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Outlook and appraisal.....3

The Scottish economy

Forecasts of the Scottish economy 20
Review of Scottish Business Surveys 30
Overview of the labour market 35
Public sector employment in Scotland 43

Economic perspectives

Exploring key economic sectors and groups of sectors in Scotland; 1998, 2004, 2007
- Stuart G. McIntyre and J. Kim Swales 49

The Scottish Public Finances 2010-11 - Surplus or Deficit?
- Professor Arthur Midwinter 63

Broadband – Towards a national plan for Scotland
- Ewan Sutherland 67

Reforming the banks in the UK.
An impact assessment of the draft Bill and alternative capital requirements.
- Giuseppe De Feo and
- Henriette Elisabeth Bauge Løland.....83

The Impact of product designations on innovation. The case of breweries in the United Kingdom
- Giuseppe De Feo and
- Keith Wilson 92

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Outlook and Appraisal

Overview

The growth of the Scottish economy continues to be weak, the labour market especially. GDP in constant prices fell by 0.4% in Scotland during the second quarter, the same loss of output as in the UK. Both the Scottish and UK economies have contracted for the three quarters up to the second quarter. But data for the third quarter show the UK economy to have expanded by 1%. We consider this to be an 'Olympics bounce' which is unlikely to affect Scotland to the same extent. Positive Scottish retail sales figures for the third quarter need to be set against the reports of several business surveys which depict growth as largely stagnating with household spending depressed and business confidence weak.

By the end of the second quarter Scottish GVA stood at -4.4% below the pre-recession peak four years ago. In contrast, the figure for UK GVA is -3.8%. This is despite the fact that the depth of the recession was a little greater in the UK, at -6.3%, than in Scotland, -5.8%. The recovery of UK GDP has been somewhat faster than in Scotland, all be it a weak recovery overall.

Manufacturing and electricity & gas supply contracted in the second quarter. The contraction in electricity & gas supply is likely to have been temporary for technical industry reasons. But the recent performance of manufacturing remains a cause for concern, especially in the light of recent weak export performance, with export volumes around 14 per cent below their 2007 peak and close to the 16.5 per cent fall experienced in the 2007-09 recession. The service sector has exhibited a more sustained recovery. But GVA is still nearly 3 per cent below pre-recession peak compared to 0.9 per cent below in the service sector in the UK as a whole. Within services there are some encouraging signs of a recovery developing in business and financial services. A look at the public sector shows government services GVA contributing to recent growth in the UK but not so in Scotland. The UK performance of government services appears anomalous. The construction sector appeared to halt its precipitate decline with growth of 2 per cent in the second quarter. But GVA in the sector still languishes 16 per cent below its pre-recession peak, much the same as UK construction.

The performance of the Scottish labour market and unemployment in particular is giving rise to increasing concern, both in itself and in comparison to the UK. Our analysis suggests that over the longer period of recession and partial

recovery, the main reasons for a rise in unemployment compared to the UK appear to be the somewhat stronger fall in output and the much greater decline in the demand for labour due, it would appear, to an economy-wide improvement - or lesser deterioration - in relative labour productivity. The reasons for this can only be speculated upon. One is the decline in oil and gas production which has high labour productivity and which is fully contained in the UK GDP data but only partially in the Scottish data. Another is the possibility that the internal labour markets of Scottish firms are less flexible on average than in the UK, with firms less willing to offer flexible working conditions and workers less willing to supply labour flexibly. This might also extend to a lesser willingness to seek and accept a reduction in real wages, or the price of labour, than their UK counterpart firms and workers. But we have no hard evidence for this.

The further deterioration of Scottish unemployment relative to the UK in the latest quarter to August seems, in the absence of published GDP data, to be because output growth was probably weaker here; productivity probably rose faster here, or fell by less, and hence jobs growth was disproportionately weaker here. Furthermore, the supply of labour rose disproportionately in Scotland relative to demand so worsening the outcome for unemployment.

Against this background of weakening domestic and foreign demand compared to earlier expectations we have revised down our forecasts. So, we are now forecasting GDP growth of -0.1% in 2012, 1.3% in 2013, and 2.2% in 2014. For employment, net jobs are forecast to contract by -1.1% in 2012, then grow by 0.8% in 2013, and by 1.3% in 2014. The number of employee jobs in Scotland is forecast to decline during 2012 by more than 25,000 jobs. The vast majority of these job losses are projected to be in the service sector (22,750) and construction (2,550). For unemployment, on the ILO measure we are projecting the number to reach 225,134 at the end of 2012. The unemployment position is expected to deteriorate slightly in 2013 compared to 2012 due to weaker output and employment growth. Unemployment is now forecast to be 234,603 by the end of 2013. In 2014, unemployment falls to 228,740 as growth and job creation pick up during the year.

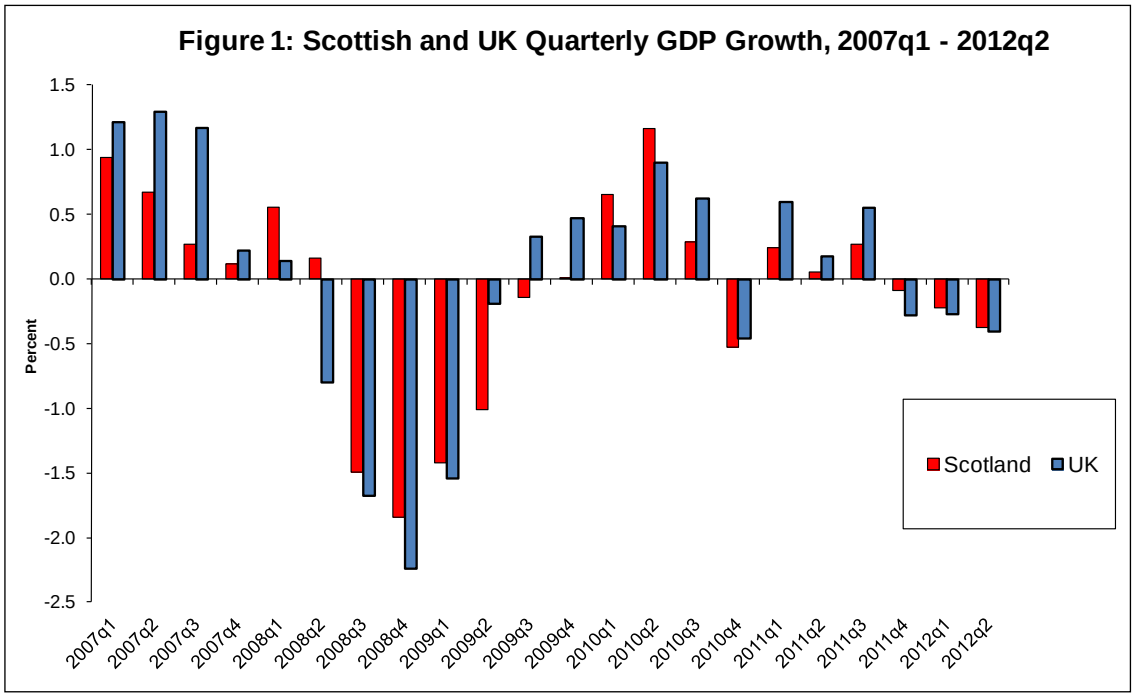
Recent GDP performance

GDP in constant prices fell by 0.4% in Scotland during the second quarter, the same loss of output as in the UK. Both the Scottish and UK economies have contracted for the three quarters up to the second quarter as Figure 1 shows.

This is clear evidence of a recession, although thankfully not as steep as 2008-09. We wouldn't expect it to be as steep of course. Because what we are experiencing is effectively an aftershock of that Great Recession.

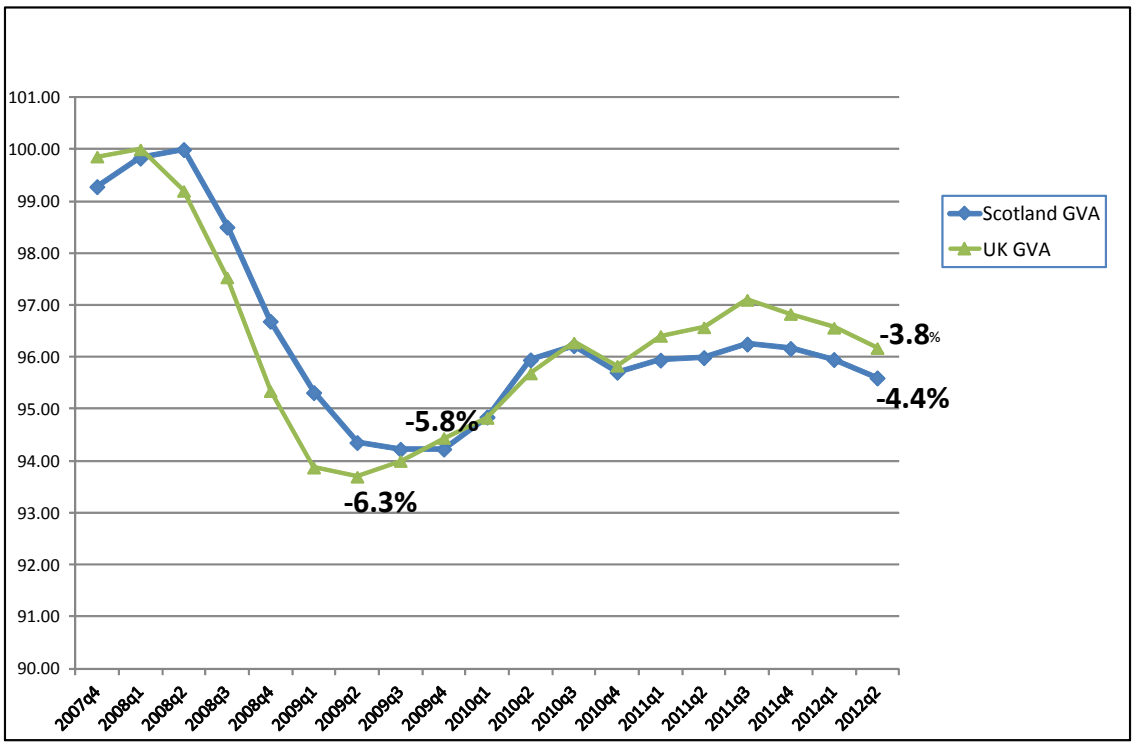
Over the year, the Scottish economy has experienced zero growth compared to slight growth of 0.4 per cent in the UK. It seems unlikely that there will be much improvement in that annual growth by the time we reach the end of the year, unless there is a mini-boom in output in the second half of the year. However, all the indications are, from surveys and casual empiricism, that that will not happen in Scotland. The provisional estimate for UK GDP growth in the third quarter was an encouraging 1%. However, around

0.2% to 0.3% points of this can be ascribed to the contribution to GDP of Olympic ticket sales. In addition, GDP growth was temporarily lower in the second quarter because of the Jubilee holiday. So, while subject to revisions, the data do suggest that the UK economy moved out of recession in the third quarter, it is likely that underlying growth is not strong. There are some straws in the wind but it is difficult to escape from the conclusion that the UK economy is largely stagnating, or bumping along the bottom, despite the evidence of a move out of recession.



Up to the second quarter both the Scottish and UK economies have still a considerable way to go to reach peak output prior to the 2008-2009 recession as Figure 2 shows.

Figure 2: GVA in recession and recovery Scotland and UK to 2012q2 (Relative to pre- recession peak)



By the end of the second quarter Scottish GVA stood at -4.4% below the pre-recession peak four years ago. In contrast, the figure for UK GVA is -3.8%. This is despite the fact that the depth of the recession was a little greater in the UK, at -6.3%, than in Scotland, -5.8%. The recovery of UK GDP has been somewhat faster than in Scotland, all be it a weak recovery overall.

Figure 3: GVA ex oil & gas, recession and recovery to 2012Q2

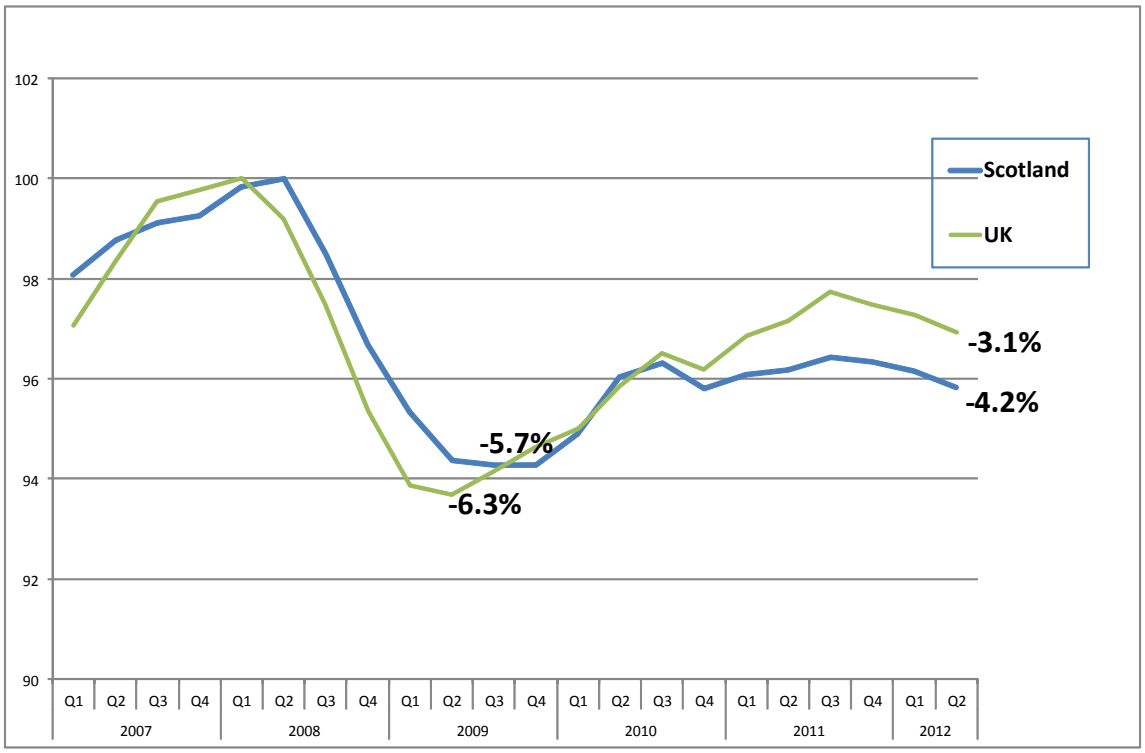
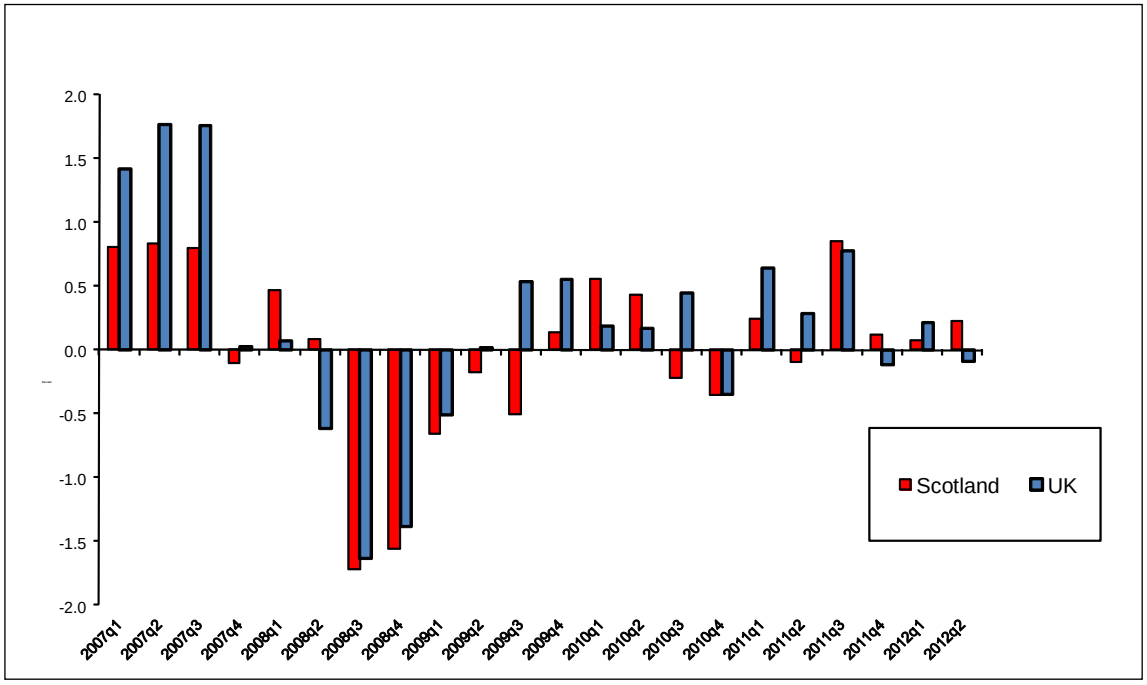


Figure 4: Scottish and UK Services GVA Growth 2007q1 to 2012q2



A final point on the aggregate output figures is that, as we noted in the previous *Commentary*, the Scottish recovery is flattered by the statistical quirk that the UK figures include all of oil production whereas the Scottish data do not. With oil production weak this has affected the Scottish-UK GDP relative as CPPR

previously pointed out. As the data excluding oil and gas production show, presented in Figure 3, the Scottish recovery from the Great Recession has more evidently been weaker than the UK.

Turning now to individual sectors of the economy, we see that the Scottish service sector, which accounts for 73% of GDP, grew by 0.2% in the second quarter, compared to a fall of -0.1% in UK services - see Figure 4. But UK services sector grew by 1.2% over the year while the growth of Scottish services was a little weaker at 1%. This underlying weakness of the recovery in Scottish services is again highlighted in Figure 5.

