
Secondly, like the OBR, they believe that the slowdown in productivity of the last few years will continue for the foreseeable future. (Chart 52)

Thirdly, they use projections for population that predict a decline in Scotland's working age population over the next decade. (Chart 53)

This means that whilst there is a gap in GDP per head between the SFC and OBR forecasts for the UK, it is much narrower than for total GDP. (Chart 54)

It is important to note however that the SFC are still predicting that Scottish growth will pick-up, and be broadly on a par with average growth rates over the past decade.

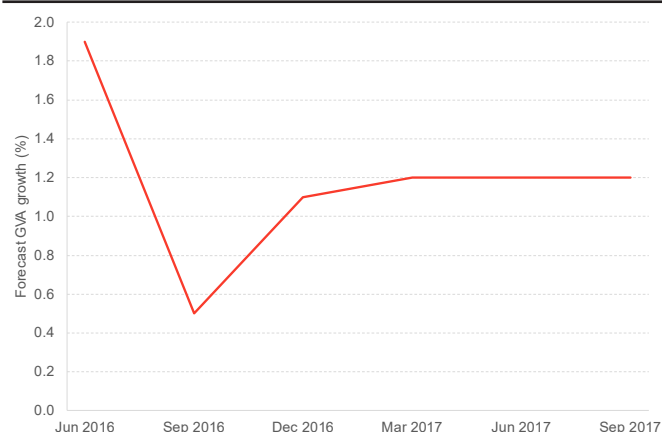
Chart 54: SFC December 2017 and OBR March 2018 forecasts comparisons, GDP and GDP per capita



SOURCE: Scottish Fiscal Commission

Our forecasts

Chart 55: Evolution of FAI forecasts for 2017 (June 2016 to September 2017)



SOURCE: Fraser of Allander Institute

Table 6: Nowcasts for Q4 2017 and Q1 2018 for Scotland

	Q4 2017	Q1 2018
Quarterly Growth	0.36%	0.34%
Annualised Growth	1.47%	1.38%

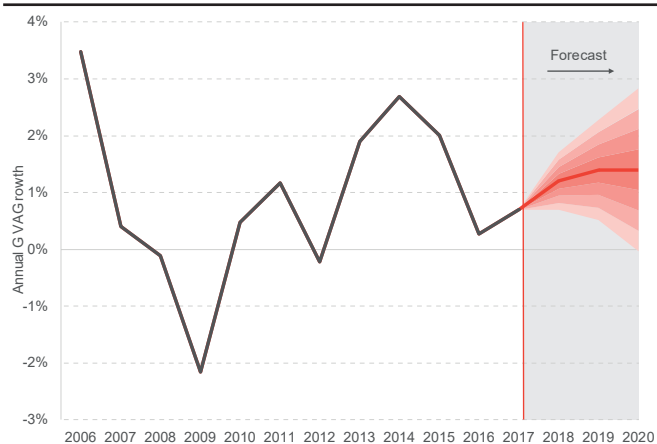
SOURCE: Fraser of Allander Institute

Table 7: FAI forecast Scottish Economic growth (%) 2018 to 2020

	2018	2019	2020
GVA	1.2	1.4	1.4
Production	1.4	1.6	1.9
Construction	0.7	0.8	0.6
Services	1.1	1.3	1.4

SOURCE: Fraser of Allander Institute

Chart 56: Growth to remain below trend through forecast



SOURCE: Fraser of Allander Institute

* Actual data to Q3 2017, central forecast with forecast uncertainty for 2018 – 2020. Uncertainty bands sourced from accuracy of past forecasts at different forecast horizons.

Chart 55 shows the evolution of our forecasts for 2017.

How does this compare to the official data?

We will get data for the final quarter of 2017 early next month (April 2018). Our latest nowcasts predict growth of between 0.3% and 0.4% for the 3-month period. (Table 6)

If the official statistics for Q4 come in close to this value (or even near to Scotland's long-term trend), this will mean that growth for 2017 as a whole will be around 0.7%.

This will be below our expectations and will mark the 2nd year of less than 1% growth.

In fact, the closure of the Brent oil pipeline in December could mean that the Q4 GDP figure for Scotland comes in even lower.

We believe however, that the official GDP statistics could be revised up in the future to make them more consistent with a healthier labour market and key business surveys. As discussed, we find the spike and then contraction in construction difficult to explain given other indicators for the sector.

Turning to our forecasts for the next three years, as in the past, we report a central forecast but also uncertainty bands that set out a likely range within which we predict Scottish economic growth will lie.

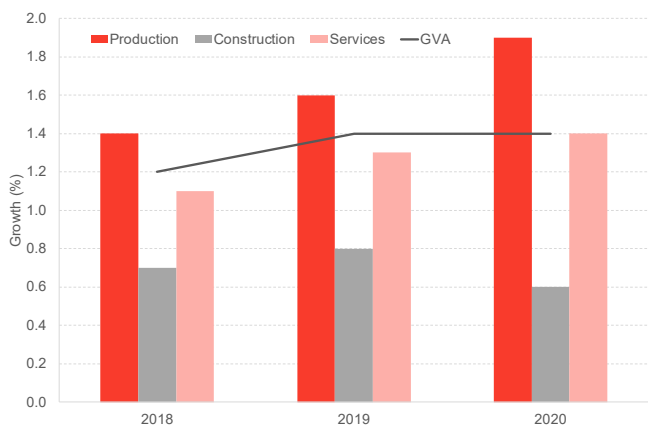
In other words, it is entirely possible that the economy could grow close to 2% this year, but our assessment is that the probability of that happening is lower than our central projection.

Overall, our forecasts are unchanged to those from December. (Table 7 and Chart 56)

Our forecast is for growth of 1.2% in 2018 followed by growth of 1.4% in 2019 and 2020.

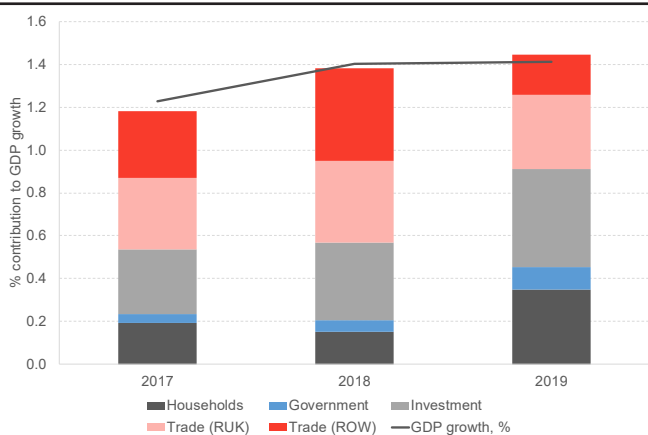
In short, we believe that the Scottish economy will grow this year, will quicken over the forecast horizon, but growth will remain below trend.

Chart 57: Sector components of FAI growth forecasts for 2018 to 2020



SOURCE: Fraser of Allander Institute

Chart 58: Contribution to FAI forecast 2018 to 2020: household contribution to fall back



SOURCE: Fraser of Allander Institute

Table 9: FAI Labour Market forecasts to 2020

	2018	2019	2020
Employee jobs	2,461,900	2,487,350	2,529,350
% employee job growth over year	+0.9%	+1.0%	+1.7%
ILO unemployment	121,400	116,200	113,250
Bank of England - UK unemployment rate (%)	4.3	4.2	4.1
OBR - UK unemployment rate (%)	4.4	4.5	4.6
Fraser of Allander Institute - Scottish unemployment rate (%) ¹	4.5	4.3	4.1

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.

Weak earnings growth should mean that household spending – and the industries it supports (e.g. retail) – will continue to be under pressure, although this should start to ease as inflationary pressures fall back.

Our forecasts assume some bounce-back in investment. With Brexit uncertainty this is arguably the element of our forecast with the greatest risk.

Net exports and tourism are on track to continue to benefit from the low value of Sterling.

We expect unemployment to rise slightly toward a level consistent with more medium-term trends. So any reported rise in unemployment in the coming months should pose little concern.

Of course, there remains uncertainty about any forecasts at the current time.

On balance, our forecasts are more optimistic than those of the Scottish Fiscal Commission.

Our reading of the labour market data – and in particular the indicators below the headline employment and unemployment statistics – suggests that there is a degree of spare capacity in the Scottish economy that could help support growth if demand picks-up.

We are also slightly more optimistic on the outlook for productivity. Finally, we take the view that whilst Scotland's 16-64 population may decline, a combination of in-migration from the rest of the UK and an increase in those working into retirement age will help to mitigate that somewhat in the short-term.

While the growth gap between Scotland and the UK is likely to remain over the next couple of years, we expect it to narrow.

Table 8: Forecast UK GDP growth (%) 2018 to 2020

	2018	2019	2020
Bank of England	1.7	1.8	1.7
OBR	1.5	1.3	1.3
NIESR	1.9	1.9	1.7
European Commission	1.4	1.1	n/a
IMF	1.5	1.6	1.7
ITEM Club	1.7	1.7	1.9

SOURCE: HM Treasury

Policy context

2018 will be an important year for the Scottish economy.

As the analysis earlier highlights, early indications are that 2018 will be another year of relatively muted growth.

Opportunities

But Scotland retains clear economic strengths.

Therefore, the recovery in the global economy, coupled with the long-term growth potential of emerging markets, offers significant opportunities for Scottish exporters to expand into new markets and increase their presence in existing ones.

The exponential growth in technology also provides the potential for new investment and innovation, particularly given Scotland's strong skills base and the research output of its universities.

At the same time, developing sustainable and productive business models for sectors of our economy that will grow significantly in the years ahead – such as in health and social care – will provide major new employment opportunities.

Of course, there are areas where Scotland can do better, for example in boosting levels of productivity across the economy as a whole. But even small improvements here, e.g. through increased rates of innovation in the workplace, has the potential to lead to major long-term benefits.

Risks

Clearly Brexit remains the greatest likely headwind for the Scottish economy.

The long-term risks are well known.

Over 40% of Scotland's international exports are to the EU and many of our firms operate in supply chains which rely upon the flow of goods and services across borders.

At the same time, with Scotland's working age population projected to fall over the next decade, any loss of EU migrants could have serious implications for individual sectors and the public

finances. On top of this, no-one yet knows the impact on domestic and international investment, productivity or the UK's status in the global economy.

As the table below highlights, the estimates in the UK Government's impact analyses are broadly in line with both our own analysis and that of the Scottish Government.

