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The Scottish economy

1 Outlook and appraisal

Brian Ashcroft, Economics Editor, Fraser of Allander Institute

Overview

Growth in the Scottish economy in the 2nd and 3rd quarters of last year almost halted, with an outturn of 0.1% in each quarter. The main reason for the slowdown is the low price of oil, which appears to be having a pervasive net negative effect on Scotland's economic growth leading to a widening of the gap between growth in Scotland and growth in the UK. On the latest data, the Scottish economy has now enjoyed positive growth for the last 12 quarters (since 2012q3) while in the UK the sustained recovery period has been slightly shorter at 11 quarters from 2012q4. However, the UK recovery from the Great Recession has overall been stronger than in Scotland. UK GDP (ex oil & gas) now stands 7.1% above the pre-recession peak compared to only 3.1% in Scotland.

The pattern of growth between Scotland and the UK again differed in the third quarter, but the divergence was probably less than in some earlier quarters. In the UK, the service sector was again by far the main driver of the overall growth rate. In Scotland the service sector was also the main driver of growth, while the construction sector, which was the main driver of Scottish growth in the second quarter, still continued to contribute positively but by only a small amount as the growth in infrastructure spending and house building slowed down. In contrast, the sector's contribution to UK growth was again negative. The production sector continued the pattern begun in the second quarter of contributing negatively to growth in Scotland while making neither a positive or negative contribution to growth in the UK. Within production, manufacturing in the UK made no contribution to growth, while in Scotland making a small negative contribution, a continuation of the performance in the second quarter but a reversal of the earlier pattern. In Scotland electricity & gas also made a negative contribution to growth, with the other production sub-sectors were flat lining.. The production sub-sectors in the UK all made a zero contribution to growth.

Despite the stronger performance of the service sector in Scotland, financial services activity continued to weaken with the prospect of recovery to pre-recession levels of activity now looking less and less likely. The weakness of financial services and the negative impact of the low price of oil on business services were not, however, sufficient to halt the growth of business and financial services overall, which still grew by 0.3% in the 3rd quarter and by 1.4% over the year.

The weakness in Scotland's GDP growth has not yet impacted overmuch on the labour market. In the quarter to December 2015 employment rose by 22,000 (0.8%) to 2,636,000 while unemployment fell by 5,000 (-2.8%) to 162,000 with the rate falling to 5.8%. Yet, the jobs recovery remains weaker than in the UK as a whole. By the end of the third quarter, Scottish jobs as reported in the LFS household surveys were 3.2% above the pre-recession peak, while UK jobs were 5.7% above peak.

In January of this year there was significant turbulence in global financial markets with a flight away from stocks and shares into government bonds as confidence in the 'real' economy diminished. This was presumably a belated reaction to the slowdown in China's economy, weakening in US growth in the 4th

quarter of 2015 and further falls in the price of oil indicating a lack of demand relative to supply. But the fundamentals in the global economy were little changed from when we last reported in November. However, the financial turbulence itself may have a dampening effect on economic activity as companies find it more difficult to raise external finance for investment.

Going forward, the main positive influences on Scotland's economic growth are: domestic demand is still growing; domestic inflation is close to zero; nominal earnings/income growth is picking up slowly and so boosting real income; interest rates remain low and household demand is boosted by some pick up in wages and earnings; and external demand for goods and services is being boosted by the continued resilience of the US economy and a gradual pick up in growth in the Eurozone as the risks of deflation appear to recede.

The main threats to Scotland's economic growth are: the low price of oil, which producing a negative effect on Scottish growth, with the negative supply effect outweighing a positive demand effect. This negative effect is being sustained as the longer than expected delay in the recovery of oil prices is dampening overall investment expenditure; growth remains unbalanced with household spending the key driver fuelled largely by rising household debt which appears unsustainable; net trade (exports minus imports) continues to be strongly negative, exacerbated by slowdown in China and 'policy normalisation' in United States; fiscal austerity continues in the UK, although the tightness of fiscal policy was loosened in the Autumn Statement after favourable OBR tax revenue forecasts. The risk is that the UK Government fails to meet its fiscal targets as tax revenues do not meet expectations and so the government re-intensifies austerity in order to attain its targets. Indeed, the Chancellor on his recent visit to China has suggested that he may need to tighten the fiscal stance in his Budget as tax revenues remain weak with growth of GDP now projected to be lower. If he indeed does so, we believe that it would be a mistake serving to worsen the slowdown in growth and tax revenues. Finally, the referendum on the UK's membership of the EU announced for June 23 2016 increases uncertainty significantly in the short term, which is likely to have a negative effect on investment, as plans are postponed until the outcome is clearer.

It is our view that the risks confronting the Scottish and UK economies are heavily skewed to the downside and with a sustained low price of oil downside risks are even greater for the Scottish economy. It is against this background that we have prepared our latest forecasts of the Scottish economy.

On GDP, our forecast for 2015 – for which we do not have official 4th quarter data until April 2016 - is 1.9%, which is exactly the same as our forecast in November 2015. For 2016, we have revised *down* our forecast from 2.2% in November to 1.9%. This is mainly driven by apparently slowing income growth, a weakening of previously strong domestic investment growth, and an extension of the expected period in which a low price of oil is likely to be sustained. On our central forecast, we are forecasting a pick up in the rate of growth in 2017 as the economy rides out the challenges of 2016 and the price of oil in particular begins to rise to more favourable levels. But at 2.2% our forecast of 2017 remains *below* our November forecast of 2.5%.

On employment, the number of employee jobs is forecast to increase in each year, and the number of jobs added in 2015, 2016 and 2017 has been revised *down* since our November 2015 forecast. The number of jobs at the end of 2015 is now forecast to be 2,415,200, an increase of 1.3% during 2015.

Our new central forecast is that the Scottish economy will add 36,800 jobs in 2016, down by around 9,000 from our November forecast, with a net of 46,850 jobs added in 2017, down by almost 8,000 from our November forecast.

On unemployment, we forecast in November that the rate would fall to 6.2% by the end of 2015, with a level of unemployment of 169,150. The recent labour market data indicate that the ILO unemployment rate in the final quarter was 5.8%, with a level of 162,000. Our latest forecasts for the unemployment rate in Scotland for the end of 2016 and 2017 are 5.7% and 4.8% and for numbers 153,350 and 159,850, respectively.

In this Outlook & Appraisal we continue to consider the long-term challenges facing the Scottish economy against a background of new and revised data on past economic growth. A consideration of policy issues on growth has been set aside for another time to allow a discussion of the potential consequences for the Scottish economy if the UK were to leave the EU – ‘Brexit’ – following the forthcoming referendum on 23 June 2016.

Scottish Government’s statisticians have now compiled a time series of Scottish GDP under the European System of Accounts (ESA) 2010 where previously the data as used in the November Commentary was based on the old ESA 1995 system. Analysing these new data leads us to conclude that Scotland’s growth performance over the long-run has been weaker than the UK with GDP per head growth evened out by falling and/or slower population growth in Scotland, with some of that weaker population growth reflecting the relative performance of the Scottish economy. The difference is small but not necessarily trivial: approximately, with 2.4% p.a. growth, GDP would double in 30 years compared to 34 years with 2.1% p.a. growth. Scotland’s growth rate could be increased by faster population growth but this, even if it were achieved for a while, would be unlikely to be sustainable. Moreover, growth due to a rising population per se would be unlikely to raise GDP per head. For that we must improve our competitiveness by improving our productivity performance.

The latest data on Scotland’s labour productivity performance shows it to be rising both absolutely and relative to UK but to still be about 2.4% below the UK. Academic research suggests that overall – i.e. ‘Total Factor’ – productivity in Scotland is much lower than rest of UK. In the absence of faster population growth, Scotland can only sustain an improved growth rate by raising its competitiveness.

Our analysis of the implications of Brexit for the Scottish economy leads us to conclude that it is difficult to imagine that it would help improve Scotland’s competitive position with respect to our trade with the EU. The decline in electronics production and the erosion of Scotland’s manufacturing base has meant that Scotland has struggled to maintain its penetration of EU markets even on the favourable trading terms obtained through membership. It beggars belief that any post BREXIT trading relationship with the EU would be better than current arrangements. The best we could hope for is a free trade area but there is no guarantee that that would be given to us. The likelihood would be that trading arrangements would be less favourable than in the EU. So, not only would actual and potential Scottish exporters have to overcome their weaker competitive position due to lower labour and total factor productivity they would face the additional hurdle of less favourable trading arrangements. Moreover, Brexit might worsen Scottish productivity growth particularly via the negative effects on trade, inward investment and financial integration.

Membership of the EU is found by several academic studies to have contributed positively to trade flows between member states, when the size of these countries and the distance between them is controlled for. Moreover, this 'trade creation' benefit is shown to be greater than the 'trade diversion' cost of trade being diverted away from other non-EU countries.

On Foreign Direct Investment (FDI), since the establishment of the Single Market on 1 January 1993, inward FDI stocks have increased faster in both the UK and EU (as a percentage of GDP) than in the US and the rest of the world. Over that same period, the UK has, on average, remained the top recipient of FDI inflows into the EU. By 2013, the EU accounted for around 50% of the stock of UK inward FDI, compared with 27% from the US and 7% from Asia. Scotland has benefited considerably from these flows and in recent years has been the top UK destination for FDI both from the EU and from outside the EU. It cannot be simply assumed that these flows would continue unaffected by BREXIT, when much EU and non-EU sourced FDI comes to Britain and Scotland in order to service the EU market and research cites this as a key reason for such investment.

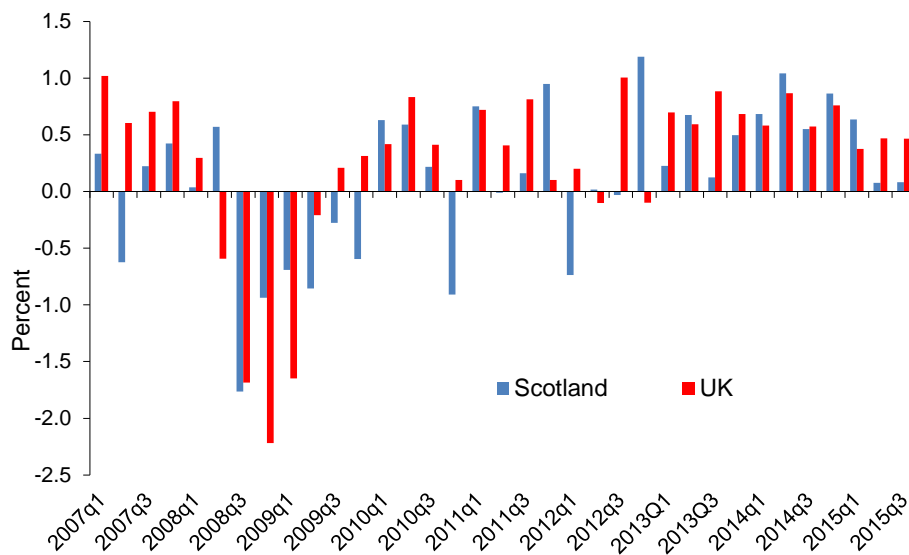
There are several academic studies that seek to identify the impact of Brexit on the UK economy. One key study in 2014, by the Centre of Economic Policy (CEP) at the London School of Economics, estimated that UK GDP would be reduced by up to 9.5% of GDP in a world where the UK cannot negotiate favourable trade terms with the EU. However, under a more optimistic scenario, in which the UK secures a free trade agreement with the EU, CEP estimates the losses to be around 2.2% of GDP. The static trade welfare effects of Brexit – i.e. the loss of trade creation benefits - are estimated by CEP to range from 1.1% to 3.1% of GDP. However, once the estimated dynamic losses of Brexit on productivity growth through reduced competition and reduced technological innovation linked to lower FDI inflows and reduced financial integration, CEP's estimates of loss rise to 2.2% to 9.5%. The harmful dynamic effects on productivity growth of Brexit are stressed by other academics who highlight the importance of intra-industry trade within the EU, which generates gains to productivity driven by increased competition and technological innovation engendered by such trade.

Scottish voters in the referendum on June 23rd should not lightly dismiss this warning about the consequences of Brexit for productivity growth in view of the already weak performance of Scottish productivity highlighted in this Commentary.

Recent GDP performance

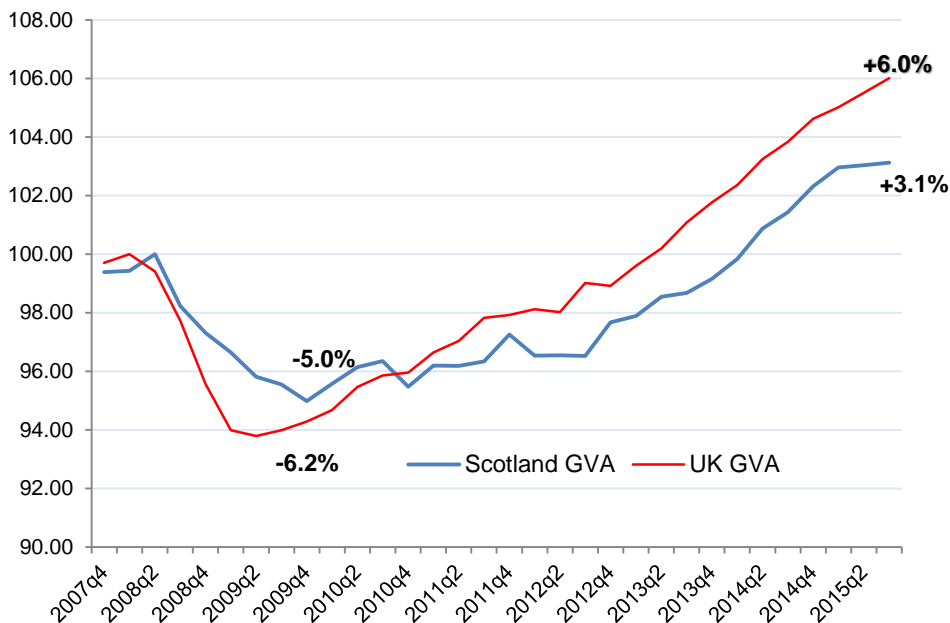
The latest Scottish GDP data are for the third quarter of last year (2015q3). The chained volume measure of GDP rose by 0.1% in Scotland in the quarter, while UK GDP rose by 0.4%. Over the year – four quarters on four quarters – Scottish growth was slightly stronger than UK growth at 2.5% compared to 2.4%. However, the marked weakening of Scottish growth from the second quarter of last year means that the growth between the third quarter of 2015 and the third quarter of 2014 of 1.7% is, in present circumstances, a better indication of annual Scottish growth. The four-quarter on four-quarter average for the final quarter of 2015 is likely to be closer to 1.7% than 2.5% due to the slow down. The Scottish and UK quarterly growth rates back to 2007q1 are presented in Figure 1.

Figure 1: Scottish and UK quarterly GDP growth, 2007q1 - 2015q3



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and Fraser of Allander Institute (FAI) calculations

Figure 2a: GDP in recession and recovery Scotland and UK to 2015q3 (Relative to pre-recession peak)



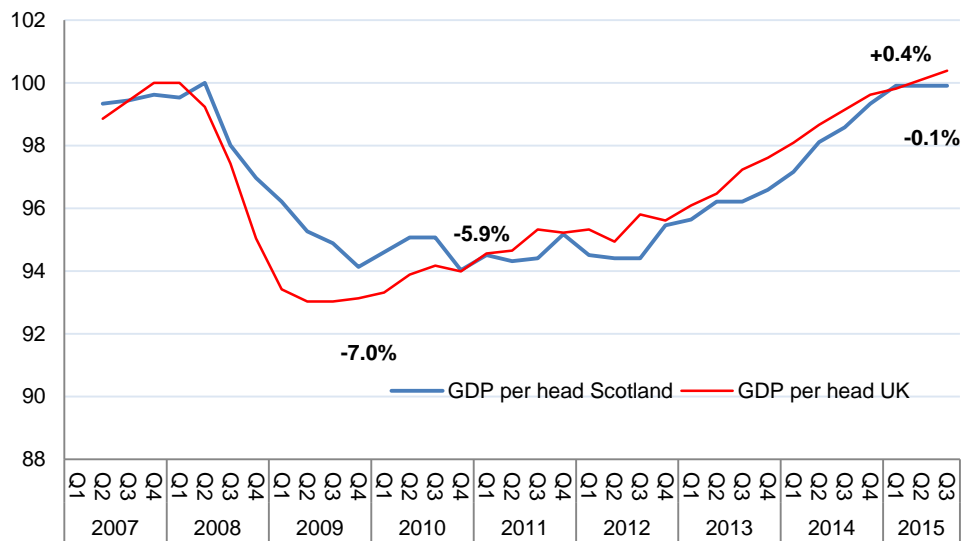
Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

On the latest data, the Scottish economy has now enjoyed positive growth for the last 12 quarters (since 2012q3) while in the UK the sustained recovery period has been slightly shorter at 11 quarters from

2012q4. However, the UK recovery from the Great Recession has overall been almost twice as strong as that in Scotland as is shown in Figure 2a.

By the third quarter, Scottish GDP was 3.1% above the pre-recession peak while UK GDP was 6.0% above its peak. So, in view of the greater depth of recession in the UK, with GDP falling by -6.2% compared to a drop of -5% in Scotland, it seems clear that the UK has enjoyed a considerably stronger recovery than Scotland even though the recovery has been weaker than from any previous recession over the previous 80 years. And the data reveal that growth from the trough of the recession to the third quarter of this year amounts to 8.6% in Scotland and 13.0% in the UK.

Figure 2b: GDP per head Scotland and UK recession and recovery to 2015q3

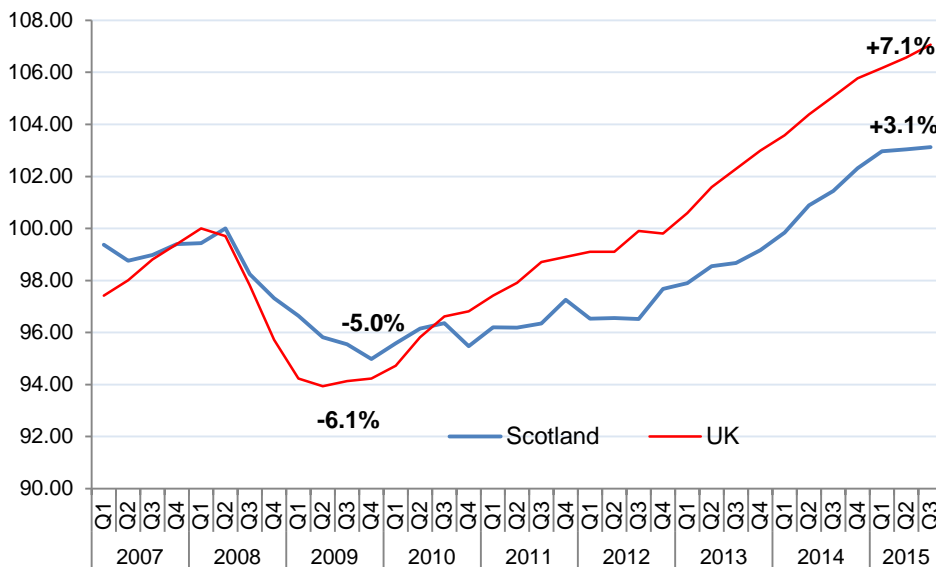


Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

As noted in previous Commentaries, Scottish Government statisticians are now producing GDP per head data, which in many ways is a better measure of the prosperity of people in Scotland. In addition, recent years have seen high inward migration into the UK and Scotland, so in assessing the performance of the economy of over time we really need to control for changing population. Data for recession and recovery in GDP per head in Scotland and the UK are presented in Figure 2b.

In the third quarter UK GDP per head stood at +0.4% above its pre-recession peak. The position is worse for Scotland with GDP per head in 2015q3 -0.1% below pre-recession peak. These data underline the continuing weakness of the recovery in both the UK and Scotland.

Returning to the overall GDP data we need to allow for the complicating factor of oil and gas production, which for offshore production is included in the UK GDP data but not in the Scottish data. Removing oil and gas production from UK GDP data gives us Figure 3.

Figure 3: GDP (ex oil & gas) recession and recovery to 2015q3

Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

When oil and gas production is removed, we find again that the gap in the strength of the recovery continues to be wider in the UK's favour. UK GDP (ex oil & gas) stands 7.1% above the pre-recession peak compared to 3.1% in Scotland. The long period of weak UKCS oil and gas production has slowed the recovery of UK GDP from recession. So, UK GDP - ex oil & gas - has had an even stronger recovery from recession than Scottish GDP. Scottish GDP has recovered by 8.6% since the trough of recession while UK GDP - ex oil & gas - has recovered by 14.0% from its trough by 2015q3, compared to 13.0% when oil and gas output is included. In the latest quarter, UK GDP ex oil and gas rose by 0.5% - more than the 0.4% reported when oil & gas is included - and by 2.3% over the year, four quarters on four quarters.

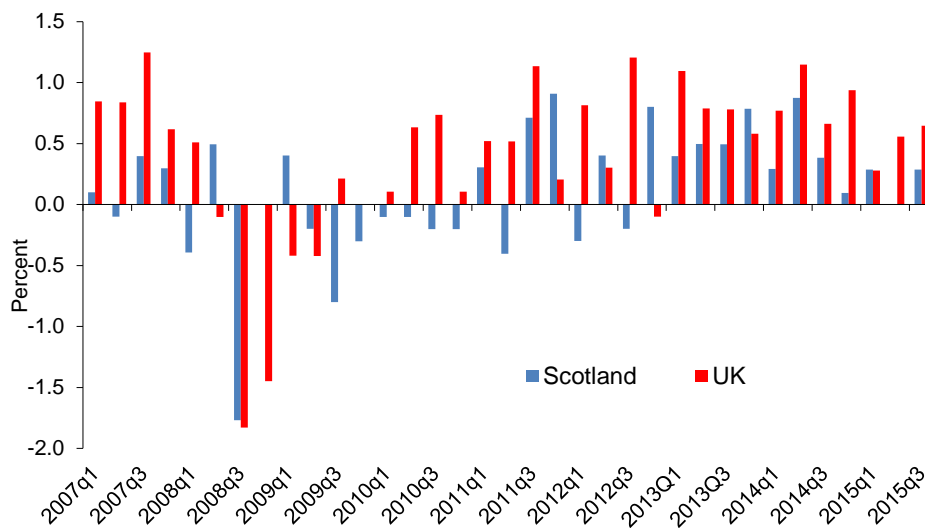
Sectoral Components of GVA growth

Turning now to individual sectors of the economy, we see that the pattern of growth between Scotland and the UK again differed in the third quarter, but the divergence was probably less than in some earlier quarters. In the UK, the service sector was again by far the main driver of the overall growth rate of 0.4% by contributing growth of +0.5% points. In Scotland the service sector was also the main driver of growth contributing +0.2% points. The construction sector, which was the main driver of Scottish growth in the second quarter still continued to contribute positively but by only +0.1% in the third quarter, while the sector's contribution to UK growth was again negative at -0.1% points. The production sector continued the pattern begun in the second quarter of contributing negatively to growth in Scotland - by -0.2% in the third quarter - while making neither a positive or negative contribution to growth in the UK. Within production, manufacturing in the UK made no contribution to growth, while making a negative

contribution -0.1% points in Scotland, a continuation of the performance in the second quarter but a reversal of the earlier pattern. In Scotland electricity & gas also made a negative contribution to growth of -0.1% points, with the other production sub-sectors neither providing a positive or negative contribution to Scottish growth. The production sub-sectors in the UK all made a zero contribution to growth. These data provide evidence that the 'march of the makers' and the desire of the UK Government to 'rebalance' the UK economy away from an over-reliance on services towards manufacturing has not, as yet, been forthcoming.

Service sector

Figure 4: Scottish and UK Services GVA Growth 2007q1 to 2015q3



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

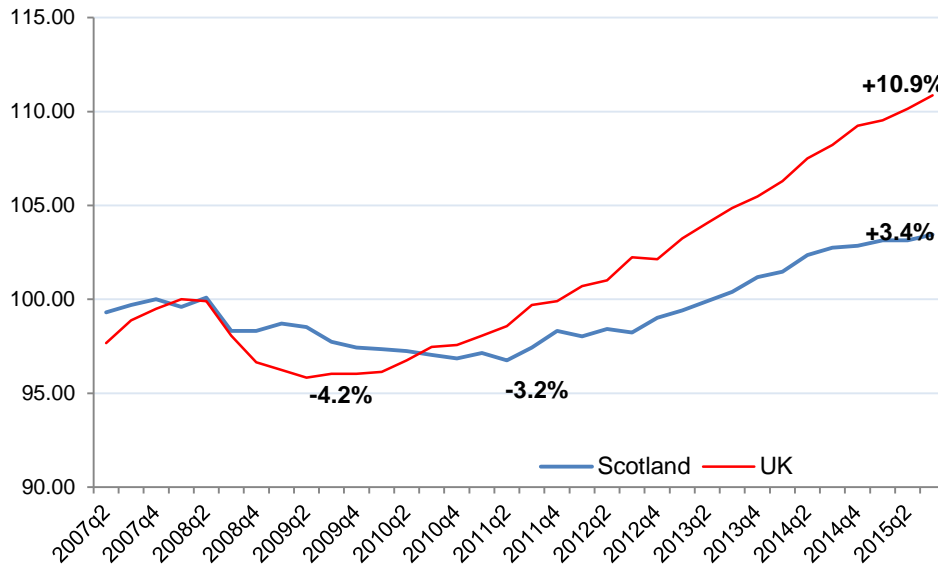
The Scottish service sector, which on 2012 weights accounts for 75% of GDP in Scotland and 78% in the UK, grew by 0.3% in Scotland in the third quarter and produced 1.2% growth over the year – four quarter on four quarter. In contrast, UK services output registered positive growth of 0.6% in the quarter - see Figure 4 – and 2.9% over the year.

The state of the recovery in Scottish and UK services is presented in Figure 5. After experiencing a shallower but more drawn out recession in Scotland of -3.2% compared to -4.2% in the UK, output in the sector stood at 3.4% above its pre-recession peak by the third quarter of last year very significantly less than the 10.9% above peak achieved in the UK.

Continuing weaker service sector growth in the third quarter in Scotland meant that the gap between the scale of the recoveries widened further in favour of the UK to +7.5% points. As noted in the previous Commentary, the effect of the slowdown in the oil & gas industry due to the low price of oil is affecting

the service sector in Scotland much more than the UK, because of the concentration of the oil-services supply chain in Scotland. And that effect continued into the third quarter.

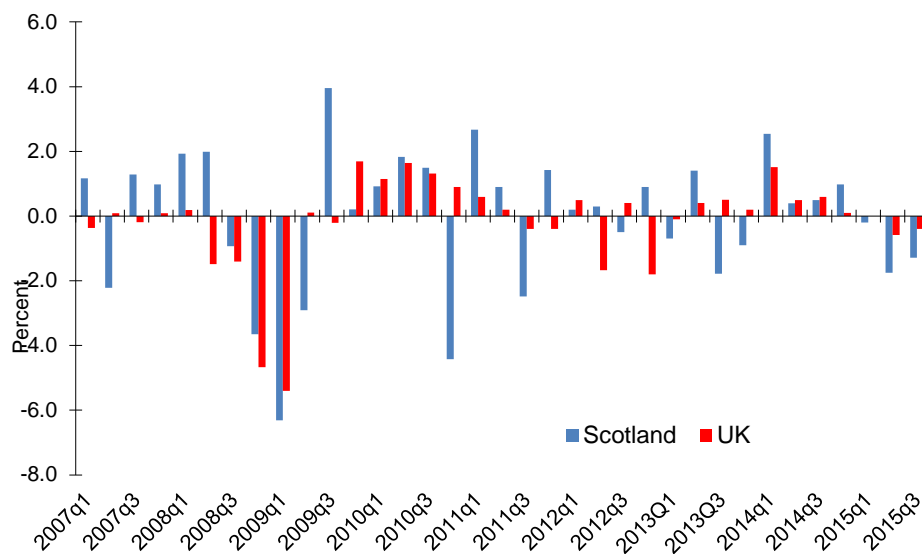
Figure 5: Services GVA in recession and recovery Scotland and UK to 2015q3



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015 and FAI calculations

Production / Manufacturing sector

Figure 6: Scottish and UK Manufacturing GVA Growth at constant basic prices 2007q1 to 2015q3



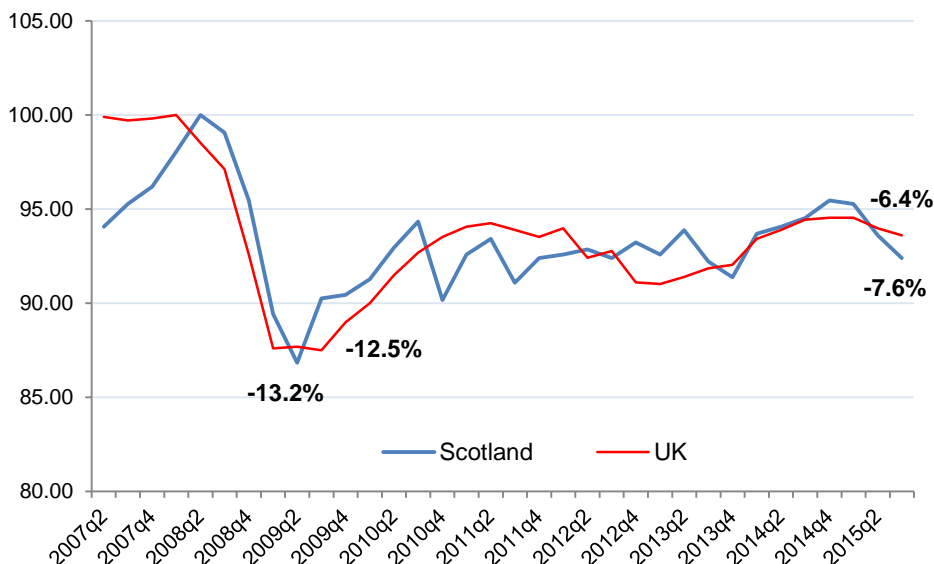
Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

The production sector in Scotland contracted by -1.0% in the quarter but grew by 1.5% over the year. Despite the slowdown in the past two quarters, the sector has been a key driver of Scotland's recovery growing by 9.6% since the trough of the recession compared to 8.6% for the economy as a whole. This contrasts with the growth of 6.2% in the Scottish service sector since the trough of the recession. In the UK, despite the stronger performance in the second and third quarters, the production sector remains a drag on the recovery with growth of 2.6% to 2015q3 since the trough of the recession compared to the 13.0% growth of overall GDP. Scottish production output fell in the third quarter by -1.0% while UK production output grew slightly by 0.2%. Over the year - four quarters on four quarters – Scottish production GVA rose by 1.5%, while UK production output rose by 1.2%.

Within production, Mining & quarrying GVA grew by 1.3% in the third quarter and rose by 2.6% over the year (UK mining & quarrying rose by 2.6% and 3.8%, respectively). Electricity & gas supply GVA contracted by -3.7% in the third quarter but rose by 0.6% over the year (UK electricity & gas supply 1% and 0.3%, respectively). In the third quarter, GVA in Scottish manufacturing again fell by -1.3% but rose by 0.8% over the year, while UK manufacturing output contracted by -0.4% in the quarter rising by 0.8% over the year. Figure 6 charts the quarterly percentage changes in GVA in Scottish and UK manufacturing.

Figure 7 shows the impact of the latest data on the manufacturing sector's recovery from recession.

Figure 7: Manufacturing GVA in recession and recovery Scotland to 2015q3



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

By the third quarter of last year Scottish manufacturing GVA was -7.6% below its pre-recession peak, compared to -6.4% for manufacturing in the UK. The latest figures confirm that the sustained recovery enjoyed by UK manufacturing since the first quarter of 2013 and in Scottish manufacturing since the

fourth quarter of 2013 has clearly come to an end. It is a matter of deep concern that the level of manufacturing output in both Scotland and the UK as a whole is lower than the level it was at in the third quarter of 2010. Trend growth has been zero over the past 5 years.

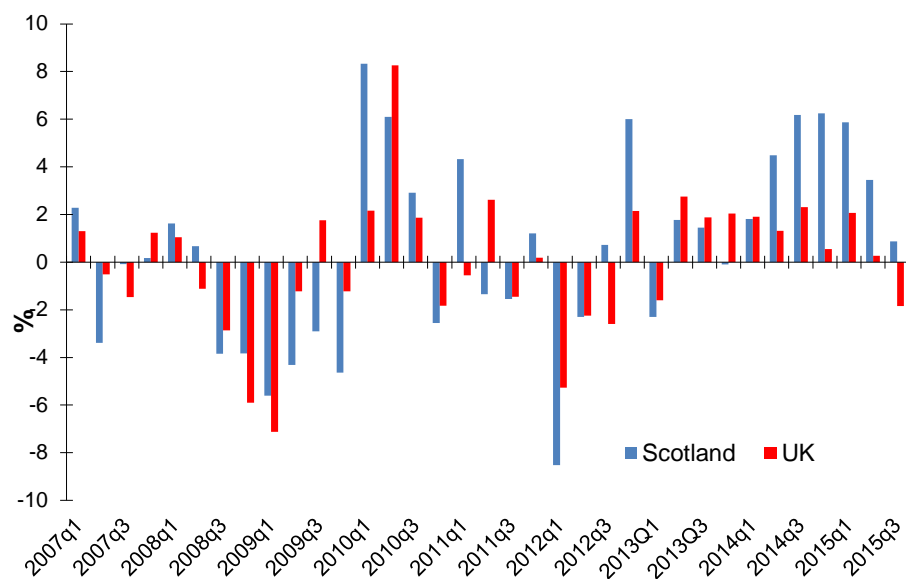
Within manufacturing, only three of the seven principal sectors experienced growth in the third quarter: clothing & leather products (accounting for 4% of manufacturing GVA) grew 2.5% in the quarter but contracted by -4.0% over the year; food & drink (accounting for 27% of manufacturing GVA) grew by 2.7% in the quarter and by 4.1% over the year; and computer, electrical and optical products (electronics) (accounting for 10% of manufacturing GVA), grew by 1.2% in the quarter and by 6.0% over the year.

However, that growth performance was offset by the four manufacturing sub-sectors that contracted in the quarter: metals, metal products & machinery n.e.c. (accounting for 17% of manufacturing GVA) contracted by -8.4% in the quarter and by -9.4% over the year; transport equipment (accounting for 7% of manufacturing GVA) contracted by -1.5% in the quarter but grew by 4.6% over the year; other manufacturing industries, repair & installation (accounting for 24% of manufacturing GVA) which contracted by -1.6% in the quarter and by -0.3% over the year; and refined petroleum, chemical & pharmaceutical products (accounting for 13% of manufacturing GVA) which contracted by -3.7% in the quarter but grew by 5.9% over the year.

Construction sector

Turning now to construction, the latest data are presented in Figure 8.

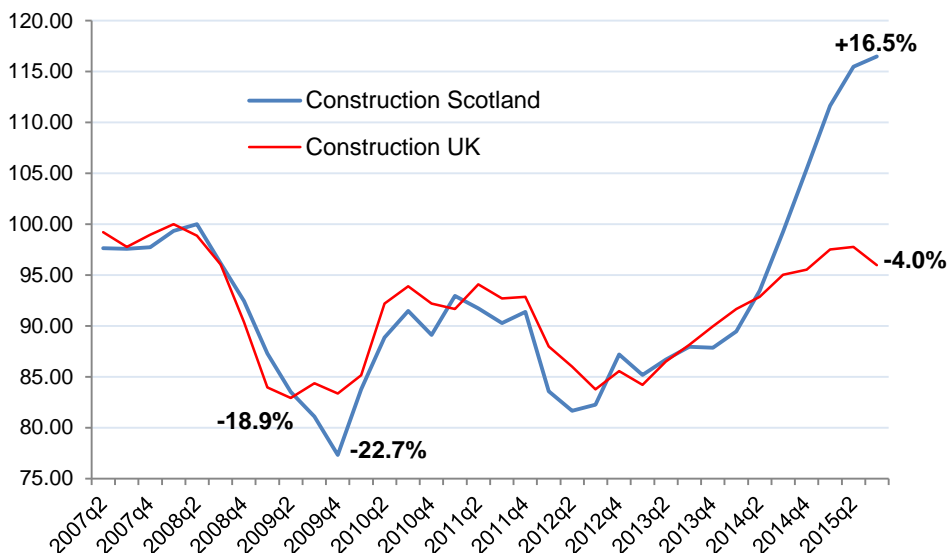
Figure 8: Scottish & UK Construction GVA Volume Growth 2007q1 - 2015q3



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

Scottish construction GVA grew again in 2015q3 but at 0.9% much more weakly than the 3.4% recorded in the previous quarter and average growth of 4.7% in the earlier 4 quarters. Over the year the sector grew by a remarkable 21.3%. The UK construction sector contracted by -1.9% in the third quarter but grew by 4.7% over the year. Figure 9 shows the recession and recovery performance of both the Scottish and UK construction sectors.

Figure 9: Construction, Recession and Recovery to 2015q3



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

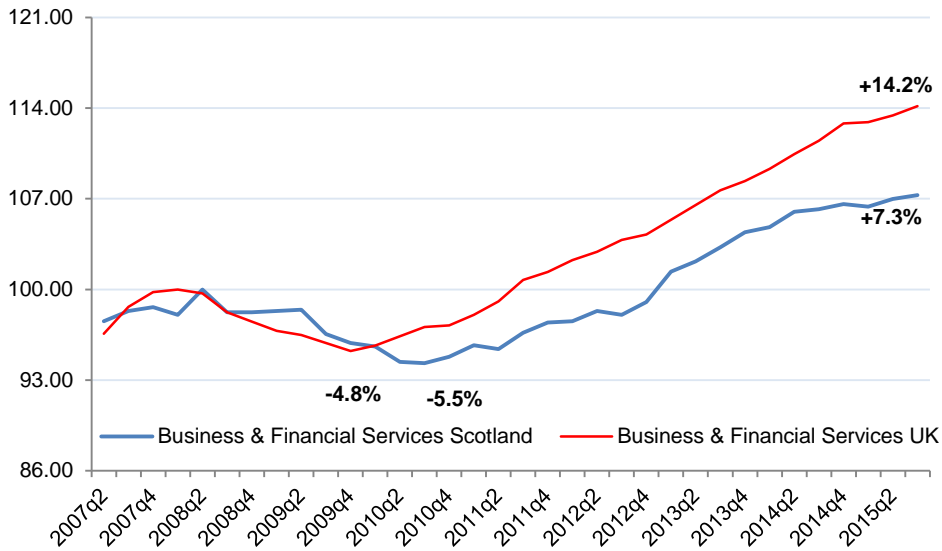
Figure 9 shows how Scottish construction activity has surged since the final quarter of 2013 but the chart also suggests given the latest data that that surge is coming to an end. The chart shows that by the 2015q3 Scottish construction had moved to 16.5% above its pre-recession peak compared to UK construction, which was -4.0% below its pre-recession level. We noted in the previous Commentary, that the surge in Scottish construction output could be almost wholly explained by a surge in spending on infrastructure, which almost quadrupled between 2012q1 and 2015q2. The rise in infrastructure spending appeared to be driven by increased public spending on infrastructure by the Scottish government, with spending on the new Queensferry Crossing of the Forth, the Borders Rail link and motorway spending likely to be major elements. But it is clear from ONS data on output in the construction industry that the rate of growth of infrastructure spending slowed in the third quarter of last year, with growth over the year to 2015q3 – quarter on quarter – slowing to 53%, compared to 87% in the year to 2015q2. It is worth noting that the growth of other components of construction output such as public and private house building and other public construction also slowed.

Components of private services sector growth

Within services, two of the three principal sub-sectors in the private sector posted positive growth in the third quarter: business and financial services and distribution, hotels and catering. Business and financial services grew by 0.3% in the quarter and grew by 1.4% over the year, compared respectively,

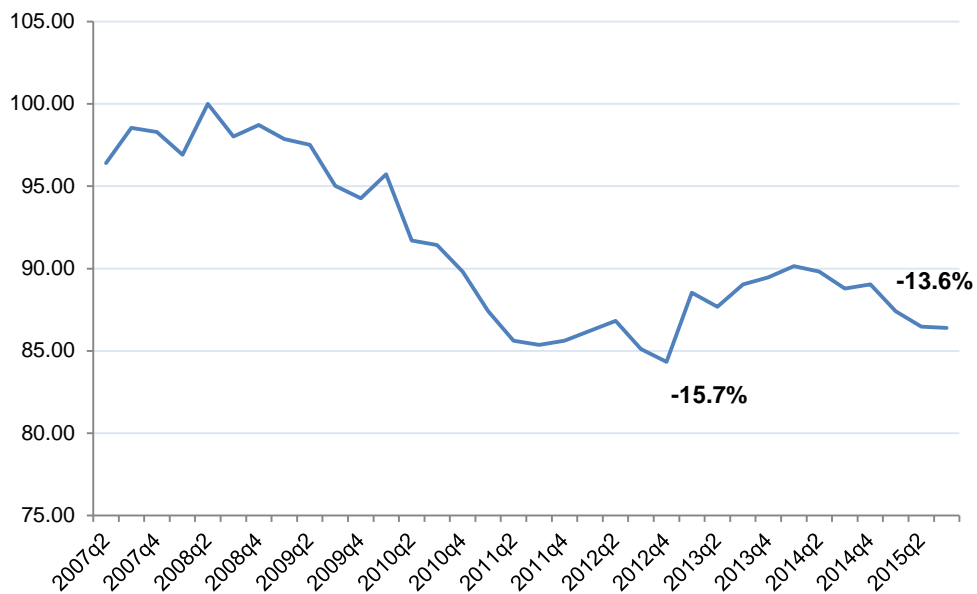
to growth of 0.6% and 3.1% in the UK. Figure 10 shows the growth of the sector in Scotland and UK during the recession and recovery.