Figure 5: Services GVA in recession and recovery Scotland and UK to 2012q2

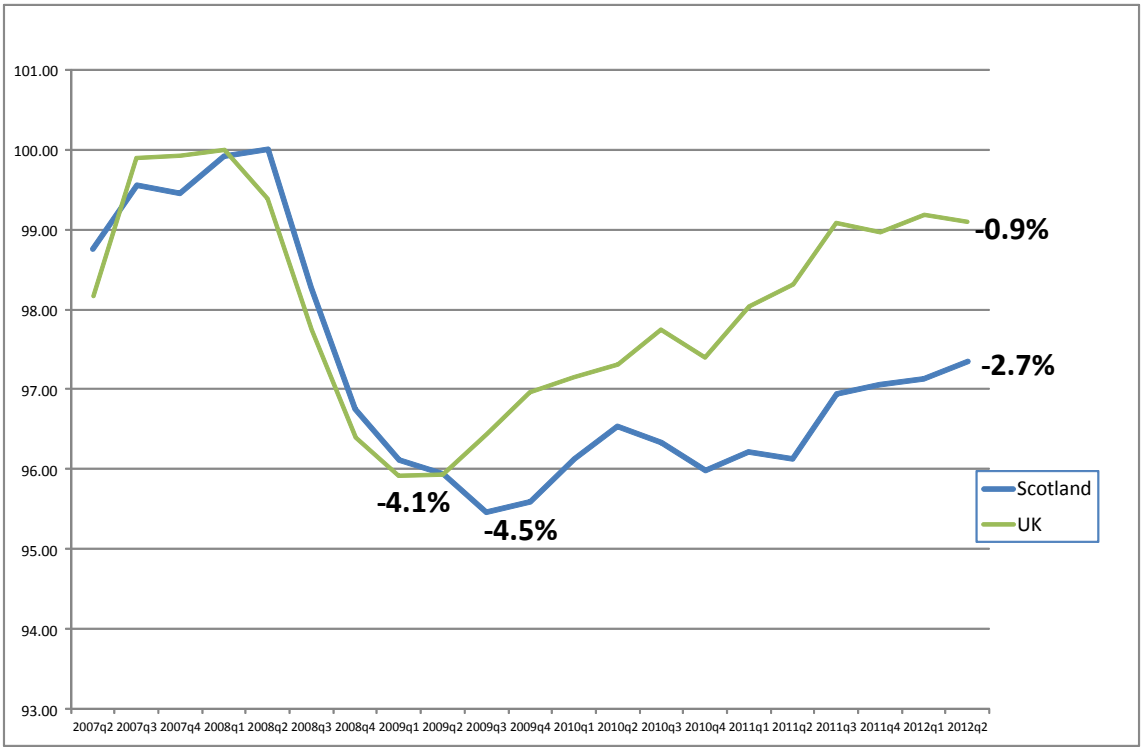
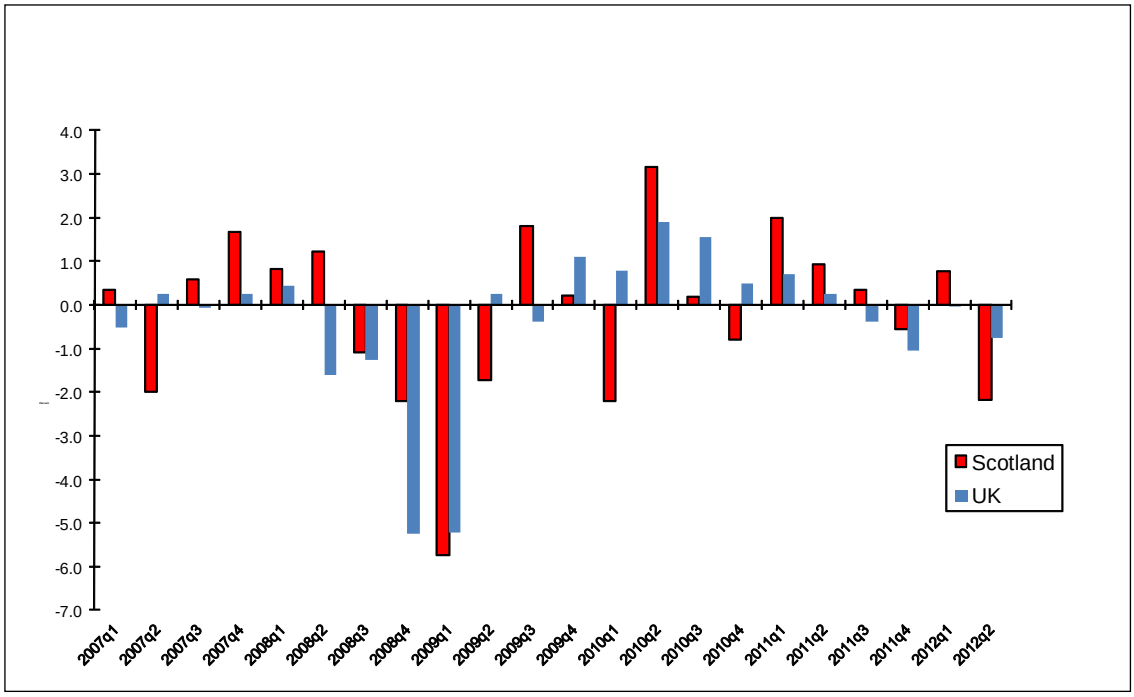


Figure 6: Scottish and UK Manufacturing GVA Growth at constant basic prices 2007q1 to 2012q2

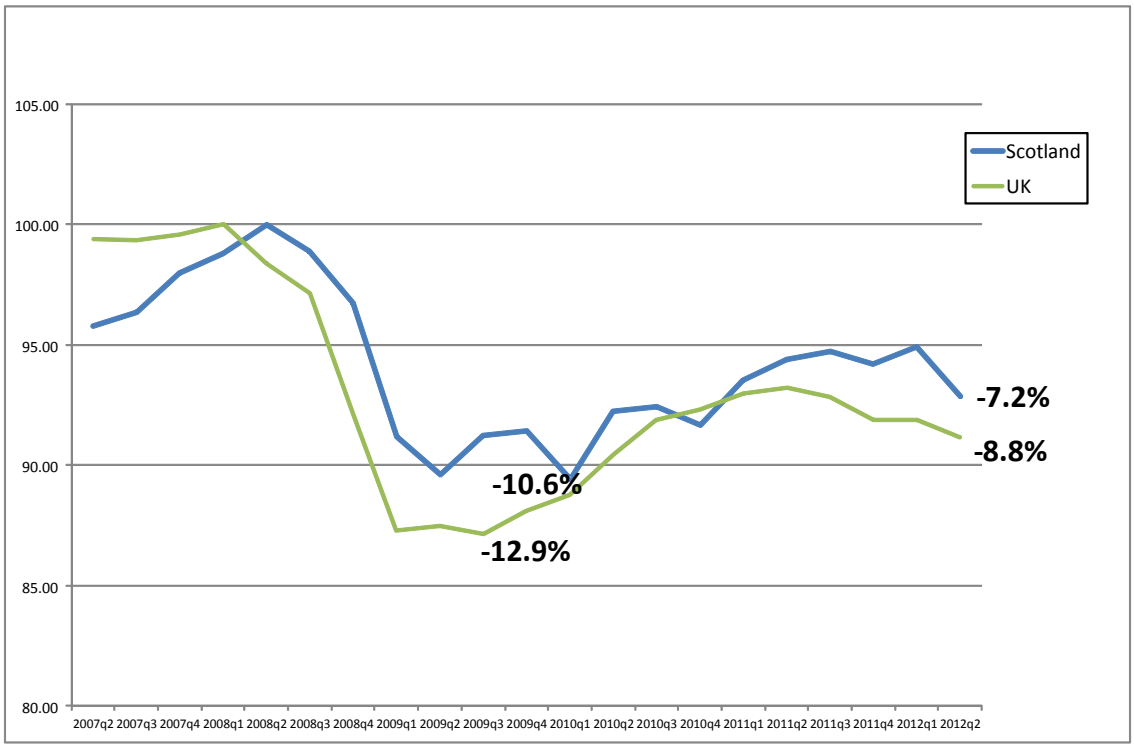


So, by the second quarter of this year, Scottish services GVA was still -2.7% below its pre-recession peak compared to -0.9% in the UK. On revised data the loss of Scottish service sector output in the recession was -4.5% a little more than the -4.1% output loss in services in the UK.

One issue that stands out from the latest Scottish data is the weakness of the production sector here. Output fell by 3.8 per cent compared to a fall of 0.7 per cent in the UK. The key reason for this was that the performance of Scottish manufacturing weakened considerably in the quarter as Figure 6 shows.

Manufacturing GVA fell by 2.2% in Scotland whereas in the UK the fall was 0.8%. In addition, Electricity and Gas Supply, which accounts for around 13% of production output in Scotland, fell by 15.1% in the quarter compared to a *rise* of 5.1% in the UK. This may have been due to the effect of high gas prices making Scottish gas fired power plants more marginal to UK energy supply. As the weather gets colder output should pick up again in this sector as more capacity is brought on stream as demand rises. So, it is the weakness of Scottish manufacturing that is the biggest concern after a stronger performance than UK manufacturing over the previous five quarters. As Figure 7 shows the fruits of that stronger recent recovery have been eroded by the latest setback. Scottish manufacturing GVA now stands at -7.2% below the 2009-09 pre-recession peak, while the figure for UK manufacturing is -8.8%.

Figure 7: Manufacturing GVA in recession and recovery Scotland and UK to 2012q2



The recent second quarter weakness in Scottish manufacturing appears to have been mainly due to a fall in production in the engineering sector, specifically Electronics (-5.5%), Textiles, Leather & Clothing (-3.8%), Other Manufacturing Industries including Repair (-3.1%), and Refined Petroleum, Chemical & Pharmaceutical Products (-2.4%). Within manufacturing, only mechanical engineering, transport equipment and food production showed positive growth in the second quarter in Scotland.

We noted in the previous *Commentary* that the construction sector was going through a very difficult time in both Scotland and the UK. Figure 8 charts the recent growth performance.

The good news is that after six quarters of negative growth Scottish construction bounced back in the second quarter with growth of 2% compared to a *fall* of 3% in the UK. But over the year, Scottish construction output fell by 10% compared to a fall of 3.2% in the UK. Figure 9 shows the performance of GVA in construction in Scotland and UK during the recession and recovery.

On revised data, the 2008-09 recession in construction was larger in Scotland than the UK with GVA falling 18.6% here and by 17.9% in the UK. Scottish construction did bounce back more strongly than its UK counterpart, until 2010 quarter 3 and then contracted for 6 successive quarters. If the stronger Scottish bounce back was the consequence of the Scottish government bring capital spending forward then it clearly didn't last. The subsequent fall in Scotland may well be related to fiscal consolidation where, so far,

the bulk of the cuts have fallen on capital expenditure and buildings especially. In the UK where there have been similar cutbacks in government capital expenditure, the impact on overall construction output might have been somewhat muted by the expenditure on construction projects associated with the Olympics. But even here the decline in construction output after the second quarter last year has led to both UK and Scottish construction output being not much higher than it was at the trough of the recession.

Figure 8: Scottish and UK Construction GVA Volume Growth 2007q1 2012q2

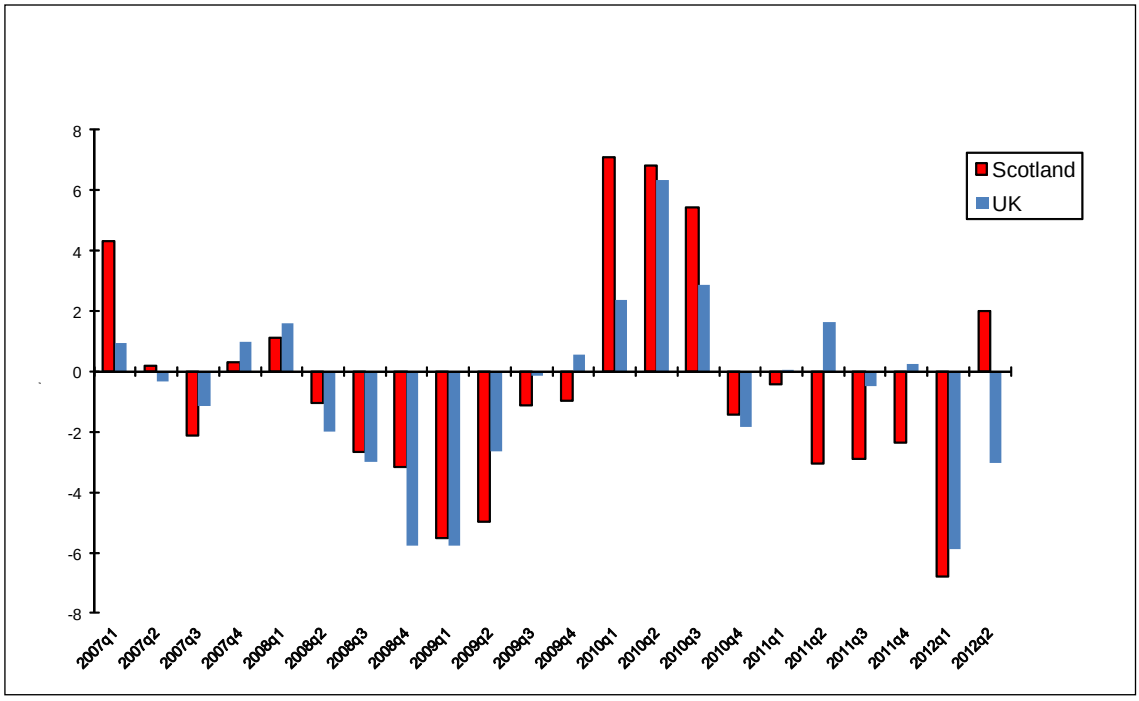
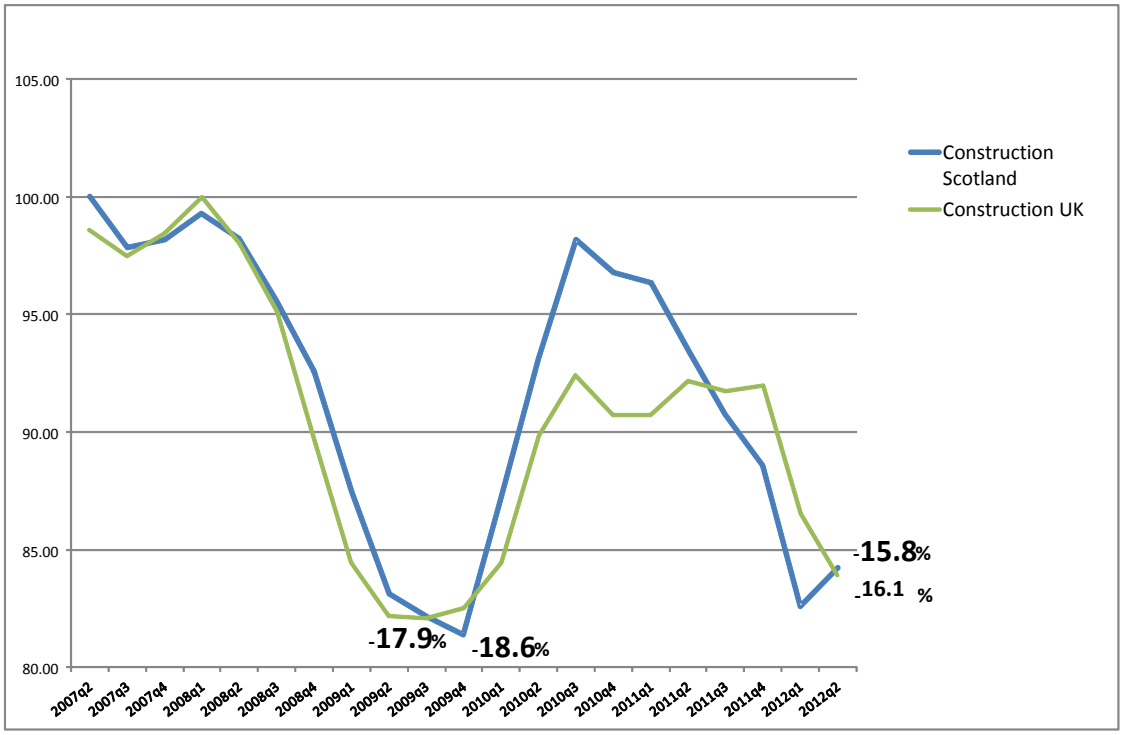


Figure 9: Construction, Recession and Recovery to 2012q2



Within services, the most important sector by contribution to GDP, business and financial services - 26% of overall GDP and 36% of service sector GVA - grew by 1.9% in Scotland while remaining flat in the UK during the second quarter. Over the year, the sector grew by only 2.6% in Scotland compared to slightly

weaker growth of 1.8% in the UK. Figure 10 shows the path of GVA in the sector during the recession and recovery relative to its pre-recession peak.