Table 10: Change in Scottish GDP relative to baseline of full EU membership by 2030

	EEA	FTA	WTO
UK (2018)*	-2.5%	-6.0%	-9.0%
SG (2018)	-2.7%	-6.1%	-8.5%
FAI (2018)	NA	-4.9%	-7.5%

* internal results as reported by media.

Source: Fraser of Allander Institute

In recent days, important progress appears to have been made with regard to the transition period the UK and the EU will operate within up to December 2020.

Whilst this creates space for further discussion, most of the major economic issues with respect to the UK's relationship with the EU post-Brexit remain unanswered.

It is understandable that exact details of the UK-EU settlement cannot be set out until a final agreement is reached. However, in 2018 businesses will look for much greater evidence that the UK Government has a clear vision for life outside the EU that not only satisfies business but can also secure the necessary parliamentary support.

Finding a solution to the Irish border issue which reconciles with the basic economics of how a Customs Union works is just one example where clarity seems to be lacking. The process for the transfer of powers to the devolved nations is another.

But like it or not, Brexit is happening.

So the sooner that businesses prepare for this reality the better.

According to a recent CBI survey published in January of this year, over 40% of UK businesses have yet to do any scenario planning for Brexit.

President Eisenhower’s famous quote – “*In preparing for battle I have always found that plans are useless, but planning is indispensable*” – has arguably never been more appropriate.

No-one knows with certainty the outcome of the negotiations. What will our trading relationship with the EU be; will there be tariffs, non-tariff barriers or a customs border to navigate; how closely aligned will UK regulations be with the EU; and how accessible will EU wide resources be?

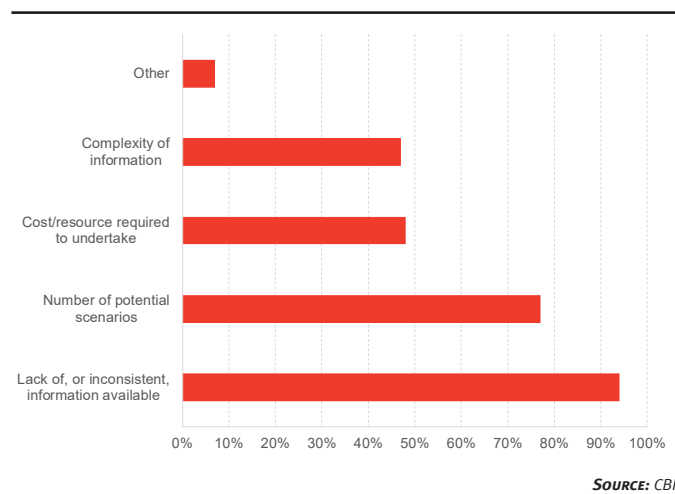
But the process of working through the potential implications of different scenarios on business models, supply chains, access to markets and sources of funding will be invaluable.

Effective preparations will ensure that – whatever the outcome – firms will be able to make the best of the new business environment.

In the same vein, there is arguably much more that both the Scottish and UK Governments could do to help Scottish businesses understand and prepare for Brexit. Providing this support should not be viewed as somehow inconsistent with Ministers’ different political standpoints.

As Chart 59 highlights, the lack of information is a key concern for many firms.

Chart 59: Of firms that have done scenario planning, what are the main difficulties faced?



Economic policy in Scotland

In recent commentaries, we have argued that there is an opportunity to use the challenge posed by Brexit to undertake a fundamental review of economic policy in Scotland.

The Scottish Government has started to set out its emerging thinking, with the creation of the new Strategic Board for Enterprise and Skills and new initiatives, such as an implementation plan for a new Scottish Investment Bank.

But if Brexit is going to make the economic outlook even more challenging than it was already, government policy is going to need even sharper focus. This means targeting resources where they will have the greatest impact and stopping doing things that either do not work or do not provide value for money.

Central to this is an effective strategy and delivery programme.

When first coming to power in 2007, the Scottish Government had one objective – a Purpose of “*delivering faster sustainable economic growth*” supported by an overarching Economic Strategy. This Purpose was supported by a transparent National Performance Framework that was designed to monitor progress. All parts of the public sector were to be aligned behind this Purpose and single Economic Strategy.

The Strategy explicitly stated that the “*call to action for all arms of the public sector to support increasing sustainable growth is not an invitation for a proliferation of initiatives, however well intentioned*” that all interventions would be “*appraised on the basis of sound analysis and evidence*” and that more effective government would assist in “*reducing duplication, bureaucracy and overlap across the public sector in pursuit of greater efficiency, effectiveness and, importantly, speed of delivery*”.

10 years later – in our view – this clarity of focus has arguably been lost.

Here is a snapshot of the current landscape.

Across the Scottish Government and its agencies, we now have an Economic Strategy; Digital Strategy; Energy Strategy; Circular Economy Strategy; Climate Change Plan; Trade and Investment Strategy; Labour Market Strategy; Social Enterprise Strategy; Hydro Nation Strategy; Strategy Action Plan for Women in Enterprise; STEM Strategy; Manufacturing Action Plan; Youth Employment Strategy; an Innovation Action Plan; a National Islands Plan; an Agenda for Cities; and even an Arctic Strategy.

Sitting alongside these we have numerous sector specific strategies – including Food and Drink; Tourism; Textiles; and Life Sciences. Not to mention an Infrastructure Investment Plan and an annual budget and programme for government process.

On top of this, most local authorities have their own form of economic development plan; all major sectors have a skills investment plan; there will soon be 7 City Deals; a new regional inclusive growth hub; and an updated National Performance Framework.

All of this overseen by the Scottish Government; Scottish Enterprise; Skills Development Scotland; Scottish Funding Council; Visit Scotland; Highlands and Islands Enterprise; South of Scotland Enterprise Agency; Scottish Futures Trust; Scottish National Investment Bank; and thirty two local authorities.

In turn they are informed by numerous advisory boards including the Council of Economic Advisers; Strategic Board for Enterprise and Skills; five independent boards of Scotland's enterprise and skills agencies; National Economic Forum; Scottish Leaders Forum; Scottish Business Growth Group; Strategic Labour Market Group; Consumers and Markets Taskforce; Hydro Nation Forum; Inward Investment Forum; Regulatory Review Group; Scotland CAN DO Innovation Forum; Fair Work Convention; Advisory Panel on the Collaborative Economy; and numerous industry groups – such as the Scottish Tourism Alliance and the Financial Services Advisory Board.

Of course, this list does not include the various programmes and activities of the UK Government in Scotland.

All of these initiatives are well intentioned. But is such a structure the best way to support coherent policy intervention in a country of Scotland's size?

More importantly, where is the evidence that this complex structure has had – or will have – a positive impact on Scotland's economic performance or deliver the systems-wide reforms required to help meet Scotland's long-term economic challenges?

Whilst many will undoubtedly have improved Scotland's economic performance, do we know which ones?

What evidence underpins each initiative and what systems for monitoring, evaluation and feedback are in place to assess their success (or otherwise)?

Strategies and advisory groups are no substitute for good policy delivery based upon evidence and data.

Back in 2007, the Scottish Government promised a streamlined and effective policy landscape for the economy. Ten years later it may be time to look at this again.

Rediscovering a single unified vision for the economy where all policies are aligned might just be the most significant – and effective – step the Scottish Government could take in 2018.

Economic Perspectives

Inter-generational equity and the Strategic Review of Water Charges in Scotland

J. R. Cuthbert

Abstract

Since the foundation of Scottish Water in 2002, over 60% of its net new capital formation has been funded direct from customer charges. This runs explicitly counter to Ministerial policy at the start of the period, which was that net new capital formation should be financed from borrowing; and it effectively means that the Scottish Government has been able to use water charges as a concealed form of taxation. This paper explains how this situation came about, and identifies key resulting issues: these include:-

- Problems of intergenerational equity.
- The question of whether funding so much capital expenditure direct from revenue was cost justified at a time of historically low interest rates.
- The opportunity foregone to have lower water charges for the benefit of domestic customers and industry.

Current proposals for the forthcoming Strategic Review of Charges threaten to make these issues even more acute. The paper argues that what is needed now is a thorough review of the approach to water charging, to address the above issues.

Key words: Scottish Water, inter-generational equity, capital investment.

1. Introduction

In any regulated utility which employs a significant amount of capital assets, a key issue is how to ensure fairness between different generations of charge payers. In other words, the problem is to ensure that the costs of providing long-lived capital assets are spread through time in a way which equitably reflects the profile of benefits which the assets will provide to successive cohorts of customers.

One traditional solution to this problem was to fund the creation of capital assets by borrowing. It was generally felt that an equitable and prudent level of net borrowing would equate to the amount of new capital assets being created: that is, the net increase in debt of the company in a period should equal the quantity (gross investment – depreciation). This is actually the principle which the Scottish Executive held to in relation to water, in the period following Scottish devolution. For example, “Ministers want to ensure that the balance between charges and borrowing remains appropriate, and hence the total borrowing should approximate to the value of new assets over the strategic review period.” (source: internal Scottish Executive memo, dated 3rd February 2004, obtained under Freedom of Information.)

One thing which is very striking, however, is the extent to which the above principle endorsed by the Scottish Executive has not been met, since the creation of Scottish Water in 2002. Since 2002, in cash terms, net new investment by Scottish Water has been about £3.4 billion: (that is, the difference between gross investment of £7.8 billion, and depreciation of £4.4 billion). Over the period, however, the debt of Scottish Water increased by about £1.3 billion. That is, over 60% of Scottish Water’s net new investment has been funded, not by borrowing, (as the original Scottish Executive principle would have implied), but direct from customer charges.

Note that it is not being argued here that funding such a large proportion of net new capital direct from customer charges is necessarily wrong: indeed, a paper by Cuthbert and Cuthbert (2009), specifically made the case for funding capital direct from revenue, provided that customers were then appropriately compensated for what, in effect, was a loan they were making to Scottish Water. The important point being made in the current paper is that, once one method for securing inter-generational fairness has been abandoned, (as it has been in Scotland), then inter-generational equity issues have to be explicitly addressed. These issues have not been addressed in the successive strategic reviews of water charges in Scotland. Moreover, as will be shown in this paper, what is currently being proposed for the next strategic review of charges actually makes the equity problem significantly worse.