Figure 10: Business & Financial Services Scotland and UK: Recession and Recovery to 2015q3



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

Figure 11: Financial Services in Scotland, Recession and Recovery 2007q2 to 2015q3



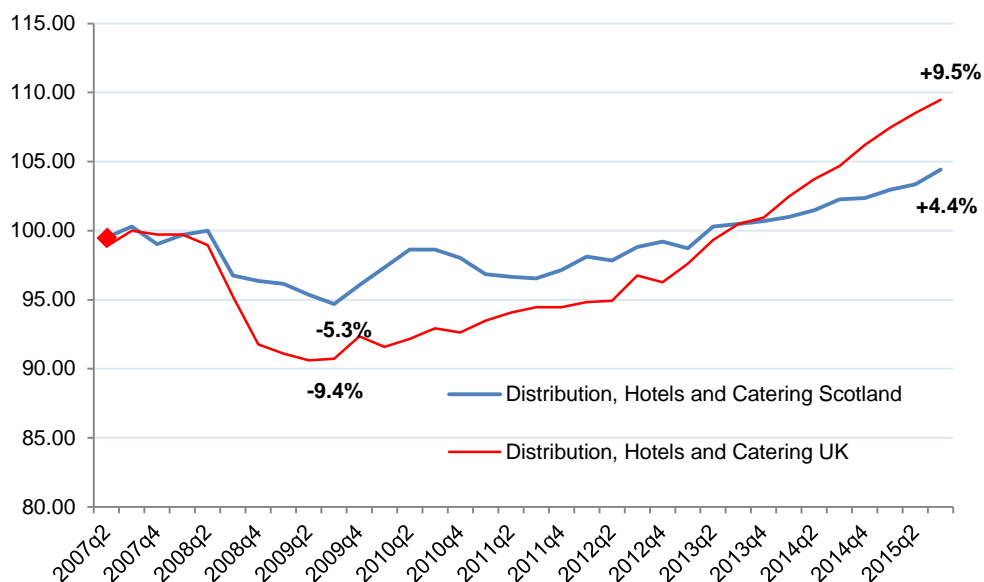
Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

By the third quarter, business and financial services output or GVA had moved to +7.3% above its pre-recession peak in Scotland compared to +14.2% in the UK. While the sector in Scotland clearly lags its UK counterpart, the recovery in the sector appears to have picked up again after stagnating since the middle of 2014. However, we noted in the previous Commentary the effect of the low oil price on activity in oil and gas support firms, which are classified to business services. So, this factor could be a drag on recovery in the sector for some time. In addition, the aggregate GVA data for business and financial services in Scotland have recently masked significant weakness in the performance of financial services. Figure 11 shows what has been happening to financial services since peak output in the second quarter of 2008.

By the third quarter of this year GVA in the sector was -13.6% below the pre-recession peak compared to the trough of -15.7% in 2012q4. There must now be a strong presupposition that the scale of the financial services sector in Scotland might never return to the levels seen before the Great Recession.

The second of the two principal sub-sectors in private services displaying positive growth in the second quarter was distribution, hotels and catering (accounting for 18% of services sector output in Scotland), where output rose by 1.0% in the quarter and by 1.9% over the year. In the UK, the sector grew by 0.9% in the quarter and by 4.8% over the year. Figure 12 shows the performance of the sector during recession and recovery.

Figure 12: Distribution, Hotels & Catering: Recession and Recovery to 2015q3

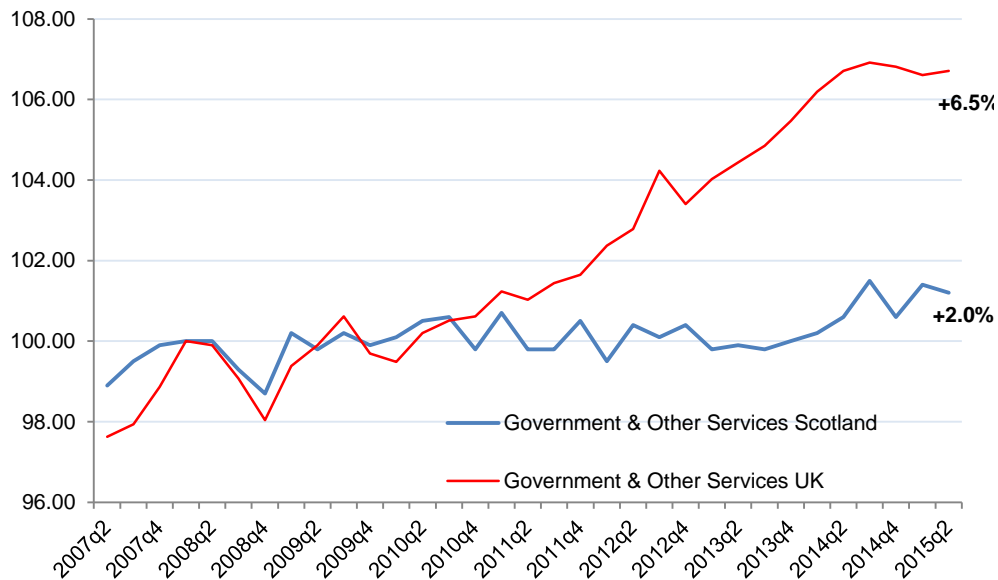


Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

Figure 12 reveals that by the third quarter the sector in the UK was +9.5% above its peak, while the sector in Scotland continued to do much worse at only +4.4% above peak. The scale of the recession in the sector in Scotland was at -5.3% much less than the loss of output in the sector in the UK, which

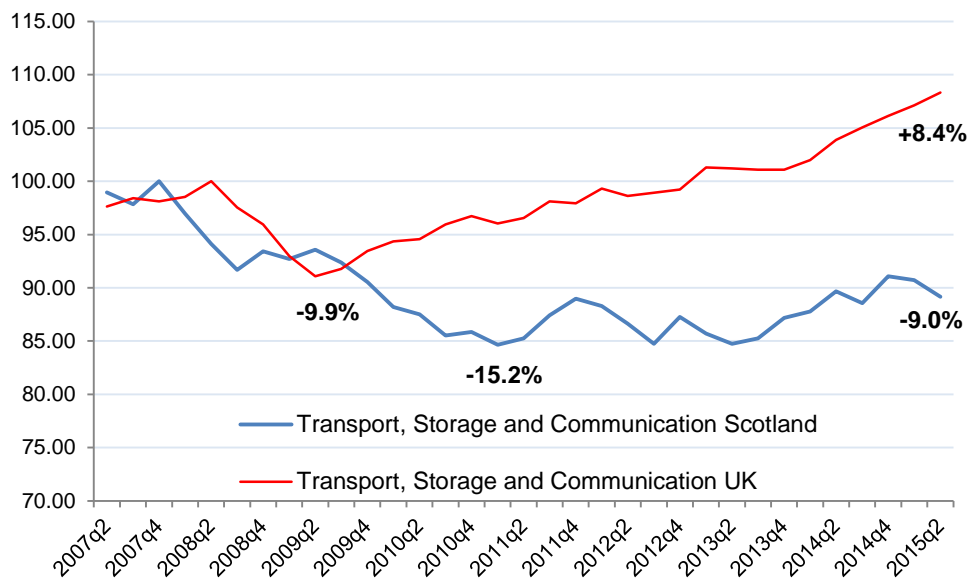
amounted to -9.4%. The track of the recovery in the sector picked up in the UK from 2012q4 but continued at much the same slow pace in Scotland, with the level of GVA in the sector in the UK relative to the pre-recession peak overtaking Scotland in the final three months of 2013.

Figure 13: Government & Other Services: Recession and Recovery to 2015q2



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

Figure 14: Transport, Storage & Communication: Recession & Recovery to 2015q2



Source: Scottish Government GROSS DOMESTIC PRODUCT 3rd QUARTER 2015, and FAI calculations

Output in Government & Other Services in Scotland in the second quarter fell slightly by -0.1% compared to a rise of 0.2% the UK. Over the year, output in the public sector grew by 0.5% in Scotland and by 0.4% in the UK. Figure 13 shows the performance of GVA in the sector in recession and recovery.

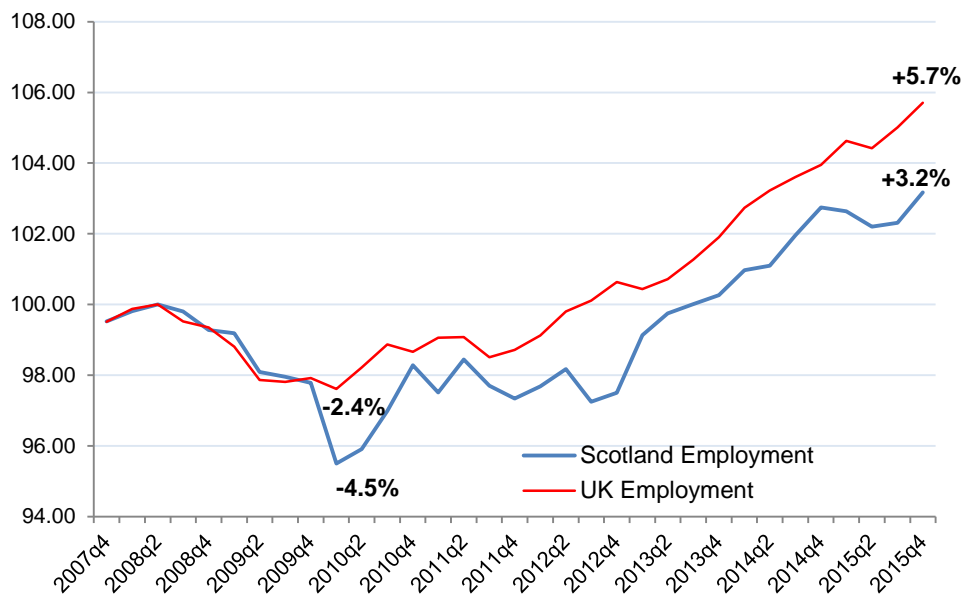
By the second quarter GVA in the sector in the UK was 6.9% above the pre-recession peak, which, as noted many times in previous *Commentaries*, is difficult to understand at a time of fiscal consolidation, whereas output in the sector in Scotland was 1.2% above its pre-recession peak.

Finally, Figure 14 highlights the performance of transport, storage & communication in Scotland and UK in recession and recovery. The sector accounts for nearly 8% of total GVA and about 10% of service sector output.

The transport, storage & communication sector contracted by -0.1% in Scotland in 2015q3 but grew by 1.0% in the UK. Over the year, growth was 1.9% in Scotland and 4.6% in the UK. Figure 14 indicates that the recession was stronger and much more drawn out in the Scottish sector with output falling by -15.2% compared -9.9% in the UK. Thereafter, the Scottish sector has largely stagnated but that has not been the case in the UK. By the end of the third quarter GVA in the Scottish sector was -11.0% below its pre-recession peak compared to +9.4% above in the UK, a huge difference in the performance of the sector between Scotland and the UK.

The Labour Market

Figure 15: Total Employment: Scotland and UK Pre-recession peak to 2015q4



Source, ONS Regional Labour Statistics and FAI calculations

The latest labour market data for October – December 2015 (see *Scottish Labour Market* section below) were much more robust than the previous quarter and provided little indication that the recovery is faltering. In the quarter to December 2015 employment rose by 22,000 (0.8%) to 2,636,000 while unemployment fell by 5,000 (-2.8%) to 162,000 with the rate falling to 5.8%. In the UK, employment rose, with 205,000 jobs created or an increase of 0.7%, while unemployment again fell by -60,000 (-3.4%) with the rate remaining unchanged at 5.1%. Over the year, Scottish jobs rose by 11,000, a rise of 0.4%, while UK jobs rose 521,000, or 1.7%. Unemployment in Scotland rose by 13,000 over the year, or 8.6%, while in the UK unemployment continued to fall by -172,000, or -9.2%. The numbers inactive fell in Scotland in the quarter by -13,000 or -0.8%, compared to a fall in the UK of -65,000 or -0.3%. Over the year, inactive numbers fell by -6,000 (-0.4%) in Scotland and by -20,000, or -0.1% in the UK.

Figure 15 shows the performance of employment in Scotland and the UK during recession and recovery to 2015q3.

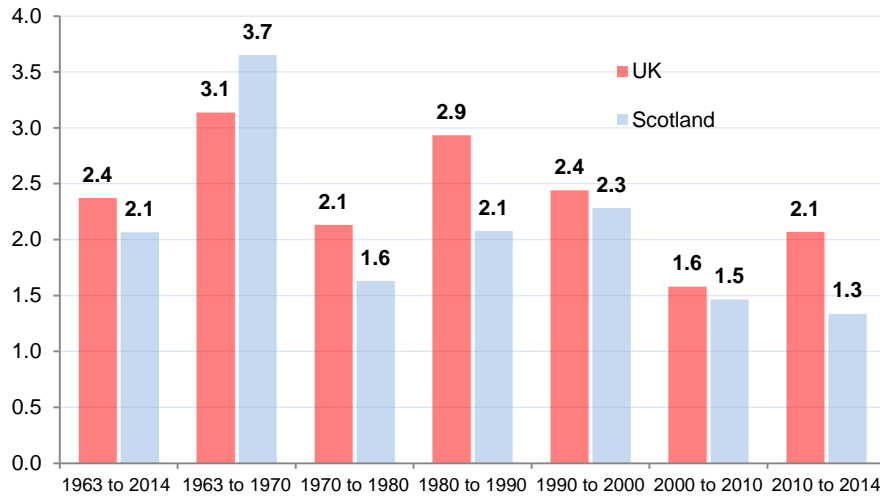
By the end of the third quarter, Scottish jobs as reported in the LFS household surveys were 3.2% *above* the pre-recession peak, while UK jobs were 5.7% above peak. So, the latest data show that the recovery in the labour market has picked up again after slowing in the previous quarter, while the recovery remains stronger in the UK.

Challenges facing the Scottish economy

In the previous two Commentaries (Vol 39, No. 1 and No. 2) we began to consider the challenges facing the Scottish economy. The July *Commentary* focused on the short-term capacity utilisation issue. In the November *Commentary* we focused on the more long-term capacity growth question. Specifically, we asked first, how is Scotland performing over the long-term in terms of growth performance against the UK? Then secondly, asked if Scotland is to raise its long-term growth performance how well equipped is the economy to do that - a question about Scotland's economic competitiveness. The evidence showed that Scotland's GDP growth rate over the past 50 years was much the same as that of the UK and indeed growth of GDP per head was somewhat better. However, there were signs of weakness. There was evidence of weaker productivity growth in Scotland, especially total factor productivity and Scotland's export performance was a cause for concern, with evidence of long-term decline. We suggested that in the next Commentary i.e. *this* Commentary, we would consider some of the policy issues that arose from this analysis. The issues that needed to be considered included: how to raise overall exports to help drive GDP growth?; how to build on the importance of the rest of UK market by selling more manufacturing products there as well as to the rest of the world?; and, how to raise service sector exports to the rest of the world? However, since then there have been two developments that mean we must postpone this important policy discussion to another time. The first is that Scottish Government has published new data on Scotland's long-term growth performance and recent productivity performance, which we consider below. Secondly, the decision of the UK Government to hold a referendum on 23 June 2016 on whether Britain should stay in, or leave, the EU is of such fundamental importance to the Scottish economy, that it is something that we must consider now.

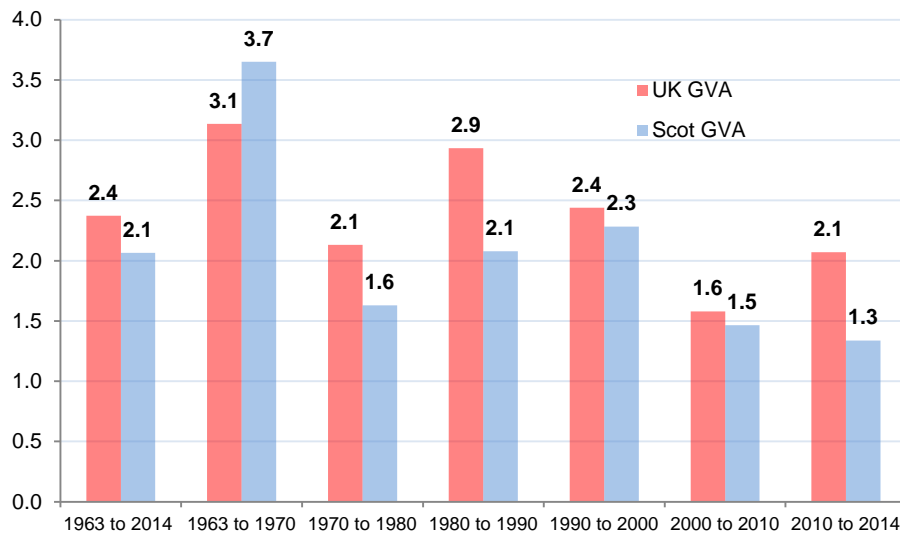
Scotland's long-term growth and productivity, 1963 to present

Figure 16: UK and Scottish GVA Growth 1963 – 2014 (Percent per annum)



Source: For Scotland is Scottish Government GVA series and for UK series is ONS
<http://www.ons.gov.uk/ons/datasets-and-tables/data-selector.html?clid=YBFR&dataset=pr2&table-id=L>

Figure 17: UK and Scottish GVA per head growth 1963-2014 (Percent per annum)



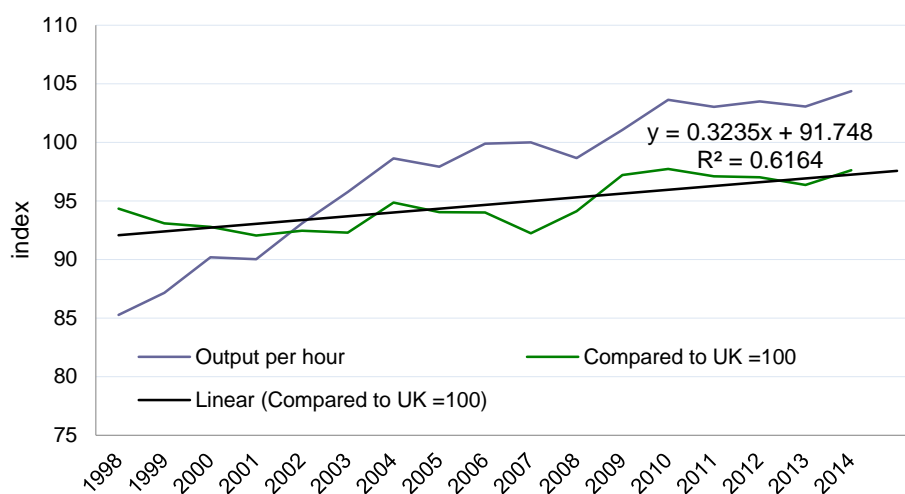
Source: For Scotland is Scottish Government GVA series and for UK series is ONS
<http://www.ons.gov.uk/ons/datasets-and-tables/data-selector.html?clid=YBFR&dataset=pr2&table-id=L>

Scottish Government statisticians have now compiled a time series of Scottish GDP under the European System of Accounts (ESA) 2010 back to 1998 and then used a 'back casting' method to revise it back to 1963. In the previous Commentary the analysis of long-run growth was based on Scottish GDP data computed under ESA 1995 – for a consideration of what was involved in moving from ESA 1995 to ESA 2010 see our July 2015 Commentary (Vol 39, No. 1). Figures 16 and 17 present the newly published data on UK and Scottish GVA/GDP growth and growth per head over the period 1963-2014, as revised under the new ESA 2010 methodology.

Figure 16 charts the absolute growth of Scottish and UK GDP – GVA at basic prices – for several time periods between 1963 and 2014, while Figure 17 allows for population movements such as net births and deaths and migration and charts GDP per head for the same periods. The main conclusions are:

- Scottish 'trend' GDP growth of 2.1% p.a. over the last 50 years is lower than UK growth of 2.4% p.a. (under the former ESA 1995, Scotland's 'trend' GDP growth rate over last 50 years was *identical* to UK growth, at 2.3% p.a.)
- Scottish 'trend' GDP per head growth over last 50 years is 2.0% p.a., the same as in the UK as a whole (under the former ESA 1995, Scotland's 'trend' GDP per head growth rate was 2.2% p.a., *faster* than UK's 2% p.a. – due to falling or slower population growth in Scotland).
- Overall Scottish growth has been consistently weaker than UK growth since the 1970s, but up until the recent recovery the gap seems to have been narrowing.
- After weakness in the 1970s and '80s, GDP per head growth was stronger in Scotland relative to UK, until the recent recovery.

Figure 18: Whole economy output per hour: Scotland and compared to UK 1998-2014



Source: ONS Labour Productivity 2014 Q3 and Scottish Government Labour Productivity January 2016.

So, we must conclude that Scotland's growth performance over the long-run has been weaker than the UK with GDP per head growth evened out by falling and/or slower population growth in Scotland, with some of that weaker population growth reflecting the weaker relative strength of the Scottish economy. Though the difference is small, it is not necessarily trivial: approximately, with 2.4% p.a. growth in GDP would double in 30 years compared to 34 years with 2.1% p.a. growth. Scotland's growth rate could be increased by faster population growth but this, even if it were achieved for a period, would be unlikely to be sustainable. Moreover, growth due to a rising population would be unlikely to raise GDP per head. For that we must improve our competitiveness, via increasing our productivity performance.

Turning now to productivity. New data for labour productivity from the Scottish Government were published towards the end of January 2016. Specifically this provides information on 'whole economy output per hour worked' in Scotland and UK up to and including 2014. This is presented in Figure 18.

The key conclusions to be drawn from Figure 18 are:

- Labour productivity has risen absolutely in Scotland by 22% between 1998 and 2014.
- Despite this growth it fell behind the UK, which had faster growth to 2007, before the Great Recession.
- Scotland's relativity improved during and after the Great Recession, with the UK experiencing a greater deterioration in productivity - hence the post-recession 'productivity puzzle' is much more of a UK than Scottish phenomenon.

So, while Scottish labour productivity is growing, it is weaker than in the UK; -2.4% below. Yet, if the trend growth in the Scottish /UK relativity - shown on the chart – continues, Scotland would match UK labour productivity in 2021. The problem with this trend estimate is that it is influenced by large cyclical fluctuations that are likely to obscure the 'true' long-term trend. Moreover, we noted in the previous Commentary the research evidence¹ from Professor Richard Harris and Dr. John Moffat that Total Factor Productivity (TFP) - where one estimates the productivity of all factors: labour, capital and land – is significantly lower in Scotland than in the UK. They find that overall, the 'gap' between Scotland and rest of UK was around 11% across all sectors in 2012 (and 22% below the leading UK region).

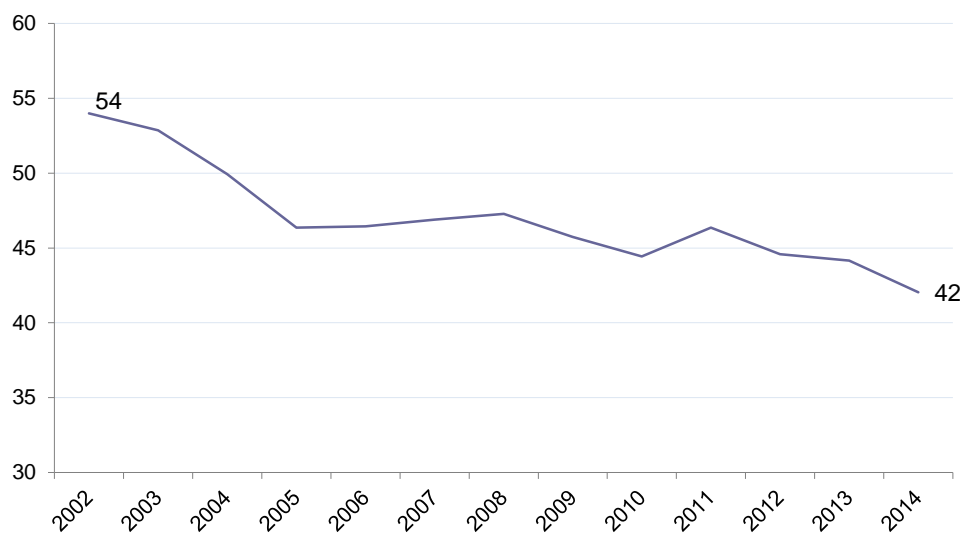
We suggested in the previous Commentary that Scotland was weak in varying degrees on all of the key determinants of competitiveness: in innovation/R&D; exporting (especially for a small open economy); skills; investment, and enterprise.

In particular, Scotland's export base has eroded over the past 15 years following the demise of electronics ('Silicon Glen'), and is being further eroded by the decline in financial services activity - and it will also be affected by the ongoing decline in the volume and value of oil production. In turn, Scotland

¹ (2014) *Scottish Productivity: implications post-2016*, by Richard Harris and John Moffat
<http://www.broadgatemainland.com/client-news/scottish-productivity-lags-11-behind-uk-research-durham-university-business-school>

has become more dependent on exports to UK, with the real value of international exports growing at 0.1% p.a. since 2002, very much slower than GDP growth. Moreover, as Figure 19 shows, we are losing out in EU markets with the share of Scottish international exports going to the EU *falling* from 54% to 42% between 2002 and 2014. According to the latest Export Statistics Scotland 2014, published in January 2016, Scotland's international exports grew in nominal terms by 2.6% p.a. between 2002 and 2014. In contrast, Scotland's exports to the EU grew by only 0.5% p.a. in nominal terms over the same period. Changes in Scotland's export performance are analysed further in the *Forecasts of the Scottish Economy* section below.

Figure 19: European Union 28 - % share of Scottish international exports 2002 – 2014



Source: Exports Statistics Scotland 2014 <http://www.gov.scot/Resource/0049/00493251.pdf>

BREXIT and the Scottish Economy

If the British people vote to leave the EU in the forthcoming referendum on 23 June 2016 it is difficult to imagine that this would help to improve Scotland's competitive position with respect to our trade with the EU. The decline in electronics production and the erosion of Scotland's manufacturing base has meant that Scotland has struggled to maintain its penetration of EU markets even on the favourable trading terms obtained through EU membership. It beggars belief that any post BREXIT trading relationship with the EU would be better than current arrangements. The best we could hope for is a free trade area but there is no guarantee that that would be given to us. The likelihood would be that trading arrangements would be less favourable than in the EU. So, not only would actual and potential Scottish exporters have to overcome their weaker competitive position due to lower labour and total factor productivity they would face the additional hurdle of less favourable trading arrangements. Moreover, Brexit might worsen Scottish productivity growth as we note below.

Despite the drop off in Scotland's trade with the EU over the past 12 years, we still conduct 42% of our trade with other members much the same as the 44% of UK exports that go to the EU. Membership of the EU has led to a deeper integration between the Scottish and rest of the UK economies and the other economies of the EU. This integration not only embraces trade but also foreign direct investment (FDI), technology and knowledge transfer, the migration of skilled labour and flows of financial capital.

The Bank of England's October 2015 publication *EU membership and the Bank of England* shows that trade intensity - the total amount of trade in goods and services relative to the overall size of the economy - has increased significantly since the UK joined the EU. In 1973, the value of UK imports and exports were together worth around 40% of UK GDP, but by 2014 they were worth close to 60% of GDP. Membership of the EU is found by several studies to have contributed positively to trade flows between member states, when the size of these countries and the distance between them is controlled for. Moreover, this 'trade creation' benefit is shown to be greater than the 'trade diversion' cost of trade being diverted away from other non-EU countries.

On FDI, the Bank's paper points out that since the establishment of the single market on 1 January 1993, inward FDI stocks have increased faster in both the UK and EU (as a percentage of GDP) than in the US and the rest of the world. Over that same period, the UK has, on average, remained the top recipient of FDI inflows into the EU. By 2013, the EU accounted for around 50% of the stock of UK inward FDI, compared with 27% from the US and 7% from Asia. Scotland has benefited considerably from these flows and in recent years has been the top UK destination for FDI both from the EU and from outside the EU. It cannot be simply assumed that these flows would continue unaffected by BREXIT, when much EU and non-EU sourced FDI comes to Britain and Scotland to service the EU market and research cites this as a key reason for such investment.²

The Bank's paper highlights studies, some of varying academic provenance, which seek to estimate the costs and benefits to the UK of Brexit. In the Bank's words:

"These studies, which take different approaches, estimate that, if the UK were to leave the EU, annual GDP could be anywhere from 9.5% lower to 1.6% higher (or equivalently, implicitly estimate that the net benefit of EU membership is between -1.6% to + 9.5% of GDP). The wide range around these estimates reflects the uncertainty around the UK's future relationship with the EU following exit." (p. 85)

The Bank cites particularly the recent (2014) study³ by the Centre of Economic Policy (CEP) at the London School of Economics, which estimated that UK GDP would be reduced by up to 9.5% of GDP in a world where the UK cannot negotiate favourable trade terms with the EU. However, under a more optimistic scenario, in which the UK secures a free trade agreement with the EU, CEP estimates the losses to be around 2.2% of GDP. The static trade welfare effects of Brexit – i.e. the loss of trade creation benefits - are estimated by CEP to range from 1.1% to 3.1% of GDP. However, once the

² Ernst & Young's 2015 'UK attractiveness survey' suggested that as many as 72% of investors considered access to the European single market as important to the UK's attractiveness as a destination for foreign direct investment.

³ Ottaviano, G I P, J P Pessoa, T Sampson and J Van Reenen (2014) "Brexit or fixit? The trade and welfare effects of leaving the EU," CEP/LSE, CEPPA016.

estimated dynamic losses of Brexit on productivity growth through reduced competition and reduced technological innovation linked to lower FDI inflows and reduced financial integration, CEP's estimates of loss rise to 2.2% to 9.5%. The harmful dynamic effects on productivity growth of Brexit are stressed by Campos and Coricelli (2015)⁴ who highlight the importance of *intra*-industry trade within the EU, which they argue:

“... generates gains that are basically driven by increased competition and technological innovation. One expects the impact of the latter on UK productivity growth to be more substantial and longer-lasting.”

Scottish voters in the referendum on June 23rd should not lightly dismiss this warning about the consequences of Brexit for productivity growth in view of the already weak Scottish productivity performance highlighted above.

Forecasts

Background

The latest data offer a mixed picture on the performance of the Scottish and UK economies. With two quarters of growth at 0.1% in each quarter, Scottish GDP growth has slowed considerably, although Scotland's employment performance has been more robust. This has not been the case for GDP growth in the UK where 2nd and 3rd quarter growth in 2015 was 0.6% and 0.4%, respectively. The second estimate for UK GDP growth in the 4th quarter of last year, published on 25th February 2016, was, at 0.5%, unchanged from the preliminary estimate. It cannot be said from these data that UK GDP growth is slowing overmuch, although there has been a weakening in growth compared to 2014. But it must be noted that the 0.5% growth achieved by the UK in the fourth quarter was faster than in Germany (0.3%), France (0.2%), the EU as a whole (0.3%), the US (0.2%), Japan (-0.4%) and the G7 countries combined (0.1%).

We do not yet have outturn data for the fourth quarter 2015 in Scotland but extrapolating from the third quarter what seems to be happening is that domestic demand is still driving growth in Scotland – see *Forecasts of the Scottish Economy* section below. In particular in the first two quarters of 2015 household demand and fixed investment were the main drivers of growth. However, in the third quarter the impetus from fixed investment fell away, mirroring the slowdown in infrastructure spending and construction activity noted above. And also the continuation of the low price of oil may be affecting onshore investment in the oil service industry and related activities. In contrast, the contribution to growth of general government expenditure has increased, while the effect on growth of net trade (export minus imports) remained resolutely negative. The ONS Release *Second Estimate of GDP: Quarter 4 (Oct to Dec) 2015* provides detail on the expenditure component contribution to UK growth. The picture is broadly similar to Scotland in the third quarter and broadly similar in the fourth quarter to the third

⁴ “Some unpleasant Brexit econometrics”, Vox CEPR's Policy Portal <http://www.voxeu.org/article/some-unpleasant-brexiteconometrics>

quarter. So, we must conclude that in the fourth quarter household demand will continue to drive growth with the stimulus from fixed investment weakening and net trade continuing to have a negative effect.

The Scottish Chambers' *Quarterly Economic Indicator* for the 4th quarter 2015⁵, shows construction and manufacturing activity remaining strong – although note that the official outturn data show that manufacturing GVA in Scotland contracted in both the 2nd and 3rd quarters. The Chambers' survey also reports a further weakening in activity in business and financial services, which they link to the fall and continuation of the low price of oil, and in a decline in retail and wholesale activity. The latter may be an indication that household demand in Scotland weakened in the 4th quarter.

Finally, as the *Forecasts of the Scottish Economy* section of this Commentary notes from ongoing Fraser of Allander Institute research, "Nowcasts" of the Scottish economy indicate that Scottish growth remained positive in the 4th quarter, although down from earlier 'Nowcasts.' As well as suggesting the slowing of growth through 2015 for Scotland, the Nowcasts are consistent with a slower rate of growth in Scotland compared to the UK as a whole.

In January of this year there was significant turbulence in global financial markets with a flight away from stocks and shares into government bonds as confidence in the 'real' economy diminished. This was presumably a belated reaction to the slowdown in China's economy, weakening in US growth in the 4th quarter of last year and further falls in the price of oil indicating a lack of demand relative to supply. But the fundamentals in the global economy were little changed from when we last reported in November. However, the financial turbulence itself may have a dampening effect on economic activity as companies find it more difficult to raise external finance for investment. Going forward the main positive and negative influences and risks on Scotland's economic growth are:

The positives:

- Domestic demand is still growing helped by the income effect of a low price of oil but may be beginning to slow as investment especially public infrastructure investment growth tails off.
- Domestic inflation is close to zero, below nominal earnings/income growth, which is picking up slowly and so boosting real income;
- Interest rates remain low and household demand boosted by some pick up in wages and earnings.
- External demand for goods and services is being boosted by: the continued resilience of the US economy – despite the slowdown in US growth in the 4th quarter (and US growth was greater than UK growth in 2015 overall); and a gradual pick up in growth in the Eurozone as the risks of deflation appear to recede.

⁵ <http://www.scottishchambers.org.uk/userfiles/files/Report%20-%20SCC%20Quarterly%20Economic%20Indicator-%20Q4%202015.pdf>

The negatives:

- The low price of oil appears to be having a negative effect on Scottish growth, with negative supply effect outweighing positive demand effect. This negative effect is being sustained as the longer than expected delay in the recovery of oil prices is dampening overall investment expenditure.
- Growth remains unbalanced with household spending the key driver fuelled largely by rising household debt. Household net assets are also high so there is a debate about the significance to demand of rising debt. Our view is that growth in household spending financed by rising debt is unsustainable even when household net asset position is strong, This is because different households hold debt from those that hold assets, and indebted households are poorer. In addition, assets are less liquid and so spending may be cut back more readily if debt is perceived to be too high.
- Net trade continues to be strongly negative with export demand threatened by the high level of sterling – although note the recent fall – slowdown in China and ‘policy normalisation’ in United States.
- Fiscal austerity continues in the UK, although the tightness of fiscal policy is being loosened. NIESR notes that “ ... November’s Autumn Statement / Comprehensive Spending Review built on the Summer Budget presented a further loosening of fiscal policy. Significant increases in government consumption are planned, made possible largely by changes to assumptions underpinning the OBR’s macroeconomic forecasts.” The risk is that the Government fails to meet its fiscal targets as tax revenues do not meet expectations and so the government re-intensifies austerity in order to attain its targets. This appears to be about to happen in the forthcoming Budget as signalled by the Chancellor’s comments in China. If so, this would, in our view, be a major mistake. A fiscal tightening when growth is slowing is likely to slow growth further and reduce the tax revenues that the Chancellor desires to meet his fiscal targets. As Oxford’s Professor Simon Wren Lewis has recently pointed out “... We can see that the amount of projected fiscal tightening (the change in the deficit) is far greater in the UK than elsewhere. Only one country currently in deficit is aiming for a surplus, and that is the UK. ...It is very hard to find any respected institution or economist that will back going for overall surplus and keeping public investment low.”⁶
- The referendum on the UK’s membership of the EU announced for 23 June 2016 increases uncertainty significantly in the short term, which is likely to have a negative effect on investment as plans are postponed until the outcome is clear. Then, if UK voters do vote to leave the EU, this short term negative impact on investment and growth will carry over into the long term

⁶ <http://mainlymacro.blogspot.co.uk/2016/02/the-austerity-winds-have-changed.html>

It is our view that the risks confronting the Scottish and UK economies are heavily skewed to the downside and with a sustained low price of oil downside risks are even greater for the Scottish economy. It is against this background that we have prepared our latest forecasts of the Scottish economy.

GVA Forecasts

For our latest GVA forecasts we continue the presentational procedure adopted in previous Commentaries. We present only a central forecast but use estimated forecast errors to establish the likely range within which the true first estimate of the growth of Scottish GVA will lie.

Table 1: Fraser of Allander Institute Forecasts of Scottish GVA growth, 2015-2017

GVA Growth (% per annum)	2015	2016	2017
Central forecast	1.9	1.9	2.2
<i>November forecast</i>	1.9	2.2	2.5
UK actual for 2015 and mean independent new forecasts for 2016 and 2017 (February)	2.2	2.1	2.2
Mean Absolute Error % points	+/- 0.16	+/- 0.64	+/- 1.37

Source: Fraser of Allander Institute forecasts, February 2016 ©

Table 1 presents our forecasts for Scottish GVA - GDP at basic prices - for 2015 to 2017. The forecasts are presented in more detail in the *Forecasts of the Scottish Economy* section of this Commentary⁷.

Table 1 shows that our GDP forecast for 2015 is 1.9%, which is identical to our forecast in November 2015. For 2016, we revised down our forecast from 2.2% in November to 1.9%. This is mainly driven by apparently slowing income growth, a weakening of previously strong domestic investment growth, and an extension of the expected period over which a low price of oil is likely to be sustained. On our central forecast, we are forecasting a pick up in the rate of growth in 2017 as the economy rides out the challenges of 2016 and the price of oil in particular begins to rise to more favourable levels. But at 2.2% our forecast of 2017 remains below our November forecast of 2.5%.

Table 1, also compares our GVA forecasts with the median of latest independent forecasts for the UK as published by the UK Treasury in February 2016. These show that we expect Scottish growth to be

⁷ As that section notes: "It may seem paradoxical to still be forecasting 2015 over two months into 2016, however we do not yet have a first estimate of the performance of the Scottish over the final quarter of the year just past, by which point we will have the first full picture of the economic growth in that year."

weaker than in the UK in both 2016 and 2017 as we expect it will have been in 2015. So, we are now forecasting growth of 1.9% in 2015, 1.9% in 2016 and 2.2% in 2017. Given our previous forecast errors the lower and upper bounds for growth in 2015 are expected to be 1.7% and 2.1%; for 2016, 1.3% to 2.5%, and for 2017, 0.8% to 3.6%.

Construction is the major sector exhibiting the fastest growth in 2015, 2016 and 2017 and especially in 2015 with predictions of 6.0% in 2015, 2.8% in 2016, and 2.8% in 2017. Growth of production is forecast to be 0.7% in 2015, 1.0% in 2016 and 1.0% in 2017, reflecting continued expected weakness in manufacturing exports and growth. Service sector growth is projected to be 1.6% in 2015, 2.0% in 2016, and 2.0% in 2017.

Employment Forecasts

Table 2 presents our forecasts for net employee jobs for the years 2015 to 2017 in terms of a central and upper and lower forecast. Note that in forecasting employee jobs we are not forecasting self-employment, which has been an important component of the recent jobs recovery (refer Scottish Labour Market section of this Commentary). Moreover, employee jobs can differ from the self-reported employment in the monthly Labour Force Survey.