Figure 10: Business & Financial Services: Recession and Recovery to 2012q2

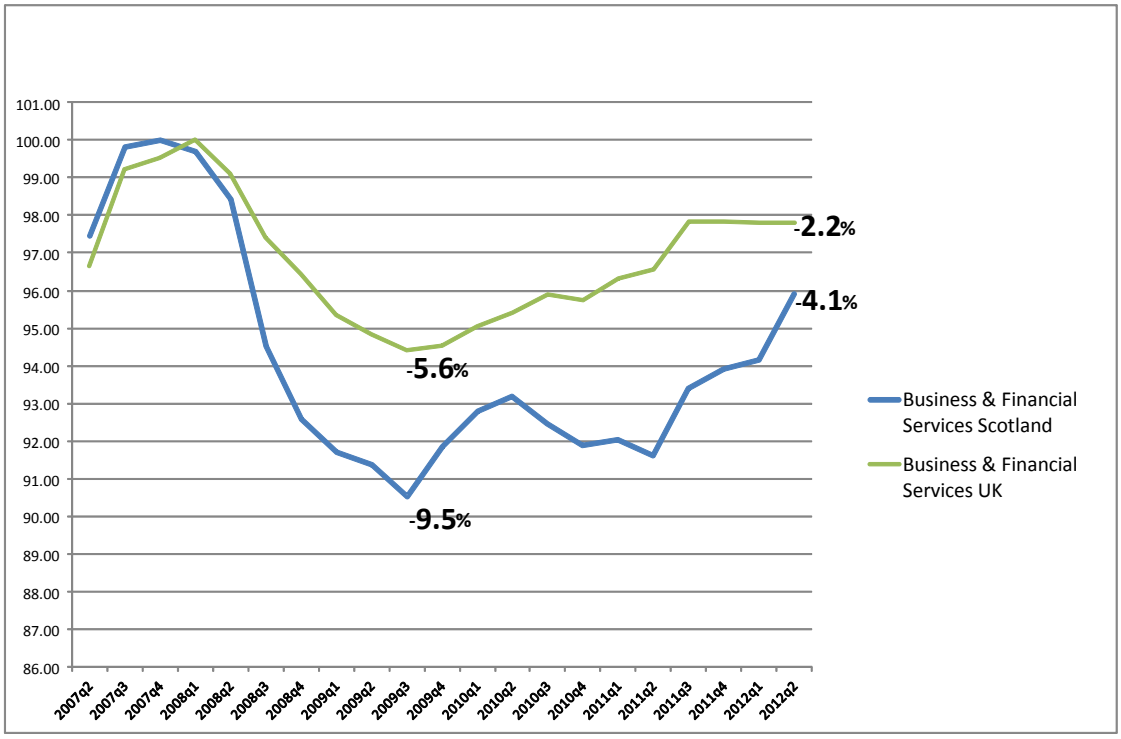
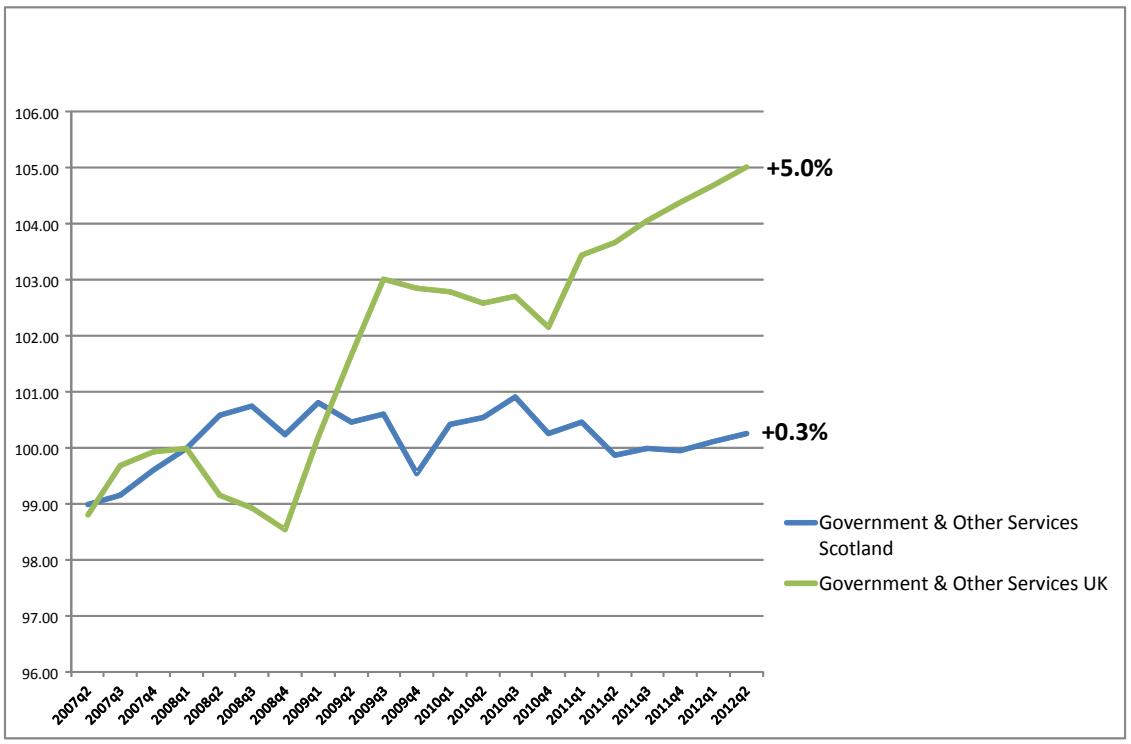


Figure 11: Government and Other Services: Recession and Recovery to 2012q2



As noted in the previous *Commentary* it is clear from the chart that this important sector experienced both a stronger recession in Scotland and a weaker recovery. On revised data, GVA fell by -5.6% in UK business and financial services during the recession whereas in Scotland the contraction was -9.5%. But since the end of last year, and since we last reported, it does appear that the sector in Scotland has

started to recover more strongly, which is encouraging. By the latest quarter the sector in the UK was -2.2% below its pre-recession peak but its Scottish counterpart was -4.1% below.

Elsewhere in services Distribution, Hotels and Catering was weaker in Scotland in the second, contracting by 1.5% compared to unchanged output in the UK. However, over the year the Scottish sector grew faster, by 1.9%, compared to 0.2% in the UK. Transport, Storage, Information & Communication contracted similarly in Scotland and the UK in the second quarter, with GVA falling by 1.5% in the former and 1.3% in the latter. But over the year output fell by 1.1% in the sector in Scotland while rising by 0.6% in the sector in the UK.

Government & Other Services GVA grew slightly by 0.1% in Scotland compared to growth of 0.3% in the UK. But over the year measured value added in the sector fell by 0.3% in Scotland compared to a *rise* of 1.5% in the UK. A closer look at the data for this sector reveals the UK position to be somewhat anomalous.

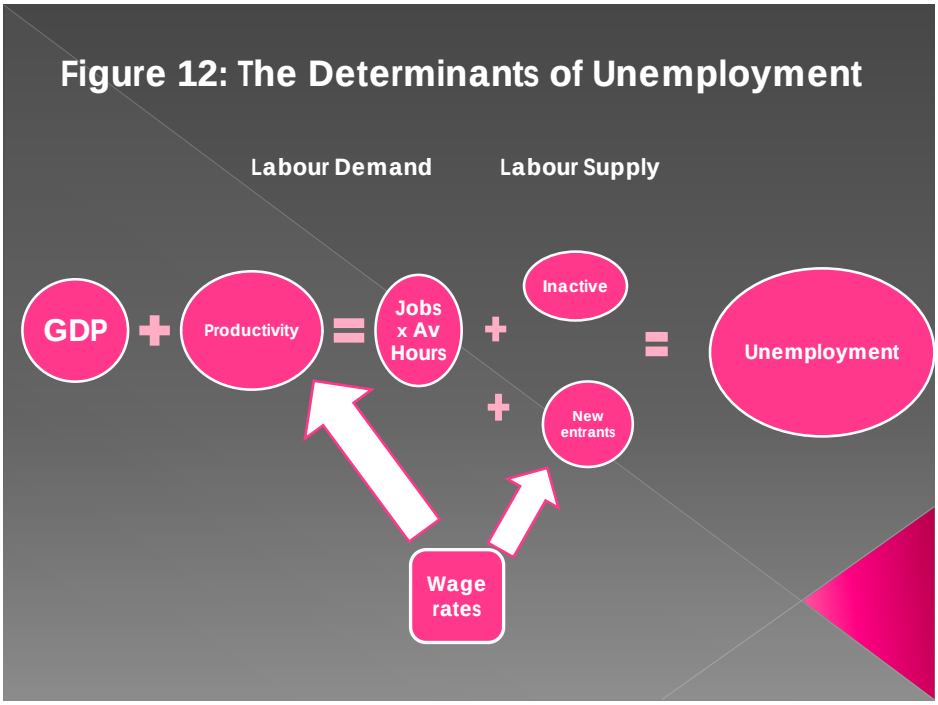
Since the first quarter 2008 output in the sector has grown by 5% in real or volume terms whereas in Scotland output is about the same at 0.3% higher. Now, in view of the fact that Government accounts for about 88% of the output in the sector, we need to ask how has such an increase come about at a time of fiscal consolidation? Is it a genuine increase in the real value of UK government output over the period? Is it due to measurement differences between the UK and Scottish government production? Or, is it due to measurement error? Either way it is important to resolve this issue because the comparative size of the government sector means that the difference in performance is a not insignificant factor in the aggregate GVA differential between Scotland and the UK.

The Labour Market

The latest labour market data (see *Overview of the labour market* below) show jobs in Scotland falling by 1,000, and unemployment rising by 7,000 in the latest quarter to August. Over the year, jobs were up by 16,000 but unemployment was higher by 10,000. In the UK employment rose, resulting in the 16-64 employment rate rising over the year to 71.3 per cent, above Scotland's 71.2 per cent which remained unchanged over the year. The contrast in the unemployment performance between Scotland and the UK in the most recent quarter is even more marked. Unemployment in Scotland *rose* by just over 3 per cent. In the UK, in contrast, unemployment *fell* by 50,000, a fall of just under 2 per cent.

What accounts for the difference in the labour market performance between Scotland and the UK both during recession and recovery, and in the most recent quarter?

We start to answer these questions by considering a framework within which to place the factors that generally determine changes in the labour market in general and unemployment in particular. This in turn helps us to draw some, we hope, interesting conclusions.



What Figure 12 suggests is that changes in unemployment reflect movements in both labour demand and labour supply. Taking demand first, we can see that when GDP changes - let's say falls - then jobs will fall proportionately if productivity remains unchanged. And productivity can change due to new technology but also if the price of labour - wage rates - changes relative to the price of other factors used in the production process. The fall in jobs, with average hours worked unchanged, will then translate into an equal rise in unemployment providing there are no changes on the supply side: the numbers active/inactive and new entrants, including individuals deciding to take on more than one job, both influenced in part by any changes in the return from work i.e. wage rates.

Therefore, holding productivity and supply factors constant, a comparable fall in GDP in Scotland and the UK should result in a comparable fall in jobs and a comparable rise in unemployment. There may be lags as employment adjusts to output change and unemployment to job change but for simplicity we abstract from those.

So, in principle, a rise in Scottish unemployment relative to the UK should be explained by differential movements between Scotland and the UK in one or more of the following:

- GDP,
- productivity (with differential movements in jobs and/or hours), and
- labour supply (influenced by wage payments, job opportunities.)

Specifically, weaker GDP growth, faster productivity growth, and a faster growth in the supply of labour should, severally, or collectively, account for the relative rise in Scottish unemployment.

We consider labour market performance in Scotland and the UK during the Great Recession and recovery and begin by looking at labour demand.

Figure 13: GDP and Employment, Scotland and UK, Recession and Recovery

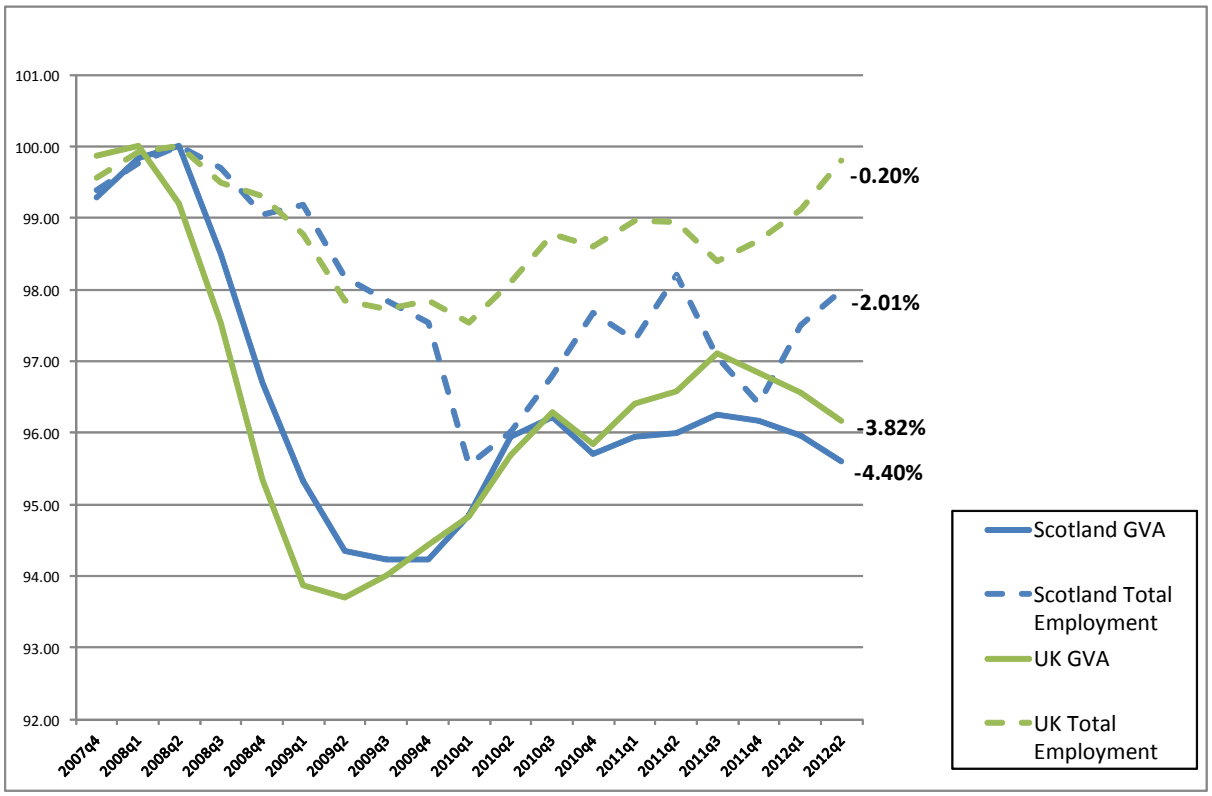


Figure 13 charts the performance of GDP and employment in Scotland and UK from the pre-recession peak to the latest data point in the second quarter of this year. We see the weaker recovery of Scottish GDP compared to UK GDP as shown in Figure 2. By the latest quarter Scottish GDP was more than 4 per cent below its pre-recession peak, a somewhat bigger shortfall than the UK where GDP is less than 4 per cent below the previous peak. But not that much differences between the two. The same, however, cannot be said when it comes to the labour market, except that the jobs position is stronger in both the UK and Scotland than output.

Scottish employment stands at around 2 per cent below its pre-recession peak. In the UK, in contrast, employment is almost back to the previous peak and is currently only 0.2 per cent below.

On the face of it, these figures suggest that productivity per worker has fallen by much more in the UK than in Scotland: that is, a larger amount of jobs are required to produce a given output in the UK than in Scotland compared to the pre-recession position.

But as Figure 12 shows, jobs are not the only dimension of labour demand. Average hours worked is also critical. Jobs may rise and fall but if average hours fall and rise proportionately the demand for labour will be unchanged. So can we reconcile the apparent UK-Scotland difference in labour demand from the jobs position alone by looking at total hours worked? One ingredient here could be the evident switch from full-time to part-time and self-employment as noted in the *Overview of the labour market* below. A greater switch away from full-time employment in the UK could bring the demand for labour in terms of total hours worked more into line with the change in output and between Scotland and the UK. But Figure 14 shows this not to be the case.

Figure 14: Total Hours Worked, Scotland and UK compared to Pre-Recession peak - Oct 2007- Sep 2008 = 100

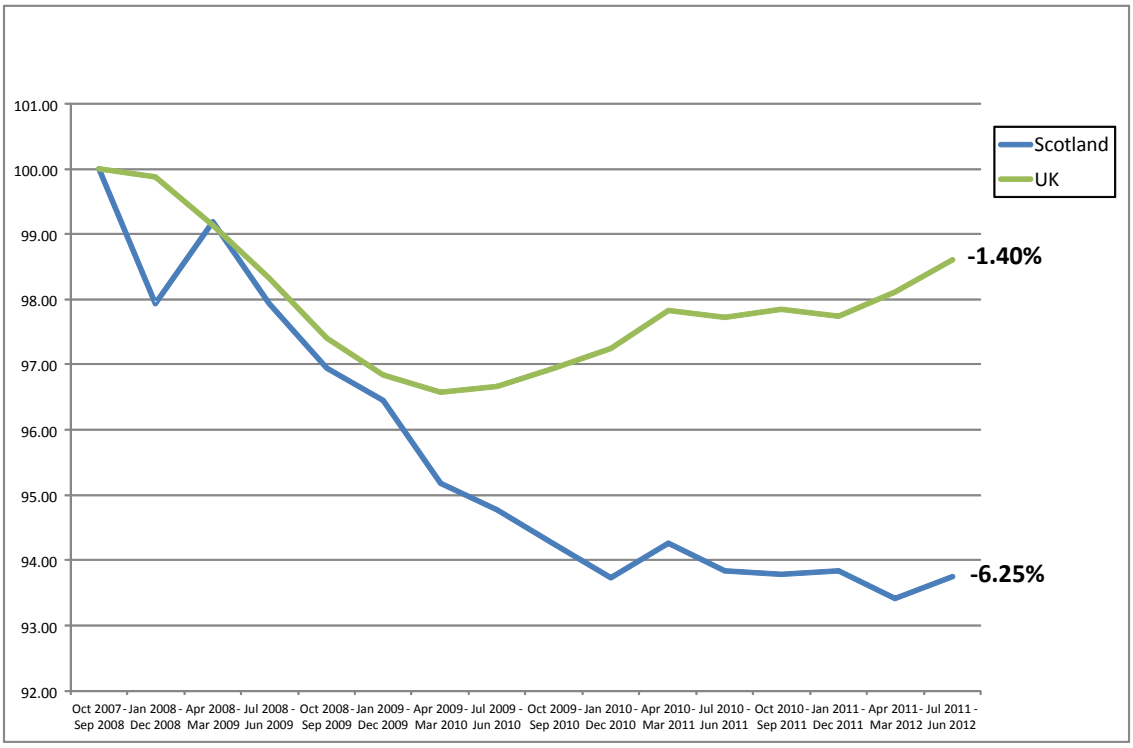
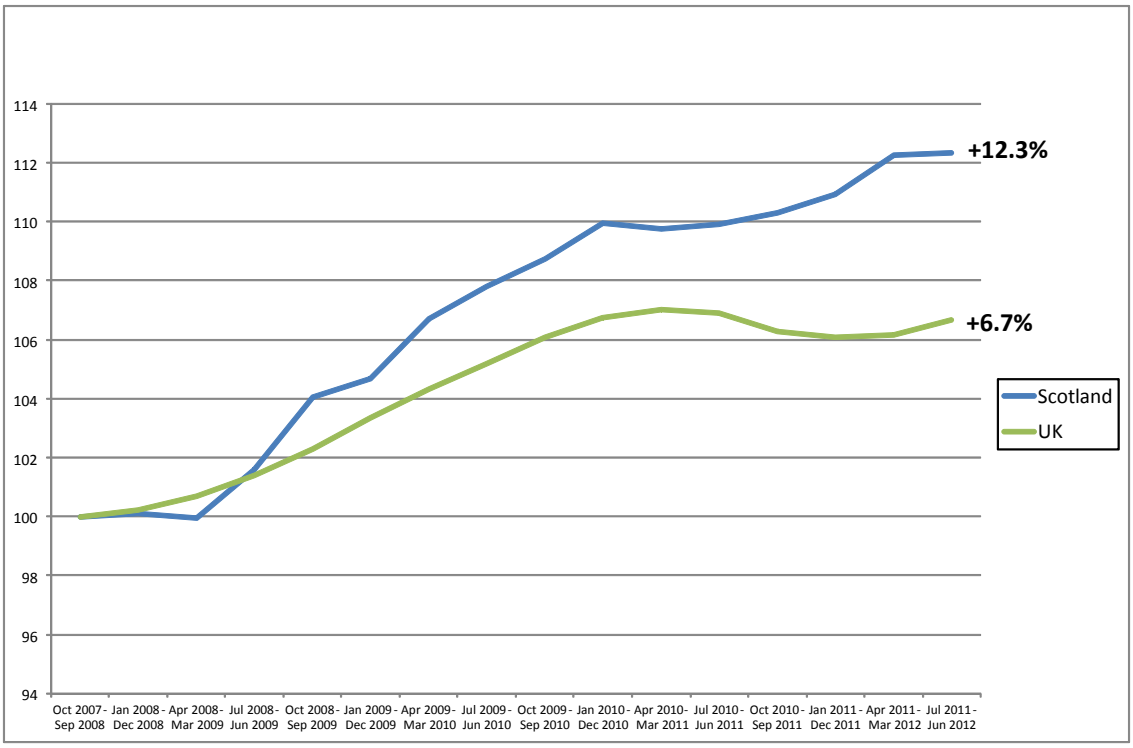


Figure 14 reveals that total hours worked in the UK dropped by 1.4 per cent compared with the previous peak, which is clearly greater than the 0.2 per cent fall in jobs suggesting a fall in average hours and therefore likely switch away from full-time employment. But with GDP 4 per cent below its peak this is certainly evidence of a fall in labour productivity per hour worked as well as productivity per worker. Moreover, the drop in total hours worked in Scotland is significantly greater at 6.25 per cent.