The paper is structured as follows: Section 2 gives background on the water industry in Scotland. Section 3 looks at the history of investment and borrowing since the inception of Scottish Water, and identifies important issues which have not been adequately tackled. Section 4 considers the approach currently proposed in the next strategic review of charges, and identifies why this is likely to make current problems considerably worse. Section 5 draws conclusions, and makes recommendations.

2. Background

Scottish Water, the body responsible for delivering water and waste treatment services in Scotland, is a public corporation. Its annual revenue, mainly from customer charges, was £1.149 billion in 2016/17, of which the majority, £840 million, came from domestic supply to households. Almost £300 million of Scottish Water revenue came from the non-household, (that is, mainly business), customers. (Note, however, that this latter figure understates the final cost of water services to industry, because it represents the wholesale cost of water services supplied to non-household customers. In the non-household sector, Scottish Water acts as a wholesaler, providing services to what are known as licensed providers, who then provide retail services to non-household customers.) Scottish Water is a very significant investor in capital assets: its gross capital investment is commonly around £500 million or so per annum.

An important issue is how the arrangements for financing Scottish Water's capital expenditure interact with the Scottish Budget, and with the Treasury's arrangements for controlling departmental expenditure.

In common with conventional Government departments, the expenditure of the Scottish Government falls into two main categories from the point of view of Treasury control: namely, expenditure covered by the Scottish Government's Departmental Expenditure Limit, (DEL), and expenditure falling into the annually managed expenditure, (AME), category. Expenditure falling under the DEL is that expenditure which can, in principle, be planned in advance – like expenditure on health, or education. AME expenditure, by contrast is that expenditure which is inherently unpredictable – the classic example is social security. As the name implies, DEL is a control total: in each of the regular five year spending reviews, every department has a set of DEL limits for each of the five years, within which it has to manage its overall expenditure. In fact, the situation is slightly more complicated than this: the overall DEL limit is split into two components: one, resource DEL, (RDEL), covering resource, that is current, expenditure: and the other, CDEL, covering capital. Each department has to manage its resource and capital expenditure within these totals each year.

For most of the period covered in this paper, the Scottish Government's resource and capital DELs were determined exogenously, by the operation of the Barnett formula, while latterly receipts generated by taxes devolved to Scotland have also come in. Within the resulting RDEL and CDEL totals, the Scottish Government is able to determine its own priorities, and how to allocate finance to these priorities. So if the Scottish Government makes a saving on one category of expenditure which scores against its CDEL, it can then spend more on other capital items – as long as the overall CDEL limit is not breached.

This is where things get interesting in relation to Scottish Water. Scottish Water has, essentially, two ways of funding capital expenditure. It can either spend any money it may have as an operating surplus directly on capital investment: (which amounts to funding capital expenditure direct from customer charges). Or it can borrow from the Scottish Government to fund capital expenditure.

Because Scottish Water is a public corporation, only some of its activities count against the DEL of its parent department, (in this case, the parent department is the Scottish Government). The Treasury's rules on this are set out in its Consolidated Budget Guidance. The key point is that it is only net lending from the Scottish Government to Scottish Water which counts against the Scottish Government's CDEL. In other words, any capital expenditure undertaken by Scottish Water which it funds direct from its operating surplus has no impact on the Scottish Government's CDEL: but any net borrowing by Scottish Water from the Scottish Government does score against the Scottish Government's CDEL.

This asymmetry in the way in which Scottish Water's capital expenditure impacts on the Scottish Government's DEL has the following implication. Suppose that Scottish Water is able to increase the amount of its capital expenditure funded from its operating surplus, so that it can reduce the amount it needs to borrow from the Scottish Government. This means that the amount which scores against the Scottish Government's CDEL will be reduced. Since the Scottish Government has complete freedom to allocate spend within its CDEL as it sees fit, this means that the Scottish Government will be able to spend more on some other area of capital expenditure, without breaching its CDEL limit. So, in effect, increasing the amount of Scottish Water's capital expenditure funded direct from customer charges frees up resources for the Scottish Government which can be spent on the Scottish Government's other capital priorities. This opens up the potential for water charges to be used as a form of stealth taxation resource for the Scottish Government.

Finally, the water industry in Scotland is regulated by the Water Industry Commission for Scotland, (WICS). The WICS is responsible for setting water charges. This is done on the basis of periodic Strategic Reviews of Charges, initially covering successive five year periods, though this has now been extended to seven years. The process starts with the Scottish Government providing Ministerial guidance, setting out in broad terms the objectives which Ministers want the review to achieve, and also, crucially, the amount of provision within the Scottish Government's CDEL which Ministers are willing to make available over the review period for lending to Scottish Water. The actual review of charges is then carried out by the WICS – but involves extensive consultation with both Scottish Water itself, and with a consultative body, the Customer Forum, designed to bring customer interests to bear on the price setting process.

3. History of Scottish Water investment and borrowing

As noted in the introduction, since the creation of Scottish Water over 60% of net new investment has been funded direct from customer charges, (as opposed to borrowing). This section looks in more detail at how this has come about – and identifies key issues which appear to have been ignored as water charging policy evolved.

Table 1 shows, for each year since 2002, gross capital expenditure, depreciation, net investment, and Scottish Water's borrowing. Borrowing is also expressed as a fraction of net investment each year. The figures are taken from the annual accounts of Scottish Water. (Note too that the figures for depreciation are actually for "depreciation and infrastructure maintenance costs" from the accounts – so a broad concept of depreciation has been used.) As can be seen, while borrowing as a fraction of net investment has fluctuated from year to year, the fraction has been consistently less than one: and, indeed, in the last two years, (2015/16 and 2016/17), Scottish Water funded its investment programme without borrowing at all.

Since the only ways to fund Scottish Water's expenditure are by customer charges or borrowing, levels of borrowing are intrinsically bound up with the regime for setting water charges. Charging regimes are periodically reviewed in each successive Strategic Review of Charges. So it makes sense to aggregate the figures in Table 1 into the relevant Strategic Review periods. This is done in Table 2. (The complete strategic review periods covered in Table 2 are 2002-06, 2006-10, and 2010-15: for completeness, note that the next two strategic review periods cover 2015-21, and 2021-27.) Table 2 also shows the public expenditure provision which the Scottish Government made available during each review period, to cover Scottish Water borrowing.

Table 1: Scottish Water Investment and Borrowing by year (£ million)

Final year beginning	Gross capital expenditure	Depreciation and maintenance	Net investment	Borrowing	Borrowing/ net investment (fraction)
2002	369.6	245.1	124.5	51.3	0.41
2003	377.8	262	115.8	42	0.36
2004	513.1	259.2	253.9	82	0.32
2005	655	250.5	404.5	162.1	0.40
2006	455.4	225.1	230.3	0	0.00
2007	636.5	250.8	385.7	196.3	0.51
2008	721.2	265.8	455.4	161.3	0.35
2009	648.3	326.9	321.4	270.2	0.84
2010	443.4	298	145.4	107.4	0.74
2011	490.7	333.7	157	51.6	0.33
2012	487.4	329.6	157.8	101.7	0.64
2013	475.2	334.5	140.7	27.4	0.19
2014	470	361.8	108.2	70.5	0.65
2015	479	345.9	133.1	0	0.00
2016	626.6	365.2	261.4	0	0.00
Total	7849.2	4454.1	3395.1	1323.8	0.39

Source: Scottish Water Annual Accounts

As can be seen from Table 2, in each review period, actual borrowing fell significantly short of provision, and in two of the three review periods, provision fell short of net investment. Over the period from 2002 to 2016 as a whole, (that is, including the first two years of the 2015-21 review period), net investment was £3.4 billion: Scottish Government public expenditure provision for Scottish Water borrowing was £2.3 billion: and actual borrowing was £1.3 billion. In other words, the overall difference between net investment and borrowing divides almost equally into a shortfall of provision relative to net investment, and a shortfall of borrowing relative to provision.

Table 2: Scottish Water Investment, Borrowing and Provision: Strategic Review Periods (£ million)

Strategic Review Period	Gross capital expenditure	Depreciation and maintenance	Net investment	Borrowing	Borrowing/ net investment	Borrowing Provision
2002-06	1915.5	1016.8	898.7	337.4	0.38	600
2006-10	2461.4	1068.6	1392.8	627.8	0.45	728
2010-15	2366.7	1657.6	709.1	358.6	0.51	750
Subtotal	6743.6	3743	3000.6	1323.8	0.44	2078
2015 only	479	345.9	133.1	0	0.00	120
2016 only	626.6	365.2	261.4	0	0.00	120
Total	7849.2	4454.1	3395.1	1323.8	0.39	2318

Source: Scottish Water Annual Accounts¹

In fact, quite different charging regimes applied as between the first, (2002-06), Strategic Review period, and the two later review periods covered in Table 2.

In the first period, Ministerial policy was, (as noted in the introduction), that borrowing should equal net investment. However, during this period, the Scottish Executive were introducing a then new budgetary control regime, called Resource Accounting and Budgeting, (subsequently withdrawn in 2003). Unfortunately, a number of mistakes were made in setting the budgetary control limits for water under this new regime. One of the mistakes meant, for example, that that element of depreciation called infrastructure renewal expenditure was double counted in the control limit set by the Scottish Executive. Overall, the mistakes meant that Scottish Water could not actually borrow up to level expected by the Scottish Executive, without breaching its Resource Accounting and Budgeting control limit. The effect was the significant shortfall in borrowing observed during the first strategic review period – and that resulted in water charges during the first review period being significantly higher than what would have been required if ministerial policy on borrowing had been met. (Mistakes in the application of Resource Accounting and Budgeting control were pointed out in Cuthbert and Cuthbert, (2003). Cuthbert and Cuthbert, (2006), gives a definitive account of the errors in the application of the control limit.)

In the next two Strategic Reviews of Charges, a completely different charging regime was implemented. Ministers had, by this stage, abandoned the position that net new investment should be funded by borrowing, but instead took the view that what was required was water charges which were affordable and stable – and, (in the case of the 2010-15 review), did not rise by more than inflation. The charging model that was introduced in Scotland was the current cost Regulatory Capital Value model, as applied to the privatised water companies in England. Unfortunately, (as analysed in detail in a paper by J. Cuthbert, (2012)), the current cost Regulatory Capital Value method is itself flawed, and generates a windfall surplus for the operating company on any approved capital investment it undertakes. In England, this resulted in the excessive dividends available to the equity owners of the privatised water companies. In Scotland, this charging method introduced a bias in Scottish Water activities towards capital intensive solutions. It also meant that the excess cash generated from customer charges by the regulatory capital value approach was available to fund capital expenditure directly, so reducing borrowing levels.