The number of total employee jobs is forecast to increase in each year, and the number of jobs added in 2015, 2016 and 2017 has been revised down slightly since our November 2015 forecast. The number of jobs at the end of 2015 is now forecast to be 2,415,200, an increase of 1.3% during 2015. Our new central forecast is that the Scottish economy will add 36,800 jobs in 2016, down by around 9,000 from our November forecast, with a net of 46,850 jobs added in 2017, down by almost 8,000 from our November forecast.

Table 2: Forecast Scottish Net Jobs Growth in Three Scenarios, 2015-2017

	2015	2016	2017
Upper	35,650	50,700	79,400
<i>November forecast</i>	<i>54,950</i>	<i>65,500</i>	<i>88,800</i>
Central	31,200	36,800	46,850
<i>November forecast</i>	<i>49,400</i>	<i>45,000</i>	<i>54,650</i>
Lower	26,850	24,250	31,200
<i>November forecast</i>	<i>43,800</i>	<i>24,450</i>	<i>20,500</i>

Source: Fraser of Allander Institute forecasts, February 2016 ©

This year, we expect 30,550 service sector jobs to be created, with around 4,800 added in production, and a reduction of -50 in agriculture. Construction jobs are now forecast to rise this year by 1,500. In 2017, the bulk of the jobs created are again expected to be in the service sector with an additional 38,800 jobs forecast, while 5,450 are added in production, 650 in agriculture and 2,000 in construction.

Unemployment Forecasts

The key unemployment forecasts are summarised in Table 3 below.

Table 3: Forecasts ILO unemployment, 2015-2017

	2015	2016	2017
<i>ILO unemployment</i>			
Rate (ILO un/TEA 16+)	5.8%	5.7%	4.8%
<i>November forecast</i>	6.2%	5.7%	4.6%
Numbers	162,000	153,350	159,850

Source: Fraser of Allander Institute forecasts, February 2016 ©

The ILO rate is our preferred measure since it identifies those workers who are out of a job and are looking for work, whereas the claimant count simply records the unemployed who are in receipt of unemployment benefit. In November 2015 we forecast that the unemployment rate would fall to 6.2% by the end of 2015, with a level of unemployment of 169,150. The recent labour market data indicate that the ILO unemployment rate in the final quarter was 5.8%, with a level of 162,000. Our latest forecasts for the unemployment rate in Scotland for the end of 2016 and 2017 are 5.7% and 4.8% and for numbers 153,350 and 159,850, respectively.

Brian Ashcroft
26 February 2016

2 Forecasts of the Scottish economy

Grant Allan, Fraser of Allander Institute

Abstract

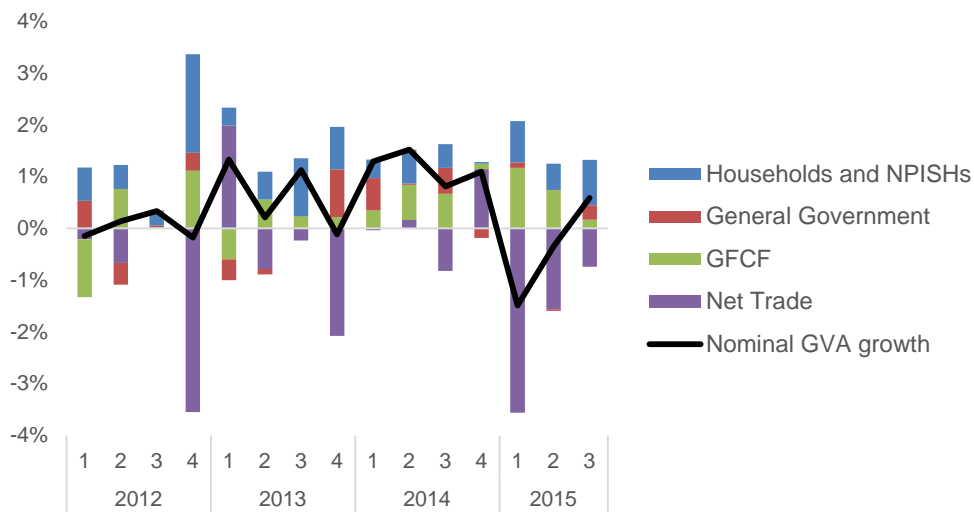
Economic growth in Scotland appears to have slowed towards the end of the year, partly driven by the knock-on impacts of reduced activity in the North Sea driven low a low oil price. Investment and domestic expenditure held up growth through the year as a whole, pointing to a domestically-supported growth model for the short term. Looking forward, the external environment for Scottish exports appears to have weakened since our last Commentary, in particular in developing countries, but also with downgrades to growth for the USA and the UK as a whole (with the rest of the UK being Scotland's largest export market). Additionally, with uncertain future investment spending, slowing growth to nominal incomes and the likelihood of a continued and prolonged period of low oil prices we have revised down our forecasts for economic and job growth over the next two years.

Households

It is evident from **Figure 1** that domestic spending has driven a considerably portion of economic activity in Scotland through 2015. In the latest quarter (Q3 2015) household and government expenditure growth contributed 0.9% and 0.3%. Growth from Gross Fixed Capital Formation (GFCF) – that is, Investment - contributed 0.2%, well down from the spectacular figures seen in the first two quarters of the year (1.2% and 0.7%). (Incidentally, that Q1 contribution from GFCF was the greatest single quarter figure since the third quarter of 2006. On average, between Q1 2012 and Q3 2015, household consumption has contributed 0.7 percentage points to nominal quarterly growth, with Gross Fixed Capital Formation and Government (only) contributing 0.7 and 0.1 points respectively). Net trade has contributed an average of *minus* 2.0 percentage points over the same period. We return to the outlook for Scottish exports, however it is clear that these have been affected by developments in international markets (particularly the Eurozone) and it is crucial for Scotland's economic health that the factors underpinning this worsening of Scotland's trading position is understood.

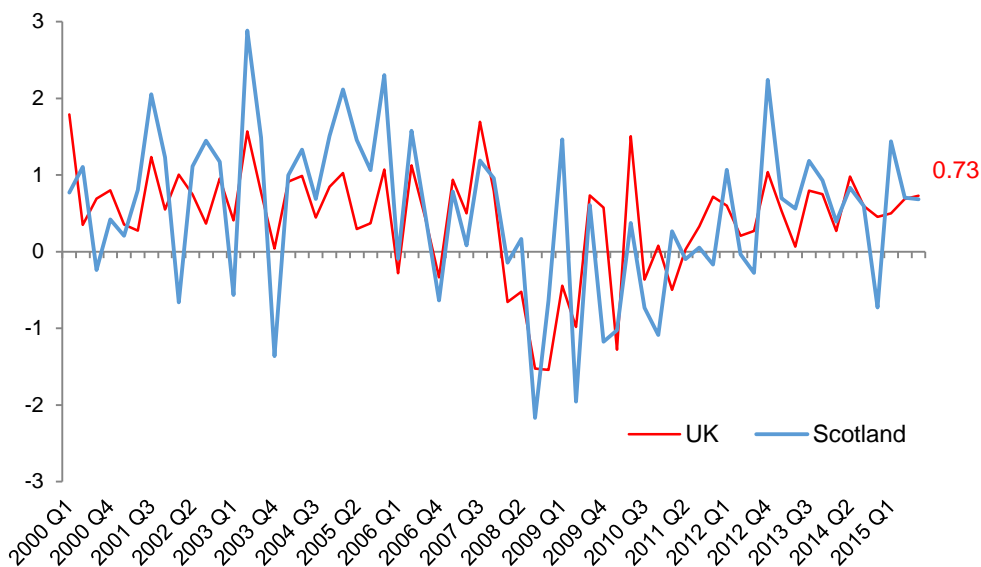
Figure 2 shows that the volatility of (real) consumption spending growth continues to be greater in Scotland than the UK as a whole, and that consumption expenditure since the start of 2011 has grown reasonably strongly (aside from a sharp reduction in Q4 of 2014 which was more than offset by a strong rebound in Q1 2015). In the most recent quarter for which data is available (Q3 2014), consumer spending grew by 0.68% in Scotland and 0.73% in the UK as a whole. **Figure 3** shows that the savings rate in Scotland, although mirroring the fall in the UK as a whole, has fallen much more sharply through 2015 (down by 2.8 percentage points since the end of 2014, while the saving rate has fallen by 0.9 percentage points in the UK). The latest Scottish Retail Sales Index suggest that in the final quarter of 2015 growth in Scotland in the (nominal) volume of sales rose by 0.6%, while they rose by 1.1% in Great Britain as a whole. On a value basis, retail sales fell by 0.3% in Scotland while they rose by 0.1% across Great Britain.

Figure 1: Contribution to nominal quarterly growth, Scotland, Q1 2012 to Q3 2015 (% points q-on-q)



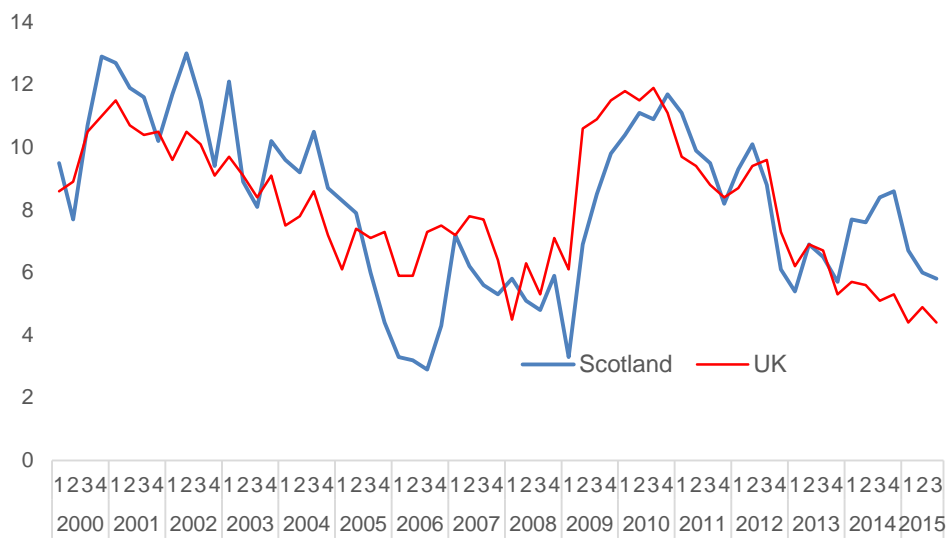
Sources: Scottish National Accounts Project (SNAP) data (Scottish Government) and Fraser of Allander Institute (FAI) calculations. The columns shows the percentage point contribution of each element to quarterly Scottish (nominal) GVA growth, while the solid black line shows nominal GVA growth for Scotland for each quarter, e.g. in Q3 2015, household and government and Gross Fixed Capital Formation (GFCF), i.e. investment, contributed positively to (nominal) growth in that quarter, while net trade contributed negatively.

Figure 2: Household real consumption spending growth, Scotland and UK, Q1 2000 to Q3 2015 (% q-on-q)



Sources: Scottish National Accounts Project (SNAP) data (Scottish Government) and UK Quarterly National Accounts (National Statistics) and FAI calculations.

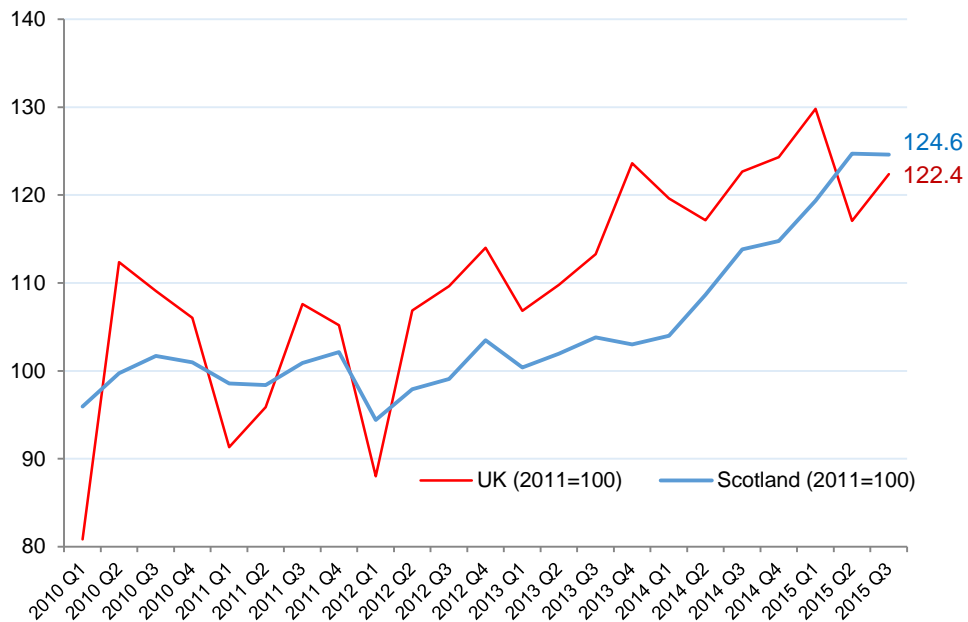
Figure 3: Household savings ratio, Scotland and UK, Q1 2000 to Q3 2015, %



Sources: Scottish National Accounts Project (SNAP) data (Scottish Government) and UK Quarterly National Accounts (National Statistics) and FAI calculations.

Investment

Figure 4: Real gross fixed capital formation, Scotland and the UK, Q1 2010 to Q3 2015



Sources: Scottish National Accounts Project (SNAP) data (Scottish Government) and UK Quarterly National Accounts (National Statistics) and FAI calculations.

Figure 4 shows comparable figures for Scotland and the UK for investment spending between Q1 2010 and Q3 2014. These suggest that investment spending in Scotland and UK are about 24% and 22%

above its average from 2011, and the strong increase in investment spending has continued through the middle of 2014 and into the first half of 2015 (this is consistent with the contribution to growth seen in Figure 1). ONS data on activity in the Construction sector suggests that Scotland has seen the greatest increase in activity in the year (up 20% in nominal terms). Detailed data suggests that this is in part due to above average activity in new housing, as well as a significant rise in infrastructure activity. In the year to Q3 2015, nominal activity in New Infrastructure work has increased by 57% in Scotland, making it the second fastest growing region of the UK on this measure – behind Wales - and first on the level of infrastructure construction activity in that quarter.

Trade

Latest exports from Scotland were reported on the 26th of January 2015 in the Global Connections Survey, now renamed “Export Statistics Scotland”. These are far from timely data in that the latest figures relate to 2014, and additionally they are denominated in nominal terms. Notwithstanding these significant limitations, they do provide a useful identification of the sectoral composition of exports from the Scottish economy, as well as information on the destination markets for Scottish goods and services. Now included in this series is an estimate of exports to the rest of the UK as well as to international markets. These data suggest that exports to the rest of the UK constituted 64% of all exports from Scotland in 2014, an increase of five percentage points since 2002. Between 2013 and 2014, exports to the rest of the UK had increased by 3.2% (in nominal terms). In total, £48.5 billion worth of exports leave Scotland for the rest of the UK.

The international (i.e. non-UK) exports data show another picture. Between 2013 and 2014 there was a reduction of £920 million (3.2%) in Scotland’s international exports, with a fall in the value of exports in “Coke, refined petroleum and chemical products” – where activity was hit by the short-term disruption at the Grangemouth refinery at the end of 2014 – and Whisky (down 7%), as well as reduction in “Computer, electronic and optical products” (down 30%).

The six top destinations for Scotland’s international exports are, by value, the USA, Netherlands, France, Germany, Norway and Ireland. In all, 51% of Scotland’s international exports are to European markets, with 42% to markets in the European Union (EU). These are down from 64% and 54% respectively over the period since 2002, with EU exports having grown more slowly than non-EU exports over the period.

We can use these data to analyse the growth in Scotland’s exports by their “destination” market. Note that this doesn’t necessarily relate to where the good or services is consumed as these data come from the destination of the exports from Scotland and so relate to their “first” destination. Further, we can breakdown the period between 2002 and 2014 into three parts:

1. the period prior to 2005 when Scotland’s exports fell to their lowest value in nominal terms
2. The period leading up to the Great Recession – i.e. 2005 to 2009
3. The period since 2009

Table 1 shows that over the period as a whole (given in the final column) the value of *all* Scottish exports has risen by 2.6% per year (again this has been adjusted for inflation). *EU* exports in this period have averaged growth of 0.5% pa, while *non-EU* exports have grown by 4.7% pa. Much of the difference over the period from 2005 has been driven by the period up to 2009, when EU exports fell by 8.0% and total exports fell by 3.2% (recall, EU exports comprised a majority of all exports at the start of this series). Between 2005 and 2009, export performance was broadly similar for EU and non-EU markets. However, since 2009 the prolonged recession and recovery in the EU and Eurozone countries has had a damaging impact on Scotland's exports to the EU growing by 2.6%, while exports to non-EU markets rose by an average of 6.4% per year.

Table 1: Scotland's international (i.e. non-UK) export growth in nominal terms, % average annual growth rate, selected periods

	2002 to 2005	2005 to 2009	2009 to 2014	2002 to 2014
Total international exports	-3.2	5.0	4.3	2.6
EU exports	-8.0	4.7	2.6	0.5
<i>Of which</i> ¹				
Netherlands	-3.2	7.9	-4.0	0.0
Germany	-9.5	0.9	6.8	0.6
France	-9.7	4.6	2.7	0.0
Ireland	-8.3	6.9	6.1	2.6
Non-EU exports ²	0.6	5.9	6.4	4.7
<i>Of which</i>				
North America	5.3	3.6	5.7	4.9
Rest of Europe	-7.4	8.3	5.2	2.9
Asia	0.7	5.8	3.1	3.4
Middle East	-2.7	6.1	10.7	5.7
South America	1.0	12.1	12.5	9.4
Africa	3.6	13.1	7.4	8.3
Australasia	-1.4	11.4	8.4	6.9

Sources: *Export Statistics Scotland* (Scottish Government) and FAI calculations. Notes: figures given are compound average annual growth rates over the periods stated. ¹ = The four largest EU export markets are shown. Overall EU exports account for 42% of all Scottish international exports during 2014. ² = "Non-EU exports" refers to "Total Rest of the world" series, where this and all data for this table are sourced from Table 1 of stated publication.

The most recent data on Scottish manufacturing exports to the rest of the world were released on the 20th of January 2016 ("Index of Manufactured Exports"). Though definitions vary slightly, the latest Export Statistics Scotland series suggests that the broad "Manufacturing" definition of exports shows that these now only account for 52% of all Scottish exports, while exports of services have tripled since the series started in 2002. This latest data show that in the third quarter of 2015 overseas manufacturing

exports fell by 0.4%. There were declines in the Metals and Metals Products, Non-metallic, other manufacturing and repair, while there were increases in Food exports (up 17.3%): Drink exports were flat in the quarter (and have been flat now for almost two years). The overall quarterly decline was the first in this series since the same quarter in 2014, however the history of this exports series – which dates back to 1999 on a quarterly basis - shows that Scotland's manufactured exports have been broadly flat in real terms for the past thirteen year, since the start of 2003.

Table 2 shows the forecasts for growth in key global markets for Scottish products through 2016 and 2017. We discuss issues relating to the country-specific issues in Scotland's major export markets later. Since our last forecasts in November 2015, economic forecasts have typically been revised down. The OECD's "Interim Economic Outlook" of February 2016 noted the downward revisions to their forecasts since November 2015: including a 0.3% downward revision for global growth in 2016 (down to 3.0%) and the same downward revision to their estimate of growth in 2017 (down to 3.3%). Identical negative revisions the OECD's growth forecasts for both years were made for the UK, while growth in the Euro area was forecast to grow by 2.0 and 2.2% in 2016 and 2017, down by 0.5 and 0.2 percentage points from the OECD's earlier forecasts.

Table 2: Economic growth forecasts for 2014 and 2015 for Scotland's major export markets, including UK, China, Japan and the Euro area, % p.a.

	Share of total (i.e. international and rest of the UK) exports, % 2014 ¹	2016				2017			
		IMF (January 2016)	OECD (February 2015)	Revision since last forecast		IMF (January 2016)	OECD (February 2016)	Revision since last forecast	
				IMF	OECD			IMF	OECD
USA	5.2	2.6	2.0	-0.2	-0.5	2.6	2.2	-0.2	-0.2
Netherlands	2.5	-	-	-	-	-	-	-	-
France	2.4	1.3	1.2	-0.2	-0.1	1.5	1.5	-0.2	-0.1
Germany	2.4	1.7	1.3	+0.1	-0.5	1.7	1.7	+0.1	-0.3
Norway	1.6	-	-	-	-	-	-	-	-
Ireland	1.5	-	-	-	-	-	-	-	-
United Kingdom	63.8	2.2	2.1	0.0	-0.3	2.2	2.0	0.0	-0.3
China	0.7	6.3	6.5	0.0	0.0	6.2	6.2	0.0	0.0
Japan	0.5	1.0	0.8	0.0	-0.2	0.3	0.6	0.0	0.1
Euro area	-	1.7	1.4	+0.1	-0.4	1.7	1.7	+0.1	-0.2

Sources: World Economic Outlook Update (International Monetary Fund, IMF, January 2016) and Economic Outlook (Organisation for Economic Cooperation and Development, OECD, November 2015) Notes: ¹ = Sourced from Export Statistics Scotland. "-" indicates a country forecast is not produced.

For the UK in particular, the average of new forecasts for 2016 as of the time of writing is 2.2%, and range between 1.5% and 2.6% (although there are only four of the 41 forecasting organisations included in the Treasury's publication forecasting UK growth below 2% in 2015). The Office for Budgetary Responsibility (OBR) forecasts for 2016 and 2017 are 2.4% and 2.4% respectively, and these were produced in November 2015. Forecasts for 2017 average 2.3%, and range between 1.2% and 3.0% (HM Treasury, 2015).

Forecasts for the Scottish economy: detail

We look at the likely impacts in this section on both the domestic and external economic environment for Scotland over the years 2015, 2016 and 2017. It may seem paradoxical to still be forecasting 2015 over two months into 2016, however we do not yet have a *first* estimate of the performance of the Scottish economy over the final quarter of the year just past, by which point we will have the first full picture of the economic growth in that year.

The evidence up to the third quarter of 2015 suggested that the Scottish economy was performing less strongly than it had begun the year, and this was partly driven by the significant "shakedown" of oil and gas-related activity in the North Sea, as the related consequences of the continuing low oil price on exploration and investment activity in this economic area. Although this has had a particularly damaging impact on the economy of the North East of Scotland, the impact has been felt across the Scottish economy as a whole, as the sectoral results in the *Outlook and Appraisal* section identify. Very positive numbers through the first three quarters for investment and household spending appears to have been sufficient to ensure that overall Scottish growth was positive in these quarters of 2015. Our latest "nowcast" data suggests that growth has been positive in the final quarter of 2015, although down from our earlier nowcasts. We are thus holding our forecast for Gross Value Added (GVA) growth in 2015 constant at 1.9%. This is broadly in line with trend economic growth of the Scottish economy over the last forty years, although is below the growth seen in the UK in 2015 (the first estimate of growth for the final quarter of 2015 was published in January at 0.5%, with an increase of 2.2% over the year). In November's Commentary we discussed the apparent divergence between Scottish and UK growth towards the end of 2015, and this appears likely to have manifest itself in a lower growth rate in Scotland for the year as a whole.

In March 2015's Commentary, we argued it was likely that Scottish economic activity would be more negatively affected by the drop in the oil price than the UK as whole. Great challenges remain for the oil and gas sector: the price has remained low for longer than was expected one year ago, and it seems unlikely that it will rebound to higher prices in the near-term or return in the medium-term to the prices seen during the three years prior to autumn 2014. With lower prices, comes a challenge for firms and operators, as well as opportunities in decommissioning of the existing infrastructure and facilities: this is likely to be more successful for the future of the sector when it is able to occur at a time of relative stability, and not driven by short-term decision making. Oil and Gas UK data suggest that in 2014 decommissioning accounted for roughly £1 billion of expenditure in the UKCS, in contrast to capital and operating expenditures of £14.8 billion was £26.6 billion respectively (Oil and Gas UK, 2015).

Looking to the longer term, it is clear that the domestic demand – particularly expenditure by households, but also investment expenditure – are likely to continue to drive much of the continuing – though slow – economic recovery through the next two years as the external environment remains weak and subject to volatility, and has worsened since our November 2015 forecast. With George Osborne, the UK Chancellor of the Exchequer, warning of a “dangerous cocktail of risks” to the UK economy at the start of 2016, and greater uncertainty in the financial markets, the external environment offers little by way of comfort. The OECD warned of “weak global trade and past currency appreciation holding back exports” in its November ‘Outlook’, with forecasts of global growth of 3.4% and 3.6% respectively – well below recent rates. It points to particular downward revisions to growth from developing countries, including Brazil, but also the Middle East, as these economies struggle with an oil price now expected to stay at or near its current price for longer than previously forecast.

Recent PMI evidence for the Eurozone from Markit (22nd February 2015) recorded the lowest measure in over a year, although the index still suggests an “expansion” in current activities (although not for France), with growing evidence of deflation. After beating forecasts, US monthly Non-Farm payroll data on employment rose by 151,000 in February 2016, around 40,000 below expectations. This followed strong employment growth through 2015, with household incomes rising and spending positively impacting on employment, wealth and activity in the construction sector. Further, the US continues to see little signs of inflation that would trigger a further increase in interest rates, which were raised by the Fed by 0.25 percentage points at its December 2015 meeting in the first sign of an attempt to “normalise” interest rates from the unprecedented monetary interventions since the global financial crisis of 2008. Indeed it is the Fed’s first increase in US interest rates since 2006.

For the domestic economy, there is strong growth in employment in the UK, with historic highs to the numbers in employment in Scotland, a growing population, plus the windfall gains of “wealth” effects from rising house prices. The Bank of England’s latest inflation report notes a slowing to wage growth, albeit that with low consumer price inflation real earnings are rising. The Bank also suggest that slower productivity growth is impacting on wage growth, as has the growth in low skills within the labour force overall. It notes that “roles than tend to be associated with lower pay, such as lower-skilled positions, have continued to form a larger-than-usual share of net employment growth” (Bank of England, 2016b, p. 25). More details on the composition of the growth in employment in Scotland on the recent data are given later in the Labour Market Section of the Commentary.

The Bank of England also identified faster than expected growth in business investment in the latest data for 2015, as well as the contribution of significant (around 20%) falls in investment growth in the oil extraction industry over the last 18 months. It does note that extraction investment is “import-intensive”, and is therefore likely to have a lower impact on the UK as a whole than if it was entirely locally (i.e. UK) purchased (although it is likely that the UK-content of such expenditures is likely to impact more significantly in Scotland).

Overall, this discussion points to a domestic-supported growth model, driven by household and investment spending, with a worsening external environment for Scottish exports. With a slowing growth to nominal incomes and uncertain investment spending, and the likelihood of a continued and prolonged low oil price (including the knock-on effects of continued reductions in expenditures in the oil and gas

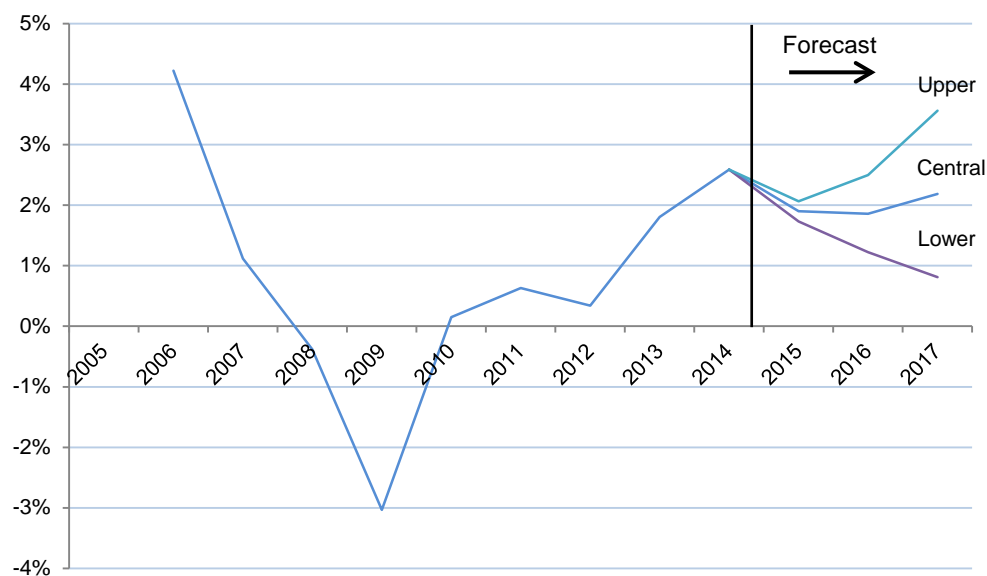
sector), plus an external environment that has worsened since our previous forecast in November 2015 therefore, we have revised *down* our forecasts for 2016 and 2017. These latest results are given below.

Fraser of Allander Institute forecasts: 2015, 2016 and 2017

In this section of the *Commentary*, we forecast year-on-year real growth in Scotland's key economic and labour market variables. In this issue, we forecast all variables for 2015, 2016 and 2017. (The growth of the Scottish economy in the final quarter is published in mid-April 2016 which will complete our first understanding of Scottish economic performance during 2015). Our forecasts cover Scotland's Gross Value Added (GVA), employee jobs and unemployment. The model used is multi-sectoral, and where useful, results are reported to broad sectoral categories.

We begin with the forecasts for GVA growth in the Scottish economy. The growth performance of Scotland between 2010 and 2014 and our forecasts for the period to 2017 are shown in [Figure 5](#). This also includes our upper and lower forecasts growth. As previously, the range around the central forecast is based on our past forecast accuracy of the first release of growth data for the year.

Figure 5: Forecasts of annual real GVA (%) growth for Scotland, 2010 to 2017



Sources: Fraser of Allander Institute forecasts, March 2016

Based on earlier forecasts between 2000 and 2014, the mean absolute error of FAI forecasts in the spring period and growth in the year previously (i.e. 2015 in this forecast) is 0.16 percentage points. Growth forecast errors made in spring for the year currently in progress (i.e. our current forecast for 2016) are 0.64 percentage points. This gives the range for the upper and lower bands in 2015 and 2016. While our past forecast error for the year subsequent to the year in progress (i.e. made now for the calendar year 2017, which is our longest forecast horizon: recall, we will not know the true value for growth in 2017 until April 2018) forecast horizon is 1.37 percentage points. This is used to give the range around our central forecast for 2017.

Relative to our November 2015 forecasts we have now revised down our central forecast for GVA growth in 2016 from 2.2% to 1.9% (i.e. a downward revision of 0.3 percentage points) and largely driven by apparently slowing income growth, a weakening of strong domestic investment growth and a longer than expected period until a recovery in oil prices which is dampening overall investment expenditure activity. Our forecast for 2017 has been revised down from 2.5% to 2.2%, largely as a result of the generally weaker outlook for export markets over the longer term. We have held our forecast for annual growth in 2015 constant at 1.9% (incidentally, this is the same as our March 2013 forecast for growth in 2015).

For comparison purposes, recall from earlier that the UK's Office for Budgetary Responsibility (OBR) forecast for growth in 2016 (made in November 2015) and the median of new independent growth forecasts for the UK in 2016 are 2.4% and 2.2% respectively, while for 2017 the respective figures are growth of 2.4% and 2.3%.

In addition to the aggregate growth forecasts in our central scenario, [Table 3](#) presents our forecasts for GVA growth in 2015, 2016 and 2017 for three broad sectoral groupings: the "Production", "Construction" and "Services" sectors of the Scottish economy.

Table 3: Scottish GVA growth (%) by sector, 2015 to 2017

	2015	2016	2017
GVA	1.9	1.9	2.2
Production	0.7	1.0	1.0
Construction	6.0	2.8	2.8
Services	1.6	2.0	2.0

Source: Fraser of Allander Institute forecasts, March 2016©

Employment and unemployment

Detailed commentary on recent developments in the Scottish labour markets can be found in the Overview of the Scottish Labour Market section of this *Commentary*. Here we present our forecasts for the number of employee jobs in the Scottish economy. We forecast the number, sectoral breakdown and percentage changes in employee jobs at the end of 2015, 2016 and 2017 respectively, as well as the ILO measure of unemployment over the same period.

The most up to date employee jobs series for Scotland shows that there were 2,386,000 employee jobs in Scotland in the third quarter of 2015, an increase of only 1,000 jobs from the end of 2014. There were 66,000 and 37,000 employee jobs added in 2013 and 2014 respectively, while there were overall falls in the total number of employee jobs of 1,000 and 25,000 in the two previous years.

Table 4: Forecasts of Scottish employee jobs ('000s, except where stated) and net change in employee jobs in central forecast, 2015 to 2017

	2015	2016	2017
Total employee jobs, Dec	2,415,200	2,452,000	2,498,850
Net annual change (jobs)	31,200	36,800	46,850
% change from previous year	1.3	1.5	1.9
Agriculture (jobs, 000s)	25	25	26
Annual change	450	-50	650
Production (jobs, 000s)	259	264	269
Annual change	3,700	4,800	5,450
Construction (jobs, 000s)	140	142	144
Annual change	1,200	1,500	2,000
Services (jobs, 000s)	1,991	2,021	2,060
Annual change	25,850	30,550	38,800

Note: Absolute job numbers are rounded to the nearest 50.

Source: Fraser of Allander Institute forecasts, March 2016 ©

Our new forecasts for employee jobs are shown in [Table 4](#), alongside a sectoral breakdown of employee job numbers. The number of total employee jobs is forecast to increase in each year, and the number of jobs added in 2015, 2016 and 2017 have been revised down slightly since our November 2015 forecasts. The number of jobs at the end of 2015 is now forecast to be 2,415,200, an increase of 1.3% during 2015. Our new forecast is that the Scottish economy will add 36,800 jobs in 2016, down by around 9,000 from our November forecast, with a net of 46,850 jobs added in 2017, down by almost 8,000 from our November forecast. The net change in employee jobs, consistent with our upper, central and lower forecasts, is shown in [Table 5](#).

Table 5: Net annual change in employee jobs in central, upper and lower forecast, 2015 to 2017

	2015	2016	2017
Upper	35,650	50,700	79,400
Central	31,200	36,800	46,850
Lower	26,850	24,250	31,200

Note: Absolute job numbers are rounded to the nearest 50.

Source: Fraser of Allander Institute forecasts, March 2016 ©

We present out forecasts for unemployment at the end 2015 and 2016 in our central scenario in our central forecasts in [Table 6](#). In line with the forecasts produced since June 2013, we report the forecast number (and rate) of those unemployed using the International Labour Organisation (ILO) definition of

unemployment. This is preferred to the claimant count measure as it gives a more complete picture of the extent of labour resources available for work but unable to find work, and so is a better measure of the level of spare capacity in the Scottish labour market.

In November 2015 we forecast that the unemployment rate would fall to 6.2% by the end of 2015, with a level of unemployment of 169,150. The recent labour market data at time of writing (23rd February) indicates that the ILO unemployment rate in the final quarter was 5.8%, with a level of 162,000. Our latest forecasts for the unemployment rate in Scotland for the end of 2016 and 2017 are 5.7% and 4.8% respectively. **Figure 5** shows the trajectory of the ILO Scottish unemployment rate since 2006 as well as our ILO unemployment rate forecasts under the central, upper and lower scenarios to 2017.

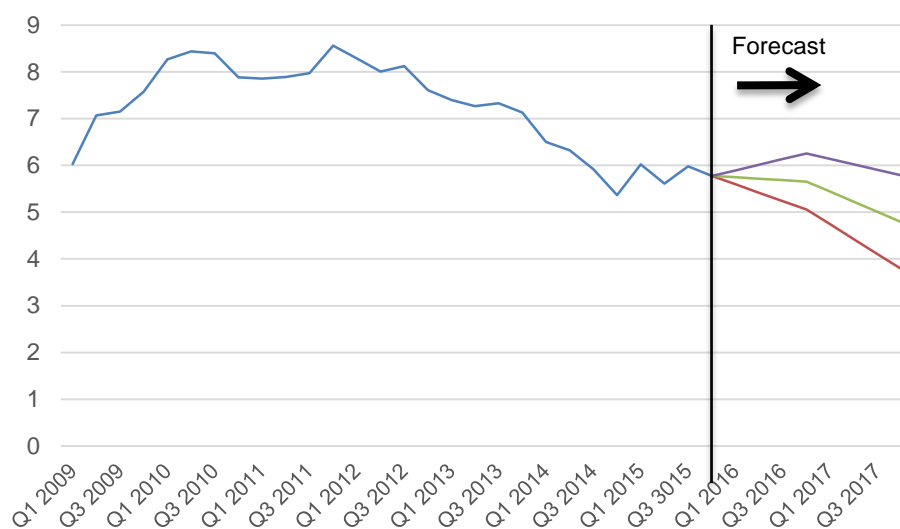
Table 6: Forecasts of Scottish unemployment in central forecasts, 2015 to 2017

	2015	2016	2017
ILO unemployment	162,000	153,350	159,850
Rate (%) ¹	5.8	5.7	4.8

Note: 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. The most recent labour market statistics are detailed in the Labour Market section.

Source: Fraser of Allander Institute forecasts, March 2016 ©

Figure 6: Scottish ILO unemployment rate, 2009 to 2017 including forecasts from 2015



Sources: ONS and Fraser of Allander Institute forecasts, March 2016

Grant Allan
23rd February 2016

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3 Review of Scottish Business Surveys

Eleanor Malloy, Fraser of Allander Institute

Abstract

Business surveys provide a useful barometer of the investment and business intentions across the economy. The business surveys reviewed in this section provide an overview of key recent evidence of the Scottish economy. Business Surveys are primarily conducted to provide data needed for calculating key economic indicators that monitor the economy over time and for constructing official statistics. The rapid rate of change in economic data creates a demand for quick estimators/indicators of these changes ideally 'as they are happening'. Survey data have the advantages of essentially being instantaneously accessible, never being revised and furthermore having little or no measurement errors. The latest set of Scottish Business Surveys are not particularly strong and show that many of the key benchmark indicators continued to slow in the most recent quarters, perhaps highlighting the impacts of the continuing low oil price and the low value of the pound on the Scottish economy.

The Bank of Scotland Purchasing Managers' Index (PMI)

The seasonally adjusted headline Bank of Scotland PMI - a single-figure measure of the month-on-month change in combined manufacturing and services output - scored 50.3 again in January 2016, unchanged from December's 2015 reading and up from the 49.8 recorded in November. The Scottish private sector grew marginally in the first month of 2016. The survey showed that the service sector reported growth but the production sector reported a contraction. The survey indicated a fall in employment as firms continued to reduce employee numbers, indeed the rate of job shedding accelerated to its fastest level since July 2015.

The January data showed a modest rise in total new orders in Scotland's private sector, as the rate of growth accelerated to a five-month high. Also, service sector respondents have reported a rise in incoming new business in every survey period since March 2015.

The Scottish Business Monitor (SBM)

The latest Scottish Business Monitor (SBM) for Q4 2015 produced by The Fraser of Allander Institute shows that the Scottish economy slowed in the final quarter of 2015. The rate of recovery is being constrained by companies in the North East. New business levels eased during the three months to the end of November with an overall net balance of +3% compared to +17% in the previous quarter and also down on the +18% of the same quarter one year ago. Expectations are that this slowdown in the rate of recovery will end and that the pace of the recovery will improve/strengthen.

The Business Monitor showed that the Scottish economy started to slow in the second half of 2008, following the global financial crash. Following the worst ever result at the end of that year, there was a gradual improvement until the early part of 2010. From 2010 to mid-2012 the Monitor showed an

economy that was largely stagnating. Last summer's Monitor showed an economy accelerating into growth. The recovery continued in spring, summer and autumn 2014 but paused at the start of 2015 before picking up again in spring and continuing throughout summer 2015. The latest Business Monitor shows this pick-up has eased in the latter part of 2015.

Firms' assessments of their immediate prospects in the next six months were on a rising trend throughout 2013 and reached highs in the first two quarters of 2014. The remainder of 2014 and into 2015 showed lower but still positive levels of expectations. Despite a fall compared to the last quarter, expectations remain positive but are lower than the high levels evident pre-recession. This is the twelfth successive Business Monitor showing a positive net balance for turnover expectations.