This suggests firstly, that the fall in the demand for labour in Scotland since the pre-recession peak is much larger than in the UK. Second, the drop in the demand for labour in Scotland is greater than the drop in GDP, suggesting that productivity per hour has risen even when productivity per worker has fallen. Third, compared to the UK, Scotland's productivity per worker has fallen by less. Fourth, compared to the UK, Scotland's productivity per hour worked appears to have risen while it has fallen in the UK. Fifth, for whatever reason, there is no evidence of a sustained recovery in the demand for labour in Scotland, which contrasts markedly with the UK. Sixth, the stronger Scottish productivity position compared to the UK cannot be explained by a greater move to part-time working in the UK. This is because it appears from our preliminary analysis of the data that the growth in part-time workers (employees working part-time and self-employed working part-time) has been greater in Scotland not the UK. Figure 15 illustrates.

Figure 15: Share of part time workers in total, Scotland and UK compared to pre-recession peak period



Seventh, a fall in labour productivity may be due falling real wages leading to labour being substituted for capital and other factors of production. It is possible that there has been a greater relative fall in real wages in UK than in Scotland. This is a subject for further work. But we doubt that this 'pricing into' work effect is sufficient to explain the fall in labour productivity in the UK because of the technical difficulties of substituting labour for capital in production processes that often require a fairly rigid balance of labour to capital. However, even given that there could be substitution at the aggregate level in favour of more labour intensive activities. So, it is a possibility, but unlikely to be of sufficient scale to produce the changes in relative labour demand and productivity identified. Nor does it seem a likely candidate to explain the differences between Scotland and the UK.

We are therefore left with the tentative conclusion that a relative rise in labour productivity for structural reasons over the period of recession and limited recovery is the main explanation for the difference in the pattern of labour demand between Scotland and the UK given the relative similarity of the path of output in the two jurisdictions.

But we still have to get from labour demand to unemployment. And for that we need to allow for changes in labour supply as well as labour demand.

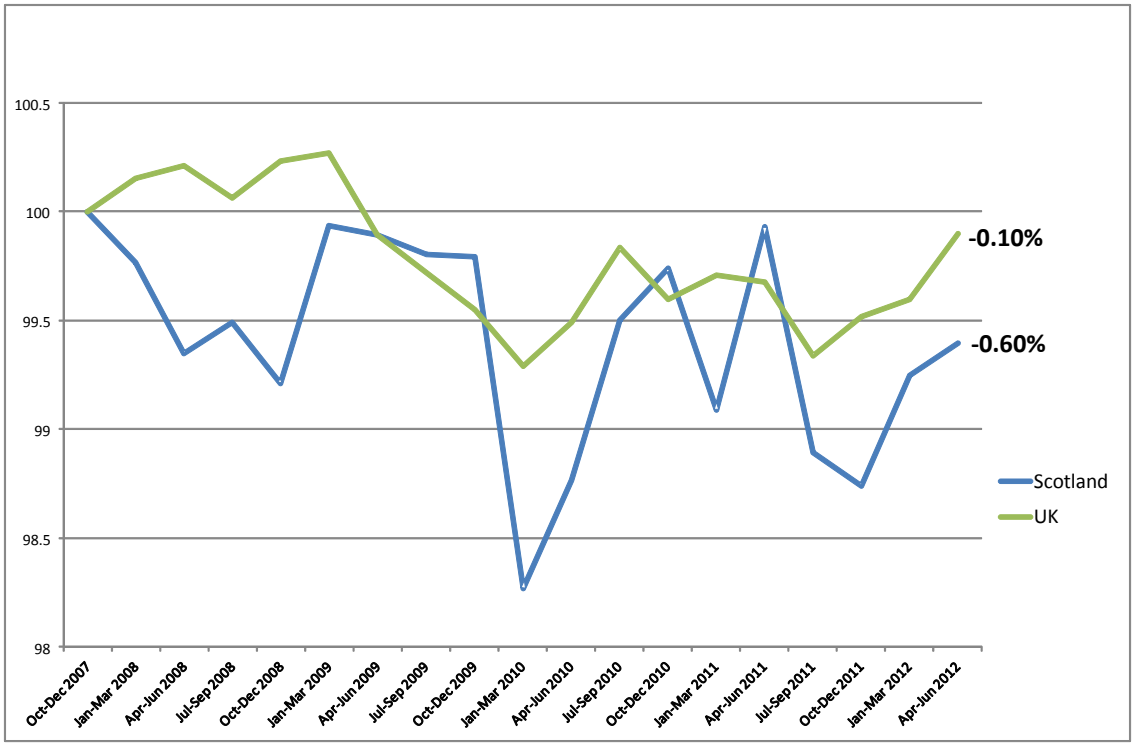
Figure 16 charts the activity rate of 16 plus individuals in Scotland and the UK compared to the pre-recession peak.

What Figure 16 shows is that labour supply, as measured by the activity rate, fell slightly in both UK and Scotland since the start of the recession. The Scottish rate has been more volatile but appears to have fallen a little more than in the UK. So, to the extent that unemployment has progressively moved higher than in the UK it does not appear to be because of supply side reasons. (It is worth noting that we have no accurate and up-to-date measure of working population to gauge the relative scale of new entrants to the labour market.)

Over this longer period, the main reasons for a rise in unemployment relative to the UK appear to be the somewhat stronger fall in output and the much greater decline in the demand for labour due, it would appear, to an economy-wide improvement - or lesser deterioration - in relative labour productivity. The reasons for this can only be speculated upon. One is the decline in oil and gas production which has high labour productivity and which is fully contained in the UK GDP data but only partially in the Scottish data - see above. Another is the possibility that the internal labour markets of Scottish firms are less flexible on average than in the UK, with firms less willing to offer flexible working conditions and workers less willing to supply labour flexibly. This might also extend to a lesser willingness to seek and accept a reduction in real

wages, or the price of labour, than their UK counterpart firms and workers. But we have no hard evidence for this. (For a similar argument and more for the UK as a whole see Chris Dillow's recent article in the Investors' Chronicle here.) Clearly, we require more evidence and thinking before we can fully understand this issue.

Figure 16: Activity Rate of 16 plus, Scotland and UK Pre-recession peak to Apr- Jun 2012



A final comment on the unemployment figures in the latest quarter which to recapitulate show unemployment rising by 7,000 in the latest quarter to August, an *increase of* just over 3 per cent. In the UK, in contrast, unemployment *fell* by 50,000, a fall of just under 2 per cent.

There has been speculation in the media that this is due to an 'Olympic bounce' favouring London and the South East but not Scotland. Others cite the different movements in part-time and full-time employment between Scotland and the UK. Some mentioned weaker Scottish growth, measurement error and the effect of lags.

All of these explanations may hold some truth. And, we certainly can't give a definitive explanation either. In the latest quarter, on the demand side the employment rate fell in Scotland by 0.1 per cent while rising by 0.5 per cent in the UK. On the supply side, the activity rate in the UK rose by 0.3 per cent as more people offered themselves for work in the UK but it also rose very slightly in Scotland. In the UK, the rise in the activity rate was less than the rise in employment, so unemployment fell. But in Scotland the rising activity rate meant that a weak fall in employment translated into a bigger rise in unemployment.

Finally, we can't be definitive about the recent changes. The latest jobs and unemployment data published refer to the period June - August. Unfortunately, we don't have GDP data for this period. The latest Scottish GDP data cover the second quarter, that is April - June. There is only an overlap of 1 month. So, we must await the third quarter data to see if there is evidence of an 'Olympic bounce' because, if it exists, it will be picked up in the GDP figures. So, the strong jobs growth of 0.72 per cent in UK employment in the quarter, compared to a fall of 0.06 per cent in Scottish jobs, might be largely the result of a strong output differential due to the Olympics.

We can conclude, tentatively, that the explanation of the large rise in unemployment in the most recent quarter in Scotland compared to the UK is as follows: output growth was probably weaker here; productivity probably rose faster, or fell by less, here, hence jobs growth was disproportionately weaker here. Moreover, the supply of labour rose disproportionately in Scotland relative to demand so worsening the outcome for unemployment.

The third quarter GDP data release, when it arrives, should throw more light on this important issue.

Forecasts

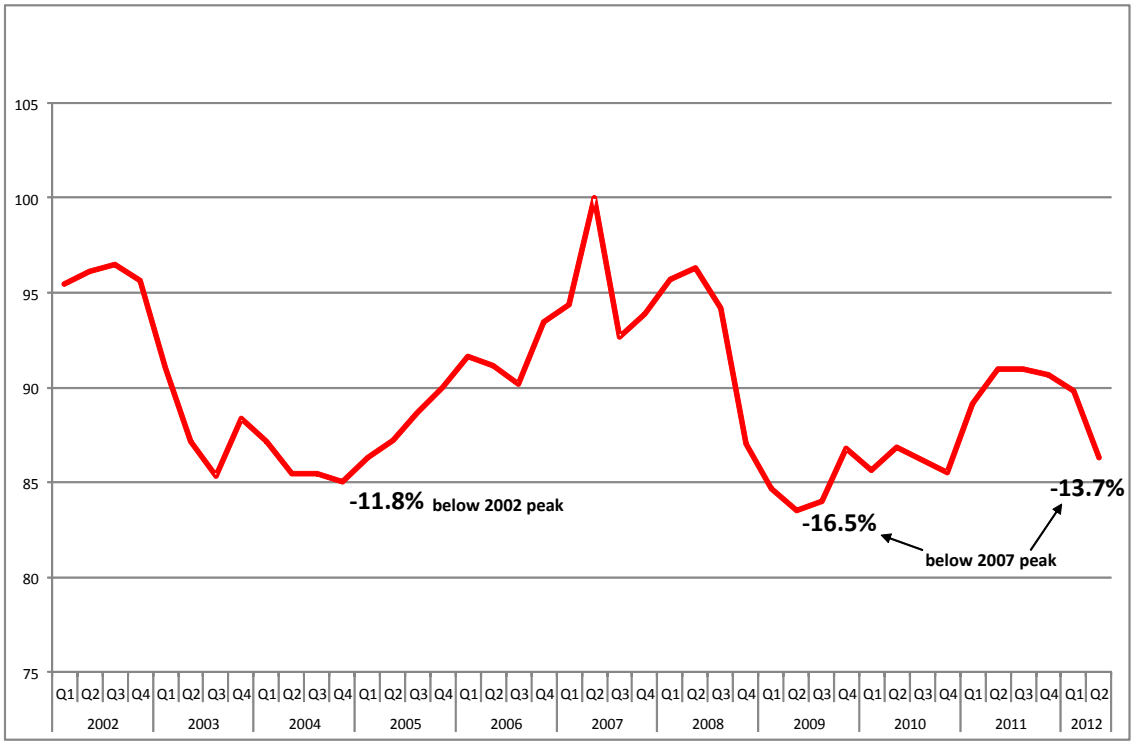
Background

The provisional estimate for UK GDP growth in the third quarter was an encouraging 1%. However, underlying growth is likely to have been appreciably weaker. Around 0.2% to 0.3% points of this can be ascribed to the contribution to GDP of Olympic ticket sales. In addition, GDP growth was temporarily lower in the second quarter because of the Jubilee holiday. So, while subject to revisions, the data do suggest that the UK economy moved out of recession in the third quarter, it is likely that underlying growth is not strong.

The pressure is on the UK government to alter its fiscal stance after the IMF Outlook report in early October suggested that the fiscal multipliers used behind projections in the advanced countries were too low in the present conjuncture. A fiscal multiplier of 0.5 tended to be the norm in such projections. This implies approximately that a fiscal consolidation amounting to a 1% cut in GDP should lower GDP by 0.5%, which in turn under conventional assumptions should *raise* the fiscal deficit by 0.2%, resulting in a *net fall* in the fiscal deficit of 0.8% of GDP. However, if as the IMF suggests the fiscal multiplier lies in the range 0.9 to 1.7 then fiscal consolidation is more likely to promote low growth and possible recession with only limited improvement in the fiscal balance. For example, a multiplier of 1.7 would lead to a drop in GDP of 1.7% given a 1% GDP cut in fiscal outlays. This in turn should *raise* the fiscal deficit by 0.68% thus producing only a small net fall in the fiscal deficit of 0.32%. The result is low growth, a probable recession and little improvement in the deficit. On these figures the approximate 6% fiscal consolidation being applied by the UK government would lower GDP by more than 10% and only improve the deficit by under 2% of GDP.

The econometrics underpinning the IMF work have been challenged but the conclusion vindicates those who subscribe to the Keynesian view that in the aftermath of a severe financially based recession, with interest rates at the zero bound, fiscal policy will have high leverage on GDP. This is because there will be no offsetting change in interest rates as the monetary authority seeks to attain its monetary target. Put bluntly, in these circumstances there is a big GDP bang for the fiscal buck and only limited GDP benefits from monetary policy. This would appear to precisely describe the situation we are presently in. But UK government macroeconomic policy seems reluctant to acknowledge this to say the least.

Figure 17: Scottish Manufacturing Export Volumes since 2002 - Seasonally Adjusted - 2007q2 =100



In Scotland, GDP has been broadly tracking the UK if a little weaker, but as we discussed above the same cannot be said for labour demand. GDP fell by 0.4% in the second quarter. Domestic demand was clearly weak if retail sales is a proxy, while fell in volume terms by -0.2%. So too was foreign demand, with manufacturing exports falling by a huge 4% after rising by 1.7% over the year. The situation in manufacturing exports does raise concerns as Figure 17 shows, especially given the likely continuing distress in the Eurozone economies and general weakness in international markets.

Manufacturing export volumes now stand at just under 14% below the 2007 peak, close to the 16.5% drop experienced in the 2007-09 recession. Moreover, it can be seen that the present situation is worse than the position in the early 2000s after the shock to Scotland's manufacturing exports of the collapse of the electronics industry. Although, in mitigation the downturn then was structural affecting mainly one sector, whereas today the malaise is more general.

We do not have GDP data for the third quarter until January next year. What we do have are the recently published data on retail sales, business survey evidence and anecdote. Retail sales bounced back in the third quarter rising by 0.9%. This is close to the 1% growth in GDP experienced in the UK. But it seems unlikely, though, that GDP will grow by as much as 1% in Scotland in the third quarter as it did in the UK. The 'Olympic bounce' seems likely to be less strong in Scotland, for fairly obvious reasons, principally because the vast bulk of the events were located in London and the south east and so presumably were the visitors.

Business surveys support the view of weak growth in the Scottish economy in the third quarter (see *Review of Scottish Business Surveys* below) with depressed household spending and business confidence weak. The oil and gas sector appears to be an exception but this is after a period of significantly declining output. From the PMI surveys Scottish performance appears weak compared to the UK, Wales and most English regions. The latest Lloyds TSM PMI suggests that Scottish economic activity is at a 21 month low compared to a 2 month low in the UK. The short-term prospects do not seem good either with further weak growth expected in a stagnating economy. It is against this background that we have prepared our latest forecasts.

GVA Forecasts

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

Table 1 presents our forecasts for Scottish GVA - GDP at basic prices - for 2012 to 2014. The forecasts are presented in more detail in the *Forecasts of the Scottish Economy* section of this Commentary below.