¹ Annual Accounts for figures on investment and borrowing. For borrowing provision, figure for 2002-06 is planned level of borrowing as given in Scottish Executive evidence to Finance Committee on 4 February 2004: later figures from Scottish Government Principles of Charging for relevant review of charges.

The overall result of the two flawed charging methodologies applied in successive Strategic Review of Charging periods has been the position observed in Tables 1 and 2 – where more than 60% of net new capital investment has been funded direct from customer charges. This has been very convenient for the Scottish Government, who have had to put in £2 billion less by way of public expenditure support than if they had stuck to Ministers’ original intention of funding net new capital expenditure from borrowing: and £1 billion less than the provision they actually made available. These sums have been available to spend elsewhere on Scottish Government capital programmes: effectively, the Scottish Government has been able to use water charges as a concealed tax, worth between £1 billion and £2 billion over the period. It has also been very convenient for Scottish Water – who have operated throughout in a cash rich environment, able to demonstrate their “financial strength”, and never near breaching their borrowing limits.

Of course, using water charges as a form of taxation means that water charges in Scotland may have been unreasonably high over the period. This is not a question on which one would wish to rush to any quick or simplistic conclusion – after all, there are other perfectly legitimate and fair charging regimes, as well as simply funding all net new capital expenditure from borrowing. Before reaching a conclusion, one would need to take a view on the following three issues.

First of all, if significant amounts of capital expenditure are being funded direct from charges, then issues of equity have to be explicitly considered. Under the Regulatory Capital Value system as it was applied in Scotland, it was almost as if the unfortunate customer is, first of all, being forced to provide a lump sum for capital investment: and then being charged loan charges, (via future regulatory capital value charges), for the capital they themselves have provided. This problem has been recognised elsewhere – but not in Scotland. Witness the following quotation from a reference book on utility regulation issued under the auspices of the World Bank: *“The regulator may consider customer provided capital to be an interest free loan to the operator, in which case the operator receives no return on that portion of its regulated assets, or the regulator may impute to the operator an interest payment on the customer provided capital, the effect of which is to lower the operator’s regulated prices.”* (Jamison et al, 2004) This is a key issue which should have been addressed before the regulatory capital value method was applied in Scotland: but it was not. (A specific proposal to address this issue was, in fact, made in the paper by Cuthbert and Cuthbert, 2009: this would have involved regarding customer financed capital as a notional loan to the utility: but the proposal was not taken up.)

Secondly, another issue which should have been considered relates to the implications of the very low interest rates, (particularly public sector interest rates), which have been available to borrowers since 2008. If real interest rates are negative, as they have been for part of this period, then it is actually cheaper to fund capital by borrowing than direct from customer charges. This statement holds in two different senses. First of all, if real interest rates are negative then the net present value of the stream of loan charges resulting from a single capital investment, discounted at the rate of inflation, will be less than the sum originally invested. So in real terms, borrowing is then cheaper than funding capital direct from revenue. But it is also true if real interest rates are negative that, if roughly the same amount of capital in real terms is being invested every year, then in the long run loan charges each year from financing the capital by borrowing will be less than the cost of funding the capital direct from revenue. So funding capital direct from revenue, if real interest rates are negative, will impose extra costs on the consumer, compared with funding capital by borrowing: not just in the short term, but also in the long term.

The third issue which ought to have been considered is the question of opportunity cost. As has been seen, the Scottish Government has effectively used water charges as a form of taxation since 2002 – to the tune of £1 billion or so. There have been costs attached to this option – not just in terms of higher charges for individual household and business consumers, but also because the opportunity has been lost to use significantly lower water charges for commercial users as an inducement for industry to locate in Scotland. It is worth remembering that the steep increase in water charges in the 2002-06 strategic review period was quoted as one of the reasons Scottish and Newcastle chose to re-locate their brewing operations from Edinburgh to the North East of England. Far from discouraging industry, a different policy on water charges could have been a powerful attractor for industry to develop in Scotland.

These three issues should have been at the forefront of successive strategic reviews of charges, but appear not to have been. If these issues had been explicitly addressed, then it seems very unlikely that the charging decisions which were actually made would have proceeded. In this sense, it is difficult to escape the conclusion that water consumers in Scotland have been significantly overcharged since the creation of Scottish Water, to the detriment of individual customers, and Scottish industry.

4. How the next Review of Charges threatens to make matters worse

It might have been hoped that these issues would have been addressed at least in the next Strategic Review of Charges for period 2021-27, for which consultation is now getting underway. In fact, as will now be seen, current indications are that the next review is likely to make matters worse, rather than better.

Details on the Water Industry Commission's thinking on the next review were published in nine Initial Decision Papers, (IDP), in 2017. These papers identify what factors are likely to impact on prices, and look at issues like service levels, and the requirement for different types of capital investment.

Central to the price setting process are, of course, the question of likely levels of borrowing, and of capital investment.

IDP paper 2 gives the following indication on borrowing: *"It seems unlikely that the Scottish Government will make more than £100 million available in the next regulatory review period: we have used a base case of £80 million annually in our modelling."*

It is interesting to set this figure for projected borrowing against the levels of net new capital investment foreseen in the IDP papers. IDP8, (on page 2), gives the following indications of this. First of all, *"Scottish Water invests around £500 million each year: around 50% of this has been for capital maintenance – the remaining 50% relating to growth and enhancement."* This implies that Scottish Water's current investment for growth and enhancement is around £250 million per annum. And later on, IDP8 states that - *"The Commission's provisional view is that expenditure on enhancement projects should be broadly similar in real terms to that which Scottish Water has delivered in previous regulatory periods."* Assuming that growth investment is also maintained, (as seems likely, given that new connections are increasing), this implies that net new capital investment will be around £250 million per annum.

Overall, what this implies is that the Commission is envisaging that £80 million of the £250 million net new investment would be met by borrowing: that is, 32%. (In fact, given the £250 million is a real figure, the actual percentage funded by borrowing would be less, once the £250 million is uprated for inflation.) In other words, it is envisaged that about 70% or so of net new capital investment in the next strategic review period will be met direct from customer charges. This would be slightly larger than the position in historic review periods – indicating that the issues identified in the previous section are certainly not being addressed.

However, this is far from being the end of the story. Closer reading of the IDP papers indicates that the actual percentage of net new capital investment funded from customer charges is actually likely to be a good deal higher than the figure of 70% noted above – probably closer to 100%. And it also indicates how the forthcoming strategic review, far from resolving inter-generational equity issues, is likely to make matters a good deal worse.

The problem arises from the strategic review's treatment of investment on maintenance and replacement. This is the topic of IDP7. What is done there is a very rough analysis based on the Modern Equivalent Asset Value, (MEAV), of Scottish Water: (the MEAV is an estimate of what would have to be spent now to replace the asset base of Scottish Water with a modern, fully functioning, equivalent.) The MEAV is estimated at some £40 billion to £60 billion. This sum is then divided in IDP7 by estimates of the average asset life of Scottish Water assets, to get estimates of what might have to be spent each year to maintain Scottish Water's existing stock, if the burden of maintenance and replacement were evenly spread. Since these estimates are a good deal higher than the current spend on maintenance and replacement, the conclusion is drawn that the condition of the asset base is currently likely to be deteriorating.

This is actually a very poor argument. A lot of the value of the MEAV will be tied up in extremely long lived assets – like the Loch Katrine scheme. So even aside from the problem of estimating a meaningful average length of life for Scottish Water assets, much of the replacement cost is likely to fall far into the future: so the assumption of an even spread of replacement costs is untenable. Further, when major assets come to be replaced, there will inevitably be significant elements of enhancement involved in the replacement: so treating replacement as an activity which is largely independent from enhancement is unjustified.

To give the IDP papers some credit, they acknowledge some of these problems. But what the papers then do is to argue that, nevertheless, customers need to spend more now, in order to provide for future replacement. A key quote from IDP7 is: *"...it appears that insufficient attention has been paid (by both regulator and regulated company) to futureproofing levels of service. An important consideration is the extent to which today's customers make an appropriate contribution towards the ultimate cost of replacing the assets that are in use."*

The implications of this line of thought are startling. If it is carried through, then additional charges will be added in to customers' bills over the strategic review period in order to provide, in some sense, for future replacement expenditure. Because of this extra cash, actual borrowing would then fall below the 30% of net new investment which, as has been noted, the IDP papers envisage. The likelihood is that, over the strategic review period, customers would end up paying for all, or almost all, net new investment directly via charges.

This would raise yet a further issue of inter-generational equity. It is already the case that customers are funding, direct from charges, a very significant portion of net new investment – without adequate recompense. But the forthcoming strategic review threatens to go a stage beyond this, forcing customers not only to fund current new investment from revenue – but also to make a contribution to future investment. This is an entirely new question of inter-generational equity – which needs to be added to the list of issues identified in the previous section as urgently needing to be addressed.

5. Conclusion

One normal principle for funding capital expenditure is to borrow to fund the provision of new capital assets – and to spread the costs over the lifetime of the assets by funding the resulting borrowing charges out of future customer revenues. This is not the only possible approach: but it does involve a consistent rationale as regards inter-generational fairness.

By accident or design, the approach to water charging adopted in Scotland has turned this normal principle on its head. The bulk of the formation of net new capital assets is now funded direct from customers' charges – without the issues of potential unfairness involved in this being addressed. And if the questionable logic underlying the current proposals for the Strategic Review of Charges 2021-27 is followed through, we will move even further towards a position where customers fund not only the current creation of new capital assets direct from charges – but also make a contribution now towards the costs of the future replacement of these assets.

The current situation, and even more the future proposals, raise profound issues of equity, which need to be addressed. But in addition, other issues also need to be brought into consideration: in particular:-

- At a time when real interest rates have been negative, is it correct to adopt the more expensive approach of funding capital direct from revenue, rather than by borrowing?
- Funding so much capital direct from revenue has meant that Scotland has forfeited the opportunity of using relatively low water charges as a potential inducement for industry to locate in Scotland.

There are further downsides to the current policy. The relatively high water charges implicit in the policy of using water charges as a concealed tax have the effect of turning Scottish Water into a cash cow – and hence a relatively tempting target for future privatisation. In addition, once the Scottish Government becomes used to not having to provide borrowing support for Scottish Water, it will find itself very reluctant, or even unable, to turn this facility back on when needed. If large lumps of replacement investment are going to be required at some point in the future – then the logical approach will be to fund such investment in the usual way, by borrowing. Current policies are likely to choke off the availability of this option within the public sector – hence increasing the risk of eventual privatisation.