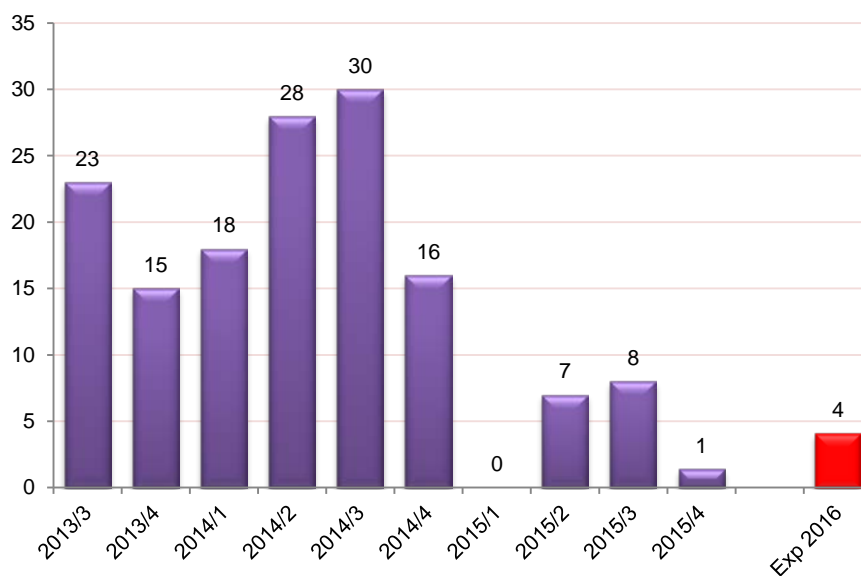
The expectation levels recorded by respondents in this latest survey suggest the private sector of the Scottish economy will show growth below trend level in the fourth quarter of 2015.

These expectation levels suggest that the private sector of the Scottish economy will show growth close to but below trend level in the first quarter of 2016, and suggests slower growth in the three months to February 2016 compared to the period to November 2015. Growth in Scottish economy slowed in the final quarter of 2015. Expectations of growth have remained broadly positive and suggest that current growth rates will be maintained in the final quarter of the year. We await the GDP figures for the 3rd quarter of 2015, and following only slight growth of 0.1% in Q2, we will then learn whether growth through last year was at moderate levels, as forecast earlier in the year. Internationally, the US Federal Reserve's decision to increase interest rates in December 2015 suggests its confidence in the embeddedness of the US recovery, however it remains to be seen how the US economy responds to this decision. Concerns about a slowdown in Chinese growth as we begin 2016 suggests ongoing weaknesses in the global economy. This will feed back into Scottish activity both through lower exports and the continuing low price of oil affecting activity across the country, and particularly in the North East of Scotland.

- Total volumes of business had previously been showing a slowly improving trend however in the latest quarter a net of -3% of companies reported a decline, well down on the +11% of the previous quarter and also down on the +19% of the same quarter one year ago.
- The overall net balance of turnover (those reporting an increase minus those reporting a decrease) is +1%, this is down from the +8% of the previous quarter and from the +16% of the same quarter one year ago.
- Export activity is continuing, on balance, to fall. The overall net balance for export activity at -10% marginally down on the -9% of the previous quarter and also worse than the -4% of the same quarter one year ago.
- Firms are significantly more concerned over weakening demand compared to the previous quarter with the percentage of firms citing it as 'very important' increasing from 46% to 53%.

- Concerns over credit costs and more notably credit availability increased slightly for both production and service firms.
- Firms located in the North East are performing significantly worse than those located elsewhere.
- Firms with a turnover of between £5 million and £10 million are reporting the most positive trends with those with a turnover of up to £5 million and those with a turnover of more than £10 million reporting more negative trends. Firms with a turnover of more than £10 million are expecting an increase in the total volume of new business.
- Expectations are that this slowdown in the rate of recovery will stop and that the pace will step up.

Figure 1: What is the trend in your turnover? (% net balance)



Source: Fraser of Allander Scottish Business Monitor

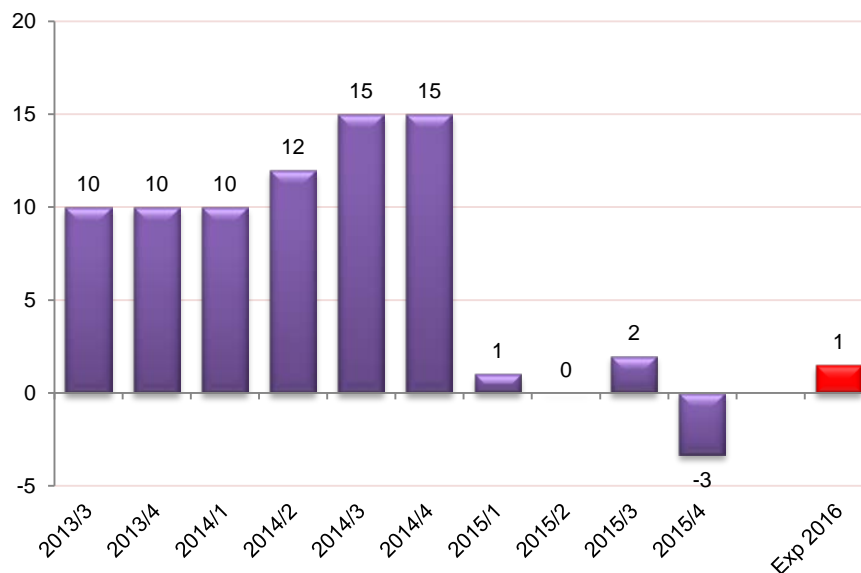
In the three months ending November 2015, 34% of the firms surveyed increased turnover, 33% experienced static turnover and 33% experienced a decrease. The overall net balance (those reporting an increase minus those reporting a decrease) is +1%, down from the +8% of the previous quarter and from the +16% of the same quarter one year ago. This latest result indicates a slowing in the pace of the improving trend identified in spring 2015.

The overall net balance of turnover for firms in the production sector in the three months to end November 2015 was 0%. This has eased from the +3% of the previous quarter but is down on the +12% of the same quarter one year ago. Services firms showed an overall net balance for turnover for the

three months ending November of +2%, down on the +11% of the previous quarter and also from the +19% of the same quarter one year ago.

Expectations for turnover in the next six months ending February 2016 show an overall net balance of +4%. Although positive this is down on the +15% of the previous quarter and also down on the +19% of the same quarter one year ago. Whilst 50% expect turnover to be static in the next six months, 27% expect turnover to increase against 23% who expect a decrease. Services firms remain more optimistic than production firms, with service firms showing an overall net balance for turnover for the next six months at +6% (+22% in the previous quarter) compared to +1% (+8% in the previous quarter) for production firms.

Figure 2: What is your trend in the volume of repeat business? (% net balance)



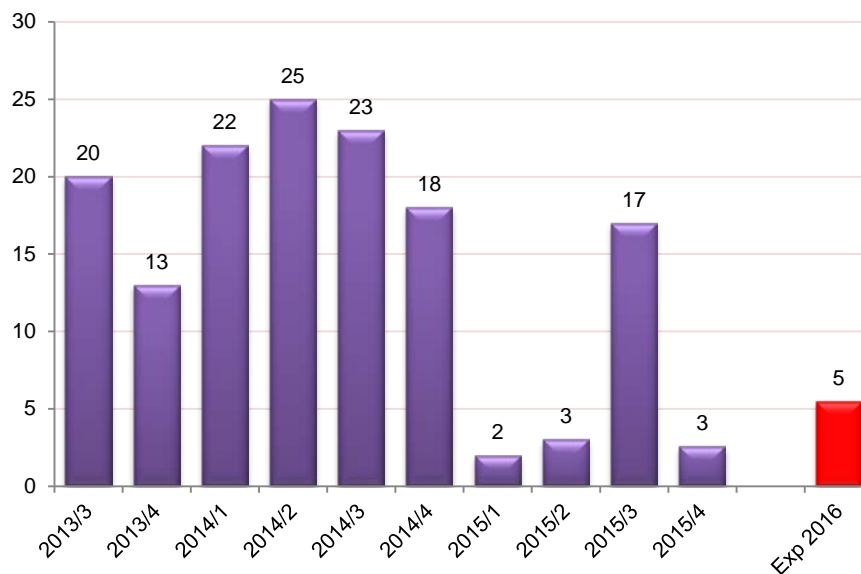
Source: Fraser of Allander Scottish Business Monitor

Volumes of repeat business are showing a slight decline in the latest quarter. In the three months ending November 2015, 19.3% of the firms surveyed increased repeat business, 58% experienced static new business and 22.7% experienced a decrease. The overall net balance of -3% is marginally worse than the +2% of the previous quarter and significantly worse than the +15% of the same quarter one year ago.

The overall net balance of repeat business for firms in the production sector in the three months to end November 2015 was -1.3%. This has eased from the -2.6% of the previous quarter but down on the +20% of the same quarter one year ago. Services firms showed an overall net balance for turnover for the three months ending November of -4.7%, down on the +5% of the previous quarter and also from the +11% of the same quarter one year ago.

Expectations for the volume of repeat business were, once again, marginally down on the levels of the last quarter with an overall net balance of +2% for this quarter compared to +4% for the previous quarter; significantly down on +13% for the same quarter one year ago. Production firms are more optimistic than service firms, with service firms showing an overall net balance for repeat business for the next six months at +0.5% (+10% in the previous quarter) compared to +3% (-7% in the previous quarter) for production firms.

Figure 3: What is the trend in your volume of new business? (% net balance)

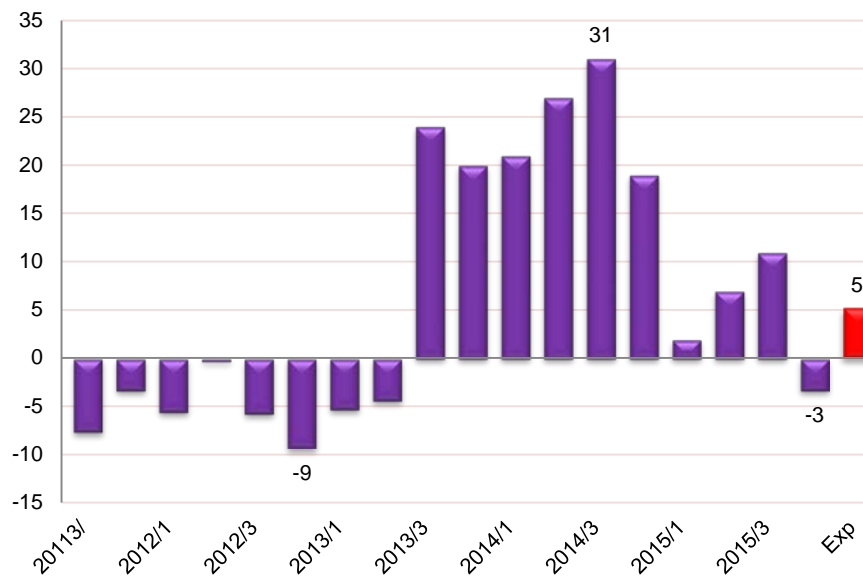


Source: Fraser of Allander Scottish Business Monitor

Trends in the volume of new business eased during the three months to the end of November with an overall net balance of +3% compared to +17% of the previous quarter and also down on the +18% of the same quarter one year ago.

The overall net balance of new business for firms in the production sector in the three months to end November 2015 was -3.4%. This is significantly down from the +18% of the previous quarter and also down on the +12% of the same quarter one year ago. Services firms showed an overall net balance for turnover for the three months ending November of +7%, down on the +17% of the previous quarter and also from the +23% of the same quarter one year ago.

Expectations for the volume of new business in the next six months have eased with the latest net balance at +6% – down on the +18% of the previous quarter and also down on the +19% of the same quarter one year ago. Service firms are more optimistic than production firms, with service firms showing an overall net balance for new business for the next six months at +8% (+21% in the previous quarter) compared to +1% (+14% in the previous quarter) for production firms.

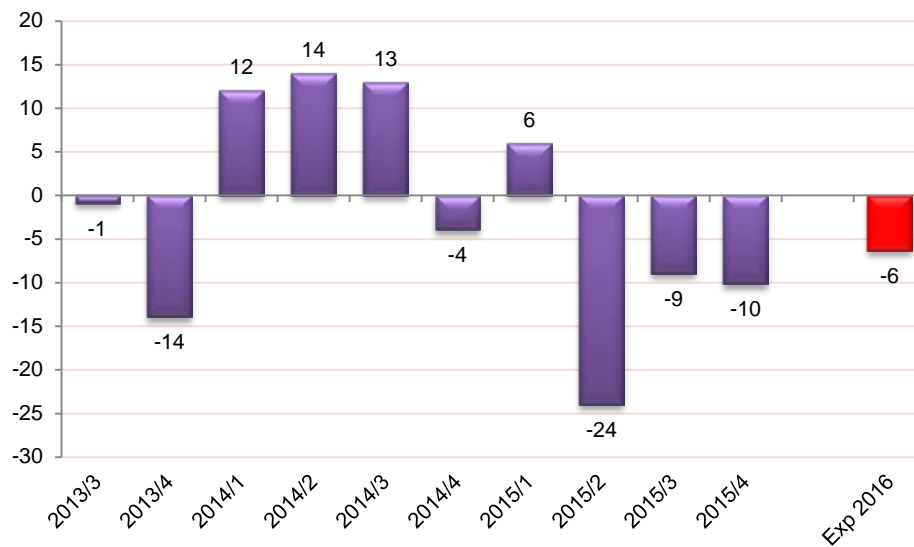
Figure 4: What is the trend in your total volume of business? (% net balance)

Source: Fraser of Allander Scottish Business Monitor

Total volumes of business had been showing a slowly improving trend however in the latest quarter a net of -3% reported a decline, down on the +11% of the previous quarter and also down on the +19% of the same quarter one year ago. These downward trends are evident across both production (-1%) and services firms but remain less positive among production firms (-5%).

The overall net balance of the total volume of business for firms in the production sector in the three months to end November 2015 was -1%. This is significantly down from the +6% of the previous quarter and also down on the +16% of the same quarter one year ago. Services firms showed an overall net balance for turnover for the three months ending November of -5%, significantly down on the +13% of the previous quarter and also from the +21% of the same quarter one year ago.

Expectations for the total volume of business in the next six months have eased with the latest net balance at +5% down on the +10% of the previous quarter and also down on the +20% of the same quarter one year ago. Service firms are more optimistic than production firms, with service firms showing an overall net balance for new business for the next six months at +7% (+16% in the previous quarter) compared to +3% (+3% in the previous quarter) for production firms.

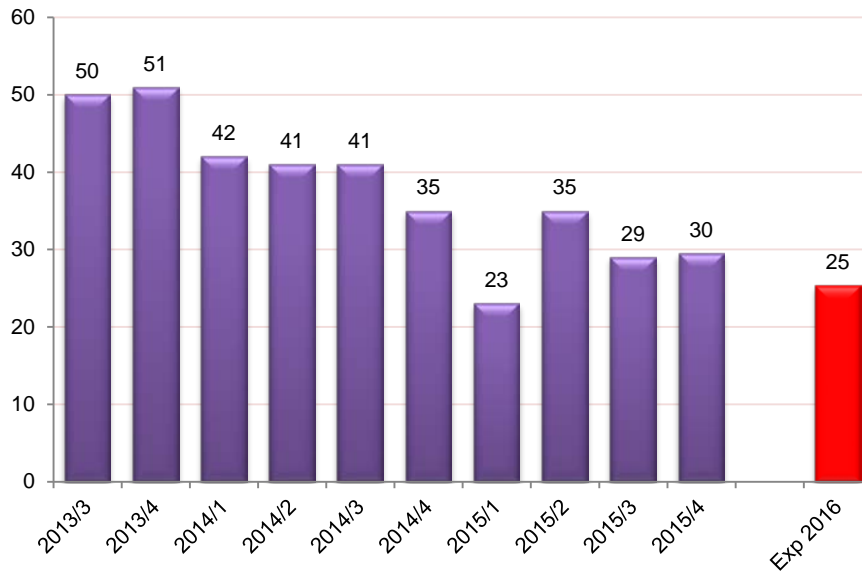
Figure 5: What is the trend in your export activity? (% net balance)

Source: Fraser of Allander Scottish Business Monitor

Export activity is continuing, on balance, to fall. The overall net balance for export activity at -10% marginally down on the -9% of the previous quarter and also worse than the -4% of the same quarter one year ago. The US Federal Reserve's decision to increase interest rates during December 2015 suggests their confidence in the embeddedness of recovery, however it remains to be seen how the US economy responds to this decision. Concerns about a slowdown in Chinese growth as we begin 2016 suggests ongoing weakness in the global economy. This feeds back to Scottish activity both through lower exports and a low price of oil affecting activity across the country, and particularly in the North East of Scotland.

The net balance for expected export activity for the next six months has eased. The net balance reached -6% – better than the -13% of the previous quarter but worse than the +5% of the same quarter one year ago.

Expectations for export activity in the next six months have fallen with the latest net balance at -6% – this has eased from the -13% of the previous quarter but is down on the +4% of the same quarter one year ago. Service firms are more pessimistic than production firms, with service firms showing an overall net balance for export activity for the next six months at -10% (-14% in the previous quarter) compared to -2% (-13% in the previous quarter) for production firms.

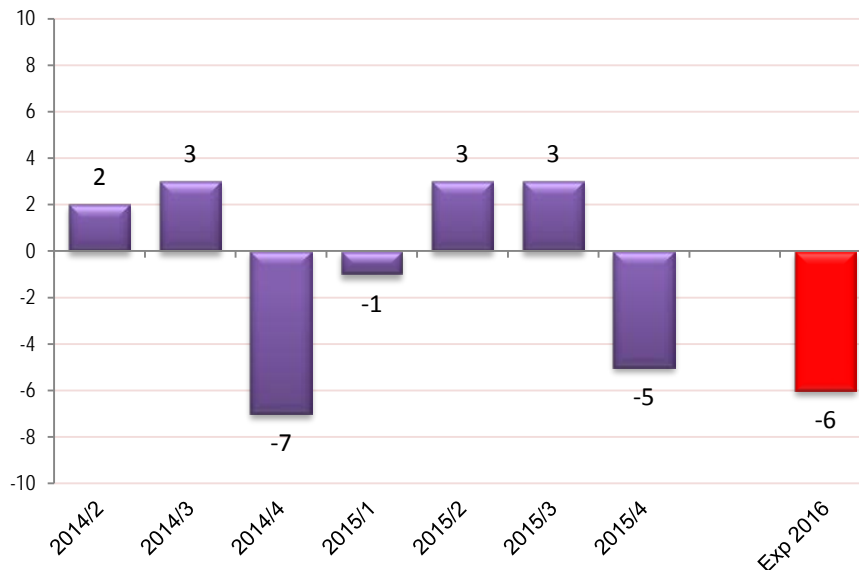
Figure 6: What is the trend in your costs? (% net balance)

Source: Fraser of Allander Scottish Business Monitor

Cost pressures were broadly unchanged in the latest quarter. The overall net balance of firms experiencing cost increases in the last three months was +30% – largely comparable to the +29% of the previous quarter but less than the +35% of the same quarter one year ago.

The overall net balance of costs for firms in the production sector in the three months to end November 2015 was +31%. This has increased from the +20% of the previous quarter but marginally down on the +36% of the same quarter one year ago. Services firms showed an overall net balance of costs for the three months ending November of +28%, down on the +34% of the previous quarter and also from the +35% of the same quarter one year ago.

Expectations for future cost increases have fallen slightly. The overall net balance for cost expectations is +25% – down from the previous quarter's +28% and lower than the +34% of the same quarter one year ago. Whilst 60% expect their costs to remain static, 33% expect an increase as opposed to 8% who expect a decrease in the next six months. Production firms are facing a larger increase in costs than service firms, with service firms showing an overall net balance for the trend in costs for the next six months at +3% (+27% in the previous quarter) compared to +22% (+30% in the previous quarter) for production firms.

Figure 7: What is the trend in your capital investment? (% net balance)

Source: Fraser of Allander Scottish Business Monitor

As forecast by firms from the previous survey, the rate of capital investment declined in Q4. For the three months to November 2015, 44% of firms reported static levels of capital investment, 30% a decrease while 25% reported an increase giving a net balance of -5%, down on both the levels last quarter +3% and also compared to the same quarter one year ago +7%.

The overall net balance of the rate of capital investment for firms in the production sector in the three months to end November 2015 was -11%. This has decreased from the +2% of the previous quarter and also from the +7% of the same quarter one year ago. Services firms showed an overall net balance of capital investment for the three months ending November of 0%, down on the +4% of the previous quarter and also from the +8% of the same quarter one year ago.

Expectations for new capital investment the next six months ending February 2016 are showing an overall net balance of -6%; down on the -3% of the previous quarter and marginally down on the -5.5% of the same quarter one year ago. Services firms remain less pessimistic than production firms, with service firms showing an overall net balance for new capital investment for the next six months at -1% (-2% in the previous quarter) compared to -13% (-4% in the previous quarter) for production firms

Scottish Chambers of Commerce Quarterly Economic Indicator

The Scottish Chambers of Commerce Quarterly Economic Indicator (QEI) is produced in collaboration with the Fraser of Allander Institute, University of Strathclyde. The results for the latest survey for Q4 2015 showed that there was a mixed performance across Scotland's key business sectors. The

construction and manufacturing sectors reported strong results, indicating continued growth following positive results in Q3 2015. However the tourism sector showed a somewhat mixed picture and the retail & wholesale sector experienced a decline with many of the indicators entering into negative territory. Both the retail & wholesale and tourism sectors, returned poorer results in Q4 2015 compared to the same quarter the year previously. Furthermore, the survey indicated a further contraction in the financial & business services sector. Overall, the survey showed that business optimism was lower in Q4 for the majority of sectors, compared to the same quarter one year previously.

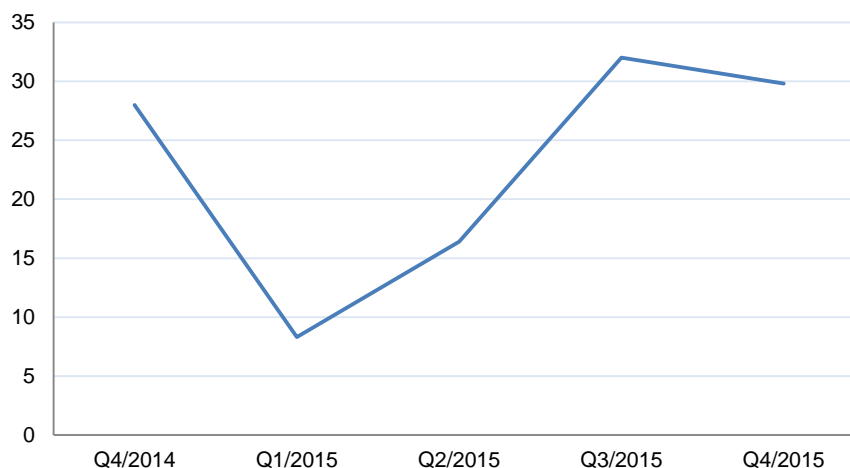
Construction

55.3% of construction businesses reported an increase in total sales revenue in Q4 2015, (a net balance of +38%). The increase can largely be attributed to domestic (Scotland) sales with just under half (47.8%) of firms reporting an increase. Almost 79% of respondents indicated that sales revenue will either be maintained or increased.

Construction Investment expenditure was positive during Q4 2015 with a net balance of 30% reporting a rise. Growth was recorded for both capital and training investment with net balances of +22% and +40% respectively. A net of +23% anticipate a further increase. A net balance of +24% reported a rise in profits during Q4 2015 marking the third consecutive quarter that construction businesses have, on balance, reported a rise in profits.

Almost half (48.9%) of all firms reported an increase in employment during the final quarter of 2015 (a net balance of +34%); the highest net balance since Q2 2007. Employment levels are expected to remain buoyant in Q1 2016 with 91.5% of businesses either expecting no change or anticipating an increase. Almost 70% of firms reported attempting to recruit staff over the quarter - the highest figure recorded since Q3 2007. Of these firms 64.5% experienced recruitment difficulties.

Figure 8: Trend in profit – Construction (% net balance)



Source: Scottish Chambers of Commerce

Financial and Business Services

The results recorded for the financial & business services sector was almost uniformly negative / subdued and continued to show the impact of the low oil price. Oil prices were a commonly cited concern for businesses throughout the year. Following disappointing figures in Q3 2015; results for Q4 2015 suggest a further contraction in the Financial & Business Services sector. Optimism declined for a net balance of -12% of firms - the lowest net balance since Q3 2014.

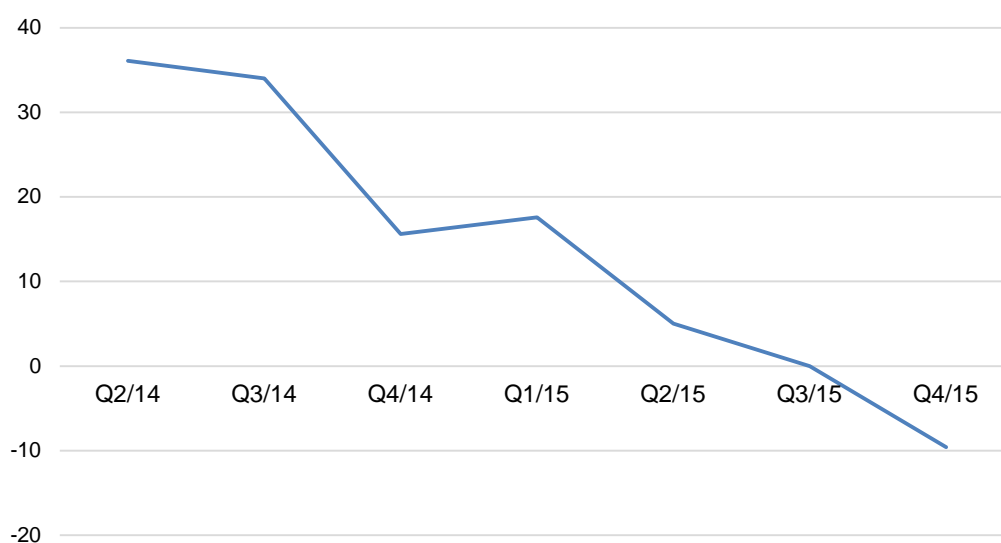
Following four quarters of positive trends for sales revenue, a negative net balance of -15.6% was recorded during Q4 2015. This is the first time that the trend balance for sales revenue has been in negative territory since this sector was introduced to the survey in Q4 2014. Cash-flow for businesses within the sector, declined for a net balance of -22.5%, also the lowest figure recorded since the sector was introduced.

A net balance of -10% reported a decline in expenditure on investment, this is first time a negative net balance has been reported since the sector was introduced to the indicator in Q1 2014. Moreover, with a net balance of -3% anticipate a further decline in Q1 2016.

Profits declined over the quarter for 46.7% of all businesses resulting in a net balance of -25%, the lowest recorded figure since Q1/14.

Employment levels decreased for a net balance of -12% of firms, the third consecutive quarter that employment levels were in negative territory. However a net balance of 7% expect a rise in Q1 2016.

Figure 9: Investment intentions in Financial and Business Services (% net balance)



Source: Scottish Chambers of Commerce

Manufacturing

Orders increased for a net balance of +18% of manufacturing firms in Q4 2015. While net balances of +6% and +14% were reported for orders from Scotland and the Rest of the UK respectively, growth eased for exports with a net balance of +12%.

Sales also, on balance, improved with a net of +13.7% reporting a rise; this is the fifth consecutive quarter that sales revenue has been positive. Growth was reported throughout the sector in terms of sales from Scotland (+8), rest of UK (+16) and exports (+8). These trends are expected to continue in Q1 2016 with 41.2% of all firms expecting sales to increase. Almost half (47.1%) of businesses reported an increase in the level of work in progress in Q4, (a net balance of +29%), the highest net % balance recorded in 2015.

A net balance of 33% reported a rise in investment expenditure over the quarter and a net of 14% expect a rise in Q1 2016.

Total employment levels rose for a net balance of +24% of firms during Q4 2015 and total employment levels are expected to be maintained or increased in Q4 with 56% of businesses expecting no change and 34% anticipating an increase. Almost 70% of firms reported attempting to recruit staff in Q4 2015 and almost one third of these firms reported facing recruitment difficulties.

Tourism

Tourism firms reported that the total number of guests and customers grew in comparison to the same time last year for a net balance of +26% of firms. Firms reported positive trends in guests coming from Scotland (+15%) and rest of UK (+15%), however, a net balance of business reported experiencing a fall in the number of guests from the rest of EU (-4%) and out with the EU (-11%).

Positive balances were reported for domestic (Scotland) sales and online sales, with net balances of 9% and 2% respectively however there was a negative trend balance for sales from the rest of UK (-11%).

Profits were down over the quarter for a net balance of -15% of firms and 53.2% of firms expect to increase their prices in Q1 2016 in order to increase profit margins.

Investment expenditure was positive during Q4 2015, with a net balance of +25% of firms reporting increased investment expenditure. Positive trends were recorded for both training and capital investment with net balances of +17% and +29% respectively. Investment expenditure is expected to continue to grow in Q1 2016 for a net balance of +17%. Downward trends are expected for both sales revenue and employment levels in Q1 2016.

Retail and wholesale

There was a decline in business optimism as a net balance of -17% reported a decline in business optimism in the final quarter of 2015 – this is the first negative net balance since Q4 2012.

A net balance of -23% reported a decline in sales in Q4 2014, with 44% of all firms experiencing a fall in sales - the lowest net balance since Q2 2013. However, a net balance of +19% expect sales to grow in Q1 2016. Total investment expenditure declined over the quarter for a net balance of -2%. A net balance of -26% reported a decline in profits during the final quarter of 2015.

Over the quarter, a net balance of -5% of retail and wholesale firms reported a decline in total employment levels. However, 41.9% of businesses in the sector reported attempting to recruit and a positive net balance of +9% expect a rise in Q1 2016. Expectations for the start of 2016 are encouraging as a net of 19% expect a rise in sales revenue and a net of +12% expect a rise in investment.

The Scottish Construction Monitor

Widely viewed as an important barometer of confidence within the Scottish construction sector, the Scottish Construction Monitor is a quarterly business confidence survey of the membership of the Scottish Building Federation (SBF). The latest survey covers Q4 2015 and in addition to its regular questions it also included a short series of questions to measure members' views concerning areas of policy including procurement, skills, planning and building control, capital investment, energy efficiency and consumer protection. The main findings of the latest survey are detailed below.

The overall confidence rating of the Scottish construction sector has been positive for ten consecutive quarters although in Q3 2015 confidence fell by 14 points and then fell a further 13 points in Q4 to sit broadly where it was during the final quarter of 2013 at +8. The percentage of respondents more confident about their prospects for the next 12 months compared to the past year has fallen from 51% last quarter to 33% this quarter and conversely, the percentage of respondents less confident about their firm's future prospects has risen from 16% in Q3 2015 to 25% this quarter.

More than half of responding firms did not believe that the recent procurement reforms by the Scottish Government improved procurement in Scotland compared to only 11% who did. Forty-four percent of respondents dislike current tendering practices claiming that they cannot afford not to take part in tenders and almost a quarter of firms reported negative experiences of procurement making them more selective in tendering for projects. The survey found that 16% actively avoid procurement opportunities due to cost and complexity compared to 14% who are content to tender and have generally positive experiences. The main issues surrounding tendering are cost and complexity, tight profit margins on projects, use of guarantee bonds and the delayed payment of tender fees.

Shortages of skills and labour were a concern with more than three quarters of respondents either moderately or extremely concerned about the impact on future growth and profitability, whereas only 7% reported having no concerns about this issue.

Most respondents were moderately satisfied with the performance of local authority planning and building control departments, while a third were not satisfied and 8% were very satisfied. 13% of respondents rate the Scottish Government's performance in prioritising public funding for investment in construction projects as good, 35% rate it as fair and 24% rate it as poor. Respondents to the latest survey ranked housing as the top priority for public investment in construction projects whereas investment in transport, energy and communications infrastructure is ranked lowest. Just over a third of firms did not think that the Scottish Government does enough to support improved energy efficiency in Scotland's existing built environment compared to 26% who do.

Scottish Engineering Quarterly Review

The latest Scottish Engineering Quarterly Review for the fourth quarter of 2015 showed that the engineering industry is being adversely affected by the strength of the pound and the impact of the slowing economy in China. The review noted that many trading areas are suffering although some companies serving more niche markets continue to thrive.

Optimism overall continued to fall but remained positive for large companies; however it continued to decline, on balance, for small and medium sized firms. Total order intake continued to fall for a net balance of 20% of firms. Falls in orders were more noticeable in small and medium sized firms. Prices, on balance, declined for a net of 30% of firms and a net of 19% of firms are forecasting a further decline for Q1 2016. Capital investment plans continued to decline for a net balance of firms. Training investment plans on the other hand continued to be positive. A net balance of 8% of Scottish engineering firms reported a decline in total employment levels and a net of 7% expect a decline in Q1 2016.

Conclusions

Overall, the pace of the recovery has slowed and this easing in the economy was identified by many Scottish business surveys last year. Despite the slowing in the rate of increase for many of the key balances, expectations in many of the surveys remained buoyant showing that many businesses are trying to be optimistic about the year ahead, however they face a number of challenges. Many forecasters have revised their forecasts downwards including the Bank of England whose forecast for GDP growth for 2015(?) has been revised down from 2.5% to 2.2%. The economy appears to be settling into a pattern of lower and slower for longer growth; with the economy still growing, but growing less strongly. Worldwide markets have been volatile despite many of the fundamentals in the economy remaining fairly good. The main concern is that if this turbulence and nervousness continues then business confidence could begin to suffer.

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Fraser of Allander Scottish Business Monitor Issue 72, September –November 2015

Scottish Chambers' Commerce Quarterly Economic Indicator, Q4 2015

Scottish Engineering Quarterly Review, Q4 2015

The Bank of Scotland Markit Economics Regional Monthly Purchasing Managers' Indices, November-January 2015

Scottish Building Federation Scottish Construction Monitor Q4 2015

Eleanor Malloy

23 February 2015

4 Scottish labour market

Andrew Ross, Fraser of Allander Institute

This section provides an overview of key labour market data in Scotland and contrasts these with both UK performance and changes over time. These data are from a range of the latest labour market data for Scotland and the UK, to December 2015. The Scottish unemployment rate stands at 5.8%, above the UK rate of 5.1%. The employment rate in Scotland is 74.8%, with the UK figure 74.1%. Growth in employment is still being sustained by increases in part-time working and self-employment. The question of whether this shift away from fulltime job creation is the 'new normal' prevails.

Recent trends and statistics

The latest comparable figures on the labour market for Scotland and the United Kingdom are summarised in Table 1. Labour Force Survey (LFS) data show that in the quarter to December 2015 the level of employment in Scotland increased by 22 thousand, to 2,636 thousand and increased over the year by 11 thousand. For the same period, UK employment rose by 205 thousand and 521 thousand respectively. The Scottish employment rate (16-64) – i.e. those in employment as a percentage of the working age population – was 74.8%, up by 0.4% from one year earlier. For the same period, the UK employment rate was 74.1%, up 0.9% compared to a year earlier. Scottish unemployment decreased by 5 thousand to 162 thousand in the quarter to December 2015, a 13 thousand increase over the year. The unemployment rate increased in the months to August 2015 and now stands at 5.8%. The comparable unemployment rate for the UK is 5.1%.

Table 1: Headline indicators of the Scottish and UK labour markets, October – December 2015

		Scotland	Change on quarter	Change on year	United Kingdom	Change on quarter	Change on year
Employment*	Level (000s)	2,636	22	11	31,417	205	521
	Rate (%)	74.8	0.7	0.4	74.1	0.4	0.9
Unemployment**	Level (000s)	162	-5	13	1,690	-60	-172
	Rate (%)	5.8	-0.2	0.4	5.1	-0.2	-0.6
Inactivity***	Level (000s)	701	-19	-27	8,880	-88	-27
	Rate (%)	20.5	-0.6	-0.8	21.8	-0.2	-0.5

Source: ONS Labour Market Statistics, Scotland and UK, February 2016.

Notes: * Levels are for those aged 16+, while rates are for those of working age (16-59/64).

** Levels and rates are for those aged 16+, rates are proportion of economically active.

*** Levels and rates for those of working age (16-59/64).

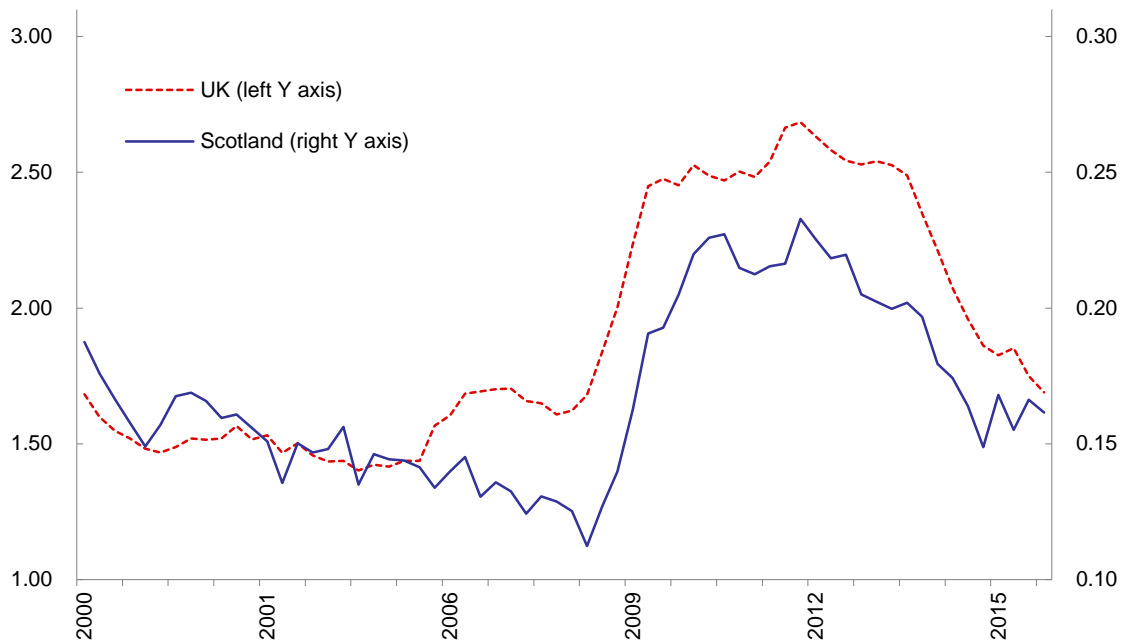
Note: In considering employment, activity and unemployment rates it is important to remember the bases and relationships of these figures. LFS data (estimated) is provided for: (1) all aged 16 and over and (2) for all aged 59/64. The first measure (all aged 16 and over) leads to higher numbers in employment, economically active and economically inactive – and reduces the economic activity rate and unemployment rate, while at the same time increasing the economically inactive rate. Conversely the second measure (all aged 16 to 59/64) leads to lower numbers who are economically active, in employment and economically inactive – and leads to a higher rates of those who are economically active, in employment and unemployed and to a lower rate of those who are economically inactive. See Scottish Parliament Information Centre briefing on Scottish labour market statistics: <https://www.scottish.parliament.uk/parliamentarybusiness/70894.aspx>

The relationships between employment, unemployment, total economically active and inactive are important in discerning the response of the labour market to overall economic conditions. It is important to appreciate that changing levels of employment and unemployment, and changes in employment rates should be seen in conjunction with changes in activity rates. For example, if people leave employment and become unemployed (i.e. are actively seeking work) they remain economically active and the unemployment rate will increase, but the rate of those economically active will remain unchanged. However, if people leave employment and do not seek further employment, as seems to be a continuing pattern, they are then categorised as economically inactive, and as such the unemployment rate will remain unchanged, whilst the activity and inactivity rates will change. Equally, the changing pattern between full and part time employment is of interest as we uncover how the labour market is responding to overall economic conditions. We return to this issue later in this section.

Figure 1 illustrates the trend in unemployment in Scotland and the UK since 2000. Between 2000 and 2015, unemployment in Scotland was at its lowest (106 thousand) in March – May 2008, immediately preceding the global financial crash and subsequent Great Recession. In contrast, unemployment was at its lowest (1,396 thousand) in the UK between August – October 2004. The highest number of unemployed in Scotland was in the period May – July 2010 (237 thousand) and in the UK in the period from September – November 2011 (2,708 thousand). Unlike the pattern of previous recessions, unemployment has fallen in Scotland (and the UK) more rapidly than expected to just above 160 thousand. This reflects in part the rapid rise in part time and self-employment (see Figure 2 and Table 5) and the development of a more flexible labour market with increases in the number of temporary, zero-hours and part-time employment contracts.