Table 1: Forecast Scottish GVA Growth, 2012-2014

GVA Growth (% per annum)	2012	2013	2014
Central forecast	**-0.1**	**1.3**	**2.2**
June forecast	*0.4*	*1.6*	*2.5*
UK median independent new (October)	-0.3	1.1	1.9
Mean Absolute Error % points	+/- 0.296	+/- 0.492	+/- 1.216

Table 1 shows that we have revised down our GDP forecast for the three years 2012, 2013, and 2014. For 2012, we have revised down our forecasts for to -0.1% (from 0.4%). We noted in the previous *Commentary* that survey evidence suggested the possibility of a quarter of negative growth in the first half of 2012. In the event the GVA data revealed that in both Q1 and Q2 the output of the Scottish economy contracted. The scale of the contraction in activity through the first half of 2012, combined with weaker survey evidence for business intentions through to the end of 2012 and into 2013 means that – on the balance of probabilities – we think it is now likely that output will contract over 2012 on an annual basis.

Table 1 also compares our GVA forecasts with the median of latest independent forecasts for the UK in 2012 and 2013 and the average of the new independent medium-term forecasts for 2014 that are published by the UK Treasury. These show that we expect Scottish growth to continue to be a little stronger than UK growth. So, we are now forecasting growth of -0.1% in 2012, 1.3% in 2013, and 2.2% in 2014. Given our previous forecast errors the lower and upper bounds for growth in 2012 are expected to be -0.4% and 0.2%, for 2013, 0.8% and 1.8%, and for 2014, 1.0% to 3.4%.

After the predicted fall in output this year in all major sectors, production and manufacturing continue to be the main sectoral drivers of growth in 2013 and 2014. Production is forecast to contract by 0.2% this year compared to a fall of -0.1% in both services and construction. In 2013, production is projected to grow at 3.3% but this is a reduced forecast from the 3.6% projected in June. Stronger growth is projected for services and construction of 0.9% apiece but the two sectors still continue to recover slowly and the forecast is reduced from 1% in June. Again, it is not until 2014 that we see much pick-up in growth. GDP is forecast to rise by 2.2%, while production growth rises appreciably to 5.71%. But the growth of the service and construction sectors, while increasing to 1.5% and 1.4% respectively, still remains moderate in 2014.

Employment Forecasts

Table 2 presents our forecasts for net employee jobs for the 3 years 2012 to 2014 in terms of a central and upper and lower forecasts.

Table 2: Forecast Scottish Net Jobs Growth in Three Scenarios, 2012-2014

	2012	2013	2014
Upper	-19,350	27,100	53,350
June forecast	*-5,200*	*41,000*	*61,750*
Central	**-25,750**	**16,950**	**29,450**
June *forecast*	*-14,950*	*19,950*	*36,050*
Lower	-32,050	5,500	5,850
June forecast	*-25,350*	*-1,700*	*10,450*

Table 2 indicates that our year-end employee jobs forecast are much reduced compared to the June Commentary. This reflects the lower GDP forecast and the clear weakening of the Scottish labour market that is evident in the recent data. On the central forecast, net jobs contract by -1.1% in 2012, then grow by 0.8% in 2013, and by 1.3% in 2014. The number of employee jobs in Scotland is forecast to decline during 2012 by more than 25,000 jobs. The vast majority of these job losses are projected to be in the service sector (22,750) and construction (2,550). The production sector loses 400 jobs, while agriculture sheds 100 jobs. Through 2013 and 2014 we continue to forecast (lower) increases in employee jobs in our central forecast, with annual increases of around 17 thousand and just under 30 thousand respectively. In 2013 there are job increases across all the main sectors, with a majority (10,200) being created in the production sector, compared to 3,800 in services. Service sector jobs growth strengthens in 2014 with more than 10,000 forecast while production jobs grow by 14,000. Construction employment is forecast to rise in 2013 and 2014 by 2,300 and 3,300, respectively, as spending on (private) investment projects begins to return as confidence builds in the recovery.

Unemployment Forecasts

The key unemployment forecasts are summarised in Table 3 below.

Table 3: ILO unemployment rate and claimant count rate measures of unemployment under each of the three forecast scenarios 2012-2014

	2012	2013	2014
ILO unemployment			
Rate (ILO un/TEA 16+)	**8.5%**	**8.8%**	**8.7%**
Numbers	**225,354**	**234,603**	**228,740**
Claimant count			
Rate (CC/CC+total job)	5.1%	5.3%	5.3%
Numbers	139,720	147,800	148,681

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. We have again revised down our forecasts for unemployment at the end of 2012, despite the deteriorating labour market conditions. As the analysis above in the section on the Labour Market implies, the variation in the link between output and labour demand and the unanticipated changes in labour supply

makes unemployment a difficult number to predict. Our projection for unemployment on the ILO measure at the end of 2012 is now 225,134. We are expecting the unemployment position to deteriorate slightly in 2013 compared to 2012 due to weaker output and employment growth. Unemployment is now forecast to be 234,603 by the end of that year. In 2014, unemployment falls to 228,740 as growth and job creation pick up during the year.

Brian Ashcroft
2 November 2012

Forecasts of the Scottish economy

Summary

The Scottish economy has contracted in the first two quarters of 2012, marking three consecutive quarters of negative growth. While quarter three for the UK has seen an uplift of 1 per cent, this is not likely to be replicated in Scotland. It is therefore possible that the Scottish economy could contract in 2012 overall, and we now forecast a contraction of -0.1% over 2012 (down from 0.4% growth forecast in June 2012). Worsening forward-looking indicators on business confidence and export orders, in particular with trouble returning to major (core and periphery) economies of the Eurozone, continue to suggest that the return to pre-recession levels of economic activity is likely to be slow. Weak domestic demand from consumers and on-going fiscal consolidation are not sufficient to offset uncertainty around what was anticipated to be a recovery led by exports and investment. The silver lining appears to be that indexes suggest that a return to overall recession (a "triple-dip") appears to be unlikely. In our central forecast we have revised down growth in 2013 and 2014 to 1.3% and 2.2% respectively.

Fiscal policy

The Chancellor will make the Autumn Statement on the 5th of December. Before this, the OBR will produce its forecasts for the UK economy over the coming years. In Scotland, the Finance Secretary laid his draft budget plans for 2013-14 during September, committing £28.6 billion across current and capital spending projects. While spending continues to fall in real terms as the (coalition) UK government imposes its policy of fiscal austerity, the spending fall in 2012-13 is smaller (-1.7%) than the real terms reduction in 2011-12 (-5.3%) which was particularly focused on reductions in capital spending. As the Scottish budget document makes clear, with announcements that austerity could continue into 2016-17, it is possible that the annual spending available to the Scottish Government could be £5.3 billion less (in 2016-17) than it was in 2010-11 (in 2012/3 prices). By switching spending from current to capital spending the Scottish Government has set out its aim to offset some of the reductions in funds available for infrastructure and repair projects, while using other financing measures available to it. With public budgets squeezed at all government levels, the UK Government's Plan A continues to offer scant help to struggling economies across the UK.

The programme of welfare changes to start in April 2013, directly affecting the incomes of many households, will be examined in the next *Commentary*. Analysis by the IFS from March 2012 indicated that over £9 billion of spending reductions will hit in 2013-4, with the two largest negative impacts coming through reductions to Child Benefit eligibility and linking benefit and public pension increases to the Consumer Price Index (CPI).

Monetary policy

Inflation continues to fall as was expected in summer 2012, although recent energy price increases mean that the anticipated decline through to the end of 2012 might be slower than expected. Falling inflation had been anticipated to offset some of the slow nominal wage growth and help to support household spending in real terms. Higher oil prices continue to be the main culprit for these price increases, with a barrel of oil trading during September on spot markets around $95 dollars per barrel, up by around $10 since mid-2012 but down by the same amount from the higher prices during winter 2011-2012.

The Bank of England's Monetary Policy Committee met in the first week of October and, while holding the interest rate at 0.5% it unanimously agreed not to extend the asset purchase programme it has continued, and which has reached £375 billion. The minutes note that while "there were, as ever, limits to what monetary policy could be expected to achieve…there was agreement that there was little to be gained at this meeting in changing the current programme of asset purchases". It would not be inconceivable that were there to be continued weak data on UK economic activity that the bank could increase this programme.

Output

Scotland saw a third consecutive quarter of negative growth in the second quarter of 2012. The decline of 0.4% mirrored the latest estimate for growth across the UK in the same period. As noted elsewhere in the *Commentary*, the level of Scottish GDP is 4.4% below its pre-recession peak from the second quarter of 2008. Scotland has recovered slower than the UK as a whole, which is 3.8% below its pre-recession peak (which was one quarter earlier). Negative growth in both Scotland and the UK over the last three quarters has likely delayed the point at which the output lost during the Great Recession will be recovered.

At the sectoral level, the pattern of output decline in 2012Q2 was quite different from the two earlier quarters of negative growth (2011Q4 and 2012Q1). In earlier periods, construction declines led the

economic deterioration as business and private investment contracted (the path of investment is discussed in more detail later in this section). The other main categories of output in Scotland – production and services – did not decline in these quarters, but saw slow or flat output growth. Contradicting this recent pattern, the most recent quarter saw a rise in output in construction (2.0%) while output in production sectors (roughly 17 per cent of the Scottish economy) fell by 3.8%. Service sector output grew slowly (0.2%) in the same period.

Within production, there was a sharp reduction in electricity and gas output (-15.1%) while manufacturing contracted by 2.2%. The manufacturing change is more important for the aggregate figures, given its relative share of the Scottish economy (12.4%). Across all the categories of manufacturing which are reported, output contracted – with the exception of the food and tobacco sector, which saw growth of 1.7%. Worryingly, there was a second quarter of negative growth in the "Engineering and allied industries" and a third consecutive quarter of decline in output in the "drinks" sector (the drink sector currently displays growth over the year, but will only preserve this with strong performance to the end of 2012).

While we do not have figures for Scotland during the third quarter of 2012, preliminary figures for the UK as a whole showed that the UK economy grew by 1.0 per cent. This exceptional single-quarter growth rate, however, comes with health warnings attached, due to two "special factors". The first is the one-off value of sales of Olympics tickets purchased in earlier periods, and is estimated by the Office of National Statistics to contribute 0.2 per cent to Q3's figures. Secondly, the extra bank holiday for the Queen's Diamond Jubilee in June is likely to have resulted in some "time-switching" of GDP into quarter three's figures that would otherwise have been in quarter two.

We do not anticipate the Scottish GVA figures for Q3 to be affected by the Olympics in the same way as the UK figures as a whole, principally due to the relatively low total value of tickets sold for activities occurring in Scotland. The additional work day however in Q3 would similarly be expected to positively boost Scottish activity in the third quarter.

The OBR will update its forecasts for UK growth in 2012 before the Autumn Statement on the 5th of December 2012. The earlier forecast of 0.8% growth is likely to be revised downwards, perhaps significantly. Forecasts for the UK as a whole have been markedly reduced since the OBR last forecast in March 2012. For example, the IMF cut their 2012 and 2013 growth forecasts by 0.6% and 0.3% respectively, and now predicts growth of -0.4% and 1.1% in each year. Similar revisions were made by the OECD. The Treasury report that the median of UK forecasts made prior to March 2012 was 2.0%. In October 2012, the median of new forecasts for 2012 was -0.3%, with a range from -0.6% to 0.3%.

Households

Figures for wage growth across the UK as a whole – a comparable figure for Scotland is not available - show that (private sector) average weekly earnings growth continues to be muted at around 2%. With inflation falling but remaining above this rate, earnings continue their real terms decline. As households repair their balance sheets by cutting expenditures and paying down (or not increasing) credit, falling real wages are likely to prolong the point at which households feel their finances to be "sustainable".

While the UK stock market has generally continued to record rises in the prices of equities since we last reported, other measures of household financial wealth, in particular housing assets, show a more sombre picture. Data suggest that individuals across the UK have little confidence in house prices increasing in the short or medium term. Survey evidence confirms little expectation of the current value of homes increasing, and since March 2012 it appears that households have generally become less optimistic about the change in value of their homes over the next year.

On a positive note, respondents to this survey in Scotland were among the most optimistic across the regions of the UK with regard to recent changes in their house prices, but across all regions there was consensus that recent house prices were falling.

Some recent data produced for UK households– also not available for Scottish households'– show the relationship of households' financial liabilities to household disposable income. This shows that from 1988 to 2001, this ratio was broadly constant between 1.0 and 1.2. Over the mid-2000s this increased rapidly to a peak of 1.75 in the first quarter of 2008. Since then, steadily declining household liabilities and (slowly) rising household income has brought this ratio down to a value of 1.5. This remains above previous long-term values. Two principle factors might contribute to this decline since 2008, which coincides with the peak of house prices in both Scotland and the UK. Principally, the household savings ratio (defined as gross savings divided by gross disposable income) has increased sharply as households have restrained their consumption spending and paid down debts (reducing the value of liabilities).

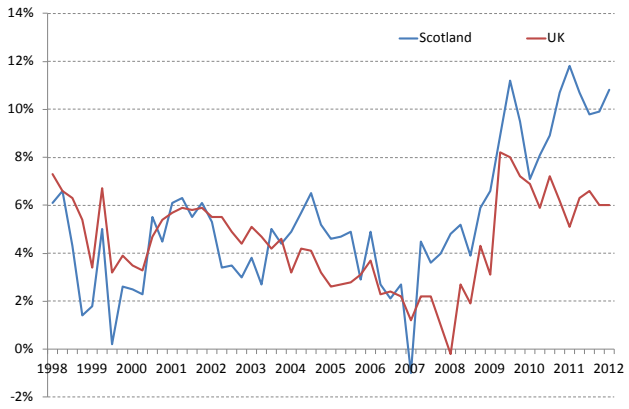
Figure 1 shows how the savings ratio has evolved in both Scotland and the UK. These data imply that Scottish households have made more significant adjustments to their savings pattern than UK households.

What is interesting is that the savings rate has been increasing in Scotland while for the UK as a whole this has been falling in recent quarters.

Comparable Scottish and UK data on household income and consumption growth are available up to March 2012 (the end of the first quarter of this year). These show that spending increased through the first quarter, making two periods of positive growth in aggregate household expenditure for the first time since the first half of 2010 (See **Figure 2**).

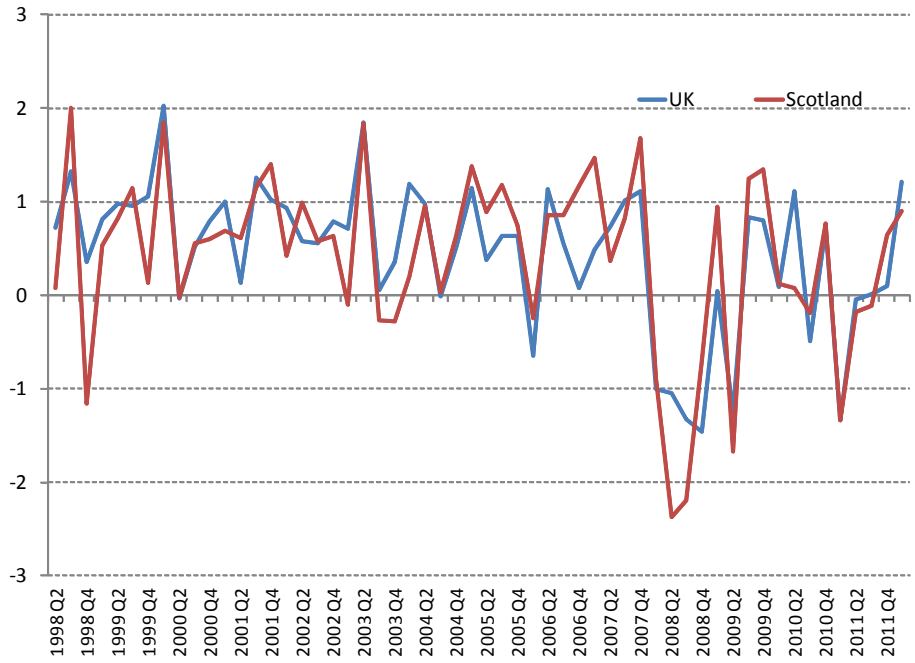
The Scottish Retail Sales monitor reported that sales in September 2012 were flat in real terms and that overall sales growth in Scotland has been slower than the UK as a whole for 18 months in a row, demonstrating a considerable weakness in Scottish household spending. It remains in the "big ticket" durable goods market that households are postponing purchases, which demonstrates unwillingness to use store credit for such items: a key indicator of a persisting lack of consumer confidence about future income prospects.

Figure 1:
Household savings ratio, UK and Scotland, 1998Q1 to 2012Q1



Sources: (Experimental) Scottish National Accounts Project data (Scottish Government) and UK Quarterly National Accounts (National Statistics).

Figure 2:
Quarterly growth in real household consumption, Scotland and UK, 1998Q1 to 2012Q1



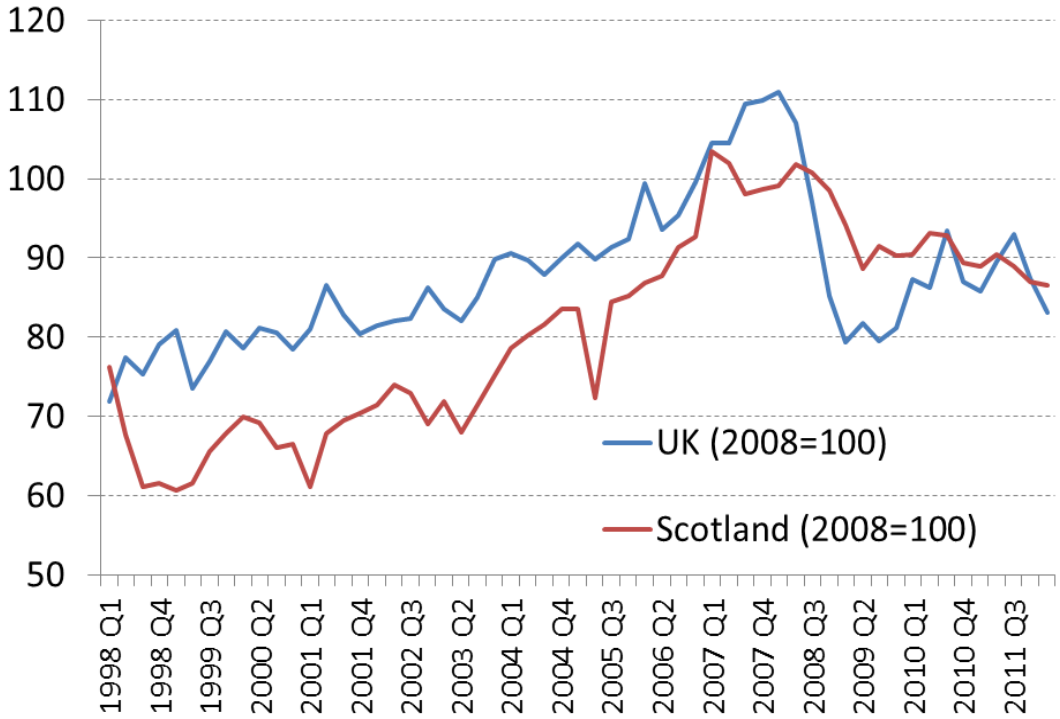
Sources: (Experimental) Scottish National Accounts Project data (Scottish Government) and UK Quarterly National Accounts (National Statistics).