All in all, this paper argues that there is a clear need now for a root and branch review of the charging policy for water in Scotland, in order to address a whole set of issues which the current system has proved itself incapable of tackling.

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Social mobility and the intergenerational transfer of advantage in labour and housing markets in Scotland: some preliminary analyses

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Abstract

This paper presents new data on social mobility in Scotland. It examines the extent to which individuals' occupation as adults is correlated with the occupation of their parents. It considers the extent to which growing up in a workless household influences the likelihood of being employed as an adult. And it examines how the occupational class of one's parents influences the probability of being a homeowner, after controlling for individual characteristics (educational qualifications, health). The paper finds evidence that parental labour market status plays a significant role in influencing labour and housing market outcomes in Scotland, and that this intergenerational effect is at least as strong in Scotland as it is in the UK as a whole.

Introduction

Recent years have seen extensive debate about the causes and implications of income inequality in Scotland.

A big part of the reason for concern about income inequality is the link between inequality and what it might mean for social mobility and the intergenerational transfer of advantage. Across countries, high income inequality tends to be correlated with lower social mobility (where social mobility reflects, in some broad sense, the correlation between the economic activities or opportunities of parents and their children). This suggests that higher income inequality in the present results in family background playing a stronger role in determining the adult outcomes of young people, with those young people's own work or skills playing a commensurately weaker role (Corak, 2013).

The mechanisms through which income inequality may be inversely correlated with lower social mobility are not difficult to imagine. Those from higher income families may be afforded greater access to better quality curricular and non-curricular educational opportunities, or may have better access to employment opportunities through networks and cronyism (MacMillan et al. 2015).

But what do we actually know about social mobility in Scotland?

Whilst the data on income inequality in Scotland has been extensively analysed (see for example Bell et al. 2015; Bell and Eiser 2016; McQuigg et al. 2017), we know almost nothing about social mobility in Scotland specifically. Perhaps the one exception is the recent work on behalf of the David Hume Institute (Social Mobility and Child Poverty Commission, 2015) which analysed the background of almost 850 leaders in politics, business, the media and other areas of public life in Scotland and found that 'those educated at independent schools and at a handful of highly selective universities are still massively over-represented'. But this research focussed on a small group of public-sector leaders rather than the population at large, and did not specifically consider the socio-economic background of those individuals' parents.

Indeed, even at UK level, data on social mobility between generations has been limited. Much of the existing work has drawn on the cohort studies of 1958 and 1970, which enable a comparison of the activities of parents and their children in adult life. Analysis of this data has suggested that income mobility has declined over time (i.e. the correlation between the adult incomes of parents and their children has strengthened, see for example Gregg et al. 2016 and Blanden et al 2007). But the same data has suggested that class mobility (i.e. the extent to which the socio-economic class of parents is correlated to that of their children) has remained relatively stable over this period (Bukodi et al. 2015; Goldthorpe, 2013).

In recent years however a new data source on social mobility has emerged. Since 2013, the Labour Force Survey (LFS) has included some questions about respondents' socio-economic background. In particular, the survey asks respondents about the labour market activity of their main-earning parent when the respondent was aged 14.

Given the large sample size of the LFS (currently over 90,000 respondents per quarter at UK level) and the wealth of information collected from respondents about their current labour market status and education, this represents a useful new source of data on social mobility. And with a Scottish sample of 7,000 per quarter, it provides scope to undertake analysis for Scotland specifically.

The LFS social mobility data has been analysed extensively for the UK by Friedman et al. (2017). The authors find strong barriers to equality of opportunity in the labour market, with the odds of those from professional backgrounds being 2.5 times higher than the odds of those from less advantaged backgrounds reaching the professions. They also find evidence of a 'class pay gap' within the professions, with those from working class backgrounds earning less than those with equivalent qualifications and experience from professional backgrounds. And they also find that those from workless households are more likely to experience worklessness as adults, partly as a result of the intergenerational transfer of health issues.

Cribb et al. (2018) also use the new LFS data to look at the intergenerational transfer of advantage in UK housing markets, finding that young adults from more disadvantaged backgrounds are less likely to own their home, even after controlling for the kind of job they do and other characteristics.

In this paper, we undertake a preliminary analysis of the social mobility data for Scotland, and ask whether there is any evidence that social mobility in Scotland is different from the UK. Specifically, the paper considers three dimensions of social mobility and the transfer of intergenerational advantage. Section 2 describes the data in more detail, while the remainder of the paper is structured as follows:

- In section 3 the paper examines rates of intergenerational occupational mobility, in other words, to what extent are the occupations that people do as adults correlated with the occupations that their parents did?
- In section 4 we consider intergenerational worklessness, i.e. are people who grew up in a workless household more likely to be workless themselves?
- In section 5 we consider whether the probability of being a homeowner is correlated with the economic status of one's parents, even after controlling for one's own economic circumstances.

Section 6 concludes.

1. Data

The analysis in this paper draws on data from the Labour Force Survey (LFS). The LFS is a UK-wide survey of employment, designed to be representative of the UK population, and the population of each of the UK's regions and countries. Each quarter, around 90,000 respondents take part, of whom around 7,000 live in Scotland.

Since 2013, the LFS has included questions designed to measure social mobility. Specifically, respondents are asked the occupation of their main earning parent when they were 14 years old. In the publicly accessible datasets (i.e. those available to researchers without access to a Special Licence), parental occupation is allocated to one of 90 occupations, defined by SOC2010.

The analysis in this paper essentially considers how various labour and housing market outcomes of respondents in the LFS are correlated with the occupational class of the respondents' main earning parent when the respondent was aged 14.

We restrict the analysis to those aged 25-60 (as those aged under 25 tend not to have settled into a career, whilst those aged over 60 tend to be exiting the labour force).

The social mobility questions are asked in the Q3 LFS. We pool data from the Q3 LFS in 2014, 2015, 2016 and 2017. We exclude Wave 5 respondents to avoid double-counting¹. This gives us a sample of almost 10,000 respondents in Scotland for whom we have answers to the social mobility questions.

The analysis draws on and takes inspiration from work that has been undertaken at UK level on behalf of the Social Mobility Commission (Friedman et al. 2017). However, the results presented in this paper tend not to be directly comparable with the analysis in Friedman et al. This is because Friedman et al. had access to some more fine grained data on occupational class, enabling them to define slightly different categories of parental occupation.

2. Intergenerational occupational mobility

To what extent are the occupations that people do as adults correlated with the occupations that their parents did? And to what extent are someone's chances of working in managerial or professional jobs influenced by having parents who worked in those kind of occupations?

These are the questions that we consider in this section. Note that we are looking here at relatively simple measures of intergenerational occupational mobility, i.e. what is the correlation between the jobs that people do as adults and the jobs their parents did when they were growing up? As such, it is not quite the same as comparing the socio-economic class of parents and their children, as identification of parents' social class would require more detailed data than we have here on occupation and other aspects of employment².

We start by dividing the occupations of LFS respondents and their main-earning parent into three broad groups, and consider rates of *absolute mobility* between these occupational categories. The three groups are:

- High occupational class: managers, directors, professionals, and associate professionals and technical staff (corresponding to SOC2010 groups 1-3).

¹ LFS respondents are interviewed over five consecutive waves, with one wave corresponding to a quarter. Thus an individual entering the survey in Q3 2014 would also be interviewed in Q3 2015. By excluding respondents in wave 5, we ensure that the same individual does not appear twice in our data.

² The standard definition of socio-economic class, the National Statistics Socio-Economic Classification (NS-SEC), classifies respondents into one of eight classes, defined not only by detailed 4-digit occupation, but also employment status (employer, employee or self-employed), size of organisation, and supervisory status. In contrast we only have data on 3-digit occupations.

- Medium occupational class: administrative and secretarial occupations, skilled trades, and caring and other services occupations (corresponding to SOC2010 groups 4-6).
- Low occupational class: sales and customer service occupations, process and machine based occupations, and other elementary occupations (corresponding to SOC 2010 groups 7-9).

Absolute mobility simply considers what proportion of the existing working population has moved up or down the occupational hierarchy, relative to their parents.

As can be seen from Table 1, rates of intergenerational occupational mobility appear relatively high. Just over one third of the population has experienced upward mobility, in other words they are working in a higher occupational group relative to that of their parents, while 23% have experienced downward mobility and 43% are working in the same broad group of occupations as their parents.

At first glance, upward mobility appears more common than downward mobility. This of course reflects in part the changing distribution of occupations over time. There is now more ‘room at the top’ than there used to be.

Table 1: Absolute occupational mobility

Occupation of respondent's parent at 14	Occupation of respondent			Total
	High	Medium	Low	
High	22.9%	9.5%	5.3%	37.7%
Medium	14.6%	11.3%	7.7%	33.7%
Low	9.5%	10.1%	9.1%	28.6%
Total	47.0%	30.9%	22.1%	100%

Notes: Individuals aged 25-60 reporting a current occupation and a main parent occupation at 14, from Q3 LFS in either 2014, 2015, 2016 or 2017. Individuals in green cells have moved ‘up’, those in red cells have moved ‘down’. Unweighted N = 7,211. Weighted N = 5,090,156. Weighted N used to calculate summary statistics.

Relative rates of intergenerational occupational mobility in contrast account for changes in the overall size of the occupational groups. Relative rates of intergenerational mobility capture the chances of individuals of a particular parental occupational group being found in different occupational groups themselves, taking into account structural changes in occupational groups over time.

Specifically, relative rates of occupational mobility are captured using odds ratios. Odds ratios tell us ‘*the chance of an individual originating in class A being found in class A rather than in class B, relative to the chance of an individual originating in class B being found in Class A rather than class B*’ (Goldthorpe, 2016). If the odds ratio is 1, this means that these chances are equal and there is no association between the occupation of one’s parent and one’s own occupation. As the odds ratio rises above 1, the more unequal are the relative chances, and the stronger the association between parent’s occupation and the occupation of the parent’s son or daughter.

The concept of odds ratios and relative mobility can be best understood through a specific example. Let us consider the odds of an individual working in a managerial or professional occupation³ if that individual’s main earning parent worked in managerial or professional occupations, compared to the odds of ending up in a managerial or professional occupation if one’s parent worked in any other (lower) occupation.