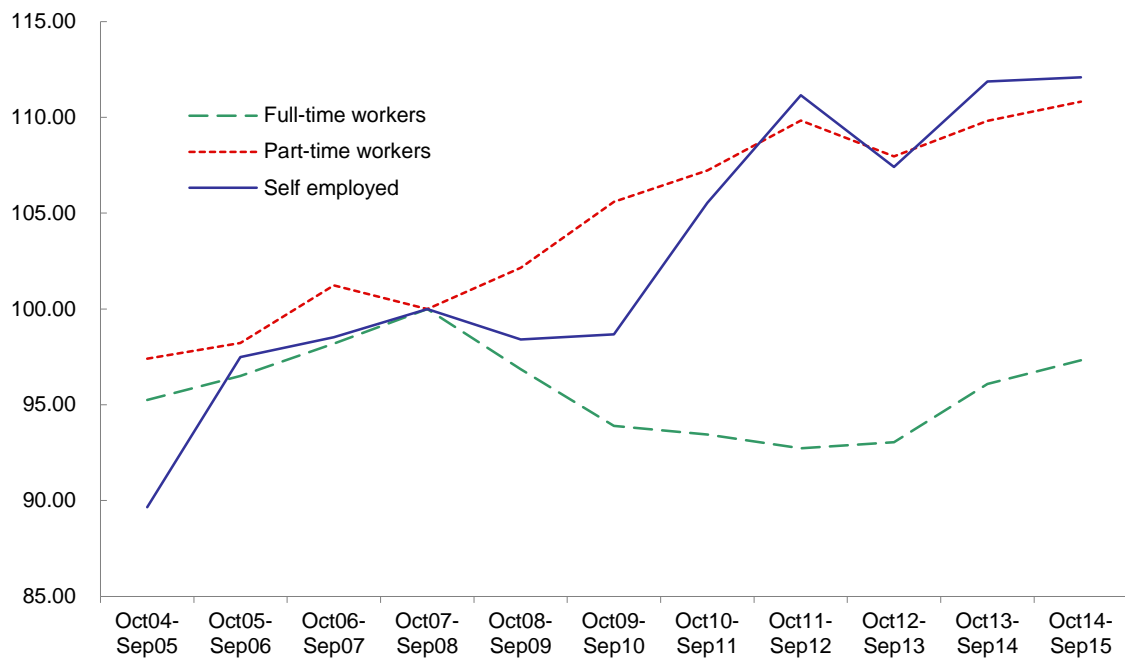
Figure 2 illustrates how the employment 'recovery' continues to be driven by an increase in part-time work and self-employment. Growth in full-time employment remains subdued but it has started to gain some momentum since 2014. In this time-series, self-employment peaked between October 2014 and September 2015 at 301 thousand. Full-time employment peaked in October 2007 – September 2008 at 1,919 thousand, and part-time work peaked in October 2014 – September 2015 at 701. A balanced recovery would require full-time work to gain significant momentum. The question is whether this shift away from full-time job creation is now the 'new normal' for the Scottish and UK labour markets. This shift towards self-employment and part-time jobs also emphasises the importance of measuring and monitoring the 'quality of work' and its contribution to labour productivity to identify underlying structural issues in the labour market.

Figure 1: Unemployment (in millions) in Scotland and the UK January 2000 – December 2015



Source: ONS Labour Market Statistics, Scotland and UK, February 2016.

Figure 2: Index of full, part time and self-employment in Scotland, October 2004 – September 2015



Source: ONS Labour Market Statistics, Scotland, February 2016.

Notes: Index - October 2007 – September 2008 = 100.

The economically active workforce includes all individuals actively seeking employment and those currently in employment (i.e. self-employed, private sector and government employed, unpaid family workers and those in training programmes). Between October / December 2015 the number of economically active (16+) in Scotland increased by 17 thousand, and the rate of the economic active increased by 0.3% to 63.7%. There were 2,797 thousand economically active in Scotland during the period. This comprised 2,636 thousand in employment (2,552 thousand aged 16–64) and 160 thousand ILO unemployed (all aged 16-64). The number of those of working age but economically inactive decreased by 13 thousand over the latest quarter to 1,594 thousand and decreased by 6 thousand over the year.

The economic inactivity rate for men aged 16–64 decreased by 1.4% over the year to 16.6%, and decreased by 0.2% for women over the year to 24.3% from October – December 2015. In the year from October 2014 to September 2015, the key components of change in inactivity were; an increase in the number of students, up by 5 thousand; more people looking after family, up by 5 thousand; more people who were temporarily sick, up by 2 thousand; fewer long-term sick, down by 14 thousand; fewer people who are retired, down by 5 thousand; and 'other' up by 2 thousand. Although the majority of the inactive (581 thousand) did not want a job, 176 thousand – or 30% - did.

The latest data on employment by age, derived from the Annual Population Survey, is available up to October 2014 to September 2015. Table 2 illustrates the changing employment rates by age group from October 2006 onwards. In the year to June 2015, employment rates increased for all age groups, other than for those 65+ which decreased by 0.4% over the year, and the 35-49 group which decreased by 0.2% over the year. The largest increase in the employment rate was in the age group 16-17 (+3.3%), followed by the age group 16-24 (+2.6%), and 18-24 (+2.3%). The employment rate for all workers aged 16 and over increased by 0.4 % over the year to September 2015 to 58.8%.

Table 2: Employment rates (%) by age, Scotland October 2006 – September 2015

(In %) Jul-Jun.	Sep-07	Sep-08	Sep-09	Sep-10	Sep-11	Sep-12	Sep-13	Sep-14	Sep-15
All 16+	59.6	59.9	60.6	60.8	59.2	58.0	57.5	57.4	57.1
16 - 64	72.7	73.1	74.1	74.3	72.3	71.0	70.5	70.6	70.5
16 - 17	44.5	43.5	40.8	40.3	37.4	31.1	31.0	29.2	29.4
18 - 24	68.2	68.4	68.6	67.7	64.2	62.5	60.5	58.2	59.4
16-24	63.1	63.1	62.7	61.9	58.4	56.0	54.6	52.5	53.5
25 - 34	79.6	79.9	81.5	81.6	80.1	78.1	79.3	79.5	78.6
35 - 49	82.3	83.0	83.8	83.8	82.1	81.2	80.6	81.6	81.5
50 - 64	62.4	62.9	64.5	66.0	64.6	64.2	63.5	64.0	63.9
65+	5.1	5.2	5.4	5.9	6.6	6.4	6.5	7.3	7.8

Source: ONS Labour Market Statistics, Scotland, February 2016. **Note:** Denominator = all persons in the relevant age group.

Total workforce job figures are a measure of jobs rather than people. Total seasonally adjusted workforce jobs in Scotland for September 2015 (the latest available figures) stood at 2,688 thousand, (i.e. 2,386 thousand employee jobs, 288 thousand self-employed jobs, HM forces and supported trainees 14 thousand). Table 3 indicates the sectoral breakdown and provides some indication of both the impact of the recession and the differential recovery in jobs across sectors. As noted above, these trends need to be considered with some caution as workforce jobs measure jobs rather than people in employment i.e. the estimates of self-employment jobs and government supported trainee jobs differ from the estimates of people in self-employment and in government supported training and employment programmes.

Table 3: Total workforce jobs by industry, Scotland, September 2010 – September 2015

Industry (in thousands, SIC07)	Sep-10	Sep-11	Sep-12	Sep-13	Sep-14	Sep-15
All jobs	2,581	2,625	2,601	2,638	2,721	2,688
Agriculture, forestry & fishing	59	50	53	58	60	51
Mining & quarrying	33	30	37	35	37	39
Manufacturing	182	189	192	190	204	200
Electricity & gas	19	19	16	17	19	17
Water supply, sewerage, waste	14	16	17	16	17	17
Construction	173	171	170	183	181	186
Wholesale & retail trade	377	376	372	369	393	402
Transport & storage	108	115	114	111	120	120
Accommodation & food service	183	182	175	196	187	192
Information & communication	72	65	71	75	67	66
Financial & insurance activities	91	89	89	92	94	89
Real estate activities	29	33	37	39	31	33
Professional scientific & technical	160	209	179	186	191	182
Administrative & support service	190	192	221	195	212	206
Public admin & defense	159	153	153	153	150	154
Education	212	207	196	197	210	209
Human health & social work	376	385	370	376	402	385
Arts, entertainment & recreation	73	81	79	84	83	84
Other service activities	64	60	59	63	59	54
People employed by households	5	3	2	3	3	4

Source: ONS Labour Market Statistics, Scotland, February 2016.

Notes: * Workforce jobs are a measure of jobs rather than people. There are extensive revisions from previous figures.

The data in Table 3 suggest that the Human health and social work sector has seen a significant contraction of workforce jobs over the year. This sector has seen a decrease of 17 thousand (-4.3% change) workforce jobs over the year. Similarly, the Manufacturing sector has seen a decrease of 7 thousand (-3.4%) over the quarter to September 2015 and a decrease of 4 thousand (-1.8%) workforce jobs over the year. The Accommodation & food service activities sector has seen an increase of 7 thousand (3.7%) workforce jobs over the quarter, and 4 thousand (2.4%) over the year.

Table 4 outlines the changing patterns of full time and part time employment. The latest data indicates that from October 2014 to September 2015, the number of employees increased by 33 thousand (1.5%), and the numbers of self-employed increased by 4 thousand (1.2%). The number of part-time workers increased by 1 thousand (0.2%) over the year, and the number of temporary employees decreased by 3 thousand (-2.3%).

Table 4 also indicates that the numbers of full-time workers in Scotland increased by 24 thousand (1.3%) over the year from October 2014 to September 2015. Part-time employment numbers have grown significantly through the recession and have increased by 6 thousand (0.9%) over the year to September 2015.

Table 4: Trends in Scottish employment statuses, October 2009 – September 2015

All in employment (in thousands)	Sep -10	Sep-11	Sep-12	Sep-13	Sep-14	Sep-15
Employees *	2,190	2,176	2,166	2,169	2,224	2,257
Self-employed *	266	284	299	289	301	302
Full-time workers **	1,802	1,793	1,779	1,786	1,844	1,868
Part-time workers **	668	679	695	683	695	702
Workers with 2nd job	100	96	99	100	99	99
Temporary employees	126	129	120	134	138	135
Total *	2,475	2,475	2,483	2,482	2,548	2,575

Source: ONS Labour Market Statistics, Scotland, February 2016.

Notes: * Includes people who did not state whether they worked part time or full time

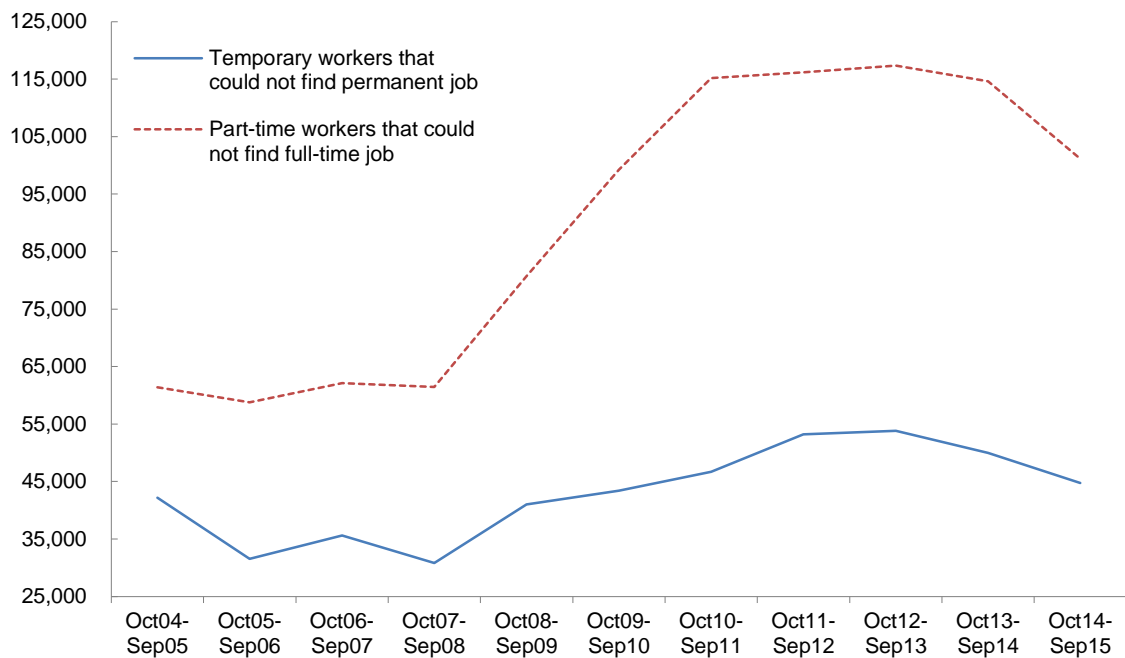
** The split between full time and part time employment is based on respondents' self-classification

The number of those working part-time because they could not find a full time job is 101 thousand, a decrease of 13 thousand (-11.8%) over the year to September 2015. The number of people who cannot find a full-time job is still almost double that of pre-recession numbers. This reflects continuing issues in the wider economy and whether these numbers will see significant reductions in near future is questionable.

Figure 3 shows the number of part-time workers that could not find a full-time job and temporary workers that could not find a permanent job from October 2004 – September 2015. Given that recent growth in employment has largely been fuelled by part-time workers and self-employment (see Figure 2) it is positive to see that the number of part-time workers that could not find full-time jobs are decreasing, from 115 thousand to 101 thousand, a drop of 11.8% over the year to September 2015.

However, the remaining high number of involuntary part-time workers shows that there is still significant slack in the labour market. The same, even though to a lesser extent, holds true for temporary workers that could not find a permanent job.

Figure 3: Trends in full, part time and self-employment October 2004 – September 2015



Source: ONS Labour Market Statistics, Scotland, February 2016

FRASER OF ALLANDER INSTITUTE

Editorial Introduction

Happiness, well-being and life satisfaction are topics that are attracting increasing attention from policy makers, and even from economists. In this issue, we publish work undertaken by researchers from the European Policies Research Centre (EPRC) and the Fraser of Allander Institute (Sara Davies, Stewart Dunlop and Kim Swales) at the University of Strathclyde. They seek to ask a simple question: is happiness or life satisfaction related to where you live in Scotland? They provide evidence to back up previous research that indicates lower levels of 'happiness' in Scotland's cities, though they find that 'happiness' is greatest those rural areas that have good access to Scotland's cities. The good life, it appears may be one of 'having one's cake and eating it'.

Though the founder of modern economics is generally taken to be the Scot, Adam Smith, Scottish-born winners of the Nobel Prize for Economics have been thin on the ground. James Mirrlees was awarded a Nobel Prize in 1996 and in 2015 so was the US-based, ex-patriate Scottish economist, Angus Deaton. In this issue, Hervey Gibson reviews Deaton's 'almost ideal demand system' model of consumption and applies it to consumption in the Scottish economy, with surprising results.

The Agreement between the UK and Scottish governments on Scotland's Fiscal Framework is of historic importance to every man, woman and child in Scotland. That it was a very protracted negotiation was indicative of its importance, as was the agreement that the indexation that should underpin it be reviewed by both governments in seven years. This topic was the subject of an article by Jim Cuthbert in the June 2015 Commentary (see http://strathprints.strath.ac.uk/53549/1/FEC_39_1_2015_CuthbertJ.pdf). In this issue, Professor Anton Muscatelli, one of Scotland's leading economic commentators, provides an analysis of the Agreement, the competing indexation methods to meet the Smith Commission's 'no detriment' and 'taxpayer fairness' criteria. In his view, the Agreement is 'right on the money',

In international terms, the UK has a poor record in the planning and delivery of large-scale infrastructure. Why this is the case is the subject of an article by Miguel Coelho and Sebastian Dellepiane. They take a *political economy* perspective to decision making in a variety of settings: power generation, high speed rail, London's international gateway airports and sewerage infrastructure. Their analysis shows that UK political decision making processes are defective and they note some international policy innovations that might be adopted in the UK - and Scotland? – to plan and more rapidly deliver major infrastructure.

Given that the elections to the 2016 – 2021 Scottish Parliament are only months away, the Commentary publishes two articles of key current policy importance: widening access to higher education and creating 'inclusive growth' in the Scottish economy. Alan Sherry, looks at the progress to date of widening access to higher education from Scotland's poorest communities. Despite much work and rhetoric, he sees little evidence of a systemic shift and questions the current policy focus on SMID 40 as a target and measure.

The second article is by David Wilson of the International Public Policy Institute (IPPI) at the University of Strathclyde. He provides a perspective of the reasons why inequality and fairness are back on the policy agenda worldwide and reviews the current policy focus of the Scottish Government on 'inclusive growth'. In doing so, he notes that the changing nature of the contemporary economy militates against it producing socially-fair outcomes. For these to be overcome – or at least ameliorated - economic policy and its institutions needs to 'build in' fairness. He uses the example of work based learning as a policy that is not only socially progressive but an economic necessity, that is targeted not only on building skills but also raising productivity – the surest and most sustainable was to raise living standards and increase median incomes.

Kevin D Kane
Managing Editor, Fraser Economic Commentary
Fraser of Allander Institute
March 2016

Economic perspectives

Angus Deaton and consumption in Scotland

Hervey Gibson

This article started as a personal *festschrift* celebrating Scotland's latest Economics Nobel Prize winner. It aimed to outline his work and then apply some of his methods to data that is used to monitor the Scottish economy.

However the data turns out to hide a hornets' nest. The hornets have to be dealt with if Scottish Ministers and Parliament are not to be stung when they start to use their new powers under the Scotland Act to manage the economy.



Illustration: © Johan Jarnestad/The Royal Swedish Academy of Sciences

Angus Deaton, from Bowden in the Scottish Borders, won the 2015 Nobel Prize in Economic Science. On 10 December 2015 in the Stockholm Concert Hall, he stooped from his almost-two-metres height to accept the medal and diploma from the King of Sweden. The Nobel Committee's celebratory poster (pictured above) shows this friendly giant, the second Scottish Nobel Economics laureate after Jim Mirrlees, peering through a microscope at the world. Dressed in tartan suit (which may be apocryphal), but with a characteristic bow tie, Deaton was seen to be analysing people's consumption, poverty and welfare.

In this article we look at Deaton's early career, then seek to apply his Nobel Prize methods to inspect the available data on Scottish consumption and to estimate the economic model which was his first major contribution to applied economics.

1. Early career

Growing up in Roxburghshire as the son of a night-school-educated water engineer, Angus started on his academic path by gaining competitive admission to two elite educational institutions. He was one of only two Foundation (free) Scholars admitted in 1959 to Edinburgh's Fettes College. Fettes is now, and

probably was then, the most expensive and, in exam terms, most successful of Scotland's private schools. He distinguished himself on the rugby pitch and in chairing discussion groups, and the one-on-one teaching at Fettes taught him to write with clarity and wit. He gained access to further essay-based one-to-one teaching by winning an Exhibition at Fitzwilliam College Cambridge. The Exhibition was to read mathematics, but the man from Melrose is happy for it to be described as a 'football scholarship' – Fitz's first XV was in need of second-row forwards.

However Cambridge rugby could be ugly, and the maths (perhaps conceptually elegant) was tough and poorly taught. As an alternative to rustication (being thrown out) Deaton switched to economics for Part II of his BA and MA, before going to London to work for the Bank of England.

After a short time at the Bank, Angus returned to Cambridge, to take a D Phil, in due course becoming part of the Cambridge Growth Project. From the mid-1960s the aim of this group of around eight researchers was '*to study quantitatively in as great detail as possible the present structure and future prospects of the British economy and the possibility of influencing these prospects through economic policy.*' (This is much the same goal as the Fraser of Allander Institute has pursued for Scotland since its creation in 1975.)

Richard Stone, the Project founder, had switched from law as an undergraduate before working with Keynes in the wartime Treasury. Deaton describes him as his mentor, and Stone described them as being 'on the same side of the movement'. Stone also won a Nobel Economics Prize in 1984 for developing the social accounting methods on which the UN System of National Accounts was based. From those same methods the Growth Project's computable model, embodying the team's research, was constructed.

The second Director of the Project, Terry Barker (schooled at Edinburgh's Watson's) also switched into economics from another discipline, going to the Project after an accounting MA from Edinburgh. Barker contributed as coordinating lead author to the UN's International Panel on Climate Change, which was awarded the Nobel Peace Prize in 2007. His work for the prize was focused on the economics of greenhouse gas mitigation. The energy-economy-environment '3-E' models he helped introduce to Europe and the world began with the Growth Project model.

The part of the model that Deaton was detailed to study was consumption, where he had to follow path-breaking work 15 years earlier by Stone himself, updated and developed by earlier CGP members. He began with a paper analysing UK consumer spending 1900-1970, and in the mid-1970s produced about a dozen papers, touching also on finance and on the computing and estimation aspects of the time.

Cambridge is famously stingy with its Professorships, and quite stingy with its money. In economics this was sometimes presented as a deliberate (and very successful) strategy to generate a diaspora, so in 1976 Deaton went off to become Professor of Econometrics at the University of Bristol. This was where he produced his seminal work, discussed at greater length below, and where he developed contacts and collaborations, especially across the Atlantic.

‘An almost ideal model’

One of those contacts was John Muellbauer, who shortly thereafter had returned to the UK to Birkbeck College, London. While at Bristol, in 1980 Deaton and Muellbauer wrote an article rated among the most influential ever in economics. *An almost ideal demand system* (Deaton & Muellbauer, 1980) was ranked in the top 20 papers ever published in the *American Economic Review*, which is the top-rated journal in the profession. A textbook, *Economics and consumer behaviour* (Deaton & Muellbauer, 1980) followed shortly afterwards, and set the model in its intellectual context.

Essentially the book argues from fundamental economic welfare axioms to a set of equations that is easy to use, does not ride roughshod over theory and logic, and tends to produce results that are either ‘as expected’, or interestingly at variance.

The basic structure of Almost Ideal Demand Systems (AIDS) is to divide consumption into a number of categories. There is one equation for each category, focusing on the ‘budget share’, the proportion of total spending that it absorbs. This share is explained in terms of the overall volume of expenditure, and the price of each category. From a purely practical viewpoint, these equations have many advantages over other formulations.

They are **easy to estimate** – both the fitting and a fair amount of testing can be performed with very basic software. The results in this paper were all obtained within Excel – the diagnostic statistics and tests are not the most elegant, but they are adequate.

They are **consistent with theory**. Deaton and Muellbauer go to great lengths to show how their model structures are consistent with realistic and simple assumptions about individual behaviour, and consistent with the motives behind it, which can be expressed in formal economic terms.

Their algebraic structure or functional form gives them **good long-run behaviour**, increasing the chances they will produce sensible results if the variables (explanatory or objective) move outside the historically observed range¹. For example, consumption of a good reacts absolutely and proportionally more strongly to price shifts when it absorbs a larger share of the household budget: we care more about prices when we are spending a lot of money on a good or service.

They are **easy to elaborate**, for example to cover data difficulties, or to add extra variables – for example I have used the age and fuel-efficiency of cars when investigating petrol demand, and weather variables when looking at tourism.

¹ *In the long run, choosing an appropriate and well-behaved functional form for a model is usually more important than estimating coefficients. The main coefficients normally take care of themselves. The fitted curve will go through the centre-of-gravity of the data, unless there is good reason otherwise. (Whether it should or not is an important thing to consider in specifying/selecting the data). The ‘slope’ (local first differential) of the main explanatory variable is also likely to closely reflect the data. Beyond this, you are lucky if you have data of a quality and in sufficient quantity to be very discriminatory when it comes to higher-order effects.*

2. Scottish consumption; the data, what do Scots consume and how do we know?

Some applied economists work from the theory to the data, and others from the data to the theory. Although Angus is ambidextrous in this respect, we start with the data. In a reflective piece that provided lots of information for this article (Deaton, 2013) he comments that 'Economists spend a lot less time with the creators and producers of data than once was the case, to the detriment of both groups; economists often do not understand the data they work with, and the evolution of national income accounting practice has taken place without much input from users'².

Although this may contain more than a grain of truth in the UK, this is less the case in Scotland, where since the late 1990s the situation has been getting progressively better. Before 1997 there was less regular statistical information about the Scottish economy than was published *in English* about the Icelandic economy. Devolution and the advent of the internet seem to have changed all that. Scottish national accounts statisticians now work physically in the same Office as the Government's Chief Economic Advisor and his economists, and collaborate on many informal joint teams. Their engagement with outside users in the Economic Statistics Consulting Group, the Input Output Expert Users Group, and the Oil and Gas Statistics Group eclipses that of the much larger Office for National Statistics (and the Fraser of Allander Institute is notable amongst those outside users).

But Scottish resources are still very limited, and Scotland relies heavily on raw data collected and processed by ONS.

The data we need to estimate Deaton and Muellbauer's AIDS model is a time series of household budgets. This we have, in the Scottish National Accounts Project, covering twelve items.

2.1 How the Scottish Government estimates the value of consumption

Scottish data on consumption is produced by the Scottish Government primarily using data from the ONS Living Costs and Food Survey (LCF) and the quarterly publication *Consumer Trends*.

Once formally part of the Integrated Household Survey, LCF is the current embodiment of the Family Expenditure Survey that started in 1957. It is a survey conducted continuously throughout the year with an annual sample size across the UK of 6,000, so there are slightly fewer than 500 households in Scotland. The survey reports on the consumption of over 70 items. In the UK National Accounts its results are balanced with other information to generate a time series of *Consumer Trends*, showing the value and volume for the UK on a quarterly basis.

In tracking the value of Scottish consumption, the approach of Scottish Government statisticians for the quarterly Scottish National Accounts is to take the 'Scottish' proportion for each of these 70 items' figures. The Scottish proportions reported in the latest LCF range from 17.4 per cent of all the preserved fruit bought by UK consumers to 1.2 per cent of the 'mixed mode' travel tickets. Thus their figures are essentially a reweighted version of ONS's consumer expenditure figures for the UK. When it is grouped

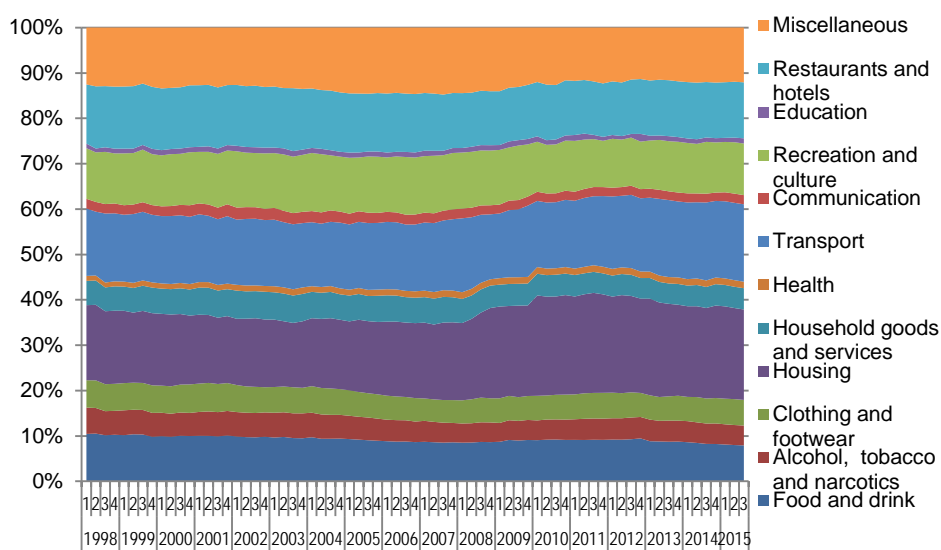
² I have edited out the adjective 'academic' from Deaton's description of users.

into twelve categories according to purpose, Scottish Expenditure as a proportion of the UK ranges from 10-11 per cent for restaurants and hotels to 4-5 per cent for education. The higher figure for the former group represents a Scottish penchant for pubs and carry-outs, and the lower figure for the education comes from differences in University fees and financing.

2.2 What this indicates about shares of Scottish household budgets

When the budget shares are plotted over 18 years (as in Figure 1), the picture is one of relative stability, except for a large increase in the housing component from early 2008 to early 2010, where the share of Scottish consumers' expenditure on housing went up from 17 per cent to 22 per cent.

Figure 1 Composition of household consumption in Scotland



Source: Scottish National Accounts (20160210) Ref: F:\Data\SGDP\SNAP\Tables at 20160210.xlsm

However, given that the volume of housing consumed cannot have changed very much over such a short period the answer must lie in the cost of housing. Sure enough, the price deflators in the Consumer Trends reference tables on the ONS website show an increase of 19.3 per cent in the rentals paid by tenants and 27.5 per cent in the rentals that owner occupiers are 'deemed' to have paid themselves as property owners. This brings us on to the next set of data required to estimate the Almost Ideal Demand System, prices.

2.3 Data on prices

There is in effect no data available on Scottish prices. ONS collects data on a UK-wide basis, and only publishes prices for regions and countries every six years, in order to comply with EU directives. Data was published for 2004 and 2010, and they indicated that the overall price level was very uniform across the UK. There is some breakdown, but detailed data, which may have shown more variation, was not reported.

Although the ONS, and the UK Statistics Authority, recognise that there is a demand for more frequent regional price indicators, ONS has little appetite for what it sees as an expensive task. Sir Charles Bean, former Deputy Governor of the Bank of England, is currently leading a review of UK economic statistics. But with a great deal else on the agenda it is unlikely that the Bean Report will prioritise regional prices. The last Bank-inspired Treasury review of economic statistics, (Allsopp, 2004), did. At the time of Allsopp's publication, ONS expressed an intention to implement most of its recommendations, but since then the ONS has retrenched – or been obliged to retrench – from the great majority, including the analysis and publication of regional prices.

So, in the absence of accurate Scottish price data, if we wish to analyse Scottish consumption we are obliged to use UK-level price indices.

But the UK data has major issues estimating the price of the largest single component of consumption, housing. Two different methods applied by ONS yield diametrically opposing views of the past decade. A third, suggested by Eurostat, gives an entirely different (and much more extreme) picture. And a fourth, more flexibly applying similar principles, gives yet another view.

Part of the problem lies with the structure of the housing market. In the UK as a whole, 17 per cent or a sixth of all housing (23 per cent in Scotland) is rented from social landlords, and a sixth (15 per cent in Scotland) from private landlords. There are quite significant surveying difficulties measuring the 'price' that should be applied to the private renting category, and this is done differently in each of England, Scotland, Wales and Northern Ireland; and in England and Wales it's about to be changed.

But in most of the housing market there isn't really a price at all. Across the UK, a third of houses are owned outright by their occupiers, and a third are being bought with a mortgage (62 per cent for these two groups together in Scotland). For these a 'price' of owner occupation, 'imputed rent', is calculated. This is a sum which home-owners are deemed to pay to themselves. Although not part of 'consumer spending' in the common sense of the term, it has to be included so that the choices of owner-occupiers and tenants are as comparable as possible. It is also required by international accounting standards, to make different countries more comparable.

In short, the figures went haywire in late 2009 and at the beginning of 2010. Over these two years there was a 19.3 per cent increase in 'actual rents', which are composed of private sector and social housing rents across Great Britain. Such a large increase in an economy sliding into depression is surprising. In the published data we cannot peel the social and private elements apart, but if this increase really happened, it may have been a consequence of structural shifts affecting landlords in the buy-to-rent market, and of the finance provided for that market as financial institutions crashed.

Whatever the problems that arose in assessing private rents, they were multiplied by five in UK calculations and by more than six in Scotland as private rents are used to stand in for imputed rents. ONS uses a 'proxy' model which aims to estimate imputed rent on the basis of actual private sector rents. This model generated an increase of 27.4 per cent in imputed rentals. The model decided that

we were all spending much more money on consuming housing, and it was this that generated the step up in housing's budget share.

We need to ask ourselves what was happening to the value of the housing services that owner-occupiers were providing to themselves? Surely in fact the reverse was true; they were dropping like a stone. House prices were weak and falling, mortgage interest rates were almost halving. Even if you didn't have a mortgage, inflation and real investment returns had collapsed. So why should the return on housing investment go up?

And the numbers are dramatic. According to Registers of Scotland the average house price in Scotland fell from £158 700 in 2008 Q2 to £146 000 one year later. And the Bank of England says the mortgage rate fell from 7.7 per cent at the turn of 2008 to 4.0 at the turn of 2010. If, for the sake of drama, we apply the high rate to the high price and the low rate to the low price, then the cost of servicing a mortgage went down by 52 per cent! A more statistically fair approach based on quarterly averages give a drop of 47 per cent, which is barely less dramatic.

The European System of Accounts (ESA) does have a provision to take such factors into account. In its methodology, Eurostat prefers matching imputed rent to 'actual' rental markets. But, 'in the absence of a sufficiently large rental market', a cost-based method calculated from house prices to give a constant real rate of return can be used. This I did, using the Bank of England's 4 per cent rate of return to give the green line in Figure 2.

Figure 2: Measures of UK housing inflation for owner-occupiers (1998 – 2015)



Source: see labels Ref: F:\Data\Prices\Consumer deflators\consumer deflators 2015Q3.xlsx

Even this is not the whole story. The ONS database for the Consumer Price Index including owner-occupation (CPIH) tells a completely different story from the 'price deflator' used in the national accounts and the Consumer Trends estimates. It *does* show a fall in owner-occupation costs, albeit a small one, shown by the red line in Figure 2.

However, relief may be at hand. Last week (February 2016) ONS came to Edinburgh's Assembly Rooms to talk to users. I asked them to explain the mess that was owner occupiers' costs. My question obviously hit a nerve. Several of them jumped up to say that it is being fixed, and all will be clear in the National Accounts 'Blue Book' to be published at the end of July 2016. But, no explanations were given, although ONS has since published a statement of the likely effect.

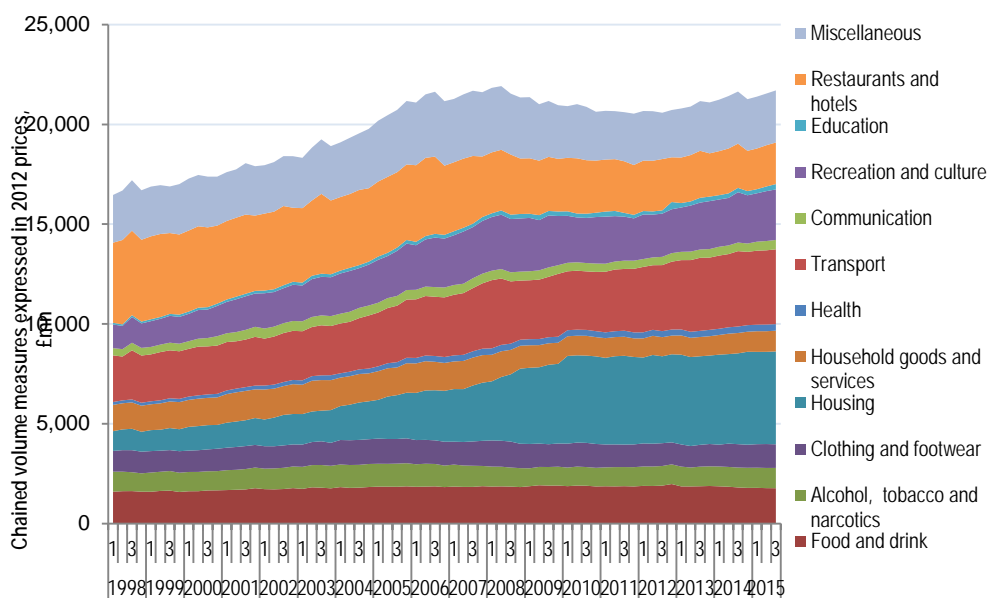
Meantime, what do we do? How do we analyse Scottish consumption when we can't trust the official price indices of the single largest item of household consumption, housing? For the final section of this paper I have constructed an index in the spirit of the Eurostat manual. However that manual was written after a period when real were stable in the range 3-5 per cent. Since then returns have slumped to and below zero for considerable periods, so I revalued the owner-occupied sector on the basis of actual prices times actual mortgage rates.

Thus we have *four* different bases on which to measure the cost of housing to consumers:

- The deflators implied by the UK national accounts, which show a steep rise through 2008 and 2009
- The indices collected for the consumer price index, which show a fall through 2009
- Two indices based on house prices and a return on the investment, which show very dramatic falls through 2008, extending in some formulations to 2011.

2.4 Published and calculated data on the volume of consumption

Figure 3: Volume growth in consumption in Scotland (1998-2015)



Source: Author's calculations F:\Data\SGDP\SNAP\Tables at 20160210.xlsm

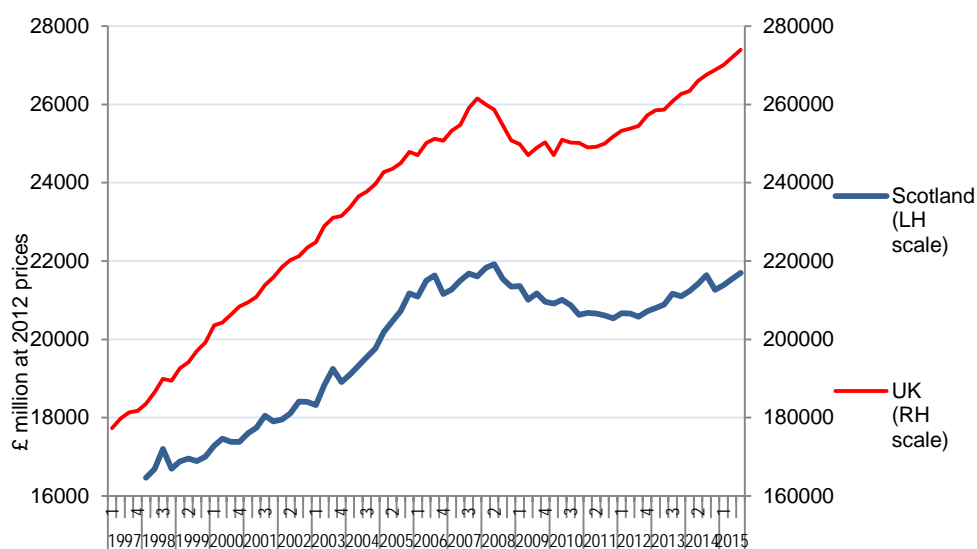
The Scottish Government does not publish estimates of the volume of consumption. However, if we have price indices, we can easily make an estimate by deflating each of the twelve published

consumption components. Given the dubious quality of the price indices this procedure is not ideal, but if the volume of housing services appears to evolve in an orderly way then the overall volume figure is likely to be reasonable.

Figure 3 shows that there is no bizarre or erratic movement in any component. Nevertheless, the fact that housing provided two thirds of all consumption growth, expanding at 12 per cent per year for more than a decade, does not quieten suspicions. We should not put our scepticism away. It may well be that both UK and Scottish consumption growth have been overstated.

Since the mix of consumption is not too different in Scotland from the rest of the UK, the patterns of total consumption over time are broadly similar, but not identical. Figure 4 shows that in 2008 Scotland apparently turned down into recession six months after the UK. In 2011 it turned up into recovery also six months later than the UK. But whereas the UK is now five per cent above its 2008 peak, Scotland is still one per cent below.

Figure 4: Consumer spending in real terms, Scotland and the UK (1997-2015)



Source: UK: ONS Consumer Trends Scotland: Scottish Government SNAP deflated by ONS deflators
Ref: F:\Data\SGDP\SNAP\Tables at 20160210.xlsm

However the taking of proportions to construct Scottish consumption may affect the last two years of this story. As outlined above, the shares are largely taken from the LCF. But because of the low sample size, LCF results for the countries and regions of the UK are published only in the form of three-year moving averages. As this article went to press in March 2016 the latest regional data (issued two months ago) related to three years centred around 2013. Being two-and-a-half years old, the weights are from the trough of the business cycle, and they show Scottish consumption equivalent to 8.2 per cent of the UK total. Similar figures were reported in the previous trough. However around the peak years of 2008 (and before that, in 1998) Scottish consumption was 8.5 per cent of the UK total, a much higher proportion. *If* it is currently running at about 8.5 per cent (and we won't know that until December 2017), then the recovery *will* have taken consumption past its previous peak, by about 3 per cent.

As well as possibly distorting the current view, the smoothing into a three-year average has a further disadvantage for modelling: in order to throw out the bathwater of spurious annual observations, ONS has also thrown out the baby, in terms of 'dynamic' information about year-to-year changes. So not only are the weights regrettably ancient, but three years of smoothing destroys the prospect of sensibly analysing the short-term dynamics of spending. We are hopeful that when this drawback is brought to ONS' attention, the individual annual figures for the regional LCF will be released.

3. How do people choose what to consume?

The basic structure of Deaton and Muellbauer's AIDS model for the twelve products and services reported in the Scottish National Accounts is estimated by regressing the budget share of each product on the logarithms of all twelve prices and on 'real' expenditure, where 'real' expenditure deflator is calculated with a slight (and simple) variation on a conventional price index:

$$\omega_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log(X/P) \quad i = 1,12, j = 1,12$$

When these twelve equations are estimated one at a time (that is, across all i) then the α_i automatically add to one, and the γ_i and the β_i to zero. To comply fully with the requirements of utility maximisation then the γ_{ij} should equal γ_{ji} , but this does not happen automatically.

Figure 5: Total expenditure elasticities



Source: Author's calculations Ref: F:\Data\Households\ModAIDSregs.xlsx\incelas

I estimated these equations twice, first using the original data, and secondly with data recalibrated using the housing cost index instead of the troubled ONS deflator.

The estimates generate a coefficient on total expenditure volume, which is akin to an income elasticity, and a set of price reactions which can be summarised in an own-price elasticity.