The most recent data on Scottish consumption – the Retail Sales Index from October 2012 – suggests that household spending growth picked up in the third quarter, and at a faster rate than in Great Britain as a whole, although slower than GB over the last year.

Investment

While the most recent quarter showed an increase in the output of the construction sector, activity in construction had been significantly damaged by the concurrent downturns in private as well as public capital spending through 2011-12. As the Fiscal policy section above notes, the largest decline in public spending on capital appears to have past, although it is likely to take some time before projects are contributing to activity in the sector. Domestic house building remains flat, while, as is noted in the *Business Surveys* section of this Commentary, the market appears to be firmly in "contraction territory" through the third quarter of 2012, and there was limited expectation of significant improvements in the market over the next twelve months. Figure 3 shows that real investment spending (including public and private spending) remains significantly below its pre-recession values.

Figure 3: Real gross fixed capital formation, Scotland and UK, Q1:1998 to Q1:2012



Sources: (Experimental) Scottish National Accounts Project data (Scottish Government) and UK Quarterly National Accounts (National Statistics).

Trade

The latest data on non UK exports from Scotland – available from the Index of Manufactured Exports, published in October 2012 – show that during the second quarter of 2012 Scottish exports fell by 4.0 per cent, and rose 1.7 per cent over the year. This was the sharpest contraction in (this portion of) Scottish exports since the final quarter of 2008, and marks the third consecutive quarterly decline in Scottish manufacturing exports. With the exception of the (small) "wood, pulp, etc." exports, all categories of manufacturing exports saw a decline in the second quarter. This includes sectors which had previously performed reasonably well since 2009, including "Food, drink and tobacco" (down 5.4% in Q2 2012), and "other manufacturing" (down 3.0%).

As these most recent data suggest, the international market for goods is showing major distress signs as we end 2012. The International Monetary Fund, OECD and European Commission have all significantly cut their growth forecasts for the Euro area and its constituent member since forecasts earlier this year as business and consumer confidence has ebbed away and forward indicators of economic activity have moved downwards. October's Purchasing Managers Index survey for the Eurozone continued the recent trend of major trauma in the European markets; falling for a third consecutive month, registering a new 40 month low, and with manufacturing and services sectors (combined) falling at their fastest rate since June 2009. While Germany appears to only be suffering "mild" (output) downturn by this measure, France appears to be recording its steepest decline since the start of the Great Recession. Markit (who collate and report on the PMI index) note that indicators at the start of the fourth quarter are consistent with a contraction of over 0.5% across the Eurozone. It is especially in the "periphery" countries of the Euro area where it appears likely that recession has returned, including Spain and Italy. These are both far larger markets than Greece placing the Euro area under its greatest test since the start of the Great Recession in 2008.

Aside from being the world's largest economy, the US is also the largest (first) destination for non-UK exports from Scotland. The most recent US GDP figures showed an (annualised) rate of growth of 2.0% in the third quarter of 2012, up from 1.3% growth in Q2. Consumer and government spending helped this quarterly increase, while investment spending and exports fell. Labour market indicators in the US have continued a slow positive trend since the turn of the year, with employment increasing and the unemployment rate declining below 8% for the first time since 2009. In addition, as noted by the Bank of England, there were positive signs across production indices into autumn in the US, while the US housing market appeared to be recovering some of the (massive) contraction since 2008. Consumer confidence indices for the US appear to have rebounded positively since the end of 2011, however slow income growth could dent increased consumer spending through 2013.

One of the first jobs for the US president after November's election is to address the fiscal changes coming into US law on the first of January 2013. After this point a series of tax increases and spending cuts will reduce the US government deficit by over $600 billion in a single year. At around 4.1% of US GDP, this will withdraw a huge amount of spending from the economy and impact on US growth in 2013.

Without any agreed changes to US fiscal policy the US Congressional Budget Office estimate that the impact on US growth, particularly in 2013, will be profound. At one extreme, if policymakers decided to reverse all of the tax increases and spending cuts the CBO predict the US could grow by 4.4%. At the other extreme, if the "fiscal cliff" is reached with no agreement, growth during 2013 is forecast at 0.5%, with a recession in the first half of 2013.

Table 1: Economic growth forecasts for 2012 and 2013 for major Scottish export markets, plus UK, China, Euro area and world, including changes from earlier forecasts where available, %

	2012		2013	
	IMF (October 2012)	Change from July 2012	IMF (October 2012)	Change from July 2012
USA	2.2	+0.1	2.1	-0.1
Netherlands	-0.5	n/a	0.4	n/a
France	0.1	-0.2	0.4	-0.5
Belgium	0.0	n/a	0.3	n/a
Germany	0.9	0.0	0.9	-0.5
Ireland	0.4	n/a	1.4	n/a
UK	-0.4	-0.6	1.1	-0.3
China	7.8	-0.2	8.2	-0.2
Euro area	-0.4	-0.1	0.2	-0.5

Source: World Economic Outlook, International Monetary Fund (October 2012). The OECD publishes its Economic Outlook on the 27th of November 2012.

Forecasts for the Scottish economy: Detail

On the domestic side of the economy, with continued fiscal contraction at the UK level, we must focus on the outlook for household and investment expansion. Household spending growth continues but remains weak, as employment falls slightly and earnings growth remains slower than the rate of increase in prices. In our central forecast, households continue to unwind their debt levels from the unprecedented highs at the start of the Great Recession, leading to continued slow spending growth, and decreased activity across the high streets of Scotland. Recent surveys point to continued depressed levels of household spending growth.

Business confidence remains dented through to the end of 2012, with weak signs of increasing private investment in the final half of the year. Construction indexes point to continued weak demand and low rates of orders growth, both from the public and private sector intentions. Commercial construction activity remains weak through 2012 and into 2013 on our central forecast, albeit with an increase towards the end of 2013 as capacity is expanded in advance of a return to (close to) trend growth in household spending in 2014.

The external market for Scottish goods and services has considerably worsened since June 2012 when we last reported. Major indexes indicate that the Euro area may have entered recession in the second half of 2012, driven by declines in production and construction sectors across major periphery economies of Spain and Italy. Rapidly worsening growth and labour market data indicates that the optimism of summer 2012 has passed and that growth through 2013 and 2014 will be weaker than was anticipated earlier in the year. We anticipate however a return to growth in the Euro area in 2013 and 2014, however the reduced

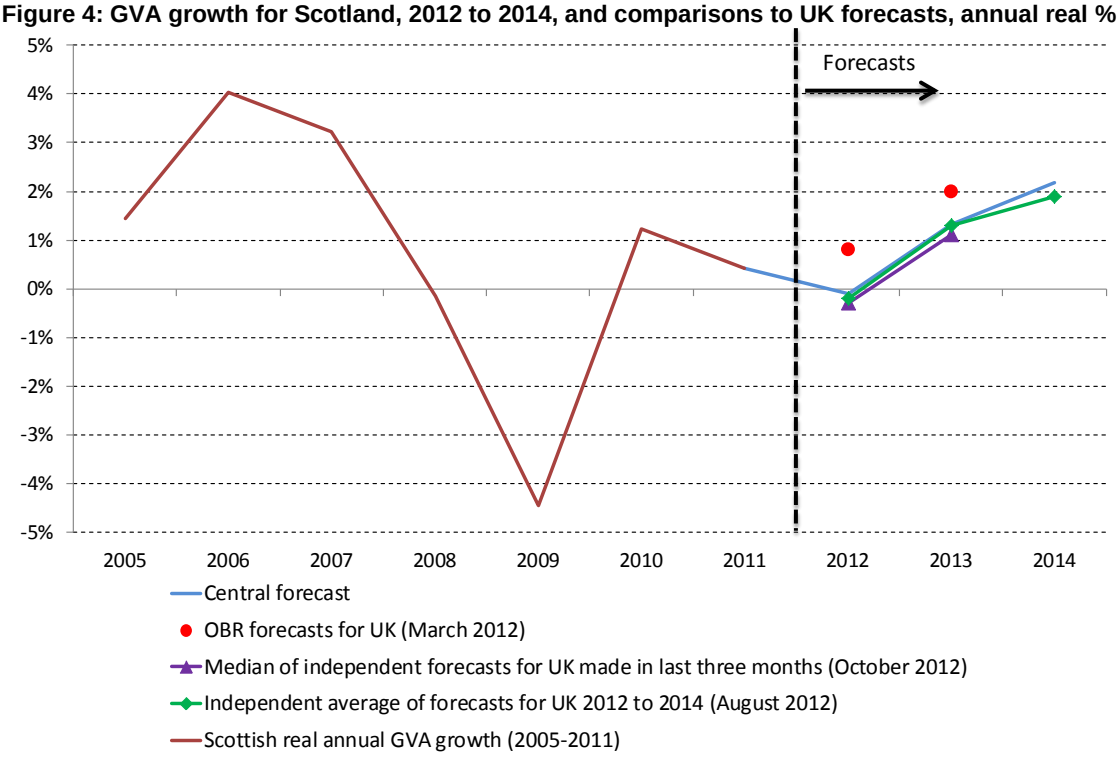
growth rate, particularly due to household spending contraction amid on-going uncertainty about incomes, is likely to continue to have a depressing effect on Scottish exports.

Results

In this issue of the *Commentary*, we are forecasting the year-on-year real growth in key economic and labour market variables, including aggregate Gross Value Added (GVA) and employment and unemployment, over the period 2012 to 2014. The forecasting model used is multi-sectoral, and where useful, results are reported for sub-aggregate sectors.

We begin with the (central) forecasts for growth in the Scottish economy. Our new forecasts for 2012, 2013 and 2014 are shown in **Figure 4**. This also shows for comparison purposes only, a number of different sources forecasts for the UK over the same period. These sources are the Office for Budgetary Responsibility (OBR) which last forecast in March 2012, and will release new forecasts later in November 2012, as well as the median of recent forecasts produced by professional forecasts for each year of the forecast window.

Figure 4: GVA growth for Scotland, 2012 to 2014, and comparisons to UK forecasts, annual real %



Sources: Fraser of Allander Institute forecasts, Office for Budgetary Responsibility and HM Treasury (various months).

We have revised down our forecasts for 2012 to -0.1% (from 0.4%). We noted in June 2012 that survey evidence indicated that there might be a quarter of negative growth in the first half of 2012. The GVA data now available indicates that in both Q1 and Q2 the output of the Scottish economy contracted. The scale of the contraction in activity through the first half of 2012, combined with weaker survey evidence for business intentions through to the end of 2012 and into 2013 (described elsewhere in this Commentary) means that – on the balance of probabilities – we think it is now likely that output will contract over 2012 on an annual basis. This will be confirmed with the release of Q4 2012 data in April 2013.

With worsening evidence of business and consumer leading indicators through 2013, we have also revised down our forecasts for Scottish output growth in that year. We have revised this to 1.3% (from 1.5% forecast in June 2012). As we have mentioned consistently the upturn in Scottish economic performance will be significantly affected by growth returning to export markets for Scottish goods. Outside of the UK, this means the US and the Eurozone countries, principally (see our discussion in June 2012's commentary). It is worrying for the short-and medium-term outlook for Scottish exports that there have been recent downturns to output and employment indicators, as well as forward-looking surveys of business and consumer confidence, in core, as well as peripheral Eurozone countries.

In addition to the aggregate growth forecasts, Table 2 also presents our forecasts for GVA growth by broad industrial grouping, i.e. for the "production", "services" and "construction" sectors.

Table 2: Growth (%) by sector in the Scottish economy, 2012 to 2014

	2012	2013	2014
Gross Value Added	-0.1	1.3	2.2
Production	-0.2	3.3	5.1
Services	-0.1	0.9	1.5
Construction	-0.1	0.9	1.4

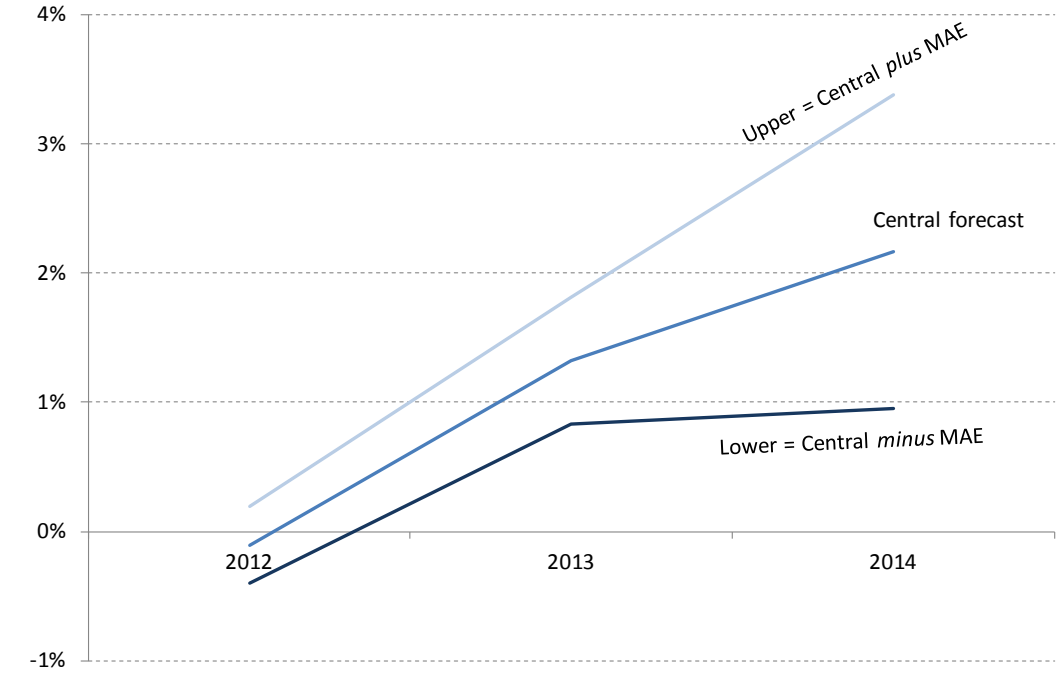
Source: Fraser of Allander Institute forecasts

As recent GVA data for Scotland suggests, the impacts of the on-going recession are being felt across the Scottish economy, i.e. in many manufacturing sectors, as well as more cyclical downturns in construction and household spending on durable goods. This is occurring concurrently with continued consolidation of UK public finances and real terms spending reductions through to the end of our forecast horizon. As we noted in June's commentary, the construction sector is likely to respond quickly to upturns in private investment, where this occurs, but recent survey evidence indicates a continued weak outlook for Scottish corporate sector making significant new investments – above those already announced.

We use our calculated past forecast errors (e.g. the difference between aggregate growth forecasts and what outturn figures were) to show the potential range of outcomes around our central forecast.

We use the estimated errors for "Winter" forecasts published over the last ten years (Allan, 2011). The mean absolute error for forecasts previously made within the last third of the year for growth in that year is 0.296 percentage points, while for growth the following year we have had mean absolute errors of 0.492. These give the ranges around the central estimates of Scottish GVA growth shown in Table 2 above.
Again, we use the mean absolute error for the longest forecast period from Allan (2011) for 2014, of 1.216, as we do not yet have a long history of forecasts of growth over a three year horizon. The estimated range around our central forecasts of GVA growth in each year is shown in **Figure 5**.

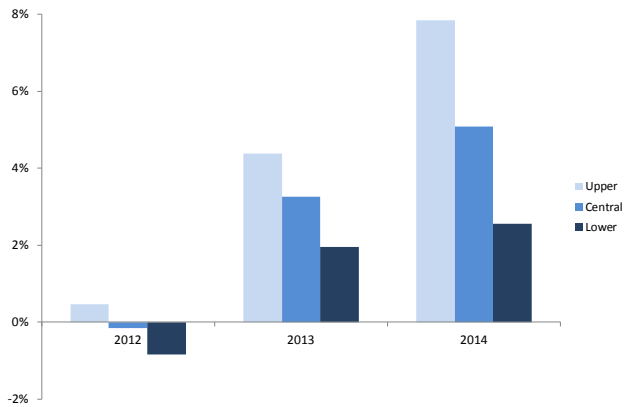
Figure 5: GVA growth for Scotland, 2012 to 2014, possible range of outturn growth



Source: Fraser of Allander Institute forecasts

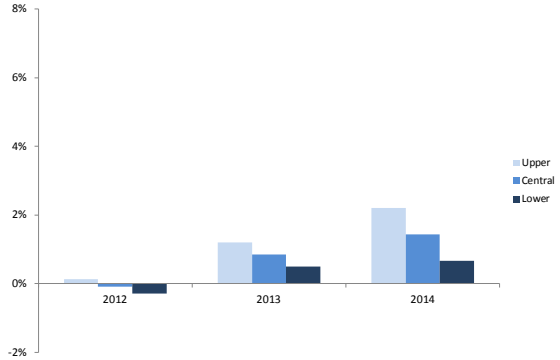
Figure 6, **Figure 7** and **Figure 8** show the forecasts of GVA growth in each of the aggregated sectors ("production", "services" and "construction") in each year under the central and the lower and upper forecasts.