³ In what follows we define managerial and professional occupations as occupations corresponding to SOC2010 groups 1 and 2. This is a slightly narrower definition than the preceding definition of ‘high occupational class’ which also included SOC2010 group 3.

Table 2 shows the transition matrix used to calculate this odds ratio. The occupation of the LFS respondent is shown in the columns, whilst the occupation of their parent at age 14 is shown in the rows. It shows for example that of all those in employment today, 13% work in managerial/ professional occupations and had a parent working in managerial/professional occupations; 20% work in managerial/ professional occupations but whose parent worked in other occupations; 16% had one or more parents working in management/ professional occupations but work in a lower occupational group themselves.

Table 2: Intergenerational transition matrix to assess relative upward mobility

Occupation of parent at age 14	Occupation of current worker:	
	Managerial and professional occupations	Any other occupation
Managerial and professional occupations	13%	16%
Any other occupation	20%	52%

Notes: Individuals aged 25-60 reporting a current occupation and a main parent occupation at 14, from Q3 LFS in either 2014, 2015, 2016 or 2017. Unweighted N = 7,211. Weighted N = 5,090,156. Weighted N used to calculate summary statistics.

The odds ratio is then calculated as:

*The odds of working in managerial/ professional occupations if one's parents worked in managerial/ professional occupations,
compared to
the odds of working in managerial/ professional occupations if one's parents worked in any other occupation.*

Taking the transition matrix in Table 2, the odds ratio is:

$$\text{Odds ratio} = \frac{13\% / 16\%}{20\% / 52\%} = 2.21$$

What this tells us therefore is that the odds of an individual with a parent working in a professional or managerial occupation ending up in professional or managerial employment themselves are 2.2 times higher than the odds of someone from any other background ending up in professional employment.

What about relative downward mobility? We now consider the odds of working in an elementary or process based occupation (corresponding to SOC2010 groups 8 and 9) if ones parents worked in those occupations, relative to the odds of working in these occupations if ones parents worked in any other (higher) occupation.

The transition matrix is shown in Table 3.

Table 3: Intergenerational transition matrix to assess relative downward mobility

Occupation of parent at age 14	Occupation of current worker	
	Other occupations	Elementary/ process occupation
Other occupations	66%	9%
Elementary/ process occupation	18%	6%

Notes: Individuals aged 25-60 reporting a current occupation and a main parent occupation at 14, from Q3 LFS in either 2014, 2015, 2016 or 2017. Unweighted N = 7,211. Weighted N = 5,090,156. Weighted N used to calculate summary statistics.

The calculation of the odds ratio is given by:

$$\text{Odds ratio} = \frac{66\% / 9\%}{18\% / 6\%} = 2.51$$

The odds of individuals whose parents worked in elementary occupations working in an elementary occupation themselves are 2.5 times higher than the odds of working in an elementary occupation if ones parents worked in non-elementary occupations.

These measures of relative intergenerational occupational mobility in Scotland – both upward and downward – indicate that the intergenerational reproduction of advantage and disadvantage remain strong.

But how does Scotland compare with the UK on these measures?

Table 4 replicates the measures of inter-generational occupational mobility for Scotland already discussed, and presents them alongside the equivalent measures for the UK as a whole. Relative intergenerational occupational mobility – both upward and downward – appears broadly similar in Scotland to the UK.

Table 4: Comparing relative intergenerational occupational mobility in Scotland and UK

	Scotland	UK
Odds of an individual whose parent worked in professional or managerial job ending up in professional or managerial employment themselves, relative to the odds of someone whose parent was employed in lower occupational group working in professional or managerial job	2.21	2.17
Odds of an individual whose parent worked in elementary job ending up in elementary employment themselves, relative to the odds of someone whose parent was employed in higher occupational group working in elementary job	2.53	2.44

Notes: Individuals aged 25-60 reporting a current occupation and a main parent occupation at 14, from Q3 LFS in either 2014, 2015, 2016 or 2017. Unweighted N = 7,211. Weighted N = 5,090,156. Weighted N used to calculate summary statistics.

Is intergenerational occupational mobility in Scotland increasing or decreasing over time?

Note that we cannot answer this question directly. To answer this question robustly, we would need the social mobility questions in the LFS to have been asked repeatedly over many years, in order that we could compare intergenerational mobility of respondents of the same age in different years. The fact that the social mobility questions have been asked in just a few very recent years precludes this approach. We can compare rates of intergenerational occupational mobility for people born in different decades, and we present this information below. But remember that it is impossible to separate out differences that stem from intergenerational mobility changing over time versus intergenerational mobility being different for those of different age groups.

In Table 5 we present the figures for absolute and relative occupational mobility for four different age groups: those born in the mid-1950s to mid-1960s, those born in the mid-1960s to mid-1970s, those born from 1975-1984, and those born between 1985-1993⁴.

There is evidence that absolute upward mobility is declining for each cohort, whilst absolute downward mobility has increased for the youngest cohort in the sample. Care needs to be exercised in interpreting this latter statistic in particular, given that this youngest group may not have reached ‘occupational maturity’ at the time they were surveyed.

Table 5: Intergenerational occupational mobility by birth cohort, Scotland

	1954-1964	1965-1974	1975-1984	1985-1993
<i>Absolute mobility</i>				
Upward	40%	37%	32%	26%
Downward	19%	19%	20%	29%
Horizontal	41%	44%	48%	45%
<i>Relative mobility</i>				
Relative upward	2.34	2.13	2.64	1.85
Relative downward	2.21	2.31	3.03	2.42
Unweighted N	2,126	2,223	1,832	1,030

Notes: Individuals aged 25-60 reporting a current occupation and a main parent occupation at 14, from Q3 LFS in either 2014, 2015, 2016 or 2017. ‘Absolute mobility’ is calculated by dividing occupations into three groups, high, medium and low, corresponding to SOC2010 classes 1-3, 4-6 and 7-9 respectively. Relative upward mobility is analysed by studying movements into managerial and professional occupations (SOC2010 groups 1 and 2); relative downward mobility is analysed by studying movements into elementary and process occupations (SOC2010 groups 8 and 9). Unweighted N = 7,211. Weighted N = 5,090,156. Weighted N used to calculate summary statistics.

Table 5 also shows the trends in relative occupational mobility. Recall that the closer that relative mobility is to one, the more even the chance of ending up in a particular occupation, regardless of ones parent’s occupation. The data suggests that social mobility is lowest for those born during the late 1970s and early 1980s, relative to other cohorts. These individuals were growing up in the late 1980s and early 1990s, a period during which the UK (and Scotland) experienced substantial increases in income inequality, however whether these facts are related is unclear. For the youngest cohort, upward and downward relative mobility look more similar to the earlier two cohorts than the 1975-1984 cohort (and relative upward mobility is higher for the youngest cohort than for the preceding cohorts), but previous caveats about age v. cohort effects should be borne in mind.

3. Intergenerational worklessness

Are people from workless households more likely to be workless as adults?

A somewhat rudimentary but nonetheless informative way to answer this question is to consider whether individuals who lived in a workless household at 14 are more or less likely to be employed themselves when they take part in the Labour Force Survey⁵.

⁴ Note that the occupational groups we use to assess absolute mobility differ slightly from those we use to assess relative mobility. ‘Absolute mobility’ is calculated by dividing occupations into three groups, high, medium and low, corresponding to SOC2010 classes 1-3, 4-6 and 7-9 respectively. Relative upward mobility is analysed by studying movements into managerial and professional occupations (SOC2010 groups 1 and 2); relative downward mobility is analysed by studying movements into elementary and process occupations (SOC2010 groups 8 and 9), as discussed in the preceding text.

⁵ A more interesting analysis might be to consider whether people from a workless household at 14 are more likely to spend more time out of work as adults, rather than simply whether they are in or out of work at a specific point in time. Unfortunately the data do not allow us to consider this question.

The results are shown in Table 6. The first column shows that the employment rate of males aged 25-60 in Scotland and from a household where at least one adult was working when they were 14 is 84.7%; the equivalent figure for males from a workless household at 14 is 66.9%. There is therefore an 18 percentage point difference in employment rate between the two groups.

For females, the difference in employment rate between those from a working and those from a workless household is larger, at 22 percentage points.

Table 6: Employment rates as adult by working status of household at age 14

	Scotland	
	Males	Females
Working household at 14	84.7%	77.5%
Workless household at 14	66.9%	55.6%
Difference	-17.9%	-21.9%
Unweighted N	4,489	5,194
Weighted N	3,321,373	3,526,818

Notes: All individuals aged 25-60 in waves 1-4 in LFS Q3 2014, 2015, 2016 or 2017.

Why might individuals from workless households be less likely to be employed themselves? We can use the LFS data to test two specific ideas:

- Do people living in workless households at 14 achieve lower education qualifications and are therefore less employable?
- Do people from workless households have worse health experiences, and does this explain their lower likelihood of being employed?

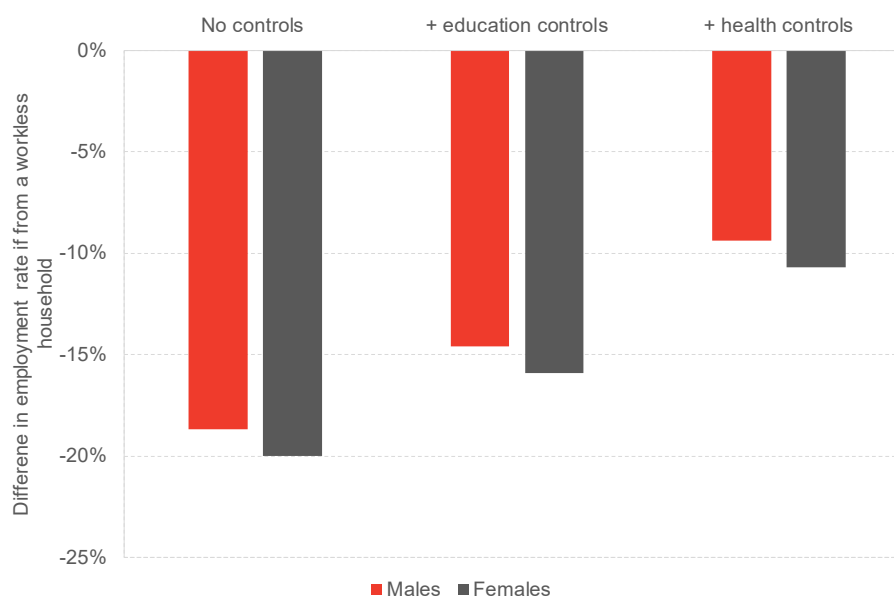
Chart 1 plots, for men and women separately, the ‘raw’ difference in employment rate between those from working and workless households. It then plots, in the second set of columns, this difference after having controlled for education qualifications of individuals. If people from workless households had lower educational qualifications, and this resulted in them being less employable, then inclusion of the education variables would result in a fall in the intergenerational association.