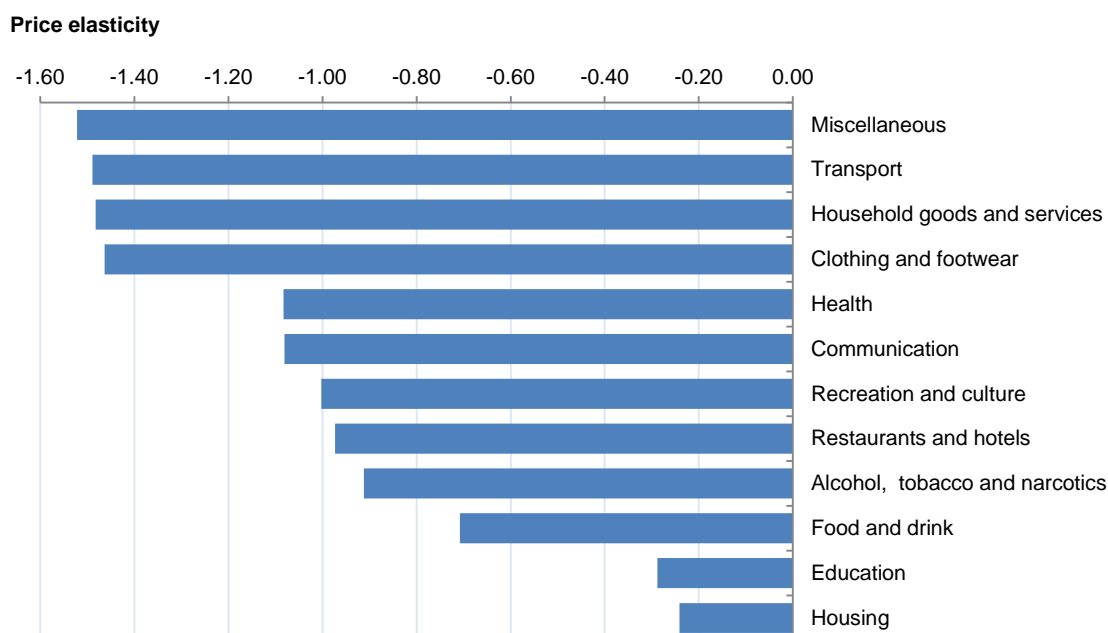
The two estimations produced fairly similar results for the ‘income effect’. This is often seen as dividing consumption goods into ‘luxuries’, highly responsive to income, and necessities, where income has relatively little effect.

The results confirm a few prejudices: ‘sin’ (alcohol, tobacco and narcotics) and smartphones head the luxury categories, while learning and a roof over your head are necessities.

The coefficients on prices in the first estimation, using the ONS deflator for housing, were erratic and unrealistic. One had the wrong sign, and many others were excessively high, for example a negative price elasticity of -3 on food.

The second set of estimates produced plausible price elasticities. All variables had the expected sign and apparently sensible orders of magnitude.

Figure 6: Price elasticities using the ‘housing cost index’ deflator



Source: Author's calculations Ref: F:\Data\Households\ModAIDSregs.xlsx\chart2

Statistics of fit in the second set were generally good, and the standard error of estimate typically only around two per cent. Autocorrelated errors were also not a great problem. The one respect in which the estimates do invite further exploration is in price homogeneity. As Deaton himself found, when prices are on the move, *even if they all move together*, patterns of consumption change.

4 Postscript and conclusion

From Bristol, Deaton's transatlantic contacts and collaborators eventually seduced Angus into American academia, not only through the pull they exerted, but in the contrast to ever-tightening UK university

resources in the 1980s under Thatcherism. Family ties may have played a part as well, Mary Ann his first wife being from the US.

Over this transition Deaton worked on developing models of consumption over time and then went on to look at growth and cycles in consumption decisions. He demonstrated how the pattern of consumption in a community or country over time bears little relation to the pattern within an individual's lifetime: there is no such thing as a 'representative consumer' and in fact individual consumption patterns diverge increasingly as people move through life.

When it comes to managing the economy through tax rates or spending, to any differences in the business cycle must be added differences in the life cycle. Scotland has a significantly older population than the UK as a whole, a different mix of income sources, and a different structure of household assets. Together these create a significant risk that UK management of consumer spending may not align to the pattern and structure of consumption in Scotland. In the past that management has been exercised predominantly by Westminster governments. And that will still be the case in the future, as Westminster has reserved the major powers on fiscal policy.

But for the first time the Scottish Parliament and Government will shortly begin to assume powers under the Scotland Act which could have a measurable impact on demand management *in Scotland*. However, it will be difficult to exercise these wisely with so little information on the most recent movement of the largest and most influential component of demand – household consumption. Angus Deaton has given us some important tools to analyse consumption, but we need data from ONS to allow these tools to be used and to make them effective.

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What makes people in Scotland happy? Is it where they live?

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Orkney has been named the best place to live in Scotland for the third year in a row according to the 2015 Bank of Scotland Quality of Life Survey.... rural areas scored consistently across a range of categories covering health and life expectancy, personal well-being and a low crime rate. Glasgow, Scotland's biggest city and the most densely populated area of the country, was ranked lowest." (Scotsman, 18th December, 2015).

1. Introduction

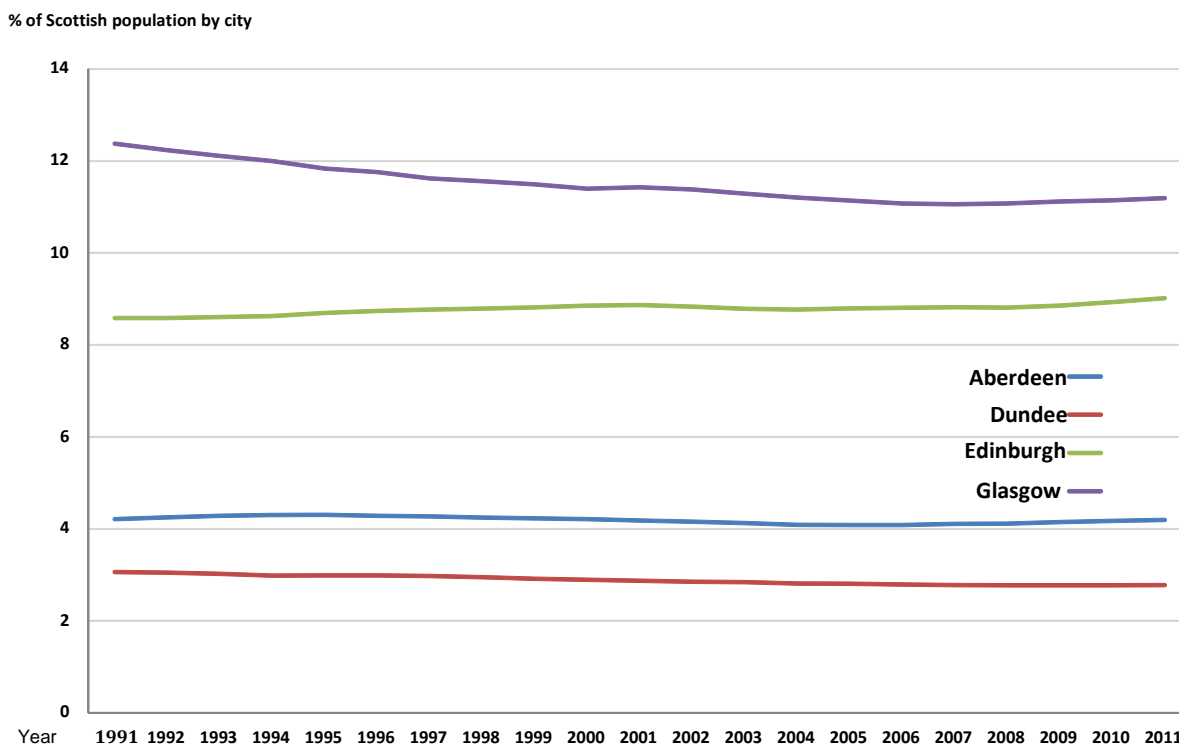
Globally, the proportion of the world's population living in cities of 10 million or more has increased from 3.2% 1950 to 11.5% in 2011 (United Nations, 2011). A key regional growth model, the New Economic Geography (NEG) identifies the mechanism underlying this shift as workers moving in search of higher real wages. Relevant to the growth of larger economic areas, studies in recent decades argue that the main rationale for regional policy should be to help generate agglomeration economies, particularly knowledge spill-overs (e.g. Morgan, Aydalot & Keeble, Cooke). This has recently become a central element in UK spatial policy, with the emphasis on the role of city regions, the 'Northern Powerhouse' and City Deals.

It is important to note, however, that the performance of UK cities (when measured by population change) is less emphatic than the New Economic Geography (NEG) might suggest. Over a twenty year period, 1991 to 2011, for example, the share of UK population located in London increased from 14% to 15%, but the share in the top 23 cities remained constant at 46%.⁴ The position in Scotland, the focus of the present study, is even more nuanced. Figure 1 below shows that Scottish cities *lost* population share until 2008 followed by a slight subsequent improvement and of Scotland's major cities, only Edinburgh has experienced a continuing population increase over this period.

A central mechanism in the process of spatial adjustment proposed in the NEG is that migration will equalise real wages between different areas. However, reliable local consumer price index (CPI) data are not available within the UK, and this creates real difficulties in testing for real wage equality over space. Therefore, rather than take the real wage as an appropriate indication of whether a location is a "good place to live", this paper uses the average life-satisfaction score to measure the quality of life in local areas.

³ The authors gratefully acknowledge financial support for this research topic from the International Public Policy Institute (IPPI) at the University of Strathclyde.

⁴ The 23 cities are those with a population over 500,000 in 1991. Only nine had population growth greater than the British average over the subsequent period to 2011. The growth of London was by far the highest. Cheshire et al., 2014, p. 14.

Figure 1: Percentage of Scottish population in main cities

This paper examines three questions. First, it examines the question of what makes people in Scotland “happy”, by investigating the factors that affect this in Scotland⁵. There is now a well-established body of academic work on happiness, but this is the first time this type of analysis has been conducted for Scotland. Second, in light of recent policy developments, particularly the notion of a Northern Powerhouse, it focuses on happiness in Scottish cities versus other areas. Finally, it tests the NEG account of spatial development by examining whether happiness is equalised across different types of area. The results show that cities are locations with low life satisfaction scores.

We use data from the Scottish Household Survey (SHS). This data source includes key demographic, social and economic data and also specifies the respondent’s life satisfaction and their home location. We can therefore use the SHS to explain inter-personal variations in self-reported life satisfaction, focussing specifically on the question of cities versus other areas.

2. Happiness Research

Work on happiness can be dated to Easterlin’s seminal 1974 analysis, which found that self-reported happiness in America did not increase even after considerable increases in average US income. Since then, a key question in this literature is how income affects welfare - does being richer make people feel happier? However, note that the argument is not necessarily that additional income has no effect on

⁵ For reasons discussed below, “happiness” is measured by life satisfaction scores.

wellbeing but rather that people's lives are also enhanced by a wide range of other factors. Focusing policy on factors other than economic growth may therefore increase overall welfare.

The call to set policy according to a broader set of quality of life indicators has recently been made by the Sarkozy Commission (Fitoussi et al, 2009) which recommended that the type of wellbeing analysis undertaken in academic circles should also be used to guide welfare policy. This suggestion has recently been taken up in the UK, where the Office for National Statistics (ONS) began to collect UK national wellbeing data in 2011.

However, the academic work on wellbeing is not without controversy. Firstly, much research in this area has used large-scale surveys of individual's personal happiness or wellbeing, which are then related to both subjective and objective indicators (income, health, unemployment, etc.) thought to influence wellbeing. This is the approach that we ourselves adopt. The complement to wellbeing in economics is utility, and while surveys of self-reported wellbeing have long been used in psychology, economics has been sceptical of the view that utility can be measured by these types of stated preference measures. Since Samuelson (1938), economics has conventionally approached utility in terms of revealed preference and argued that an individual's utility should be identified by what they do rather than what they say.

That said, research on wellbeing shows a high correspondence between an individual's self-reported wellbeing and objective indicators. For example, individuals with higher happiness scores also tend to have higher levels of life expectancy and suffer from fewer mental health problems (Deiner, et al, 1996). The extensive body of work on wellbeing also shows that a common set of influences affect wellbeing, both across time and nations, including income, health, unemployment, age and gender. In most cases, the results reflect the intuitively expected outcome. For example, studies consistently find that poor health and unemployment are major determinants of wellbeing⁶.

A second concern is that people's perceptions are socially constructed, leading to differing self-interpretations of life satisfaction. For example (Skidelsky and Skidelsky, 2012, p 109) argue:

Ask an American how he is doing and the chances are he will say "*great, thanks*". Ask a Russian the same question and he is likely to shrug and say "*normalno*", suggesting that things could be worse.

Many wellbeing studies are pan-European, where difficulties might arise in controlling for differences in cultural norms. The present study uses data for areas within one country - Scotland - and the results are therefore much less likely to be affected by cultural differences in how individuals interpret this basic question.

A third question is which term should be used to indicate wellbeing? The various terms which have been used include wellbeing itself, happiness and life satisfaction. However, these are not synonymous; asking someone whether they are 'happy' is likely to provide a result that reflects temporary emotional responses, while responses to 'life satisfaction' are more likely to measure people's reflections on their

⁶ See, for example, Dolan et al, pages 100 and 101.

longer-term life experience. Previous studies have shown that happiness and life satisfaction are not necessarily closely related. Bjornskov et al (2008), for example, found that in the World Values Survey the correlation between self-reported life satisfaction and happiness was only 0.44. The Scottish Household Survey uses life satisfaction, which we believe is preferable to happiness in that it is more likely to provide a more cognitive assessment of an individual's entire life experience and so provide a more comprehensive measure of how people rate their wellbeing.

3. Previous analysis of life satisfaction

3.1 General Analysis

A substantial body of work has been conducted since Easterlin's 1974 analysis and there is now broad agreement on the principal determinants of wellbeing. Notably, higher income is almost invariably associated with greater well-being, a point confirmed by Blanchflower and Oswald (2011), who concluded:

“Some textbooks have wrongly told generations of psychology undergraduates that money is not a source of happiness. In so far as regression equations can settle the question, the answer is unambiguous: yes, money buys happiness”.

Education is also typically associated with higher levels of life satisfaction⁷. Age is also significant, with many studies finding a U-shaped relationship where life satisfaction reaches a minimum point and then increases as people get older. Gender and ethnicity appear to have some influence, with men and non-white groups both typically displaying lower life satisfaction scores. Other individual level variables influencing life satisfaction include marriage and having children.

Some studies also note the significance of social capital. Bjornskov et al (2008) argue that having a wide range of social connections creates greater social cohesion between people and increases trust, thereby improving individuals' life satisfaction. The ONS has also recently argued that “networks of individual relationships with family and friends, local community and civic engagement form the fabric of a cohesive society” (Seigler, 2015, p.2).

3.2 Living in the City - Spatial differences in life satisfaction

Table 1 reviews previous studies that have included an area variable as one of the determinants of happiness - typically these studies find that living in more densely populated areas lowers life satisfaction. For Sweden, Gerdtham and Johannesson (2001) explore the relationship between life satisfaction and several socio-economic variables, including an urbanisation measure. They found that those living in the three largest Swedish cities reported a lower level of life satisfaction than respondents in other areas.

⁷ However, Blanchflower and Oswald (2011) note that studies which control for both income and education tend to find that the relationship is through the influence of education on income – i.e. highly qualified people tend to earn more.

The Australian study reported in Dockery (2003) included a variable measuring whether respondents lived in a major city and, controlling for other factors, life satisfaction was found to be significantly lower in these cities. Hayo (2004) investigated life satisfaction in seven Eastern European countries and showed that, controlling for a range of characteristics including age, gender, marital status, education and unemployment, people living in relatively rural areas (less than 5,000 inhabitants) had a statistically significant higher level of life satisfaction than all other areas.

Other authors confirm that life satisfaction in cities is typically lower than in rural areas. Hudson (2006) found that those living in villages were happier than others, while Graham and Felton's (2006) study of Latin America revealed that people in small towns had higher life satisfaction compared to residents of large cities.⁸ Shucksmith et al. (2009) used 2003 European Quality of Life Survey (EQLS) data for 28 European countries and found that rural residents in the 12 twelve richest countries of the EU had higher wellbeing than city residents.

Sørensen (2014) used European Values Study (EVS) data for 27 countries and measured urbanisation by three categories of population size, from rural (fewer than 5,000), to town (5,001-100,000) to city (over 100,000 inhabitants). His results incorporated 32 commonly-used independent variables and identified a significant difference between rural areas and cities, with life satisfaction higher in rural areas.

For the UK, the major wellbeing survey conducted by the UK's Office for National Statistics (ONS) also finds higher life satisfaction scores in rural areas compared to cities.

The above studies measure wellbeing with several different dependent variables and across a variety of different area definitions. However, the broad conclusion from previous research is that being less happy in larger areas, including cities, is common in many countries.

⁸. *The paper did not define "small towns" or "large cities".*

Table 1: Well-being studies reporting spatial characteristics

Study	Area	Question	LS point scale	Data	No. of area types	Result
Gerdtham and Johannesson (2001)	Sweden	(Daily life is never a source of personal satisfaction, daily life is sometimes a source of personal satisfaction, daily life is a source of personal satisfaction most of the time.)	3	Level of Living Survey (LNU, 1991) (Institutet for Social Forskning, 1992)	3	Lower life satisfaction in the larger cities
Dockery (2003)	Australia	Happiness with your life as a whole (unhappy, fairly unhappy, fairly happy or very happy.)	4	Longitudinal Surveys of Australian Youth (LSAY) and the Household Income and Labour Dynamics Australia survey (HILDA)	2	Lower life satisfaction in cities
Hayo (2004)	Eastern Europe	On the whole, are you very satisfied, not very satisfied, or not at all satisfied with the life you lead?	3	1,000 respondents per country from opinion surveys in seven countries, organised by the Paul-Lazarsfeld-Society	3	Higher level of life satisfaction among those living in relatively rural areas
Hudson (2006)	EU member countries	On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?	3	Eurobarometer survey (2001)	2	Those living in villages happier than others
Graham and Felton (2006)	Latin America	On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?	3	Annual survey conducted by the Latinobarometro organization (2004)	2	Residents of small cities had a higher life satisfaction compared to residents of large cities.
Shucksmith <i>et al.</i> (2009)	Europe	Life satisfaction - scale of one (very dissatisfied) to ten (very satisfied)	10	2003 European Quality of Life Survey	3	Rural residents in the 12 twelve richest EU countries had higher life satisfaction than city residents
Sørensen (2014)	Europe	All things considered, how satisfied are you with your life as a whole these days?	10	European Values Study	4	Significant difference between rural areas and cities, with life satisfaction higher in rural areas
Oguz, 2014	UK	Overall, how satisfied are you with your life nowadays?	10	Office for National Statistics, Measuring National Well-being programme survey	2	People living in rural areas give higher ratings for their well-being than those living in urban areas

4. Life satisfaction in Scotland - Scottish Household Survey data

The main dataset used in this paper is the 2009 Scottish Household Survey (SHS), a random survey conducted biennially by the Scottish Government and weighted to be representative of the Scottish population to Local Authority level. The information collected covers a wide range of measures on life in Scotland, including both life satisfaction scores and many indicators which previous research in this area has been shown to affect life satisfaction. The respondent's location is identified separately, and respondents are classified into cities, towns and rural areas on the basis of population size.

Table 2: Descriptive Statistics

	Mean Life Satisfaction Score*	8.6
Location		
	% living in Cities	34.9
	% living in Towns	43.9
	% living in Rural areas	21.3
Income		
	Average Annual Income (£s,2009)	23 125
Personal Characteristics		
	Average Age	51.6
	% Male	43.7
	%Female	56.3
	Ethnicity (% White)	97.6
Health Status (%)		
	Very Good	34.2
	Good	36.9
	Fair	21.2
	Bad	6.1
	Very Bad	1.6
Marital Status and Children(%)		
	Married	43.7
	Single	29.1
	Separated	4.2
	Divorced	9.4
	Widowed	13.6
Employment Status (%)		
	Employed Full Time	31.9
	Employed Part Time	10.3
	Self Employed	5.6
	Looking after Home/Family	5.3
	Retired	31.6
	Unemployed	4.7
	Disabled	5.1
	Other	5.3
* Scored from 1-11		

Descriptive statistics

Table 2 shows the values of some of the key variables. The SHS provides a large sample size, 24,982 responses, approximately 0.5% of Scotland's total population. As discussed earlier, the wellbeing measure used is the respondent's life satisfaction score - specifically, respondents were asked: "All things considered, how satisfied are you with your life as a whole nowadays?" with responses scored from 0-11.

Urbanisation Measure

Results are classified by three area types; cities, towns and rural areas. Rural areas have a population of less than 3,000, towns between 3,000-125,000 and cities over 125,000 residents. Areas defined as cities are the four largest Scottish urban areas, Glasgow, Edinburgh, Aberdeen and Dundee.

Table 3 shows the average life satisfaction scores for the three areas. The figures show that rural areas score highest, followed by towns and then cities. The difference between cities and towns is relatively small, with the town score only 1.5% above the city score. However, there is a more evident difference in life satisfaction when we compare cities with rural areas, where life satisfaction is almost 6% above the city score.

Table 3: Average Life Satisfaction by area

City	8.41
Town	8.53
Rural	8.90

Scottish Local Authority data

The SHS does not collect figures on a number of potentially relevant spatial measures. However, it specifies the respondent's Local Authority area, and we have augmented the SHS figures with other data available at this level to reflect details of the local areas. The model also therefore includes measures of the local unemployment rate, a crime index, a measure of income inequality and two measures of the quality of local public services (school education and health). Data on these was gathered for all 32 Local Authority areas in Scotland.

Methods and results

The analysis here seeks to explain which factors affect life satisfaction - for example, are people in Scotland who are in good health happier than others (the answer is yes) and, if so, by how much? Is being in good health more important than having a high income (again, yes).

We address these questions by developing a regression model, where each person's life satisfaction score is related to measures such as health, income, age, etc. - life satisfaction is termed the dependent variable because it is "depends" on, or is affected by, the other variables in the model.

We also report coefficients. For example, in Table 4 immediately below the coefficient for Towns is 0.126. Life satisfaction scores run from 1 to 11, and this means that if an individual moved from a city to a town (and nothing else in their life changed) they could expect their life satisfaction score to increase by 0.126 life satisfaction points.

Finally, the t-value shows whether the result is statistically significant; t-values above 2 (for positive effects, where a factor such as higher income increases life satisfaction) or below 2 (where the effect is negative, such as being unemployed) are statistically significant.

Regressing life satisfaction against the urban/rural measures, with city dwelling as the comparator (or reference, see Table 5), shows that there are statistically significant differences in life satisfaction between urban and rural areas within Scotland (Table 4).

Table 4: Regression results (Area only)

	Regression Coefficient	t-value	Regression R-squared
Towns	0.126	4.04	0.009
Rural Areas	0.497	13.19	

However, there are two puzzles with this finding. The first, the standard neo-classical economic argument, is that we might expect that migration would even out variations in life satisfaction over space, and this is clearly not the case. The second is that if there are differences we should perhaps expect, as the New Economic Geography argues, that life satisfaction would be greater in vibrant urban spaces. The reality is clearly more complex.

We next ask whether differences in life satisfaction over space can be linked to the characteristics of the local area. In order to determine this, we report results from a regression model that includes a range of explanatory factors typically found to influence life satisfaction (see Table 5). The results are, in general, very consistent with previous findings. In selecting explanatory variables, we focused in particular on a wellbeing model developed by the ONS, so that our approach would replicate as far as possible findings likely to influence official thinking and policy on wellbeing policy in the UK (Oguz *et al* (2013). This also allows us to compare our Scottish results against UK findings, an assessment of considerable interest given recent political developments regarding the devolution of legislative power in the UK.

Table 5: Determinants of Life Satisfaction in Scotland

Location (Reference: Cities)	Coefficient	t-ratio
Towns	0.047	1.00
Rural Areas	0.123	2.08
Income		
Average Annual Income (£s,2009)	0.006	6.34
Personal Characteristics		
Age	-0.039	-7.20
Age Squared	0.0004	8.07
Gender (Female)	0.205	6.05
Ethnicity (Reference = White)	-0.262	-2.42
Health Status		
Very Good (Reference: Good Health)	0.414	11.47
Fair	-0.626	-14.72
Bad	-1.723	-24.27
Very Bad	-2.200	-17.58
Marital Status (Reference: Married)		
Single	-0.312	-6.43
Separated	-0.496	-6.02
Divorced	-0.429	-7.02
Widowed	-0.480	-7.04
Single parent	-0.071	-1.49
Employment Status (Reference: Employed Full Time)		
Employed Part Time	-0.039	-0.70
Self Employed	0.064	0.93
Looking after Home/Family	-0.227	-2.95
Retired	0.285	4.39
Unemployed	-1.019	-12.94
Disabled	-0.626	-7.43
Other	-0.119	-1.51
Housing Reference: (Owns Home)		
Buying with Mortgage	-0.092	-2.05
Local Authority Renter	-0.191	-3.53
Housing Association Renter	-0.162	-2.52
Private Sector Renter	-0.128	-2.03
Other		
Local Amenities	0.063	1.91
Community Spirit	0.098	2.11
Good Neighbours	0.143	4.40
Feeling Very Unsafe	-0.470	-7.72
Crime Index	0.0001	0.14
Pupil /Teacher Ratio	0.0001	0.01
Medical employees ratio	0.0005	0.31
Local Unemployment rate	-0.012	-1.58
Income Inequality	-0.090	-0.71
Rural/Green/Seaside area	0.133	-0.66
No Pollution in area	0.375	0.46

The results reported in Table 5 show that the type of area does affect life satisfaction. When we control for other factors affecting life satisfaction we find that there is no statistically significant difference between towns and cities but that those living in rural areas of Scotland have a higher life satisfaction (although the effects are much reduced both in size and statistical significance). This result corresponds with other analysis of how place affects wellbeing which typically find that rural residents have a higher level of life satisfaction than those living in cities.

Thus, while the type of area does have some effect, it is only one of several factors that affect life satisfaction and it is useful to consider its *relative* importance compared to other factors.

We do this firstly by discussing the results in Table 5 in terms of how different types of factors affect wellbeing. People will have little conscious choice over some of these factors, for example personal characteristics like age and sex, but how these are distributed by area will still affect the overall level of life satisfaction in different areas. The same applies to factors over which they may have some choice (e.g. being married, education). In contrast, some variables will vary across areas, including average incomes, unemployment, deprivation, housing and the local environment. It is therefore important to try and isolate the extent to which life satisfaction is affected specifically by spatial factors.

We do this by discussing the results in Table 5 in terms of the framework developed by Dolan et al. Their review article discusses the influence of a range of factors under the following headings, many of which are included in the present analysis⁹:

- Income
- Personal characteristics (e.g. age, gender)
- Socially developed characteristics (e.g. education, type of work)
- How we spend our time (e.g. hours worked)
- Relationships (e.g. marriage, seeing family and friends)
- The wider economic and social environment (including area impacts)

Income

Echoing the conclusion noted earlier by Blanchflower and Oswald (2011), people in Scotland do feel that having more money improves their lives, which provides some support to the argument that increasing GDP should be a component of economic and welfare policy.

*Personal characteristics*¹⁰

Both age and age-squared are significant and life satisfaction in Scotland has the same U-shaped profile as seen elsewhere. Both gender and ethnicity matter – women and white population groups both have a statistically significant higher level of life satisfaction when compared to the relevant reference groups.

⁹. Dolan et al's full categorisation includes other variables not considered here because they are not measured in the SHS.

¹⁰. The model does not include a variable measuring inherited personality as in Diener (1999).

Education

As noted, Blanchflower and Oswald question whether the link between education and life satisfaction is direct or is rather the result of the impact of education on income. The education measure used here was not significant.

Type of work

This was measured by the Standard Occupational Classification skill categorisation, which runs from Higher Managerial to Routine Occupations¹¹. Occupational status did not significantly affect life satisfaction.

How we spend our time (hours worked, including unemployed)

There is robust evidence that being unemployed typically results in a significant reduction in wellbeing, and this also comes out very strongly here - unemployment is the second most important factor after health; other things being equal, unemployment reduces life satisfaction by 9.3% compared to full-time employment.

However, there is less evidence that the number of hours worked affects wellbeing. Working part-time marginally lessens life satisfaction compared to full-time employment, but the effect is not significant. Despite the possibility that those who are self-employed may work longer hours, this also has little effect. Only two time-related variables, other than being unemployed, impact on wellbeing. These are being retired (positively) and spending time looking after home and family (negatively), suggesting that it may not be the amount of free time we have, but how we are able to spend it.

Relationships

Relationship status makes a significant contribution to life satisfaction. The model used being married as the reference variable and compares this with four other types of relationship (single, separated, divorced and widowed) and all four categories show significantly lower levels of life satisfaction. Table 5 also shows that the reduction in life satisfaction is greater for those who have been in a relationship (i.e. those who are separated, divorced or widowed) compared to single people.

Housing

Home ownership clearly matters to people and the security of owning a home significantly increases life satisfaction. The reference case is those who own their home and while there is some difference between this group and those purchasing with a mortgage, both have a higher life satisfaction score than those who are renting, particularly so where this involves local authority housing.

¹¹. Higher managerial and professional occupations, Lower managerial and professional occupations, Intermediate occupations, Small employers and own account workers, Lower supervisory and technical occupations, Semi-routine occupations and Routine occupations.

Health

As elsewhere, health matters more to wellbeing than any other measure. Moving from “Good Health” to “Bad Health” reduces life satisfaction by 16% and this falls even more for those in “Very Bad Health”, which reduces life satisfaction by a fifth (20.4%).

The local economic, social and physical environment

i) Public Services

Neither of the two indicators used to measure the quality of local public services appears to have any significant influence on wellbeing. One is the quality of local education, which is measured by the ratio of pupils to teachers. In contrast to what we would intuitively expect, this had a positive impact on life satisfaction, suggesting the unlikely finding that people are happier when their children are in larger classes. The variable measuring local health provision (the number of health workers to population) is positive, but has no significant effect on life satisfaction.

One possibility is that these measures may simply be similar within local areas. Both ratios are measured at Local Authority level and since councils set policy locally, the pupil/teacher ratio, for example, should be similar for all schools in the same local authority area. Because the figures do not vary by local authority area, we may simply be unable to pick up any potential impact from this measure.

ii) Crime and Deprivation

Despite its links to deprivation and its presumed importance to the quality of local life, there has been a relatively little amount of previous work on how local crime rates affect wellbeing¹². Crime is measured here by the number of crimes per 10,000 of population by Scottish local authority area. This does show sizeable variation across Scotland; all Scottish cities have a crime rate above the Scottish average and so should be picked up in model results.

Despite this, the results show no relationship between life satisfaction and the level of crime at a local area level. Contrary to expectation, the measured impact is actually positive. This result may again be due to the fact that it is measured at the (relatively aggregated) local authority area level. If, for example, crime is localised in crime ‘hotspots’ within these areas, the majority of people will be unaffected and so we would expect this to have little impact on life satisfaction. Further research on this area at sub-local authority level is probably needed to address this question further.

However, we find a curious relationship between life satisfaction and the *perception* of crime. While the incidence of crime is not significant, there is a very strong association between life satisfaction and feeling safe in one’s local area; a move from feeling “Very Safe” to “Very Unsafe” reduces happiness by 4.3%. Unlike the crime index, this variable is measured for individuals and may be more likely to pick up on the local experience of crime. Alternatively, it may be that fear of crime is unrelated to the volume of

¹². Di Tella, R., & MacCulloch (2008) did find a relationship between happiness and the levels of violent crime.

crime that actually occurs in a locality. We show that this measure does help to explain differences in life satisfaction between rural and other areas.

The results also show that other measures of deprivation appear to make little difference. Neither the local unemployment rate nor living in an area of multiple deprivation had any significant effect. The first of these is measured at local authority level and so may suffer from the same problem identified with several other variables discussed above, in that the area definition is simply too aggregated to detect more localised impacts. However, this issue does not apply to the deprivation variable, which is measured for individuals.

ii) *Income Inequality*

The model also included a Palma Ratio¹³. Inequality has been extensively discussed in the academic literature on wellbeing and was Easterlin's original explanation of why increasing GDP doesn't increase happiness. He argued that because people compare themselves with others, happiness is unchanged unless people rise up the *relative* income scale; hence, individuals feel no better off even when their own income increases if they remain in the same relative position.

We find no relationship between inequality and life satisfaction at local authority level in Scotland. Once again, however, finding no influence in our model does not mean that inequality has no effect since the finding could again be because the data on this is measured at local authority level.

iii) *Social Capital*

Respondents to the SHS are asked to specify a series of questions about what they liked about their local area, including two measures of social capital:

- Whether they felt that the area had a sense of community spirit
- Whether they felt they had good neighbours

Both measures were both positive and significant. Given that people do appear to value living in areas where there is a strong sense of community support, social capital would appear to play some role in increasing life satisfaction.

The Local Environment

The responses to what people liked about their area in the Scottish Household Survey also included two environmental measures. The first was whether they liked the area because it was a "Rural/green/countryside/seaside" area and the second was whether it had "No pollution/fresh air". Neither variable was significant in our analysis.

¹³. This is measured as the ratio of the income share of the top 10% of income earners to that of the bottom 40%

How important are spatial differences to life satisfaction?

In summary, we detect a limited impact from a number of spatial measures which might be expected to influence life satisfaction. This includes measures of the quality of local life such as crime, deprivation, living in an area of high unemployment, income inequality and the quality of local public services. The converse is true for many personal and relationship measures.¹⁴ Age, gender, marital status and health appear to impact significantly on people's happiness, but it is more difficult to identify the effect of local area characteristics.

Finally, we examine the contribution of spatial variables by comparing our results against the findings of the ONS's wellbeing study, (Table 6)¹⁵. We do this by using the R-squared statistic derived from the model. R-squared shows the proportion of life satisfaction that is explained by the model. For example, the model results reported in Table 5 has an R Squared equal to 24.9%, meaning that this explains 24.9% of all variations in life satisfaction in Scotland.

We assess the importance of each measure using the following criteria:

- Large = contribution of 1.0 percentage point or more to R-square
- Moderate = contribution of .05 < 1.0 percentage point to R-square;
- Small = contribution of 0.1 < 0.5 percentage point to R-square;
- Very small = contribution of less than 0.10 percentage point to R-square.

Table 6: Contribution of variables to Life Satisfaction, UK and Scotland

	ONS	SHS
Self-reported health	Large	Large
Marital Status	Large	Large
Unemployment	Large	Large
Age	Moderate	Small
Housing Tenure	Small	Moderate
Ethnicity	Small	Very Small
Area	Small	Very Small
Gender	Very Small	Small
Living in deprived area	Very Small	Not Significant
Education	Very Small	Not Significant
Having Children	Very Small	Not Significant
Migration	Very Small	N.A.

These two exercises use different databases and a different range of variables and definitions. For example, the variables measuring health, age, gender, marital status and housing tenure are identical or

¹⁴. The overall effect of personal measures would probably increase if we had been able to include a measure of personality itself in the model.

¹⁵. The ONS results are reported in Oguz et al, (2013), Table 1, p3.

very similar. Meanwhile the measures for deprivation differ, as do those for ethnicity, work status and having children, in each case because the ONS variables are wider than those used here. For example, our definition of ethnicity is white versus non-white, while the ONS includes nine different ethnic groups¹⁶.

Similar to the present study, the ONS found that “generally across regions, people living in rural areas give higher ratings for their well-being than those living in urban areas when other factors have been taken into account.”¹⁷ In both cases, the area in which people live made only a very limited contribution to the model’s explanatory power.

Overall, the results for Scotland are very consistent with those for the UK; what makes people in Scotland happy does not differ greatly from people across the UK. Interestingly, this appears to suggest that moves or greater devolution of powers in the UK do not arise from differences in socio-economic preferences as between Scotland the rest of the UK.

What explains urban-rural differences in life satisfaction?

As in other studies, the results presented here show that the type of area does appear to have some impact on life satisfaction. Finally, we examine differences in life satisfaction across three spatial levels. Table 7 details differences in the level of variables which were statistically significant in the main regression equation, for three area types - cities, towns and rural areas.

Table 7: Area endowments of key variables (% by area)

	Cities	Towns	Rural Areas
Marital Status	37	44	53
Gender	44	43	45
Unemployment	6	5	2
Health	35	32	36
Single parent	7	6	4
Retired	29	33	34
Looking after home and family	6	5	6
Good Neighbours	35	39	36
Community Spirit	10	11	22
Income (,000s)	22.5	22.4	25.6
Feeling safe in the local area	29	36	68

Table 7 demonstrates that rural areas in Scotland have a higher level of life satisfaction compared to urban areas because their endowment of several significant factors is in their favour. This comes out very strongly in the variable measuring “Feeling Safe”, where rural dwellers are much more likely to report that they do. One additional reason why rural inhabitants are happier is because they are much more likely to be married. The data also shows that cities contain a high proportion of single people

¹⁶. See Oguz *et al* for a full set of ONS variable definitions.

¹⁷. Oguz *et al*, (2013), p42.

compared to towns or rural areas; 37% of those living in cities were single compared to 27% in towns and 21% in rural areas. Rural areas are also more likely to have a larger proportion of retired and lower proportions of single parents, both of which increase life satisfaction. While the effect is relatively slight, rural areas also contain (slightly) more women and are also (slightly) more likely to respond that they are in very good health. With respect to area variables, rural residents are considerably (twice) more likely to like their local area because they feel that it has a sense of community spirit¹⁸.

Rural inhabitants also perform better against two key economic variables; annual net income and whether they are unemployed. Both findings are surprising given the data reported in other surveys such as the European Quality of Life Survey. This has further implications for the New Economic Geography¹⁹.

For income and unemployment it is important to note that these are both measured by where respondents live and not by where they work. In a country the size of Scotland, it is perfectly possible to live in a rural area and to commute to work in a town or city. We addressed this by re-running the model with the wider area categorisation shown in Table 8. This specification differs from that used in the main model in that it distinguishes areas by whether or not they are accessible to larger settlements, although only to those with a population above 10,000²⁰.

Table 8: Accessibility and Life Satisfaction

	t-ratio
Small Urban Areas	0.98
Accessible Small Towns	0.05
Remote Small Towns	1.34
Accessible Rural Areas	2.37
Remote Rural Areas	1.21

The table shows that life satisfaction is only significantly higher when individuals live in an area which is *both rural and* accessible to a larger area, including cities. The coefficient on “Accessible Rural” is larger than the on rural alone²¹ and the statistical significance also increases. Other things being equal, living in the country does increase life satisfaction, but only where rural residents are also able to access the services (including employment) available in larger areas.

5. Conclusions - Urban-rural differences in life satisfaction in Scotland

A significant aspect of the UK policy focus on economic growth is focused on cities, which are seen as the location of growth-supporting agglomeration effects, such as knowledge spillovers, labour pooling and producer-supplier linkages. Even the policy objective of geographically rebalancing the UK economy

¹⁸. Although this does not hold for the other measure of social capital, having good neighbours.

¹⁹. Very similar findings emerge even if we exclude pensioners and limit the analysis only to those who are in the labour market.

²⁰. While we included all variables shown in Table 3 above, there is little difference in the other variables and we report results only for the revised areas. The reference case is cities.

²¹. The coefficient rises from 0.1218 (All Rural areas) to 0.1496 (Accessible Rural Areas).

is expressed in terms of strengthening “challenger” cities to offset the dominance of London. However, the growth of UK cities, in terms of population, has been no higher than that of the rest of the country in the twenty year period 1991-2011.

Moreover, as this study indicates, life satisfaction appears to be significantly lower in cities. This suggests that policy-makers should be wary of endeavouring to increase city size as a means to stimulate economic growth, or should at least implement complementary policies that address the social and environmental costs of cities. The concentration of job opportunities in cities increases interregional migration, which in turn stretches family, friendship and community relationships. In addition, commuting times tend to be longer in large cities, leading to a reduction in leisure and family time, and potentially generating strains in family relationships and broader social capital. Similarly, in the absence of effective policy responses, environmental quality is likely to be lower in agglomerations, partly due to congestion and pollution, but also due to more limited access to green space and the natural environment.

One consequence of new information and communication technologies (ICT) is the increased scope for some businesses and workers to locate at a distance from their customers. Public investment to improve connectivity (notably high quality broadband and transport infrastructure) networks can facilitate business creation and home-working in remote and rural areas, and reduce time spent commuting. This study suggests that such moves may be beneficial in enhancing life satisfaction, possibly because people are better able to maintain stronger family and other social ties, or because they allow individuals to make a wider range of choices about where they live and work.