Figure 6:
GVA growth forecasts for "Production" sector in central, upper and lower cases, 2012 to 2014



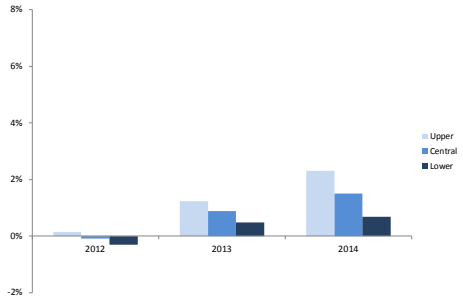
Source: Fraser of Allander Institute forecasts

Figure 7:
GVA growth forecasts for "Construction" sector in central, upper and lower cases, 2012 to 2014



Source: Fraser of Allander Institute forecasts

Figure 8:
GVA growth forecasts for "Services" sector in central, upper and lower cases, 2012 to 2014



Source: Fraser of Allander Institute forecasts

Employment

The most recent data for employment indicate that the Scottish labour market has weakened since improving during the first half of 2012. Employment of people of working age fell by 6000 in the most recent three month period, while the unemployment rate rose above 8 per cent and there was a 7000 increase in the numbers in the labour market but out of work. Detailed commentary on recent developments in the Scottish labour market is available in the *Labour Market* section.

The most recent data on the number of (employee) jobs in the Scottish economy are available to the end of June 2012. These currently suggest that the number of jobs in Scotland has increased during the first half of 2012 by over 50,000, increasing in both Q1 and Q2. We forecast – and this is supported by more recent data on changes in employment – that there will be a decline in the number of jobs through the second half of 2012. Our 2012 forecast is for the number of jobs at the end of 2012 to be down by 25,750 from the end of 2011.

Our forecasts for employee jobs in 2012, 2013 and 2014, including a breakdown by broad sectoral groups, are shown in Table 3. The number of employee jobs in 2012 is forecast to fall in 2012, largely due to a fall in jobs in the "services" sector, but with reductions in jobs seen across all broad categories. Through 2013 and 2014 we expect the number of jobs to increase each year (by 0.8% and 1.3% respectively), with most of the job gains seen in the "Production" sector as the domestic-facing services sector continues to struggle to create employment opportunities in the face of slow or zero household spending growth.

The employee jobs forecasts consistent with our upper and lower forecasts for GVA growth are given in Table 4.

Table 3: Forecasts of Scottish employee jobs (000s, except where stated) and net change in employee jobs in central forecast, 2012 to 2014

	2012	2013	2014
Total employee jobs (000s), Dec	2,232	2,249	2,279
Net annual change (jobs)	-25,750	16,950	29,450
% change from previous year	-1.1%	0.8%	1.3%
Agriculture (jobs, 000s)	32	32	34
Annual change	-100	650	1,500
Production (jobs, 000s)	237	248	262
Annual change	-400	10,200	14,050
Services (jobs, 000s)	1,841	1,845	1,855
Annual change	-22,750	3,800	10,550
Construction (jobs, 000s)	122	125	128
Annual change	-2,550	2,300	3,300

Note: Absolute numbers are rounded to the nearest 50. Source: Fraser of Allander Institute forecasts

Table 4: Net annual change in employee jobs in central, upper and lower forecast, 2012 to 2014

	2012	2013	2014
Upper	-19,350	27,100	53,350
Central	-25,750	16,950	29,450
Lower	-32,050	5,500	5,850

Note: Absolute numbers are rounded to the nearest 50. Source: Fraser of Allander Institute forecasts

Unemployment

We present our forecasts for unemployment in Scotland for 2012, 2013 and 2014 in our central scenario in Table 5. As with previous forecasts we report the ILO unemployment measure and the number forecast to receive unemployment benefits ("claimant count"). The ILO measure is preferred as it gives a more complete indication 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 labour market.

As is discussed elsewhere in the *Commentary* in the most recent quarter the level of unemployment has risen on the ILO measure, while the claimant count measure continues to record declines in the numbers receiving unemployment benefits.

Table 5: Forecasts of Scottish unemployment in central forecast, 2012 to 2014

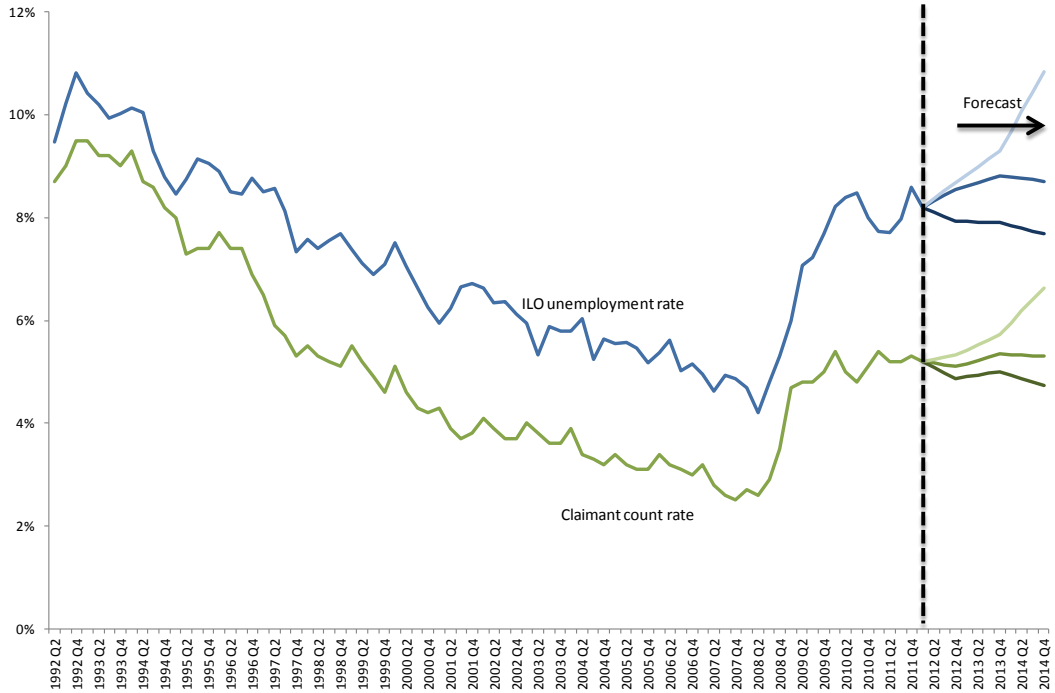
	2012	2013	2014
ILO unemployment	225,354	234,603	228,740
Rate[1]	8.5%	8.8%	8.7%
Claimant count	139,720	147,800	148,681
Rate[2]	5.1%	5.3%	5.3%

Notes: Absolute numbers are rounded to the nearest 50. [1] = rate calculated as total ILO unemployment divided by total of economically active population aged 16 and over. [2] = rate calculated as claimant count divided by sum of claimant count and total workforce jobs. The most recent labour market figures are detailed in the Labour market section of the Fraser Economic Commentary.

Our forecasted levels and rates of unemployment in Scotland at the end of 2012, 2013 and 2014 are given in Table 5. We have again revised these down – both in levels and rates – as the Scottish labour market continues to display unusual (low) productivity changes – e.g. more robust employment measures while output has been declining over recent quarters.

We show the history of both ILO and Claimant count unemployment rates, and our forecasts for these variables, between 1992 and 2014 in **Figure 9**.

Figure 9: Scottish ILO and claimant count unemployment rate, history and forecast: 1992 to 2014



Source: Fraser of Allander Institute forecasts

Grant Allan
1st November 2012

Review of Scottish Business Surveys

Overall

A wider sense of despondency was evident amongst business surveys commenting on the third quarter results, with the exception of the oil and gas sector, the emphasis was on a weakening economy, with weak consumer demand, output down in construction, declining export activity and more concerns as to activity over the year ahead. Both the latest Scottish Chambers Business (Q3) and Lloyds TSB Business Monitor survey (Q3 to August) commented on the 'stagnating' Scottish economy. The Bank of Scotland PMI (September data) noted a decline in private sector output, reflecting a declining trend in new work, a reduction in backlogs and accelerating input price inflation due to rising fuel and commodity prices. The CBI data for Q3 similarly noted a decline in both new orders and output. Declining trends in export orders and Eurozone uncertainties were seen as contributing to a decline in orders was reported by Scottish Engineering (Q3).

Scottish Chambers' of Commerce Business Survey (SCBS) respondents reported that the continuing weakness in the Scottish economy was more widespread in Q3 than in the first half of 2012 as the trends in demand in manufacturing and in tourism weakened. The outturn in all sectors in Q3 was weaker than expected and weak in all main sectors. Business sentiment weakened in all main sectors, furthermore in all sectors the main trends in activity remain weak, reinforcing the sense of weak, stagnating demand and continuing negative growth. The percentage of respondents in all sectors expecting an improvement in demand in Q4 is limited; the majority anticipate either no change or a weakening in demand, suggesting few, if any signs of an improvement in the Scottish economy over the short term. In the SCBS report for the second quarter the findings concerned the sense of a slowdown in economic activity across our major markets together with the adverse effects of on-going reorganisation and cutbacks in the UK public services influencing both consumer and business sentiment and activity in Scotland and in the rest of the United Kingdom. At the end of the third quarter they reported more signs of a slowdown and a wider sense of an economy stagnating with weak and inadequate performance.

Similarly the latest Lloyds TSB Scotland Business Monitor (June- August 2012) showed an economy continuing to stagnate although stressed that there were no signs of a return to deep recession. The Scottish Engineering Quarterly Review reported that uncertainties as to the Eurozone economy was now impacting on the order intake of Scottish engineering firms although noted the encouraging figures from the Oil and Gas sectors, but reported large firms were now less confident.

Oil and gas services

Globally the outlook for the oil and gas sector in 2013 remains positive, notwithstanding continuing political and economic uncertainties. The increasing global interest and potential of shale reserves is beginning to influence both national energy policies and the global oil market. The techniques applied to the development of shale gas are now being applied to shale oil fields and related areas. In the US this has led to rapid production and shale and Canadian oil sands could, according to some industry figures, help make the US self-sufficient in oil by 2020 – 2025. Both oil companies and a number of countries in Europe, Asia and South America are exploring the shale gas and oil potential. In the medium term an increased supply of lower cost gas could 'crowd out' the development of renewables and or nuclear energy generation and affect the supply of LNG from conventional gas reserves with impacts on the cost of gas in some countries. However, the conditions for the successful exploitation of shale gas may limit its development, and environmental concerns have to be overcome, but there is much to suggest the development of shale gas will revolutionise the global gas industry, possibly leading to differing models of development across the globe and will impact on the energy policies and prices (IHS CERA 2012). Estimates of the economic and employment opportunities from shale gas in the UK vary considerably, and it is uncertain whether the current ban on drilling for shale gas in the UK will be lifted by the end of 2012.

Notwithstanding the drive towards renewable energy generation hydrocarbons will continue to be the dominant source of energy, providing over 1/3 of EU energy needs in 2030 and almost all energy used in transportation. The past eighteen months has witnessed a number of changes to the UK's tax regime. The Budget in 2011 increased the Supplementary Charge, but post budget changes improved Ring Fence Expenditure Supplements. The 2012 Budget and post budget changes included: increased allowance for small fields and for large deep water activities, the introduction of a brownfield and large shallow gas

allowance and initiated consultation on measures to provide decommissioning certainty, all of which heralded a more positive environment.

The latest Aberdeen & Grampian Chamber's oil and gas survey (October), the Oil & Gas UK quarterly index, PwC's study of skill shortages and Deloitte's review of drilling activity all indicated rising confidence in the sector reflecting more positive tax changes, continuing demand, high oil prices and potential developments in the UKCS, Eastern Mediterranean and Africa.

However, as Oil & Gas UK noted that whilst the signs of a recovery in new field approvals and merger and acquisition activity indicate investor confidence is returning following the announcement of measures by the Government aimed at boosting activity, but it is important to see the rising confidence in the context of low levels of exploration activity in 2011 and more changes are arguably necessary to boost long term drilling activity.

Private sector

The Bank of Scotland PMI paints a picture of a continuing slowdown in the Scottish economy; momentum had picked up slightly during June 2012 but then growth started to falter again in July and August and turned down in September. Increased concerns as to trends in exports, weak consumer demand, and rising cost pressures were evident in surveys covering the third quarter.

Production

The Lloyds TSB Scotland Business Monitor reported that the overall net balance of turnover for production firms in the three months to end August this year was -2%; slightly down on the +4% of the previous quarter and the 0% of the same quarter one year ago.

Manufacturing

According to SCBS manufacturing respondents business confidence weakened in significantly in quarter three with a net balance of 22% of firms reporting reduced confidence levels. Business optimism remains weaker than a year ago, reflecting concerns as to the continuing Euro zone weaknesses, a theme echoed in the latest Scottish Engineering's Quarterly Review, but less so in the latest CBI report.

During the three months to the end of September, the trend in total new orders declined by more than had been expected for a net balance of SCBS firms. Respondents are also more cautious as to the trends in orders in the fourth quarter. Scottish Engineering reported a downward trend in the total order intake for the first time since the Q4 2011 although electronics, oil & gas and machine shops performed more strongly, but there were marked differences both in the outcome and expectations between small, medium and large firms. Encouragingly forecasts for Q4 2012 anticipate an improvement although the turnaround is limited to small and medium size firms as large firms expect orders to remain negative. The trend in export orders remained negative (for all sizes of company). Engineering respondents are anticipating that exports will continue to decline but the decline will slow.

Average capacity utilisation improved although was down on the same quarter of 2011. The underlying weaknesses in demand remain evident with more than half of firms reporting working below optimum levels.

Turnover is expected to decline for a small net balance of firms (respondents in the previous quarter had forecast a rise). The net trend in profitability is also weaker than in the second quarter with a net balance expecting a fall in profits.

Although remaining weak, the trends in investment in plant/machinery improved slightly during quarter three for a net balance of SCBS manufacturing firms with around 60% expecting no overall change. New investment was again mainly directed towards replacement or to improve efficiency. Scottish Engineering firms reported positive trends in investments.

A net balance of SCBS firms reported a decline in total employment levels although around two thirds continued to report no change to overall levels. Slightly fewer than 12% of firms increased pay during the three months to September and the average increase was 3.5%. 43% reported seeking to recruit staff, and difficulties remained limited. Scottish Engineering respondents reported and expect a rise in overall employment levels and continued to report skill shortage in relation to project engineers, design engineers, IT specialists, technicians, welders and CNC machinists. Scottish Engineering also reported deep concerns regarding the ageing workforce.

Construction

Business confidence weakened further in the third quarter for SCBS respondents; however, although the rate of decline worsened compared to Q2 it was less severe when compared to Q3 2012. The latest data available from the Scottish Building Federation's Scottish Construction Monitor (SCM) is for Q2 2012 and indicates that their business optimism index declined further and now stands at -40.

SCBS Orders continued to slow at much the same rate as in the previous quarter and further declines are forecast for Q4. With very few new contracts evident construction firms continue to rely on repair and maintenance work. The decline in public sector orders steepened slightly. More than three-quarters, compared to 70% in the previous survey, reported working below capacity. Cash flow trends continued to decline for SCBS firms. Turnover and profitability are still expected to be weak over the next 12 months together with continued pressure on margins. Average capacity used declined marginally from 75.7% to 74.6% although was broadly in line with the Q3 2011 level. The downward trend in employment continued in Q3 with few SCBS firms reporting a rise. Once again few recruitment difficulties were evident. Average pay increases fell from 2.3% in Q2 to 2.0%.

Markit/CIPS noted the UK construction sector 'remained rooted in contraction territory' in its report for September 2012. The survey found that an upturn in civil engineering was offset by further declines in house building and commercial activity.

In Q2 2012 the Scottish Building Federation asked a series of questions to their members regarding the submission of PQQs for public procurement. The results indicated that most firms with a turnover of less than £2 million did not submit any PQQ's for public procurement during the past three years. Many of the smaller firms indicated that they were dissuaded from participating in public procurement due to prohibitively high associated costs. The survey found that the average construction firm had to submit 36 pre-qualification questionnaires for every successfully secured public contract, indicating an average success rate of 3%.

Logistics and wholesale

Data from the SCBS business survey showed that business optimism amongst Scottish wholesale firms continued to decline with slightly fewer than half of firms reporting a decline in business confidence. Business confidence however, was less depressed compared to one year ago. The downward trend in sales was broadly in line with expectations from the previous survey; a net balance expect the decline to continue, though ease, in the final quarter of 2012. More than 80% of SCBS wholesalers continued to report increased pressures from transport costs. Pay settlements were cited as a pressure for 16% of firms. More than 60% of firms expect to increase prices over the next three months. Cash flow trends weakened although concerns over turnover and profitability remained high. Once again most firms reported no change to investment plans; nevertheless there was a decline. Wholesale respondents on balance, reported an unexpected net increase in overall employment levels during the third quarter of 2012 although a net balance expected to shed staff in Q4. A third sought to recruit staff; largely for replacement. The average pay increase in Q3 was 2.2% compared to 1.8% in Q2.

Retail Distribution

Weak sales trends were consistently reported over the summer months, with discounting, multiple retailers planning to reduce the numbers of stores and a spate of retail closures (see PwC Report) being widely reported; and the high street vacancy rate of 14.5% being marginally higher than at the end of 2011. The widely reported low levels of business confidence continued to ease marginally in the third quarter of 2012 for SCBS firms, and although the net balance remains negative it is marginally better compared to Q3 2011.

The SCBS retail survey base is primarily small/medium independent outlets and only 11% reported and only 8% expect increased sales, as continuing concerns over consumer confidence remain evident in Q3. Cost pressures remain historically high, although those concerned with increasing suppliers costs eased from 61% to 56%. Transport costs and utility costs also continued to be of particular concern. Pressures on margins remain widespread with over half expecting declining profitability and turnover over the next year. Labour market activity continued to decline with only 8% reporting and 10% expecting an increase in

overall employment levels. Recruitment problems also eased. Only 12% of firms reported increasing pay, and the average increase was 3.4%.

The Scottish Retail Consortium reported sales up by 1% in September, but this was again driven by rising food sales, overall sales still remain lower than a year ago. Whilst the Scottish Retail Consortium had reported a1.2% increase in June sales, Scottish sales were reported as 'dire' in August when they fell by 0.9% (compared with August 2011 which saw a decline of 0.7%). After accounting for inflation, the Olympic month recorded a real terms decline in total sales of 2%, suggesting little, if any, 'bounce' in retail sales as a result of the Olympics.