Even after controlling for education men are still 15 percentage points less likely to be employed if they are from a workless household, and women are 16 percentage points less likely to be employed⁶. Education does influence employment prospects: for example, men with a degree are almost 10 percentage points more likely to be employed than men with standard grades only, whilst men with no qualifications are almost 10 percentage points less likely to be employed than those with standard grades. Furthermore, educational attainment is correlated with household working status at age 14: those from workless households are only around half as likely to have a degree as those from working households, and are twice as likely to have no qualifications. However, education itself is not the only, or even the dominant driver of the difference in employment rates between those from workless and working households.

In the third pair of columns, Chart 1 plots the intergenerational worklessness effect after controlling for past and current health problems. The inclusion of these controls reduces the intergenerational worklessness effect further: controlling for education and health, men from workless households are 9 percentage points less likely to be employed than those from working households, and women are 11 percentage points less likely to be employed. These results imply that those from workless households are more likely to experience health problems that lower their employment prospects, potentially through the intergenerational transmission of poor health.

⁶The full table of regression results is included in Annex 1.

Chart 1: Difference in employment rates for those growing up in a workless household compared to a working household, Scotland



Notes: All individuals aged 25-60 in waves 1-4 in LFS Q3 2014, 2015, 2016 or 2017. N = 4,459 (males) and 5,152 (females). See Annex for statistical inference.

So a significant part of the difference in employment rates between those from working and workless households can be attributed to the facts that those from workless households tend to achieve a lower standard of education, and tend to be more likely to have health problems. But even after accounting for these two transmission mechanisms, there is still a strong association between the working status of the household at 14 and working status today.

One potential explanation for the remaining association between the working status of parents and their children might be that, as adults, people often live close to the area in which they grew up. If the areas of relatively weak and relatively strong labour demand remain consistent over time, then this may explain some of the remaining part of the gap. Unfortunately however we are not able to test this hypothesis specifically with the current dataset.

How does intergenerational worklessness in Scotland compare to the UK?

Table 7 shows the equivalent figures for Scotland and for the UK as a whole. What is striking is that being from a workless household at 14 appears to be associated with a smaller employment rate penalty in the UK compared to Scotland. In the UK, the employment rate of males from a workless household at 14 is 13 percentage points below the employment rate of those from a working household (compared to 18pp in Scotland). In the UK, the employment rate of females from a workless household at 14 is 17 percentage points lower than the employment rate of those from a working household (compared to 22pp in Scotland).

These differences in our measure of intergenerational worklessness between Scotland and UK do not 'go away' (or change to any significant extent) if we exclude those born outside the UK (if immigrants are systematically more or less likely to be employed conditional on parental worklessness than the UK-born, then the fact that immigrants form a larger proportion of the UK as opposed to Scottish population might influence the observed gap).

Nor do the differences between Scotland and the UK ‘go away’ if we exclude London from the definition of the UK (it is sometimes assumed that a global city like London might provide enhanced opportunities for intergenerational social mobility, although Friedman and MacMillan 2017 find evidence to refute this hypothesis).

The gap in the intergenerational worklessness effect between Scotland and the UK remains too after controlling for education and health. Males and females from workless households in the UK are 6pp and 9pp less likely to be employed than those from working households⁷, compared to 9pp and 12pp in Scotland. This does not suggest that people from workless households in Scotland are less likely to gain educational qualifications, or are more likely to have health problems relative to those from working households, compared to the UK.

Further investigation is warranted into the reasons for Scotland’s apparently higher intergenerational worklessness gap.

Table 7: Employment rates as adult by working status of household at age

	Scotland		UK	
	Males	Females	Males	Females
Working household at 14	84.7%	77.5%	87.6%	76.4%
Workless household at 14	66.9%	55.6%	74.3%	59.3%
Difference	-17.9%	-21.9%	-13.3%	-17.1%
Unweighted N	4,489	5,194	54,435	61,375
Weighted N	3,321,373	3,526,818	40,064,372	41,012,490

Notes: All individuals aged 25-60 in waves 1-4 in LFS Q3 2014, 2015, 2016 or 2017.

4. Homeownership

Is the probability of being a homeowner influenced by the economic status of one’s parents?

There has recently been growing concern about the implications of house price growth for homeownership. One of the main concerns is that, as the deposit required to become a homeowner increases relative to average incomes, whether one is able to become a homeowner or not depends increasingly on the scale of any inheritances of wealth from parents or grandparents, and less and less about the incomes of individuals themselves.

In this section, we consider the extent to which the probability of being a homeowner is influenced by the economic status of ones parents, relative to one’s own economic status presently. Whilst we cannot observe the level of inheritance or parental financial support in supporting the acquisition of a home, we can nonetheless examine how homeownership varies with the economic status of ones parents, while controlling for other factors likely to affect current income.

⁷ Regression results available on request.

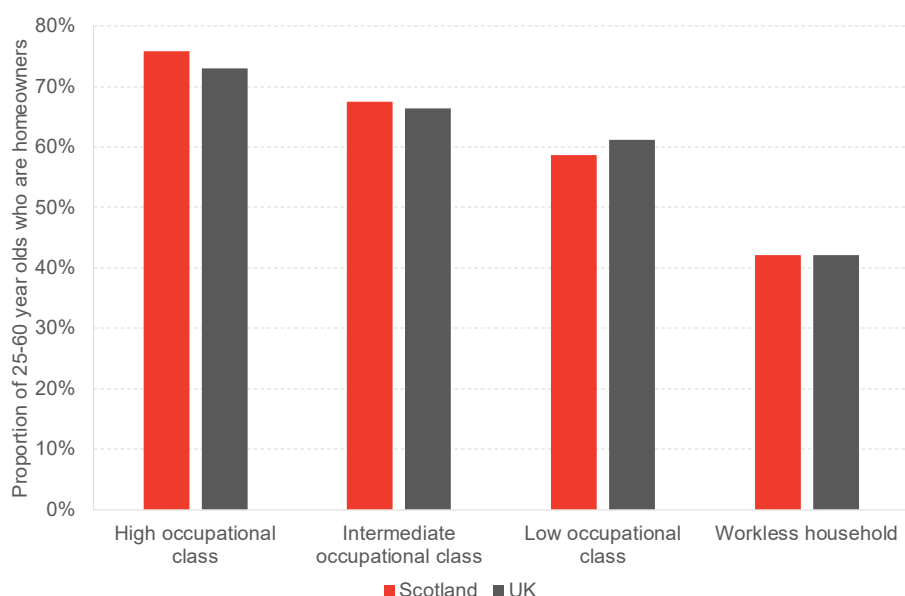
We first classify individuals into one of four groups to reflect the economic status of their parents at 14:

- High occupational class: main wage earner was in managerial, professional or associate professional occupation (corresponding to SOC2010 groups 1-3).
- Medium occupational class: main wage earner was in intermediate occupation (corresponding to SOC2010 groups 4-6).
- Low occupational class: main wage earner was in sales or elementary type occupation (corresponding to SOC 2010 groups 7-9).
- Workless household: no wage earner in the household when respondent was 14.

Chart 2 shows the rate of homeownership among each of these four groups. There is a clear gradient in homeownership: among those whose parent was working in a professional/ managerial job at 14, 76% of 25-60 year olds are homeowners; among those from a workless household, only 41% are homeowners.

The intergenerational social gradient appears broadly similar in Scotland to the UK (in both Scotland and UK, 67% of 25-60 year olds are homeowners).

Chart 2: Rate of homeownership by parental occupational class



Notes: Weighted N = 6,575,210 (Scotland) 76,885,575 (UK). Unweighted N = 9,314 (Scotland); 109,854 (UK)

Of course the fact that individuals from more advantaged backgrounds are more likely to be homeowners is not in itself surprising. People from more advantaged backgrounds are (as we have already seen), more likely to be in high earning occupations themselves. What we are interested in is whether the intergenerational effect remains even after controlling for the factors likely to affect income in the present.

In other words, we want to look at the difference in the likelihood of homeownership between two people who are identical in their own observed characteristics (sex, age, qualifications, occupation, etc.) but who come from different parental backgrounds.

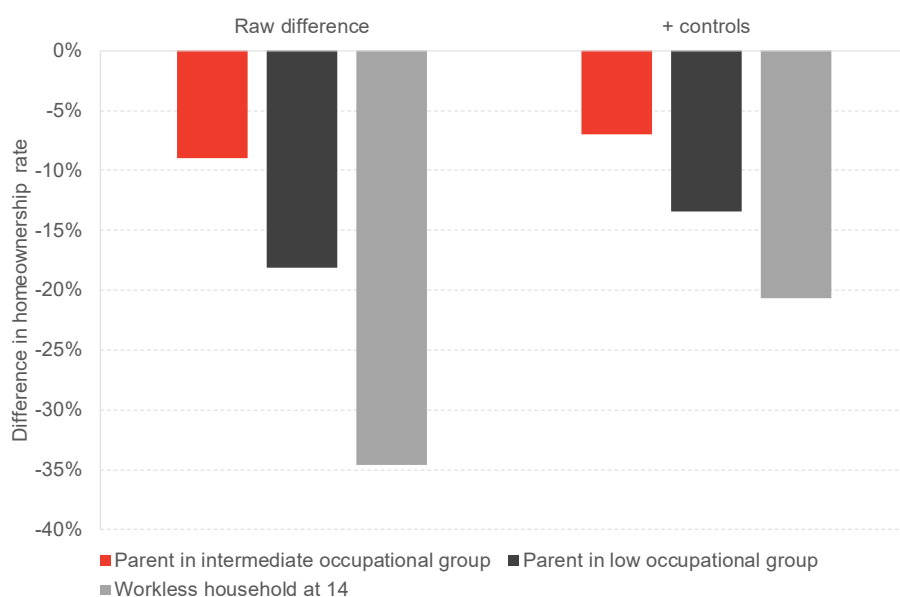
To do this, we regress the probability of being a homeowner on a basket of explanatory variables. These include gender, age, highest qualification, whether or not the respondent was born in the UK, whether the respondent is single or married/co-habiting, whether or not the respondent is employed/self-employed, and the type of occupation that the respondent does. Ideally we would observe respondents' income from employment, but this is not available in our current dataset⁸. As a proxy, we rank 80 two-digit occupational classes into ten deciles of average hourly pay, and allocate each working respondent into an appropriate wage decile based on their occupation.