Further, policy-makers could consider the implications of land use, urban and transport planning for life satisfaction, rather than emphasising its effects on business development and economic growth. In particular, effective urban planning can contribute to reducing commuting times and difficulties via decisions on the location of business, housing, amenities and public services. Land use planning can help to safeguard and promote more widespread access to the natural environment and green space, in both urban and rural areas.

Finally, the study suggests the need for public policy to address both the interpersonal and the interregional dimensions of inequality. It shows that the disadvantage of cities diminishes if account is taken of individual characteristics which are known to affect life satisfaction. It therefore supports the importance of targeted support to individuals and social groups which suffer particular or multiple dimensions of disadvantage (e.g. in terms of income, access to employment or education/training, mental health and family support). However, even after allowing for such individual factors, cities remain characterised by lower levels of life satisfaction, suggesting that there is also a need for additional policy intervention in particular areas. This may take the form of policy instruments aimed, for example, at the physical regeneration of certain urban areas, to create employment in areas with high unemployment, or to empower communities to find their own solutions to local problems.

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Policy perspectives

The Fiscal Framework and the Scotland Bill: Right on the money

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On the 25th February 2016, the UK and Scottish Governments agreed the Fiscal Framework associated with the Scotland Bill¹. The Fiscal Framework set out a number of the aspects governing the devolution of additional taxation and welfare spending powers as a result of the Smith Commission Agreement². This is a good deal for both Scotland and the UK.

It should be noted that the Fiscal Framework is a complex agreement covering a number of aspects of the additional powers. Elsewhere I have set out various aspects of the Fiscal Framework in detail and I have provided some analysis on the most controversial aspect of the agreement, which deals with the determination of Scotland's remaining block grant, and how it is adjusted (indexed) over time³.

The block grant adjustment (BGA) mechanism for the devolution of additional income tax powers was at the centre of much of the debate. An excellent analysis of the different types of indexation is offered in a number of sources⁴.

The bargaining position between the two governments, as far as one could discern from public sources, was the following: the Scottish Government had argued that the basis for the BGA should be the per-capita indexed deduction method (PCID)⁵. This method would give Scotland the incentive to grow its tax base relative to the rest of the U.K., but would protect Scotland against demographic risks in addition to those present through the Barnett formula. The argument is that anything other than PCID fails to meet the Smith Commission's first no-detriment principle, and would have undermined the Smith commitment to maintain the Barnett formula as the cornerstone of the agreement.

The U.K. Government seemed to initially focus on a levels deduction (LD) approach, which in a sense is a 'Barnett formula for tax'. The UK government's position was that PCID does not meet one part of the Smith Commission's Agreement's second no-detriment principle, around 'tax-payer fairness'. This would imply, for instance, that an increase in UK government spend on devolved areas such as the English NHS, financed using devolved income taxation would unduly benefit Scotland through the Barnett

¹ See

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/503481/fiscal_framework_agreement_25_feb_16_2.pdf

² <https://www.smith-commission.scot/smith-commission-report/>

³ See my evidence to the Devolution (Further Powers) Committee at Holyrood

http://www.scottish.parliament.uk/S4_ScotlandBillCommittee/Inquiries/devolution_committee_-_AM_-_Final.pdf and my recent Stevenson lecture at the University of Glasgow -

http://www.gla.ac.uk/schools/socialpolitical/research/politics/stevensontrust/newsandevents/headline_445809_en.htm

⁴

David Bell, David Eiser and David Phillips offer a survey of the three main approaches to the BGA – see

<http://www.ifs.org.uk/publications/8060> and the update in

<http://www.centreonconstitutionalchange.ac.uk/blog/adjusting-scotland's-block-grant-options-table>.

⁵ A rationale for PCID was originally published in the Fraser Economic Commentary (Vol. 39, No. 1, June 2015) by Jim Cuthbert – see http://strathprints.strath.ac.uk/53549/1/FEC_39_1_2015_CuthbertJ.pdf

formula as Scottish taxpayers would gain additional funding net of the BGA. This is because the Scottish population share as a proportion of the UK is larger than Scotland's share of UK income taxation⁶.

In my evidence to the Devolution Committee⁷ I set out these two BGA methods and the Indexed Deduction (ID) method, a third method similar to PCID but which does not adjust for population changes.

I argued in a number of interventions during the debate and in my evidence to this Committee and to the House of Commons Scottish Affairs Committee that PCID is the only method which satisfies the *major* aspects of the Smith Commission Agreement. The Smith Commission agreement placed Barnett at the centre of the fiscal framework. The LD (and ID) methods erode Barnett over time and violate the first no-detriment principle. They expose Scotland to additional demographic risk when Scotland does not have the policy levers to offset these trends. The current differential demographic trends between Scotland and the rest of UK as projected by the Office for National Statistics (ONS) are starkly different. Based on ONS population projections, the costs to Scotland of adopting LD instead of PCID would have amounted to a cumulative £7bn loss in real terms over the first 10 years of the Scotland Bill being enacted. Even with ID the losses would be very marked⁸. Hence anything but PCID erodes Barnett and does not deliver Smith.

In the end, in the Agreement the governments reached, the following compromise position.

There was a decision to use Barnett as the formula for the indexation mechanism for welfare with a 100% comparability factor, which seems appropriate given the nature of the welfare devolution envisaged in the bill.

The BGA adjustment indexation mechanism for tax (see Paragraphs 17-19 of the Agreement) is a compromise. A 'Comparable Model' will be used 'to effect the BGA'. In essence this is a modified version of the levels deduction (LD) method. It is modified by a factor which reflects Scotland's differential share of the UK tax pool for each of the devolved taxes. This is described in detail by Bell, Eiser and Phillips⁹. Indeed Bell et al call this modified LD 'tax-capacity adjusted levels deduction' (TCA-LD). In essence this BGA mechanism moves some way to take account of the Scottish Government's concern that LD exposes Scotland to additional risk by reducing the adjustment in the block grant in those taxes (like income tax) where Scotland has a lower share of the UK tax pool than its population share.

Unlike Level Deduction (LD) the TCA-LD mechanism addresses the problem of Scotland initially having a lower share of UK tax revenues, but it still does not protect Scotland's block grant from the additional demographic risk due to Scotland's population growth being slower than that in the rest of the UK. The detriment relative to the 'no-devolution case' of adopting TCA-LD is shown in Table 1 in Bell et al.

⁶ The problem is neatly set out in an example in Bell, Eiser and Phillips

<http://www.centreonconstitutionalchange.ac.uk/blog/adjusting-scotland's-block-grant-options-table>.

⁷ See Slide 4 in my presentation

http://www.scottish.parliament.uk/S4_ScotlandBillCommittee/Inquiries/devolution_committee_-_AM_-_Final.pdf

⁸ Indeed ID has other undesirable features which are explored in detail in the literature.

⁹ see <http://www.centreonconstitutionalchange.ac.uk/blog/adjusting-scotland's-block-grant-options-table>.

Curiously, in offering this compromise with the hybrid TCA-LD method the UK government in effect abandoned its demands for the 'tax-payer fairness' part of the second no-detriment principle.

However, whilst this TCA-LD mechanism is *notionally* calculating the BGA, in para. 20 in the agreement it is clear that this BGA mechanism is *de facto* overridden. Paragraph 20 of the agreement states that the outcome until 2021-22 will be that the BGA will shadow the per-capita indexed deduction method (PCID), which as noted above is the Scottish government's preferred method, and the approach I had supported.

In essence, the TCA-LD method will be a shadow formula which is not operational during the initial duration of this Fiscal Framework Agreement (i.e. until 2021-22), during which *de facto* PCID will determine the BGA.

The key question is what happens after 2021-22. This is set out in para. 20-23 of the Agreement and which was clearly one of main sticking points in the negotiation.

The Agreement makes it clear that there will be an independent review which will inform the two governments' views. The governments will decide, through a new negotiation post-2021, what the future indexation mechanism should be. In effect this is a 'sunset clause' for the BGA indexation mechanism post 2021-22. The important point is that there is no presumption that a particular method will be used after that date. The agreement does not specify what might happen if a methodology is not agreed in time for 2021-22.

I have suggested that this agreement by the two governments is good for Scotland and for the UK. The reasons for this are the following:

1. For Scotland, it ensures that PCID is *de facto* used to determine the BGA, thus avoiding additional demographic risk.
2. For Scotland, it is important that the first no-detriment principle as embedded in the PCID method is still operative and does not automatically lapse after 2021.
3. For the UK, although PCID does not, during the period until 2021-22, deal with the issue of 'tax-payer fairness' (the second part of the second Smith no-detriment principle) it ensures that this principle is not forgotten, and will be part of the 2021 review. It is important to stress that TCA-LD would not have dealt with the 'tax-payer fairness' principle either, whilst LD would have. As I set out in my evidence to the House of Commons Scottish Affairs Committee, and in a recent Stevenson Trust lecture at the University of Glasgow, a modified version of PCID might have addressed the 'tax-payer fairness principle' more directly, by adjusting the block grant further whenever additional income-tax changes are made by the UK government to reflect changes in devolved spending.
4. For the UK, the use of PCID in the next few years will not impact greatly on the 'tax-payer fairness' issue, as the period until 2021-22 is likely to be a period of continued fiscal consolidation, which

means that the issue of the UK government raising additional income taxation to fund additional UK spend in devolved areas such as NHS and education is unlikely to be substantive issue. Indeed the Finance Act 2015 included the UK Government's 'tax lock commitment' which notionally prohibits the UK government increasing income tax rates during the current parliament. This further limits any 'unfair' benefit from UK taxes to Scotland.

5. For both Scotland and the UK, the period until 2021-22 provides a period in which we will learn more about the actual economic and demographic risks that emerge from the framework without having to rely on modelling assumptions and forecasts.

6. For both Scotland and the UK as I stressed before it is important that the Agreement provides a stable framework. It is important that the different spending and taxation policy proposals for the 2016 Scottish Parliamentary election by the political parties can be evaluated, and that this debate happens against the background of a Fiscal Framework which will not trade off changes in taxation and welfare spending decisions that would be swamped by an unstable block grant due to demographic effects. This Agreement provides that stability by taking away the issue of demographic risk, violating the first no-detriment principle.

My conclusion is that this agreement comes to the right decision on the BGA method. It is a pragmatic solution by the two governments which produces the right result, whilst conceding that a final decision on the BGA will not be considered until 2021, and it will need to be arrived at, following an independent review, by mutual agreement. It goes without saying that this review will be important as it will be difficult for either government to deviate from the conclusions of a genuinely independent review.

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The political economy of major infrastructure in the United Kingdom

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Abstract

Evidence has been accumulating that UK infrastructure is under enormous pressure and is holding back economic growth. Although these problems have been receiving increasing attention from media and political commentators, there has been little effort to understand systematically their policy and institutional roots. This paper fills this gap by examining the political economy of infrastructure policy and presenting a series of case studies to illustrate our theoretical predictions. We find evidence that the British political system amplifies the risk of policy failure around infrastructure in the form of short-sightedness, policy instability, a weak evidence base and a lack of public consent.

Introduction

Infrastructure¹ plays an important role in facilitating economic growth and there is substantive evidence that suggests the UK economy is being held back by lack of investment, mainly in the transport and energy sectors (e.g. Novella *et al.* 2012). London, for example, has some of Europe's most congested roads, with the average driver in 2014 spending about 96 hours stuck in traffic². Airport capacity constraints, especially in the South East of England, causes delays, cancellations and unreliability for passengers, driving up air fares, and damaging the UK's connectivity (Airports Commission, 2015). In the energy sector, the capacity margin has been declining, triggering a rush of costly policy initiatives and emergency regulatory measures designed to ensure the lights stay on (e.g. Helm, 2013, Ofgem, 2015). Shale oil/gas extraction through hydraulic fracturing³, which ministers and industry were hopeful might spark a revolution in Britain's energy market, has been seriously held back by local community opposition.

There is *prima facie* evidence that these problems are intrinsically related to distortions in policymaking. For example, in the past decade and a half, energy policy has been notorious for failing to anticipate investment needs and providing a sound regulatory framework for private investors. Perennial controversies surrounding some of the most expensive infrastructure projects for the UK taxpayer, such as the planned, £50bn HS2 high-speed railway between London, the West Midlands, and the North of England are symptomatic of serious weaknesses in the way policymaking is grounded in technical evidence. The tortuous debate about aviation capacity in the South East of England which spans across more than four decades, and is yet to produce an effective way of tackling congestion in the UK's main international gateways, is a tale of the struggle of the British political system to successfully reconcile the widespread economic benefits of a large-scale infrastructure project with the perceived costs they bring

¹ Broadly defined as capital intensive projects in energy, transport, water, digital communications, waste disposal networks, and strategic flood defences.

² Based on data from <http://inrix.com/scorecard/>.

³ A technique in which water and chemicals are pumped into shale at high pressure to extract gas and oil.

to local communities. Local opposition to shale oil/gas extraction is another case in point. The best laid plans have often crumbled because of a lack of local community consent, and have led to an increasingly litigious environment, where judicial reviews and other legal challenges often play a decisive role.

The paradox is that, despite the mounting evidence that points to pervasive policy failures, there has been little academic effort to connect these problems to the inner working of policymaking around infrastructure, and ultimately to the institutional architecture within which they operate. The few studies that come close to taking this approach have concentrated more on developing normative proposals for policy and institutional reform rather than offering a thorough examination of the pitfalls of current policymaking processes and their interplay with the UK's macro polity (e.g. Helm, 2013; Aghion *et al.* 2013; Armitt, 2013).

This article aims to help fill this gap. Our key research aim is to provide a better understanding of the *institutional* roots of apparent policy failures in the area of infrastructure investment in the UK. To that end, we combine theoretical analysis and empirical evidence. At the theoretical level, we bridge literatures across academic disciplines to provide a new account of the political economy of infrastructure. At the empirical level, we present a series of case studies of recent, high-profile infrastructure investment decisions in the energy, transport and water sectors. Although these cases do not formally test our theoretical claims, they offer useful heuristics for illustrating how the identified mechanisms work in practice. Moreover, we are confident that, taken together, these paradigmatic examples offer a credible 'plausibility probe' (George and Bennett, 2005) of the validity of our theoretical expectations.

To anticipate the key arguments, our work shows that the British (and Scottish) polity is associated with important deficiencies in policymaking around infrastructure, mostly in the form of short-sightedness, instability, a poor evidence base and fragile public consent. The mechanisms driving this behaviour are threefold. Firstly, while in theory the UK Westminster model is expected to deliver stable, decisive government, in practice, the lack of consensus-building capabilities undermines policy effectiveness where long-term commitment and credibility is crucial. Secondly, an adversarial political culture creates incentives for parties and interest groups to use information in ways that damage the quality of policymaking. Finally, electoral incentives expose decisions to the disproportionate influence of marginal constituencies. Our core argument is that at the heart of these problems is a gap in the institutional architecture around infrastructure investment; that the UK lacks effective forums where politicians, experts, interest groups, and local communities can engage in structured, informed deliberation and negotiation around policy options.

Our ultimate ambition is to lead a new generation of research into the 'politics of policy' in the UK. The idea is to identify problems in the structure of incentives that underlie policy failures with an eye to frame a debate about possible institutional innovations and solutions. This is a critical contribution in its own right. As a case in point, the LSE Growth Commission called for the further investigation of the institutional constraints of the UK economy (Aghion *et al.*, 2013). That said, our study may have analytical and comparative merits beyond the British case. For one thing, it offers a micro perspective

into the link between institutions and economic performance. Existing scholarship on the political sources of growth and equality focuses mainly on the effects of macro, monetary and fiscal affairs (e.g. Persson and Tabellini, 2003). Yet, micro policy areas such as infrastructure policy are relatively neglected. Our contribution stresses the importance of allowing for the effects of a more finely-graded range of policy dimensions of economic prosperity. For another, this study may stimulate research into the interface between political economy (e.g. Besley, 2007) and political institutions (e.g. Lijphart, 1999, 2012). Building bridges between these literatures is crucial for developing a more nuanced account of the incentives structure shaping public choices.

The article is organised as follows. The next section examines the key economic and political constraints surrounding the formulation of infrastructure policy. Section two examines the political economy around infrastructure in the UK, reflecting on how we might expect the political system to perform in this area. Section three presents a number of case studies which illustrate our core arguments. Section four outlines key findings and policy implications, charting a way forward for reforming the governance of infrastructure investment.

I. The economics and politics of infrastructure

Investment in infrastructure usually involves the creation of long-lived assets and high sunk costs, which in turn generate problems of time inconsistency/credible commitment. In other words, private investors will only be prepared to commit to financing these projects if future customers agree, in a long-term contract, to cover average costs and refrain from behaving opportunistically (e.g. Jamison *et al.*, 2005; Trillas, 2010). In practice, such long-term contracts require governments, usually through regulators, to guarantee that future consumers will pay a price that reflects average costs. Government intervention is also required to handle a wide range of externalities that are typically associated with large-scale infrastructure projects, from environmental impacts to disruption and congestion imposed on local communities where projects are sited.

Making informed decisions about infrastructure investment is very challenging. It often involves long-term commitments with potential to 'lock in' the economy in unsuitable infrastructure systems for many years, seriously harming future economic prosperity (e.g. Bottini *et al.*, 2013). Avoiding such an outcome requires robust analysis of the long-term effects of alternative infrastructure systems across a wide range of uncertain future scenarios. It entails understanding the drivers of demand for infrastructure services in the future, and how different infrastructure configurations might be able to meet that demand (e.g. Tran *et al.*, 2014). It needs to consider the ways in which existing economic activities are likely to respond to new infrastructure investments, as well as how these investments may facilitate the emergence of new, potentially quite different, activities. This requires a strategic, network-oriented approach that goes well beyond a project-by-project analysis of specific investment proposals (e.g. Grimes, 2008, 2010).

Unsurprisingly, therefore, most of the publicly available information about the (predicted) effects of large infrastructure projects on the economy and on specific groups is highly controversial. The assumptions and methodologies that influence the evaluation of policy options are almost invariably highly

contestable and contested (e.g. Pindyck, 2015). The goals that projects seek to achieve and the interests they serve involve clear trade-offs, and as a result, are often subject to dispute (Douglas and Wildavsky, 1983; Kalra *et al.*, 2014).

Conflicting interests, opinions and values make the politics of infrastructure investment especially difficult. To facilitate a constructive public and political debate, it becomes crucial to engage all the relevant affected groups in the development of the evidence base that is used to inform policy. Credible analysis requires a detailed understanding of public preferences regarding the policy trade-offs implicit in alternative investment options. Also, the methods and assumptions that underpin technical analysis need to be extensively discussed with relevant interested parties, as part of a deliberative process. Failure to foster this type of deliberative processes increases the potential for conflicting views about data, methods, system boundaries and optimisations to become polarised and undermine the quality of the political debate (e.g. Bruijn and Leijten, 2008). It increases, in particular, the risk of “information wars”, where interest groups and political parties face incentives simply to draw on partial pieces of evidence to support pre-determined positions.

Such a political environment of this kind creates poor incentives for the creation of successful infrastructure policy. First, it is likely to impact directly on the quality of the decision-making process that underpins the selection of individual projects (e.g. Glaister *et al.* 2006; Helm, 2010, 2014). Second, it often leads to policy risk and uncertainty which, in turn, affects the readiness of the private sector to invest, and/or the costs of capital required for investment to materialise. In particular, firms may decide to delay investments in long-lived, irreversible assets because of policy uncertainty, or as a risk mitigating strategy. They may demand a higher equity risk premium to compensate for increased risk of default and higher costs of external finance. They may also prioritise projects with shorter time horizons that offer a quicker pay-off.

Some studies link elections to cycles in corporate investment (e.g. Julio and Yook, 2012; Gulen and Ion, 2013). Analysis of the US electricity industry indicates that firms invest less in new assets in states that have previously passed and repealed legislation to restructure the electricity industry, thus corroborating the hypothesis that regulatory instability reduces new investment (e.g. Fabrizio, 2012). Similarly, Cambini and Rondi (2014) find that political interference in regulatory functions is detrimental to firms' investment. More generally, there is a flourishing strand of literature that associates election periods, or other political changes, to increased stock market volatility (e.g. Bialkowski *et al.* 2008; Boutchkova *et al.*, 2011, 2012); movements in bond yields; exchange rates; and equity volatility (e.g. Bernhard and Leblang, 2006).

Third, weak deliberative processes are also likely to fuel opposition from groups that incur, or are perceived to incur, costs during and/or following the construction of infrastructure projects – typically communities in the vicinity of infrastructure sites. This is further aggravated by a dearth of suitable institutional mechanisms to promote negotiation and agreement on the nature and extent of externalities caused by individual projects and ways to compensate for them (e.g. Gibbons, 2014; Thompson, 2014; Ahlfeldt and Kavetson, 2014).

Existing empirical studies indicate that opposition to development is often associated with communities' perceptions about projects' risks and about the fairness of the siting processes (e.g. Schively, 2007a; O'Hare, 2010; Petrova, 2013). Objective risk assessments tend to pale next to the risk perceptions of the public. Lack of trust in government is often cited as a source of opposition to proposed projects. Suspicion between supporters and opponents of individual projects is another obstacle. Distrust of experts involved in discussions about where to place infrastructure facilities and doubts about the credibility of their evaluations are additional sources of opposition. In particular, conflicting, multiparty, communications about the effects of infrastructure facilities risk creating an 'information haze' which prompts the public to shift from asking for additional information to becoming more entrenched in pre-conceived views about those facilities.

A related literature highlights the importance of effective community participation in planning decisions. The design of participatory processes, including decisions about who participates and when, the purpose of participation, how information is provided to participants, and how the process is organised, all seem to influence the quality of project plans and their implementation (Schively, 2007b; Grimes, 2005; Innes and Booher, 2010; Schenk and Stokes, 2013). These studies place an emphasis on the merits of a 'consensus building approach' whereby stakeholders are assembled for face-to-face facilitated dialogue, to assess the various dimensions of a project, and to seek creative options that satisfy everyone's key needs and concerns.

II. The political economy of infrastructure in the UK

The UK Westminster model has long been described as a paragon of majoritarian democracy (Lijphart, 1999, 2012). The prevailing narrative highlights a unitary and centralised state, "winner-takes-all" electoral rules, and a pluralist, competitive constellation of interest groups. Proportional representation is rejected in the name of clearly defined and easy-to-understand lines of accountability. The electoral system promotes concentration of power in single-party majority governments dominant before Parliament (Rose, 1974). The political culture often prizes confrontation over compromise (King, 2001)⁴. Against this background, one might be forgiven for anticipating UK governments to be defined by high organisational capacity, and decisive and coherent policymaking, possibly even geared for the long-term. A more careful examination, however, leads to an entirely different set of expectations.

In fact, the institutional architecture of strongly-majoritarian democracies involves a credibility conundrum (Majone, 1996). With a relatively small number of veto players and future governments with different partisan agendas, current policies can be easily reversed. While this implies greater adaptability to shifting public preferences (e.g. Jennings and John, 2009; John *et al.*, 2013; Soroka and Wlezien, 2005; Bartle *et al.*, 2011), it can also undermine the consistency and predictability of policy, damaging its effectiveness, particularly in areas where long-term commitment/credibility is important. This problem is aggravated in the British political system with its ingrained tendency to a high turnover of both senior

⁴ This narrative has been qualified and in some cases contested (e.g. Bogdanor, 2009; King, 2010; Flinders, 2010; Jordan and Carney, 2013; Judge, 2014), but it still fits rather well the practice of politics and government in the UK (e.g. John *et al.* 2013; King and Crewe, 2013; Fukuyama, 2014).

officials and Ministers in cabinet reshuffles (e.g. Kam and Indridason 2005; and Indridason and Kam 2006).

Another important feature of the British political system is its intensely-partisan, adversarial culture, and reluctance to compromise (Hood, 2013; King and Crewe, 2013; Dellepiane-Avellaneda, 2014). Together with a competitive interest group system (Lijphart, 2012), it creates perverse incentives for the use of information that can harm policymaking. This is further compounded by the peculiarities of Britain's electoral geography, and specifically the disproportionate influence on policymaking of core and marginal constituencies (Johnston, 1979; Johnston and Pattie, 1995, 2006; Ward and John, 1999; John and Ward, 2001; Besley and Preston, 2007; Ashcroft, 2010).

Furthermore, there is no strong tradition in the UK of active consultation and engagement with local communities and other relevant stakeholders in policymaking, or compensation for the costs imposed upon them (e.g. Devine-Wright, 2011; Airports Commission, 2015). In practice, those left to make the case for infrastructure to local communities – developers and government ministers – are often the least trusted to do so (CBI, 2014).⁵ Too often the mechanisms of dispute resolution rely on legal challenges, public campaigns, political lobbying and public protest, leading to inefficient winner-take-all outcomes.

None of these features fit well with the requirements for good governance of infrastructure investments. Policy credibility/commitment through wide cross-party consensus is of the essence to fostering investment in infrastructure. Yet, the British political system is designed to deliver alternation of powerful governments and ministers in government, with little incentives to negotiate and compromise. An intensely-partisan and adversarial culture, combined with numerous, competing interest-groups does not make for an environment that encourages and rewards rigorous assessment of policy alternatives and informed debate. And a weak tradition of engagement, deliberation, and compensation often motivates local communities and other stakeholders to oppose vehemently individual infrastructure projects.

We would, therefore, expect infrastructure policymaking in the UK to be exposed to important failures in the form of policy instability, associated with lack of cross-party support and damaging incentives for private investors; inadequate consideration of policy alternatives leading to policies that are not grounded in firm empirical evidence; and failure to secure support/consent from sectors of society affected by proposed infrastructure projects.

These failures are especially relevant considering that the UK needs to make major strategic infrastructure decisions over the next few years (NAO, 2013a; HMT, 2013). The investment needs come from climate change and energy security requirements (e.g. the UK is committed to a legally binding EU target to meet 15% of its energy demand from renewable sources by 2020, and to reducing greenhouse gas emissions by at least 80% in the domestic Climate Change Act 2008); compliance with policies aimed at protecting public health and the environment (e.g. water companies are required by the EU's Water Framework Directive to meet environmental quality standards); maintenance and replacement of

⁵ Only 15% of people surveyed in CBI (2014) trust the companies building a project to explain its advantages and disadvantages to the local area. Ministers were the least trusted group in the survey at just 6%. The most trusted group according to the polling consists of technical experts, attracting 54% of approval.

existing infrastructure (e.g. a fifth of the UK's existing electricity generating capacity is planned to close over the next decade); and coping with the pressure of rising population (the Office for National Statistics expects the UK population to increase to over 73 million people by 2035 – ONS, 2014).

It is also worth noting that the UK is rather unusual among advanced economies in the extent to which it relies on the private sector to finance and provide infrastructure, which exacerbates the damaging effects of the problems of credibility/commitment discussed above. Of the £375 billion (bn) that the Government estimates as planned and potential infrastructure investment for the rest of the decade and beyond, about two thirds is expected to be financed from the private sector, a fifth from public sources and the rest from a mix of public and private finance. Energy sector projects (the most significant in value among the £375 billion) are planned to be almost entirely privately financed. Transport projects (the second largest planned infrastructure investment) should be financed roughly equally through public funds and public-private partnerships (HMT, 2013).

III. Case studies

Electricity generation

An important part of Britain's energy generating capacity has been or is in the process of being decommissioned. Coal and oil-fired power stations are facing closure because of pollution control requirements associated with an EU directive on large combustion plants. Old nuclear stations are coming to the end of their cycles. At the same time, the EU renewables directive implies that around 30% of Britain's electricity generation will have to come from renewables by 2020.

As a result of low (private) investment in new power plants, security concerns have been on the rise. Ofgem, the energy regulator, first sounded the alarm in a 2009 with references to an unprecedented challenge to secure supplies to consumers (Ofgem, 2013). In 2013, Ofgem stated that the margin between peak electricity demand and available supply could drop to between 2% and 5% by the winter of 2015-16, from more than 15% in 2011-12, 'mainly due to a significant reduction in electricity supplies from coal and oil generation plant, coupled with limited investment in new plant.' (OfGem, 2013, p.4).

The situation reached a point that required the National Grid to pay companies to reduce their energy consumption during periods of peak demand – typically between 4.00 pm and 8.00 pm on winter weekdays. There is also a new 'capacity mechanism' for gas-fired power, under which generators are paid to keep their plants available as a back-up. And an array of government initiatives have been designed to bring forward new (private) investment in power generation. These have included subsidising the private sector; giving guarantees; and moving infrastructure assets into state ownership (Helm, 2013). As things stand we face rising costs, rising emissions due to increased coal use, and a greater risk of supply insecurity.

This is happening at the same time as energy prices are being drawn into a wider debate about the costs of living. This discussion has attracted a considerable amount of media attention, and has risen quickly in the political agenda, sparking references to tariff freezes, windfall taxes, and rolling-back

subsidies for renewables. The result is heightened policy and regulatory uncertainty, which threatens to create a vicious circle of a high cost of capital, driven by high policy risk, leading to increases in energy prices which, in turn, lead consumers to put pressure on their political representatives to make policy changes. The prospect of policy changes raises policy risk further, and with it the cost of capital.

The background to this is one of relative neglect, for more than a decade, of the conditions required for the private sector to invest in energy generation. After privatisation in the 1980s and early 1990s, there was a perception by many that energy markets were now to be treated like those of many other goods and services, i.e. subject to safeguards, but not in need of special attention. These were years of excess supply – a legacy of the investments made in the 1970s – North Sea oil and gas, low prices and no serious climate change constraints (e.g. Pearson and Watson, 2012). Within Whitehall, energy policy was downgraded from having its own department in 1980 to being part of a wider portfolio of one junior minister in 1997. Changes introduced to the regulatory regime at the end of the 1990s mostly disregarded the need to incentivise the market to provide excess capacity and ensure security of supply. The New Electricity Trading Arrangements, later converted into the British Electricity Trading and Transmission Arrangements, are often credited for incentivising a short-run strategy based on ‘sweating existing assets’ rather catering for the long term through investment in new power-generating capacity (e.g. Helm, 2008).

It was not until the mid-2000s, with increasing concerns about climate change and security of supply, that these perceptions were reversed. Episodes such as the winter of 2005-06, when the Russians interrupted gas supplies to the Ukraine for a number of hours, leading to a spike in gas prices and the UK nearly running out of gas, contributed to the reversal of perceptions. Expectations that energy supplied by old plants would be replaced by new offshore wind farms and nuclear reactors proved unfounded. A flurry of white papers, consultations and acts of Parliament followed. Yet, these processes were marked by delays and reversals. Security of supply, cost competitiveness, and environmental sustainability (the goals that are often associated with energy policy) found varying support among parties and even among the same government. Commenting on nuclear energy, Helm (2013, p. 60) notes that ‘[f]or 12 years governments have decided that they don’t want nuclear, and then that they do, that nuclear needs no public subsidy and then that it does, and that a waste solution should be found first, and then that it is not urgent.’ In practice, little progress was made in creating conditions for the private sector to invest in new supply.

The approach that has dominated energy policy in recent years has also attracted criticism from independent experts and regulators. For example, in an interim report of an investigation into the energy market, the Competition and Markets Authority (CMA) criticised the subsidy that the Department of Energy and Climate Change (DECC) awarded to offshore wind projects through an administrative process known as “Final Investment Decision enabling for Renewables” scheme (FIDeR). The CMA’s analysis indicated that the support cost under the FIDeR scheme was 30% to 60% higher than that of similar offshore wind projects awarded through competitive allocation a few months later. DECC’s decision might have resulted in an increase in costs for consumers of approximately £250– £310 million per year for 15 years, equivalent to a 1% increase in retail prices (CMA, 2015).

Crucial assumptions that underpin the current energy strategy, its impact on carbon emissions and on the competitiveness of the UK economy, have also been criticised. Concerns have been raised, in particular, about the idea that oil and gas prices are bound to go up in incoming years as their stocks are depleted (the 'peak oil/gas' theory); and the notion that with enough subsidy from consumers, the current generation of renewables is likely to become cost competitive, and make a difference to global warming (e.g. Helm, 2013).

Furthermore, a number of independent analysts and commentators have expressed doubts about the impact of the current policy approach on costs for consumers and their willingness to support those costs. The National Audit Office, for example, has drawn attention to the fact that there has been no assessment of the overall impact of infrastructure on future bills or whether those bills will be affordable: 'Therefore government and regulators are taking decisions on behalf of consumers in the absence of full information about the situation for consumers. Affordability can only be assessed by taking into account all household bills, household incomes and wider costs of living. Gaps in analysis, and the lack of a common approach to measuring affordability, mean that the government does not have an overall picture of affordability, either for the average household or for those on low incomes.' (NAO, 2013b, p. 9).

In short, evidence has been accumulating that suggests that UK energy policy since privatisation in the 1980s has been short-sighted; that it has exposed private investors to important policy risks that might have harmed investment incentives; and that strategic policy decisions have often failed to be grounded in strong technical analysis.

Railways – HS2

HS2 is the Government's flagship transport infrastructure project to build a high-speed rail line from London to Manchester and Leeds, via Birmingham, the East Midlands, Sheffield and Crewe, to begin operation in 2026 and be completed by 2032/3. The total cost of the scheme is currently estimated at £42.6 billion for both phases with an additional £7.5 billion for rolling stock (Butcher, 2014a). It was supported by the Labour Government in 2009 and has had the support of the Conservative-Liberal Democrat Coalition Government (2010-15) and the current Conservative Government, elected in 2015. Despite this cross-party support, it has been the subject of great controversy over the last few years. There have been heated public debates focused on the value of such large, expensive schemes and their ability to foster economic growth, particularly in the north of England. These debates have also been accompanied by more technical, detailed discussions on matters related to the robustness of the data and forecasting used in the Government's business case for HS2; the impact on journey times, carbon emissions, homes, communities and habitats.

The Public Accounts Committee (PAC) criticised the Department for Transport for making decisions 'based on fragile numbers, out-of-date data and assumptions which do not reflect real life' and having a large contingency that appeared 'to be compensating for weak cost information' (PAC, 2013, p.5).

Commenting on the project's preparation, the National Audit Office stated that:

High Speed 2 is at a very early stage of planning and development and, as such, we cannot conclude on whether the programme is likely to deliver value for money. The cost and benefit estimates in its economic case are uncertain and will change because the programme is at an early stage. Furthermore, there have been past errors in the underlying model and some key data needs to be updated. In presenting its case for investment, the Department has poorly articulated the strategic need for a transformation in rail capacity and how High Speed 2 will help rebalance economic growth. The Department and HS2 Limited have started a lot of work recently to strengthen the evidence and analysis on which the case is based. The challenging programme timetable, however, makes delivering this work difficult and increases the risks that the programme will have a weak foundation for securing and demonstrating success in the future.

(NAO, 2013c, p.11).

The Treasury Select Committee published a report on the 2013 Spending Round and stated that the Treasury should not allow HS2 to proceed 'until it is sure the cost-benefit analysis for HS2 has been updated to address fully the concerns raised by the National Audit Office'; that the Treasury should publicly quantify the benefits for HS2 'not captured by the existing economic appraisal'; and that prior to any decision by the Treasury to proceed with HS2, it 'should publish its own comprehensive economic case supporting its decision'. (Treasury Committee, 2013, p.36.)

Commenting on the origins of High Speed 2 in the *Financial Times*, former Business Secretary, Peter Mandelson said:

'In 2010, when the then Labour government decided to back HS2, we did so based on the best estimates of what it would involve. But these were almost entirely speculative. The decision was also partly politically driven. In addition to the projected cost, we gave insufficient attention to the massive disruption to many people's lives construction would bring. Why? Not because we were indifferent but because we believed the national interest required such bold commitment to modernisation... We were focusing on the coming electoral battle, not on the detailed facts and figures of an investment that did not present us with any immediate spending choices. The vision was exciting, a lot of spadework had been done in the transport department and the cabinet adopted HS2 as a "national cause", competing with the then Conservative leadership whose enthusiasm for the project had predated our own.' (Mandelson, 2013)

In 2015, an inquiry of the House of Lords Economic Affairs Select Committee into the economics of HS2 concluded that:

'The Government has yet to make a convincing case for proceeding with the project... it is not at all clear that HS2 represents the best, most cost-effective solution to the problems it is intended to solve. The Government's two declared objectives for the project are to increase capacity on the railway to meet long-term demand and to rebalance the economy by stimulating growth in the north of England... On capacity, published statistics on current rail usage do not suggest that there is an overcrowding problem on long-distance trains, either now or in the near future. On stimulating growth, the Government has not

considered whether this could be better achieved by investing in improving regional links between northern cities. The Government claims that the biggest beneficiaries of the project will be business travellers, yet the evidence used to calculate the magnitude of this benefit (an estimated £40.5 billion) is out-of-date and unconvincing. Neither are we convinced why, if business travellers were the biggest beneficiaries from the project, they should not contribute more to the cost by paying higher fares.'

In the summer of 2014, while the controversy around HS2 was well underway, the Chancellor of the Exchequer announced plans for a high-speed rail link between Manchester and Leeds as part of creating a 'northern powerhouse'.⁶ He implied the line could either involve a big upgrade to the existing trans-Pennine route between the two cities, or a construction of a new line, and admitted there was no specific plan but that he wanted to 'start a conversation' about what has been dubbed 'HS3'.

The idea of creating a 'northern powerhouse' received wide support. It is, in fact, an idea reminiscent of the previous government's 'northern way' – a collaboration between three northern regional development agencies, which the Coalition Government abolished – that, in 2011, drew a transport strategy stretching from Liverpool to Newcastle-upon-Tyne. But the idea of addressing connectivity problems in that region through a high-speed rail line sparked more controversy. Some commentators have drawn attention to the array of bottlenecks on existing roads and railways that limit the effective size of the region's economy, claiming that HS3 'is another multibillion-pound solution in search of a problem' (FT editorial, 2014)

The remarks echo one of the key conclusions of Eddington (2006, p.6): 'Smaller projects which unblock pinch-points, variable infrastructure schemes to support public transport in urban areas and international gateway surface access projects are likely to offer the very highest returns...However, large projects with speculative benefits and relying on untested technology, are unlikely to generate attractive returns.' Long lasting controversy around the building of a high-speed railway line connecting London to the North of England is a powerful illustration of the problems that emerge from failing to build a credible evidence base through deliberative/participatory processes, and relying instead on public and political debates shaped by party-political tactics and competitions between interest groups.

Aviation in the South-East of England

The question of UK airport capacity has been considered a number of times over the last forty years (Helsey and Codd, 2014). Yet, little progress has been made since those discussions began. The only new runways built in recent decades were at London City and Manchester airports. London airports still rely on runways that have been in place since the middle of the twentieth century. Heathrow is now effectively full. Gatwick is operating at more than 85% of its maximum capacity and completely full at peak times. The UK is reaching the limits of existing airport infrastructure (Airports Commission, 2015).

Capacity constraints at Heathrow are imposing high levels of delay and unreliability for passengers, limiting the airport's ability to respond to one-off events, and to offer predictable patterns of respite from

⁶ *Greater Manchester and the Liverpool, Leeds and Sheffield city regions have a population of 9 million, a £154bn economy and almost 3 million jobs.*

noise for local communities. In terms of connectivity, Heathrow still has a dominant position among European hubs on routes to North America and other established aviation markets, but it has not been able to establish a similar position in routes to emerging economies. Furthermore, the number of domestic routes to the airport is declining, restricting access from other UK regions to Heathrow's network of international services.

The problem around the expansion of aviation capacity in the South East of England is intimately related to perennial controversies surrounding the impact of increased flights on noise and air pollution levels (especially nitrogen dioxide) in surrounding areas, compounded by lack of adequate compensation mechanisms. The two combined create strong incentives for the parties affected (often a relatively small, focused group) to mobilise and oppose new projects or expansion of existing infrastructure. Crucially, these groups tend to be in electorally important suburban constituencies.

Opposition to the expansion of Heathrow airport is a classic example. In 2007, the Labour Government ran a consultation on this question, which included, among other proposals, plans by BAA to add a third runway. It did not take long for this process to come under severe criticism from residents' campaign groups, local authorities affected by the plans, national campaign groups, and a group of politicians from various parties.

The response of the 2M Group – an alliance of local authorities affected by Heathrow's operating activities – illustrates particularly well the consequences of failing to develop a constructive dialogue around the facts and figures that should inform negotiations and decisions concerning infrastructure projects. It stated that its members were 'not anti-Heathrow but feel passionately that the Government consistently fails to either acknowledge or assess the airport's full environmental impact'. It went on to say (2M Group, p1):

This has been an inadequate consultation from the start. Member authorities have incurred considerable expense in commissioning specialist consultants to examine the data and arranging extensive local information exercises to make good the deficiencies of the Department for Transport's (DfT) own programme. A number of our members have submitted their own responses to the consultation. None of us feels that our submissions are complete. We have all been hampered by the inadequacy of the information and the limited time allowed for analysis. The central issue here is one of trust. No one believes that this expansion will be the last. Stephen Nelson of BAA even admitted as much at the London Assembly Environment Committee evidentiary sessions. He could not rule out a fourth runway in the future. Our members are equally opposed to the third runway and the abandonment of runway alternation. No one believes that mixed mode is an interim measure. The history of Heathrow shows that once extra capacity is secured, it is never given up.

In March 2008, *The Sunday Times* claimed that it had obtained documents under the Freedom of Information Act, which indicated that the airports operator BAA had 'colluded with government officials to "fix" the evidence in favour of a new third runway at Heathrow' (Ungoed-Thomas Woolf, 2008). The Environment Agency, the environmental regulator, also raised doubts about the proposals, and in particular, 'whether the economic analysis of options for Heathrow is robust... we wonder to what extent

the analysis has taken account of the other elements of the Air Transport White Paper preferred strategy for south-east airports (e.g. a new runway at Stansted), and to what extent these elements may lead to the displacement of any of the identified benefits of expanding Heathrow.’ (EATR, 2007, p2)

The 2010 Coalition Government set up an independent review that was asked to publish its findings after the 2015 general election. The Airports Commission, led by Sir Howard Davies, was tasked with advising on options for maintaining the UK’s status as an international hub for aviation and immediate actions to improve the use of existing runway capacity in the next five years. The Commission published its findings in July 2015, recommending a new runway at Heathrow, together with a ‘significant package of measures’ to mitigate its impact on local communities and the environment, including a ban on all flights between 11.30pm and 6am, a legally binding cap on noise levels, a levy to fund a more generous compensation package for those living under the flight path, and an independent noise regulator.

The Government pledged to consider the commission’s findings and give a detailed response by the end of the year. There is no guarantee that it will implement its recommendations. Senior figures in the Conservative party, such as Boris Johnson, mayor of London, Philip Hammond, the foreign secretary, and Zac Goldsmith, MP for Richmond Park (and prospective Conservative mayoral candidate), all of whose constituencies sit under the airport’s flight path, have come out strongly opposing Heathrow’s expansion. The Liberal Democrats announced, in September 2014, before the Airports Commission published its analysis and recommendations that they would oppose, on environmental grounds, any form of airport expansion: ‘We remain opposed to any expansion of Heathrow, Stansted or Gatwick and any new airport in the Thames Estuary, because of local issues of air and noise pollution. We will ensure no net increase in runways across the UK as a whole by prohibiting the opening of any new runways unless others are closed elsewhere.’ (Liberal Democrats, 2014, p.22)

Problems with the expansion of airport capacity in the south-east of England offer a strong illustration of the consequences of failing to promote serious, interactive engagement with local communities and to compensate them for the local costs that large infrastructure projects often involve.

Sewerage - Thames Tideway

Underneath the whole of London is a sewerage system designed by Sir Joseph Bazalgette and built largely in the 1860s. Large quantities of sewage had been flushing directly into the river Thames destroying its ecosystem. Increasing population levels aggravated the problem. A sewerage network of about 21,000km was then built underneath London between 1859 and 1875. It served the 2.5 million people who were living in the city, and it was designed to accommodate an extra 1.5 million people living in London. Lately, it has been struggling to cope with a population of more than 8 million⁷.

Hoping to resolve this problem, successive governments have, since 2007, supported the construction of a £4.2bn “super sewer” – a 25km long tunnel designed to boost the capacity of the London’s

⁷ E.g. in October 2012, the Court of Justice of the European Union ruled that the UK was in breach of the European Urban Waste Water Treatment Directive. This has raised the prospect of a large lump-sum fine and daily fines being levied on the UK until it complies with the Directive.

sewerage network and prevent tens of millions of tonnes of sewage that every year overflow into the Thames. The project was granted planning consent in 2014. The Water Services Regulation Authority (Ofwat) approved its financing in August 2015. Construction is planned to start in 2016 and is meant to last for seven years. It will be the second largest infrastructure project in the UK and one of the biggest in Europe.

The idea of building the tunnel dates back to 2005, when a study commissioned by Thames Water reported on potential solutions for the lack of sewerage capacity in London. The study concluded that the only practicable strategy to meet all environmental objectives was the interception of sewage spills before they reached the river. For that purpose, it proposed the construction of a 25km tunnel, running from Acton in the west of London through to Abbey Mills in the east (the so-called 'Thames Tideway Tunnel') as part of a broader investment program which included plans for another tunnel (a 6.9km long tunnel for taking overflows away from the river Lee), and upgrades to five existing sewage treatment plants.

The proposal has been embroiled in controversy ever since it was announced. In 2005, Philip Fletcher, Director General of Ofwat at the time, argued that further study should be carried out before any commitment was made to the proposal. In 2006, he advised ministers that there was scope for improvement options that would offer better value for money⁸, and on the following year, insisted the Thames Tideway project was not cost-effective and that other options should be explored:

"All the work done to consider yet further improvements to the Tideway demonstrates that it would not achieve value for money. Indeed, the evidence strongly suggests that the benefits would be very limited from the proposed sewer interceptor, whether in terms of health improvement, nuisance reduction, or environmental improvements. Any such improvements would not in any way be proportionate to the very high cost – well over £2 billion."⁹

Professor Chris Binnie, former chairman of the 2005 study that proposed the Thames Tideway solution, admitted years later that technical progress in sewage management had undermined the case for the project, and that alternatives should be considered. He challenged the cost-benefit calculations presented by the Department for Environment, Food and Rural Affairs, arguing that faulty assumptions were both overstating the benefits of the tunnel and underestimating the effects of alternative solutions. His latest analysis contends that the upgrade of the sewage treatment works together with the construction of the Lee tunnel, on their own, should be enough to fulfil the objective of protecting the environment from the adverse effects of water discharges (Binnie, 2014).

Sir Ian Byatt, head of Ofwat between 1989 and 2000, has also stated publicly that the tunnel is not necessary and called it 'a real disaster' (Plimmer, 2015). According to Sir Ian, 'neither Ministers nor regulators have set out the underlying analysis behind the Ministerial decision to opt for this solution. In the absence of this information, it looks as though alternatives have been brushed aside by Ministers, and that regulators have accepted this as a *fait accompli*.' (Byatt, 2013, p.14)

⁸ *Letters from Philip Fletcher to Elliot Morley, 7th December 2005 and 14 February 2006.*

⁹ *Letter from Philip Fletcher to Ian Pearson 31st January 2007.*

In an 'early review of potential risks to value for money', the NAO (2014) acknowledged the controversy around the Thames Tideway project and stressed that 'such claims emphasise the importance of independent government scrutiny and quality assurance over the options appraisal in order to win public confidence that value for money has been secured' (p.23). The chair of the Public Accounts Committee, Margaret Hodge, called the project 'a gold-plated solution that will lumber London water tax-payers with an £80-a-year extra bill just for this'. (PAC, 2014, p. 23)

Lately, critics have turned to the tunnel's unusual financing arrangements. About one-third of the project is expected to be funded by Thames Water, with the remaining £2.8bn cost to be met by a consortium composed of German insurer Allianz, Swiss Life Capital and Dalmore Capital. There were only two bids to finance and build the project, which has raised concerns about lack of competition in the selection of that consortium. They will own, manage and finance the project during construction, and will later supply sewerage services to Thames Water on a 125-year concession. The investment will generate an income stream from day one, paid for by Thames Water's customers. Meanwhile, the risks of construction, including cost overruns, accidents or other incidents at the project's 42 sites, together with a range of financial risks (e.g. another global collapse in credit) will be borne by taxpayers as government is acting as guarantor (Plimmer, 2015; Ofwat, 2015a).

The Thames Tideway Strategic Study originally estimated the cost of a single full-length tunnel at £1.7bn (2004 prices) and the increase in Thames Water residential customer bills at £40 to £45 annually. This was later revised by Thames Water to an estimated total cost of £4.2bn (2011 prices) and a maximum increase in bills of between £70 and £80 annually (NAO, 2014). In 2015, Ofwat announced that it expected the tunnel to have an impact on bills between £20 and £25 (Ofwat, 2015b).

In summary, the process that led to the approval of the Thames Tideway Tunnel offers a powerful illustration of how deficiencies in building a credible evidence base through active engagement of a wide range of stakeholders can give rise to conflicting analysis, continuous controversy, and eventually policy decisions of dubious quality. Indeed, when it comes to infrastructure policymaking, the British political system appears to struggle even with those projects that have cross-party support.

IV. Key findings and policy implications

Important challenges lie ahead for UK infrastructure. Energy security, compliance with environmental regulation, maintenance and replacement of existing infrastructure, and increasing population, are only a few examples from a wide range of pressures that will impact on UK infrastructure for decades to come. Successfully addressing these challenges will require large-scale investment. In contrast to most other developed countries, the UK relies extensively on the private sector to finance and provide infrastructure. Government still plays a pivotal role, however, both by designing policy and regulatory frameworks and by investing directly in individual projects, alone or in partnership with the private sector. Poor policy decisions could lock the economy into inadequate and/or overly-costly infrastructure systems for many years to come, placing a heavy burden on future prosperity.

The evidence reviewed in this paper suggests there are important problems in the way the UK makes strategic infrastructure decisions, these include short-sightedness; lack of cross-party agreement which exposes private investors to high levels of policy risk; deficiencies in the development of the evidence base that underpins projects with cross-party support; and failure to secure public consent, which often leads to political procrastination. Many of these problems appear to be largely associated with the absence of institutions that effectively engage politicians, experts, interest groups and local communities in the policymaking process. Without credible, participatory processes, the politics around infrastructure investments in the UK is often trapped by unconstructive interactions between party-political tactics, pressures from interest groups, and hostility from local communities.

There are several international examples of infrastructural innovation from which the UK could learn. The United States has been experimenting for several decades with ways of making consumers, or their representatives, take a more active role in the regulatory processes through constructive engagement, and negotiated agreement and settlement. In the Netherlands, the so-called *Alders Table* – a consultative body responsible specifically designed to formulate advice to government on plans for Schiphol airport – was successful in creating a forum for national and municipal governments, representatives of local communities, and parties involved in aviation to come together and discuss mutually-advantageous solutions. The success of that initiative inspired the creation of similar consultative bodies across the country. In France, the *Commission Nationale du Débat Public* – a state-funded, independent body – has been playing an important role in ensuring the public participates effectively in decision-making processes about projects that have major effects on the environment and land use. The work of the *Australian Productivity Commission* has also been praised for its role in fostering informed public and political debates through a mixture of solid research and public input and scrutiny. Within the confines of current constitutional architecture, these examples of institutional innovation may offer the best guides for reforming the governance of infrastructure investment in the UK. In October 2015, the UK Government announced the launch of a ‘National Infrastructure Commission’, an independent body that is supposed to enable long term strategic decision making to build effective and efficient infrastructure for the UK. If the Commission manages to replicate some of the best practice of the international examples mentioned above, it could play an important role in filling the institutional gap that we discussed in this paper.

JEL No. D78, H54, H57, L98, O22, O43.

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Widening participation or reinforcing privilege in Scottish higher education?

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I Introduction and background

A key priority of successive Scottish and UK governments has been to increase participation in higher education based on the premise that higher level qualifications lead to economic growth which will benefit society and lead to individuals obtaining well-paid sustainable employment. The opportunity of the 'graduate' premium in terms of salary has been seen by successive governments as a means of addressing poverty particularly in communities which continue to experience the deprivation associated with post-industrialisation. This led to a commitment by the then Prime Minister Tony Blair in 1999 to enable 50% of young people to progress to degree level education. It was anticipated that this expansion of volume would automatically increase participation from under-represented groups. However this policy ambition has not yet resulted in the major shift in participation rates in higher education by residents of the most deprived data-zones anticipated by government nor the bodies with responsibility for delivering this policy.

The failure to improve significantly participation from under-represented groups is a complex matter for which there is no one 'silver bullet'. As such to help deliver change there has been the development of a myriad of initiatives designed to improve articulation and progression into higher education programmes predominately at university-type institutions. These initiatives are led by dedicated professionals who are seeking to deliver change supported by others who populate management committees, steering groups and policy forums. However, despite twenty years of valuable work and effort it is difficult to identify any *systemic* shift in the nature of the university population and particularly at the research intensive higher education institutions (HEI's).

II The Scottish Index of Multiple Deprivation (SIMD): is SIMD 40 the right benchmark?

As always with these matters there is the debate about what criteria should be used to identify under-represented groups. The Scottish Government has used the Scottish Index of Multiple Deprivation (SIMD) data-zones as the means to focus activity and importantly to measure success. The use of SIMD postcode data-zones is regarded by Universities Scotland² as a rather blunt instrument as it contends that there is a need to widen participation for those who do not reside in the most deprived data-zones but who, because of other factors, are under-represented in higher education. As a consequence there has been considerable debate about refining the criteria which should be included in the widening

¹ *These are the personal views of the author and are not intended to be the views of Glasgow Kelvin College. The author is currently a member of the SFC Access & Inclusion Committee, has previously chaired the former Focus West (now the Schools for Higher Education Programme) and is a former member of the Scottish Widening Access Programme-West Executive Committee.*

² *Widening Access to University- Universities Scotland 2012*

access/participation matrix to include other elements such as specific additional learning needs and ethnicity. Therefore Universities Scotland proposes that more emphasis should be placed on individuals than on post codes.

There is the other camp which contends that whilst SIMD is a blunt instrument, by using the most deprived data-zones it is the most effective proxy to identify those individuals and groups who are most likely to be under-represented in degree-level provision as the other suggested criteria based on specific elements such as those above will include individuals who are also over-represented in communities who reside in these data-zones. For example recent migrants to Scotland are more likely to reside in the most deprived communities, especially within cities, there is considerable evidence that long term medical conditions which can impact on learners is much more prevalent in SIMD20 post-codes and care experienced young people predominately live in these post-codes. In fact there is a strong argument that the Scottish Government's current use of SIMD40 (the 40% most deprived data-zones) as the benchmark to target widening access to university is *insufficiently* challenging. This is particularly the case in Glasgow, Scotland's largest city, where 50% of all local authority residents live in the 20% percent most deprived data-zones (SIMD20). Hence, in Glasgow, the use of SIMD40 as the official, Government-sponsored benchmark to widen participation in higher education automatically includes the *majority* of the population. Put more starkly, 27% of Glaswegians have no qualifications and therefore any attempt to widen access which does not engage this cohort fully is failing to address the Government's policy imperative to create a fairer and wealthier Scotland. In short, in Glasgow – and in other similar local authority areas - SIMD40 represents 'low hanging fruit'. Addressing this issue in Glasgow - and West Central Scotland more generally - to improve qualifications/skills levels and employment rates will have a significant *national* impact in improving Scottish economic growth while also tackling poverty, exclusion and health-related issues which undermine economic progress in Scotland.

Much work has been undertaken in schools to provide opportunities to enable young learners from SIMD40 data-zones to progress to higher education, both at colleges and higher education institutions, using a variety of approaches. These activities focus on advice/guidance/aspiration raising with additional support around the subjects and grades required for progression to programmes such as medicine, law, science and engineering. There has been a degree of success however it tends to be either with regard to an individual or a small number in a year-group cohort. However, it should be noted, that there is some evidence from work carried out by Glasgow City Council Education Services that learners who have received this assistance would have been likely to progress anyway to a degree programme and the support provided to them gave them vital additional confidence to make the leap. Despite such intensive efforts over the years, the schools which were originally identified as requiring additional support to assist learners to progress to higher education still remain in such programmes. And, unsurprisingly these schools predominately serve the most deprived communities in Scotland. In short, despite intensive and extensive efforts to widen participation in higher education, there has been no systemic shift in widening access for learners from Scotland's most deprived communities and groups.

While work has been on-going to contextualise the admissions process at a number of HEIs, and for degree programmes within universities, a number of matters remain to be considered. How do learners who live in the 5%, 10% or 20% most deprived SIMD data-zones evidence the development of skills development and/or achievements in other aspects of their lives? For example a 'gap year' experience is highly unlikely to be affordable. Sustained volunteering, unless organised within the context of the school day, is challenging as there is often the need to maximise opportunities for part-time employment. And participation in sport is becoming increasingly difficult both as it (again) reduces part-time employment opportunities and due to the cost. This is not to argue that contextualised admissions should be abandoned, as work at the University of Bristol has proved the value of such an approach, but rather it has to be adapted to take account of the real challenges faced by learners in the most disadvantaged communities in providing the opportunities required to demonstrate their abilities and potential and which go beyond simple tariff scores.

III College SIMD20 participation and College / HEI articulation: a success story

Another part of the jigsaw in promoting widening participation has been articulation from college based HNC/D provision into HEI degree programmes. This approach was developed as it was recognised that learners, particularly from SIMD20³ data-zones, were much more likely to attend college than university either immediately post-school or after period of employment. From 2003, Scottish HEIs have received funding from the Scottish Funding Council (SFC) to support articulation to degree programmes, initially with no conditions but subsequently with greater emphasis on the need to ensure that progression guaranteed *advanced standing* for the learner. This means that learners articulate to Year 2 or Year 3 of a degree programme with credit provided for the learning undertaken in college. Hence this reduces the length of the learner journey; were such recognition not granted it would result in such learners facing the potential of a six year degree compared to four years for direct entrants. Clearly, this has a direct financial benefit and is an important factor for learners from deprived communities wishing to access higher education provision.

However the nature of *advance standing* varies across institutions and across programmes within institutions. This is partly due to that fact that for a period of time colleges were able to develop their own HNC/D programmes which led to a proliferation of awards all with the same or similar titles but different content. However the SQA has addressed this issue and there has been a return to standardised national qualifications. From the most recent data⁴, there has been an increase in the number of articulating students with advanced standing from the baseline of 529 in 2008/09 to a figure of just under 4,000 in 2013/14. Of these articulating learners, 898 or 23% were residents of SIMD20 data-zones; that is twice that of the 12% of SIMD20 residents who are 'direct entrants' to Scottish HEIs. Therefore it appears that the articulation model is successful in increasing participation from the most deprived data-zones, though of course they still constitute a relatively low number compared to the total number of learners in Scottish HEIs.

³ SFC Learning for All: Measuring Success 2015

⁴ Commission for Widening Access Evidence 2015

The latest figures for Scotland's colleges indicate that 28.9% of all enrolments are from SIMD20; however in the Glasgow Region the figure is 42% and this, in turn, varies across the region's three colleges⁵. Indeed, in some programmes delivered by these colleges and depending on the location of the campus, the figure is nearer 70%. In HEIs the variation is even more stark; one university having circa 1,400 learners from SIMD20 and one with only 20! There is also a direct link between the higher number of SIMD20 learners who progress to HEIs using HNC/D articulation routes with advanced standing and the much lower number (if any) for those institutions which do not have well-developed articulation pathways or who offer limited credit for the college experience. Currently the HEIs with the greatest commitment to the advanced standing articulation route are the post 1992 institutions. While this is a positive development it has the impact of limiting learner choice in terms of progression opportunities.

However the above is not to contend that the HNC/D articulation/progression route is better than other approaches, rather it is one which is more likely to engage with residents of the most deprived communities on a sustained basis. If higher levels of participation in higher education from Scotland's most deprived learners / learner communities is a key aim of government policy, further consideration requires to be given as to how the articulation approach can be developed further to ensure that all Scottish HEIs work collaboratively with colleges to the benefit of SIMD20 learners.

IV: Participation and productivity opportunities in work-based and blended learning

A further factor that requires to be considered when evaluating the success or otherwise of widening participation rates is the focus on the linear learner journey. There has been insufficient work undertaken on the opportunities for work-based learning which combines work and study, or indeed return-to-study following work. This could be of particular interest to learners from SIMD20 data-zones as accessing sustainable employment and the salary it attracts is often a motivating factor on leaving school. Hence, moving into the world of work immediately post-school or college is attractive. This may be the time to consider a wider application of the apprenticeship/HNC/D to degree route which is utilised in some aspects of the energy and engineering industries. Or, for those of us old enough to remember, a return to 'sandwich' degree programmes which provided the benefits of both employment and degree study – and boosted social mobility.

For far too long the emphasis has been on a traditional, full-time provision model which articulates with more full-time study. Consideration of more flexible modes of part-time study or 'blended' learning at undergraduate level linked to employment is now required. With skills and productivity at the heart of Scotland's economic future, work-based and blended learning offer an opportunity to both widen participation, provide alternative routes for more diverse learners and also support employers in key areas of the economy to enhance the skills of their workforce, increase productivity and contribute to economic growth.

⁵ From Glasgow Clyde College at 28.3%, City of Glasgow College at 32% and Glasgow Kelvin College at 58.5%. Source: SFC Infact database 2014

V: Delivering a step change in inclusion and participation in Scottish higher education

Much progress has been made in developing potential opportunities for access into higher education for residents from the most deprived data-zones. However, to date the scale of the impact has been limited and at the current rate of progress fundamental change in the composition of the student population at some HEIs will take generations, if ever, to change. If it is the ambition of Scottish education institutions to reflect Scottish society more accurately they will have to consider how radical and brave they are prepared to be in order to provide residents from SIMD20 with greater opportunities to participate in degree level education. At a time of austerity, and in effect a cap on student numbers, this will mean a reduction in opportunity for those from SIMD80 and above. This in itself will be a challenge both to government and to institutions and is likely to be unpopular with a very influential group of the population.

To implement such a change will require a review of the means of recruitment/selection to a more appropriate contextualised model, consideration of guaranteed places for learners from SIMD 5, 10 and 20, more effective models of guaranteed articulation from college based HNC/D routes with advanced standing and more flexible modes of degree delivery that support work-based and blended learner journeys.

In short, more of the same will not deliver the step change needed to ensure that participation in higher education and skills is increased for learners in Scotland's most deprived communities. If we continue as we are, we are knowingly tinkering at the margins, while reinforcing privilege and exclusion. Therefore the publication of the Commission on Widening Access final report, scheduled to be available in early Spring 2016, is awaited with some interest by those who are waiting for a strategy which will produce a step change in how Scotland will seek to address the under-representation of learners from the most deprived communities in degree programmes offered by all of Scotland's HEIs.

If we want to unleash Scotland's potential and we are all Jock Tamson's bairns, now is the time for government, institutions, business and civic society in Scotland to be radical in developing our most precious resource, our people.

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The challenge of Inclusive Growth for the Scottish economy

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Abstract

“Inclusive Growth” is the new approach to economic policy in Scotland. This Perspective summarises the thinking underlying this approach, including whether and how far it reflects a substantive change in policy. It suggests how the issues raised will frame economic policy in Scotland over the 2016-2021 Parliament, and underlines the importance of work based learning, as one example of how the Scottish Government is putting inclusive growth into practice. It concludes that a broad perspective is required to promote prosperity and address inequality in Scotland in an integrated way.

Key words: Scotland, inclusive growth, inequality, Scotland's Economic Strategy, work based learning

1. Introduction and background

The ex-Head of the Research Department at the IMF, Professor Olivier Blanchard recently reflected on the response to the financial crash of 2007/08, and how economic policy makers should learn from the new facts about the economy. He argued that, in future, the task of governments and Central Banks should not simply be to use fiscal and monetary levers to fine tune an otherwise mostly stable economy. Instead a new approach should be built to avoid catastrophic destabilisation, as happened in 2007/08. To underpin this broader policy approach, he described a new approach to economics which takes the risks of destabilisation seriously. He urged an awareness that “*dangers lurk in dark corners*”, with a need for greater attention to those issues which have the potential to destabilise the economy. Some of these are well known, especially the financial sector and imbalances across the world economy, and others reflect the disruptive changes underway in the economy.

In a recent speech, Dr. Gertjan Vlieghe, External Member of the Monetary Policy Committee of the Bank of England, argued that “3 D’s” were increasingly important to monetary policy makers, namely debt, demographics and distribution of income. Moreover he says that many of the modelling tools used by central banks to assess the state of the economy “*imply that, by design, debt does not matter, there are no demographics and there is no distribution of income*”. His prescription going forward is to combine existing tools with the development of detailed analysis of underlying trends in the economy, including the “3 D’s”.

Professor Robert Gordon has identified a set of headwinds affecting the future of the world economy. His book, the [Rise and Fall of American Growth](#), published earlier this year starts with a disquieting claim, namely that “*the economic revolution of 1870 to 1970 was unique in human history, unrepeatably because so many of its achievements could only happen once*”. He foresees the prospects for continuing economic growth as much less than we have experienced, compounded by a series of headwinds, due to ageing population, a plateau in educational attainment, rising inequality and the need to repay household debt. Yet there is much we don’t know about the medium to long term prognosis for

the growth and stability of economic activity. The prospects for future economic growth are to put it mildly unclear. Edward Luce, in a recent Financial Times piece, described 3 distinct schools of thought;

- **“Digital optimists”** see huge opportunities for a digital industrial revolution. Their core argument is that the full productivity benefits of digital technologies have not yet been realised and the potential for disruptive innovation through networked information is enormous – and positive;
- **“Digital pessimists”** also see a prospect for huge changes in the use of machines, artificial intelligence and robots. Yet they mainly fear the potential destabilising and negative impact of jobs, incomes and human potential; and
- **“Digital-sceptics”** doubt the potential for continuing growth in productivity in the developed countries, even with digital technologies. Robert Gordon is the strongest proponent, and his pessimism has echoes in the concerns about so called “secular stagnation”. There are many forces at play here, including medium term weakness in aggregate demand as a result of the debt overhang and changed structure of personal spending. And there is the (conceptually different) problem of low levels of technological progress constraining future income growth. But for the average worker and consumer, the sceptics point to a much less positive future.

What is clear is that economic policy making is no longer (even if it ever was) a simple matter of steering the economy. Rather it requires a fundamental understanding of what is happening under the bonnet, whether the accelerator and brakes actually work and what skills we need to chart a course ahead. While there is a recognition that activist government will be required to deliver prosperity and reduced inequality, there remains strong disagreement over how this new agenda should be delivered.

2. A Scottish context

In its latest Economic Strategy, the Scottish Government committed itself to pursuing Inclusive Growth and marshalled an impressive set of studies to justify its new approach. The document seeks to provide *“an overarching framework for achieving the two mutually supportive goals of increasing competitiveness and tackling inequality in Scotland”*, and introduces 4 priorities of *“investment and innovation, supporting inclusive growth and maintaining our focus on increasing internationalisation”*.

A policy approach based on Inclusive Growth rests on 5 propositions, namely that:

- **Inequality of income is growing.** The Scottish Government note that income inequality among working age people increased faster in the UK between 1975 and the late 2000s than in any other country in the OECD;
- **The inequality of household wealth is more unequal than the distribution of income, and wealth inequality is increasing at a faster rate than income inequality;**
- **This inequality of income is constraining economic growth, and making the economy less stable.** This counters the common perspective that some inequality may be necessary to

create incentives to promote economic activity. Government Ministers quote a recent study by the OECD which concluded that rising income inequality in the UK reduced GDP per capita growth by 9 percentage points between 1990 and 2010;

- **Measures to address inequality can be growth-enhancing as well as inequality reducing**, which counters the common view that there is a simple trade-off between efficiency (and growth) and equity (and fairness);
- **High levels of income inequality are not linked to high economic performance or high human welfare.** Many northern European countries have achieved lower levels of income inequality than the UK whilst also performing better on key measures of economic performance (for example on the United Nation's Human Development Index (HDI) is a composite index based on indicators of life expectancy, educational attainment, and income).

This Perspective does not attempt to synthesise the huge research literature which underpins this narrative on economic policy. There are many excellent documents, which describe much of this story:

- Bell, Eiser and McGoldrick (2014) have prepared an excellent summary on the Income Inequality in Scotland, and what can be done about it;
- There are excellent book summaries of new approaches which have been published in recent years, especially books by Piketty (2104) and Atkinson (2014);
- There are many good summaries of the contrasting approaches to “distributional justice”. Some see income from economic activity as driven by human effort, skills and technology in the competitive economic marketplace. For a rigorous outline of this view, see Mankiw (2014). Others see market outcomes as the product of inheritance, societal “rules”, and luck, which increasingly reflect “market imperfections”, and the extraction of so called “economic rents”, rather than competitive forces. For a clear outline of this view, see Stiglitz (2011); and
- The previous two annual Economic Reports to the President, published by the US Council of Economic Advisers (2014, 2015) offer a sweeping, evidence-based assessment of the challenge of inclusive growth in the US.

This Perspective argues that, if we are serious about delivering on inclusive growth, we need to understand what is under the bonnet of the modern economy. For the vast majority, the jobs market is both the cause of inequality and the solution to it. Therefore, in order to achieve inclusive growth, we will need innovative approaches to economic policy. We will need new and better institutions to deliver them. And perhaps most of all, we need a greater depth of analysis of “what works at work”, to promote inclusive growth.

3. Why inequality of wealth matters so much

A combination of the financial crash in 2007/08 and an emerging new view of the economics of inequality is transforming our “big picture” perspective on the economy. And no-one is contributing more

to this reconsideration that Professor Thomas Piketty. His huge book, *Capital in the 21st Century*, has captured a mood.

Piketty has created a new grand narrative to explain the development of the economy, and he sees strong forces toward ever rising inequality of wealth and of income in future. His newest, and most powerful, contribution is to focus on ever-rising inequality of wealth. Piketty's pared down narrative of the last 200 years is a story of the rise, fall and rise again of the inequality of wealth. Indeed, the gap in wealth between rich and poor was large and rising in the 18th and 19th century, due to a combination of skewed returns from land and huge gains to the emergent business class during the initial stages of industrialisation. This was however undermined by the destruction of capital assets in the two world wars, particularly among the very rich, with a further loss in the real value of remaining savings by inflation. But, after reaching a historical low in the 1950's, the wealth gap between rich and poor started to rise again.

Piketty is not the first to observe a return to growing inequality of wealth. His profound insight is that this growth may reflect an inevitable force of capitalism. He identifies what he calls a Fundamental Law, namely that if the rate of return on wealth is greater than the rate of growth in the economy, then in simple terms the "rich will get richer". His economic model outlines how an ever growing inequality of wealth inevitably leads to a declining share in national income going to workers. His challenge to the economics profession is to take this "wealth begets wealth" process seriously, because it has no obvious self-regulating mechanism.

Piketty's work offers a fresh perspective on the post war period of economic growth in the west in the 1950s and 1960s. He sees the post war period of inclusive growth - where trends in economic growth and of inequalities of income and wealth reinforced each other, positively - as a fortuitous historical accident, rather than the norm. And he sees a major challenge in getting back to those trends without concerted government action. There are many doubters about his technical story, and those who see alternative explanations for growing inequality of wealth. And there are even more doubters about his solutions. But his perspective on the potential future risks of ever growing inequality has changed our collective perspective.

4. Why inequality of income has grown so much

Piketty's rich historical narrative fits with the trends in rising inequality of income. The facts are clear, albeit different across developed countries. The past 30 years has seen a huge increase in inequality of income within nations, especially the growth in the top 1% and the stagnation of median incomes. In parallel, global inequality between countries has actually narrowed over the last few decades, due to economic growth in countries like China and India.

There has been much focus on the rise of the super-rich. The average income of the super-rich in the US, defined as the top 0.1% of income earners, did not re-attain pre-WW1 levels until the late 1970s. (That's not a typo). Since then, average income of that group has grown by 7% per annum, which means their incomes roughly double every decade. The experience for the rest is the polar opposite – average incomes grew steadily after the war to around 1980, and have levelled off since.

Why has there been a U-shaped trend in income inequalities since WW2? The trend reflects globalisation, demographics, technological change underpinning economic growth, and changes in policies, behaviours and attitudes, particularly since 1979. While there are overlapping explanations, there are some identifiable trends; which have been well summarised by Coen Tuelings:

- **Globalisation has made the world flatter**, and political change has opened up much of Asia to accelerated economic growth. We have seen a dramatic increase in the global supply of labour, and free movement of capital and labour has led to huge changes in the location of economic activity and of global wages;
- **Changing technology has placed a premium on different skills.** Emergent technology has opened up new industries and closed the door on others. The outlook for jobs has been summarised by Andy Haldane, the Bank of England's Chief Economist. He said that *"technology may be the single most important force shaping the fortunes of jobs and wages"*. In general, as technology has advanced, people have become richer. And some professions and jobs have declined but more have been created. In the current period of disruption, the group that has benefited most are the highly educated and those with high cognitive skills, especially in sectors allied to digital technologies and computers. But there is a "hollowing out of the labour market", with massive benefits for some "superstars" and more modest returns for others. This effect is clearest among sport and media celebrities, bankers and the "super-manager" class of corporate CEOs. The benefits of growth appears to accrue to those who can harness digital technologies (i.e. can "complement computing power") and capture it in wages. But, on the negative side, there has been a decline in occupations that can be replaced by new technologies (i.e. can be "substituted by computing power") and labour has shifted into service professions, which are often non-tradeable internationally. Inequality will be greatest in parts of the economy where the super successful can gain huge returns (e.g. finance, entertainment, digital technology) and in economies with large shares of these sectors (especially the UK and USA).
- **The overall share of the economic cake going to workers is falling, with a greater share of the benefits accruing to profits.** A declining "Labour Share" is in fact one of the defining facts about western economies since the 1970s. At this stage it is not clear that this is the product of Piketty's focus on wealth. But it does appear to reflect changes in occupational structure and in the role of collective bargaining and union power in the economy. The trend away from statutory bargaining and wage setting seems to have reduced the share of economic gains going to workers. This suggests that measures to support minimum wages may not lead to reduced employment.

5. Scottish policy responses

So how is a policy focused on inclusive growth any different from the policy approach undertaken over the previous 15 years? An assessment by Marsh and Wakefield (2015) for the Scottish Parliament notes that, since 1999, there have been 8 economic strategies published by Scottish administrations. While all of have focused on raising productivity as the principal way to achieve long run economic growth, the

number of mentions of inequality has grown. The first strategy published in 2002 did not mention inequality, while the current document mentions inequality no less than 135 times. Yet, a simple word count is perhaps misleading, given the pre-2007 governments' separate and complementary publications on Social Justice. The difference between the economic strategies published by this Administration and former administrations before 2007 should not be exaggerated.

Nor should we be surprised by the very significant continuity in policy approach. The major challenge remains how best to raise productivity in the economy. The solution is not less economic growth, but more of the right type of economic growth. The simple arithmetic of compound growth means that delivering better economic growth for those disadvantaged in the economy remains crucial. As a thought experiment, the US Council of Economic Advisers asked "what if" the benign trends after WW2 had simply continued? They calculated what incomes would be like if the faster technological change and the shared growth in incomes (to 1973) and expanded labour participation (until male and female participation reached parity in 1995) had kept going. They found that average household incomes might have doubled on today's levels, with by far the major contribution coming from the benefits of faster economic growth, rather than from reduced inequality or higher participation. As the 2015 Report to the President makes clear, the inter-relationship between productivity growth, inequality of income and labour participation have driven our recent experience and will continue to shape the prospects for inclusive growth going forward.

Like the US experience, the Scottish Government's economic policy has responded to the changed political and economic environment around inclusive growth. Policies are increasingly reflecting this changed perspective. While promotion of economic growth remains fundamental, governments are increasingly careful not to promote growth which simply compounds the malign trends of rising inequality and increasing instability. Instead, the search is for growth policies, which match prosperity with structural reform to life chances and labour markets.

Fortunately, there is no simple trade-off between prosperity and equity. Instead, there is a huge middle ground of policies and social attitudes that deliver prosperity and equality. If trends in inequality partly reflect policies and social structures, then how can we develop a pro-growth social policy (and a pro-equality economic policy)? The Economic Strategy continues a very welcome emphasis on research, innovation and enterprise, and the imperative of raising export performance. It prioritises early years intervention, and childcare support, which will contribute both to expanding the working age population now and to developing the workforce of the future. And it recognises the skills challenges, both in formal education and in the workplace.

Most prominent in Scotland has been the Fair Work agenda, which focuses on workplace innovation and the concern that a neglect of effective "industrial relations" has undermined job satisfaction and productivity. Governments are now supporting labour markets to promote the interests of workers, and there is scope for companies to improve profitable outcomes by ever more education and better workforce utilisation.

Yet, the scope for Government to intervene is highly contested and bounded, and the changes in the responsibilities of the Scottish Government will throw these challenges into sharp relief. The scope for government actions are constrained on multiple fronts:

- **There is the “zero lower bound of monetary policy”.** In order to help the world economy out of the recession, western central bankers have resorted to historically low interest rates and unconventional monetary policies. This may continue for some time yet, and world interest rates are at very low levels. But there is little more that governments can do to boost growth through monetary policy;
- **There is an “upper ceiling of fiscal policy”.** The scope for Governments to spend more is deeply constrained. The financial crash and the resultant high levels of government debt have, rightly or wrongly, led to a view that welfare spending needs to be reigned in. Austerity policies, based on fiscal rectitude, have look likely to have made inequality worse;
- **There are limits on the scope for governments to “tax the rich”.** The accumulation of income and wealth by very successful individuals and corporations is an important tax base. Various income and wealth taxes are widely recommended, with a recognition that any negative impact on incentives may be minimal. But the opportunities for tax avoidance at national level blunts the effectiveness of such taxes, and limits the willingness of governments to introduce them;
- **The scope for measures to “compensate for market outcomes” through income transfers is highly contested.** The paucity of income and wealth of multiply disadvantaged individuals undermines their wellbeing and potential. One of the key features of the economy at present is the “jobs rich, wages weak” recovery which has increased in-work poverty. Over time, the welfare state is increasingly becoming an in-work support mechanism as much as an out of work support insurance. There is increasing interest in the idea of a “Basic Income” as an alternative to targeted welfare support;
- **The effectiveness and impact of labour market interventions, through the Living Wage and statutory Minimum Wages, need evaluated to ensure they work.** One of the most compelling recent contributions has been Professor Anthony Atkinson, who summarised 12 proposals to tackle inequality. His first was to advise that *“the direction of technological change should be an explicit concern of policy-makers, encouraging innovation that increases the employability of workers, notably by emphasizing the human dimension of service provision”*. The Scottish and UK Government are moving, albeit in different ways, to support higher and more widespread minimum wages. The Living Wage campaign has been actively promoting the benefits of raising wages alongside raising productivity in the workplace; and
- **The changing taxation responsibilities of the Scottish Government, through the new Smith Commission powers.** The further transfer of powers and responsibilities to the Scottish Parliament will mean that the composition of the income tax base will directly affect income tax revenues raised in Scotland. One key focus of the Fiscal Framework negotiations was on the appropriate procedure for calculating the reductions in the block grant to Scotland to offset the increased tax revenues

which will be raised directly in Scotland. The final deal reached between the Scottish and UK Governments means that, at least for the next 6 years, any differential growth in population between Scotland and UK will not affect the deductions made. However, any change in occupational structure and incomes will affect the income tax raised. This introduces, for the first time, a direct link between the income tax base in Scotland and revenue raised.

6. The importance of work based learning

The renewed importance being placed on work based learning illustrates the challenge of inclusive growth. Our economy is suffering for the lack of trained young people and our young people will suffer if they do not gain the right skills. The UK Government's "Productivity Plan" published in July this year said that *"The UK performs poorly on intermediate professional and technical skills, and is forecast to fall to 28th out of 33 OECD countries for intermediate skills by 2020"*. Employers see the benefits, but will need to regain the habit, of training our young people. While, as Sir Ian Wood put it in his ground-breaking report on Developing our Young Workforce, *"Employers have lost the habit of employing young people"*.

A series of articles in the Fraser Economic Commentary have illustrated some of the challenges in labour market planning in Scotland. Gail Rogers and Kenny Richmond summarised the issues around "Job Polarisation", Graham Thom and Susan Mackay outlined the challenges on skills planning, and Robyn Millar, Sir Harry Burns and Alec Morton explained the interaction between demographics, economic activity and health. In this Commentary, Alan Sherry outlines the challenge of widening participation in higher education.

Looking forward, one of the key issues in labour market planning will be whether we have the analysis and policies that can find a route to inclusive growth. Skills Development Scotland are pioneering a renewed focus on work based learning, in the context of the 'Developing our Young Workforce' agenda. The Fair Work Convention is building a strategic approach to workplace innovation. These developments fit well with a strategic perspective on our changing labour market, and we should expect major developments in these areas in the coming period.

7. Conclusions

The challenges facing the Scottish economy are considerable. There are many headwinds – with a prolonged and reduced contribution from oil and gas activity, lower population growth than the UK as a whole and long term and well known structural features on private sector innovation and export performance. Yet, there is considerable scope for governments to pro-actively enable citizens to prosper, to make markets work better for citizens and to steer technological change toward lower inequality. Policy on innovation and growth needs to have an eye to inequalities, and social policy needs to acknowledge and work with the fundamental forces at work in the economy. This new agenda will pose a considerable challenge to the agencies and institutions of government, which generally take a focused view on their narrow statutory responsibilities. In future, a broader perspective is needed to promote prosperity and address inequality in Scotland in an integrated way. The need for new tools of policy and reformed institutions is at the heart of the Scottish Government's Economic Strategy – and success will depend on its effective delivery.

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