The regression results are presented in Annex 2.

Chart 3 shows the differences in homeownership rates between individuals from a high occupational class background and those from other backgrounds, before and after controlling for the individual's own observed characteristics.

The chart shows for example that, before controlling for individual characteristics, there is a 35 percentage point difference in homeownership rate between an individual whose parents are from a high occupational background and an individual from a workless household. After controlling for individual characteristics, this gap reduces to 21pp.

Chart 3: Difference in homeownership rate by parental occupational class



Notes: Chart shows difference in homeownership rate for each of the three categories of parental occupational class, relative to have a parent in a high occupational grouping at age 14. Unweighted N = 9,314 (Scotland). See Annex 2 for regression results and detail of controls

The gap in homeownership between individuals of different parental occupational class, even after controlling for individual characteristics, broadly supports the hypothesis that individuals whose parents worked in higher occupational groups are more likely to have benefited from financial support from their parents in acquiring a home.

⁸ The questions on parental occupational class are asked in the Q3 LFS. But questions about employment earnings are only asked when respondents are in waves 1 and 5. This means that we can only observe earnings data and parental occupation simultaneously for individuals who enter the LFS in Q3. Individuals entering the LFS in Q1, Q2 or Q4 answer earnings questions in those quarters uniquely. Matching individuals across quarters is only possible for users with a special licence.

However, it is also likely that our results exaggerate the role of parental social class in influencing homeownership. This is because we have only partially been able to account for relevant individual characteristics. Ideally we would like to control for the net earnings of the household over time. Controlling only for the occupational wage decile, age and qualification status of one member of the household (who may not necessarily be the main wage earner) is in reality a relatively poor proxy of household lifetime income.

In future work we hope to investigate this issue further by accessing more detailed data on respondents' earnings, and various characteristics of the household.

5. Conclusions

This paper sheds new light on various aspects of intergenerational social mobility in Scotland, using data from the Labour Force Survey.

The results show that the occupation of ones parents at age 14 has a strong influence on the occupations that people do as adults. The influence of parental occupational class on one's own occupation appears at least as strong in Scotland as it is in the UK.

Evidence as to whether intergenerational occupational mobility is increasing or decreasing is mixed, and is in any case difficult to assess definitively with the current dataset.

The data also show that growing up in a workless household significantly increases the chances of being workless as an adult. This intergenerational worklessness effect appears stronger in Scotland than the UK, even after controlling for the effect of the intergenerational transmission of education and health. Understanding the causes of this gap is worthy of further research.

There is also a strong association between the occupation of ones parents at age 14 and the probability of being a homeowner, even after controlling for age and the type of job that one does as an adult. This suggests that intergenerational transfers of wealth are significant in influencing housing tenure.

Access to 'special licence' versions of the LFS will permit further analysis of social mobility in Scotland. The special licence versions of the LFS include more finely grained occupation data, smaller area geographical data, and data on individual wages.

In summary, the occupation of one's parents does play a significant role in influencing the labour market and housing market opportunities one has as an adult in Scotland. And the significance of intergenerational transfer of opportunity appears at least as great in Scotland as in the UK.

Low levels of social mobility are objectionable on moral grounds in the context of what might be perceived as fair. But low levels of social mobility may also have wider economic implications if this limits the extent to which talented individuals are able to fulfil their potential within the economy.

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Annex: further data tables

Table A1: Difference in employment rate between those from a workless as opposed to working household, regression results

VARIABLES	(1) Males	(2) Females	(3) Males	(4) Females	(5) Males	(6) Females
Workless household at 14	-0.187*** (0.034)	-0.200*** (0.034)	-0.146*** (0.033)	-0.159*** (0.034)	-0.094*** (0.033)	-0.107*** (0.035)
Degree or higher			0.092*** (0.014)	0.129*** (0.015)	0.039** (0.015)	0.096*** (0.015)
Other HE			0.074*** (0.015)	0.057*** (0.017)	0.043*** (0.016)	0.050*** (0.017)
Highers or equivalent			0.030* (0.016)	0.043** (0.018)	0.007 (0.016)	0.031* (0.019)
National Level 5			Baseline	Baseline	Baseline	Baseline
Other qualifications			-0.017 (0.024)	-0.075** (0.030)	-0.021 (0.025)	-0.052* (0.031)
No qualifications			-0.177*** (0.029)	-0.223*** (0.028)	-0.091*** (0.028)	-0.138*** (0.029)
No current health problems			Baseline	Baseline	Baseline	Baseline
Current health problem					-0.042** (0.016)	-0.026 (0.018)
Current health problem limits activity					-0.166*** (0.029)	-0.116*** (0.025)
Current health problem limits activity a lot					-0.658*** (0.031)	-0.518*** (0.028)
No past health problem					Baseline	Baseline
Past health problem limits activity					-0.114 (0.070)	-0.093 (0.070)
Past health problem limits activity a lot					-0.019 (0.065)	-0.032 (0.076)
Observations	4,489	5,194	4,473	5,186	4,459	5,152

Notes: dependent variable is binary variable to reflect employment status (1= employed, 0= not in employment). Regression restricted to individuals aged 25-60. Results are unweighted. All explanatory variables are dichotomous.

Table A2: Homeownership by parental occupational class

VARIABLES	(1) Scotland	(2) UK	(3) Scotland	(4) UK
Intermediate occupational class	-0.090*** (0.012)	-0.073*** (0.003)	-0.070*** (0.013)	-0.042*** (0.004)
Low occupational class	-0.181*** (0.014)	-0.130*** (0.004)	-0.134*** (0.015)	-0.078*** (0.004)
Workless household	-0.346*** (0.025)	-0.319*** (0.007)	-0.207*** (0.030)	-0.185*** (0.008)
Age			0.011*** (0.001)	0.011*** (0.000)
Gender			0.036*** (0.011)	0.034*** (0.003)
Married			0.222*** (0.012)	0.189*** (0.003)
UK born			0.263*** (0.020)	0.247*** (0.004)
Employed			0.360*** (0.033)	0.296*** (0.009)
PT			0.017 (0.015)	0.012*** (0.004)
Occ. Decile 1			-0.259*** (0.038)	-0.220*** (0.010)
Occ. Decile 2			-0.191*** (0.037)	-0.164*** (0.010)
Occ. Decile 3			-0.134*** (0.036)	-0.098*** (0.009)
Occ. Decile 4			-0.074* (0.038)	-0.059*** (0.010)
Occ. Decile 5			-0.062* (0.037)	-0.047*** (0.009)
Occ. Decile 6			-0.042 (0.039)	-0.032*** (0.010)
Occ. Decile 7			-0.038 (0.040)	-0.055*** (0.010)
Occ. Decile 8			-0.009 (0.033)	-0.018** (0.008)
Occ. Decile 9			-0.023	0.007
Occ. Decile 10			Baseline (0.032)	Baseline (0.008)
Degree or higher			0.125*** (0.015)	0.106*** (0.004)
Other HE			0.073*** (0.015)	0.066*** (0.005)
Highers or equivalent			0.070*** (0.015)	0.043*** (0.004)
National Level 5			Baseline -0.063**	Baseline -0.070***
Other qualifications			(0.025)	(0.006)
No qualifications			-0.141*** (0.023)	-0.127*** (0.007)
Observations	9,314	109,854	9,293	109,680

Notes: dependent variable is binary variable to reflect homeownership status. Regression restricted to individuals aged 25-60. Results are unweighted. All explanatory variables are dichotomous other than Age which is continuous. The Occupational Decile variables are ten dummy variables to indicate which occupational decile the respondent works in, where 80 occupational sub-groups have been ranked according to median UK wage in 2014.

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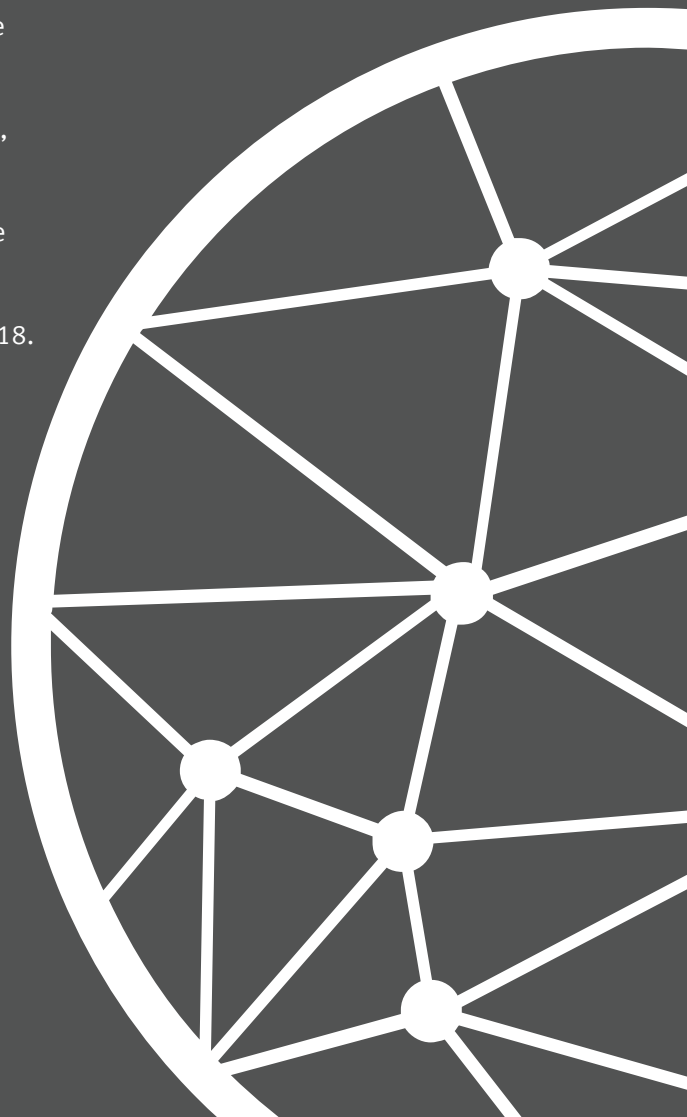
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