Tourism

The latest available Scottish Hotel Occupancy Surveys (July 2012) reported bed and room occupancy fractionally lower than for the comparable months in 2011, 2010, 2009 and 2008 – with only Aberdeen & Grampian, Fife and Scottish Borders reporting improvements in both room and bed occupancy compared to a year earlier. April and June figures were better than the preceding years.

Weak consumer demand continues to affect the sector with insolvency studies reporting higher numbers of restaurants and restaurants at risk and higher levels of hotels for sale.

Business confidence among SCBS tourism respondents declined during the third quarter of 2012 although optimism levels were not as depressed compared to Q3 2011. More than half of hotels reported a fall in visitors during the three months to the end of September; and more than half anticipate a further decline in the final quarter of 2012. The trend was much worse than had been forecast by respondents from the previous survey. Average occupancy rose from 64% to 68% although was down on the same quarters of 2011 and 2010. During the three months to the end of September 2012, trends in bar/restaurant trade and for conference/ function facilities continued to decline. A net balance of firms had expected to increase daily room rates in the three months to the end of September but the pattern was one of continued discounts. These 'special offers' seem set to continue with a net balance of 23% expecting to decrease room rates in Q4 2012. More than three-quarters reported that the lack of tourist demand remained the primary business constraint. Poor transport infrastructure, high fuel costs and weak marketing of the area also remained a concern to hotels. Fewer than 20% of hotels sought to recruit staff and employment trends, as forecast, continued to decline. A net balance of 29% of tourism respondents 29% employment levels to ease in Q4 2012.

Outlook

The latest data from the Lloyds TSB England Regional PMI suggests Scottish performance remains weak compared to most English regions and to the UK and Wales, and at a 21 month low compared to a two month low for the UK. At the UK level there are signs of weaknesses ahead with rising input price inflation, weak consumer demand and continuing pressures on margins. Increasing activity and investment are set to continue in the oil and gas sector and this continues to impact positively both in manufacturing and in the Aberdeen and Aberdeenshire economies, but generally weak domestic and export demand continues to undercut these effects.

The latest Aberdeen Chamber oil and gas survey, Oil and Gas UK and A Deloitte report all highlight the shortage of skills in the oil and gas sector, and this is echoed in the latest Scottish Engineering's Quarterly Index. Concerns as to shortages of skilled staff coupled with an ageing workforce suggest that firms may be hoarding labour and this might contribute to the current changing relationship between employment and productivity (see the Labour Market Section).

At the end of the third quarter there are more signs of a slowdown in the Scottish economy and a wider sense of an economy stagnating with weak and inadequate performance. Increasingly business organizations are calling for changes to UK government policies to drive the economy, but there are few signs of any change in national policy and the current age of austerity seems likely to continue.

Cliff Lockyer/Eleanor Malloy
October 2012

Current trends in Scottish Business are regularly reported by a number of business surveys. This report draws on:

1. Aberdeen & Grampian Chamber of Commerce Survey no 17 November 2012;
2. The Confederation of British Industries Scottish Industrial Trends Survey for Q2 and Q3 2012;
3. IHS CERA. IHS Upstream Operating Costs Index (2012);
4. HIS Unconventional Gas. Transforming the Global Gas Industry2012);
5. Lloyds TSB Business Monitor Issue no. 58 and 59;
6. Markit/CIPS UK Construction PMI for July, August and September 2012;
7. Scottish Engineering's Quarterly Review Q2 and Q3 2012;
8. The Bank of Scotland Markit Economics Regional Monthly Purchasing Managers' Indices for July, August and September 2012;
9. Lloyds TSB England Regional PMI for August and September 2012;
10. The Scottish Retail Consortium's KPMG Monthly Scottish Retail Sales Monitors July, August and September 2012.

Overview of the labour market

Inevitably interest in the Scottish labour market continues to focus on the levels and trends in employment and unemployment and again we return to these themes. In addition the UK Government proposals to reform public sector terms and conditions of employment have emerged (see the Public Sector employment section of this Commentary). The employment law proposals emanating from in the Beecroft Report continued to surface at the recent Conservative Party conference (see the February and June issues of the Commentary).

Employment law issues

As we noted in the June Commentary the Beecroft Report contained recommendations to change/simplify employment legislation in a number of areas. In September the Government announced it was considering introducing 'settlement agreements', where staff would leave voluntarily and not seek unfair dismissal or other compensation, and would consult on streamlining unfair dismissals procedures and on the suggestion of a cap on unfair dismissals (although latest data suggests that only 1 – 2% are awarded compensation in excess of £50,000).

In October plans for employees to accept reduced employment rights in exchange for shares were announced. In return for shares valued between £2 – 50,000 employees would give up rights to unfair dismissals, statutory redundancy payments and the right to request flexible working or time off for training. This was generally seen as essentially a niche idea, relevant to high value business start-ups, but of little relevance elsewhere. Recognition that the value of shares could rise or fall coupled with the diminished attractiveness of such conditions to potential employees and the potentially adverse impact on employee engagement and motivation meant the scheme seems set to fade into obscurity. However, proposals to reform and change the terms and conditions of civil servants (see the Public Sector section) may well influence employment policies in the private sector in the longer term.

The existence of blacklists of employees, a feature of the 1960s and 1970s, re-emerged following action by the Information Commissioner's Office which exposed a blacklist used by a number of construction firms. The ICO invited those who were concerned that their names might be on the list to contact the ICO. This has currently led to action in the High Court by some 84 claimants (Financial Times 19th October 2012).

Recent trends and statistics

The latest figures Comparable figures on the labour market between Scotland and the United Kingdom in the quarter to August 2012 are summarised in Table 1. Labour Force Survey (LFS) data show that in the quarter to August the level of employment in Scotland fell by 1 thousand, to 2,490 thousand. Over the year to August 2012, employment in Scotland rose by 16 thousand. For the same period, UK employment rose by 510 thousand. The Scottish employment rate (16 – 64) – those in employment as a percentage of the working age population – was 71.2 per cent, unchanged compared to one year earlier. For the same period the UK employment rate was 71.3 per cent, up 0.9 per cent compared to one year earlier. Scottish unemployment, in the quarter to August, rose by 7 thousand to 222 thousand, a rise of 10 thousand over the year.

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, in the total economically active and economically inactive – but reduces the economic activity rates and unemployment rates, but at the same time increases the economically inactive rate. Conversely the second measure (all aged 16 to 59/64) leads to lower numbers economically active, in employment and economically inactive – but leads to a higher economically active, employment and unemployment rates

but lower economically inactive rates. Figures derived from the Labour Force Survey differ slightly from those derived from the Annual Population Survey.

The relationships between employment, unemployment, totally economically active and inactive are important in appreciating changing levels of employment and unemployment, and changes in the employment rates should be seen in conjunction with changes in the activity rates. If people leave employment and become unemployed (but are still economically active) the unemployment rate increases, but the economically active rate remains unchanged. However, if people leave employment and do not seek employment, as seems to be a continuing pattern, they are categorised as economically inactive, as such the unemployment rate remains unchanged whilst the activity and inactivity rates change. Equally the changing pattern between full and part time employment is of interest and we return to this issue later in this section. This is clearly shown in table 1. Over the year to August 2012, the numbers employed rose by 16 thousand, whilst unemployment rose by 10 thousand – and the numbers of those aged 16-59/64 who are economically inactive fell by 11 thousand and the numbers economically active rose by 1 thousand.

Table 1 shows that for Scotland the preferred International Labour Organisation (ILO) measure of unemployment rose to 222 thousand, between June – August 2012, a rise of 10 thousand over the year. The ILO unemployment rate rose in the three months to August 2012 and now stands at 8.3 per cent. This represents a 0.2 per cent rise over the last quarter and a 0.3 per cent rise relative to the same period a year earlier. The comparable ILO unemployment rate for the UK stands at 7.9 per cent, and is down 0.2 per cent over the most recent quarter and also down 0.3 per cent over the year.

Figure 1: Trend in Scottish unemployment 1992 – August 2012 (thousands)

Source: Labour Market Statistics (First Release), Scotland and UK, September 2012

Figure 1 illustrates the trend in unemployment in Scotland since 1992. Unemployment peaked in October – December 1992 at 268,000, it took almost five years - to August - October 1997 - to be consistently below 200,000 and a further five and a half years - to February – April 2003 - to be below 150,000 and reached the lowest number (111,000) in May – June 2008. If the same pattern is repeated, and unemployment

does not rise in future months, then it may take approximately three years for unemployment to fall below 200,000.

Table 1: Headline indicators of Scottish and UK labour market, June – August 2012 (thousands)

Jun – Aug 2012		Scotland	Change on quarter	Change on year	United Kingdom	Change on quarter	Change on year
Employment*	Level (000s)	2,490	-1	16	29,590	212	510
	Rate (%)	71.2	-0.1	0..0	70.3	0.5	0.9
Unemployment**	Level (000s)	222	7	10	2,528	-50	-50
	Rate (%)	8..2	0.2	0.3	7.9	-0.2	-0.3
Inactivity***	Level (000s)	758	-2	-11	9,024	-138	-314
	Rate (%)	22.3	0.0	-0.3	22.5	-0.3	-0.8

Source: Labour Market Statistics (First Release), Scotland and UK, September 2012
** 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)*

The economically active workforce includes those individuals actively seeking employment and those currently in employment (i.e. self-employed, government employed, unpaid family workers and those on training programmes). Between June – August 2012 the numbers economically active (16+) rose by 5 thousand and the activity rate rose by 0.1 to 63.4%. There were 2,712 thousand economically active people in Scotland during June – August 2012. This comprised 2,490 thousand in employment (2,418 thousand aged 16 – 64) and 222 thousand ILO unemployed. The level for those of working age but economically inactive fell by 2 thousand in the latest quarter, and fell by 11 over the year thousand to 758 thousand people; this indicates a fall of 1.4 per cent in the number of people of working age economically inactive over the last year.

Table 2: Employment rates thousands (%) People by age for July 2004 – June 2012

	All aged 16+	16 - 64	16 - 17	18 - 24	16-24	25 - 34	35 - 49	50 - 64	65+
Jul 04 - Jun 05	59.4	72.6	43.4	69.1	63.4	79.3	82.0	62.1	5.1
Jul 05 - Jun 06	59.7	73.0	43.1	68.1	62.7	79.5	82.9	63.0	5.0
Jul 06 - Jun 07	60.6	73.9	43.1	68.7	63.2	81.1	83.7	64.2	5.6
Jul 07 - Jun 08	60.8	74.2	39.4	68.5	62.2	81.6	83.9	65.5	5.7
Jul 08 - Jun 09	59.8	72.8	38.0	65.9	60.0	80.3	82.3	64.8	6.6
Jul 09 - Jun 10	58.3	71.0	30.4	62.2	55.6	78.3	81.0	64.4	6.5
Jul 10 - Jun 11	58.2	70.9	33.6	61.2	55.6	79.0	81.5	63.3	6.7
Jul 11 - Jun 12	58.0	70.9	29.0	59.9	53.7	79.6	81.3	64.2	7.1

Source: Labour Market Statistics (First Release), Scotland and UK, September 2012

Data on employment by age, derived from the Annual Population Survey, is available up to June 2012. In the year to June 2012 employment rates fell for all age groups except those aged 25 – 34 and those aged over 65, with the employment rate for those aged 16 – 64 remaining unchanged, and with the largest percentage point falls being recorded for those aged 16 -24. Employment rates for women (16 – 64) again fell more than those for men. Table 2 illustrates the changing employment rates by age group for July – June 2004 onwards.

Table 3: Employment, unemployment and inactivity rates by Local Authority Area 2007, 2008 and July 2011 – June 2012 (%)

Geography (Residence Based)	Employment rates 2007	2008	July 2011/ June 2012	Unemployment rates 16+* 2007	2008	July 2011/ June 2012	Economic inactivity rates 2007	2008	July 2011/ June 2012
Scotland	76.0	75.6	70.9	4.7	4.9	7.9	20.1	20.3	22.9
Local Authority Area									
Aberdeen City	79.1	79.4	77.9	3.7	3.6	5.2	17.3	17.6	17.0
Aberdeenshire	82.6	82.2	79.3	2.5	2.6	3.7	15.6	15.5	17.4
Angus	79.1	80.0	73.4	4.5	4.6	6.2	16.2	15.6	22.0
Argyll & Bute	80.0	77.6	71.5	4.0	4.3	6.5	16.3	18.4	23.3
Clackmannanshire	69.4	70.9	66.4	5.5	5.4	10.0	25.3	25.4	25.2
Dumfries and Galloway	77.4	76.2	69.4	4.2	4.5	7.7	19.1	19.5	23.2
Dundee City	72.1	71.5	66.2	6.6	6.3	9.9	22.4	23.9	26.8
East Ayrshire	73.1	74.6	66.5	6.3	6.1	11.0	21.5	20.4	25.2
East Dunbartonshire	78.9	77.6	73.8	3.1	3.9	6.2	19.0	18.7	20.9
East Lothian	79.2	77.9	74.0	3.5	3.5	6.9	18.0	19.4	20.8
East Renfrewshire	77.2	76.5	73.8	3.4	3.6	5.7	19.1	20.5	21.7
Edinburgh, City of	77.4	76.6	71.5	4.3	4.5	6.5	19.5	19.8	24.0
Eilean Siar	79.4	78.7	67.5	4.2	4.6	7.1	17.7	16.3	24.6
Falkirk	78.1	78.9	70.4	4.6	4.4	8.9	18.5	18.3	22.4
Fife	75.9	76.5	70.8	5.6	5.8	8.8	18.8	17.7	22.2
Glasgow City	66.9	66.6	63.2	6.8	6.9	10.8	28.2	28.8	28.7
Highland	82.0	81.7	80.0	3.2	3.5	4.7	16.0	16.3	17.5
Inverclyde	68.4	72.5	65.5	7.1	6.4	12.2	24.8	23.0	22.6
Midlothian	80.7	79.9	77.2	4.2	4.2	7.0	15.1	16.2	17.7
Moray	80.4	81.8	77.1	3.5	3.8	5.1	17.2	15.0	19.4
North Ayrshire	71.5	71.8	60.1	6.4	7.4	12.9	23.5	22.0	30.0
North Lanarkshire	73.2	71.0	68.2	5.4	5.9	11.1	22.6	23.8	22.5
Orkney Islands	86.4	83.9	80.2	2.7	2.9	4.2	11.2	14.2	17.2
Perth and Kinross	78.1	78.7	74.3	3.5	3.7	6.1	18.8	17.9	19.2
Renfrewshire	75.0	76.0	69.4	5.1	5.5	9.3	20.9	18.9	23.8
Scottish Borders	81.4	80.6	71.7	3.1	3.6	6.0	16.2	15.8	23.8
Shetland Islands	88.1	88.0	81.3	2.6	2.8	3.3	10.4	10.8	16.8
South Ayrshire	77.2	75.4	69.3	5.0	5.4	8.9	18.9	20.5	22.8
South Lanarkshire	78.9	76.7	73.0	4.2	4.4	8.0	18.5	20.6	21.4
Stirling	76.8	75.2	70.8	3.9	4.5	7.1	19.2	20.2	24.3
West Dunbartonshire	73.9	71.2	66.7	6.3	6.9	11.2	20.8	23.3	24.9
West Lothian	77.8	79.1	74.3	4.8	4.6	6.9	17.7	17.4	21.9

Source: 2007 and 2008 data from Annual Population Survey (Jan to Dec); July 2011 – June 2012 data from Labour Market Statistics (First Release), Scotland and UK, September 2012 (Source Annual Population survey, Job Centre Plus administrative system and Annual Business Inquiry)

Note: See sources for definitions and original sources

Inactivity for men aged 16 – 64 fell by 20 thousand over the year. Inactivity for women rose by 9 thousand over the year. In the year to June 2012 the changes in the reasons for inactivity were: student up 10 thousand, looking after family/home down 10 thousand, retired down 1 thousand and long term sick down

8 thousand. The numbers temporarily sick fell by 1 thousand. The majority 589 thousand did not want a job – but 188 thousand were inactive but wanted employment.

The most recent (seasonally adjusted) figure for Jobseekers allowance claimants (16+) in Scotland stood at 139.9 thousand in September 2012, down 4.1 thousand or 2.8% over the year (these figures are taken from table 7 in the Labour Market Statistics [First Release] September 2012. The claimant count rate at September 2012 stood at 5.1 per cent, or 6.6% for men and 3.4% for women (note these figures are taken from table 7 in the Labour Market Statistics and measure the number of claimants on the second Thursday of each month). The latest unemployment data at the Scottish constituency level is available in a SPICe Briefing.

Table 3 indicates the continuing significant differences in employment, unemployment and inactivity rates at the local authority level. In the year July 2011 – June 2012 employment rates varied from over 80% in Shetland, Orkney and Highland to between 65 - 70% in nine local authority areas and below 65% in two local authority areas. Likewise unemployment rates were again lowest in Aberdeenshire, Orkney and Shetland and highest, in East and North Ayrshire, Inverclyde, and North Lanarkshire.

Table 4: Total workforce jobs* by industry, Scotland, June 2005–2012 (thousands)

Industry	June 2005	June 2006	June 2007	June 2008	June 2009	June 2010	June 2011	June 2012
A : Agriculture, forestry and fishing	51	54	60	60	59	66	50	50
B : Mining and quarrying	25	28	30	30	29	31	30	35
C : Manufacturing	233	226	228	212	201	187	189	196
D: Electricity, gas, steam and air conditioning supply	10	10	13	16	19	21	18	19
E: Water supply; sewerage, waste management etc	16	18	17	16	14	113	19	19
F: Construction	181	194	203	199	185	173	179	172
G: Wholesale & retail trade; repair of motor vehicles etc	382	384	380	396	398	380	388	374
H: Transportation and storage	125	118	123	123	111	112	112	118
I: Accommodation and food service activities	189	190	188	191	186	179	190	199
J : Information and communication	72	73	79	69	68	69	74	81
K : Financial and insurance activities	114	107	91	98	100	91	92	89
L: Real estate activities	25	29	30	32	32	27	31	31
M: Professional, scientific and technical activities	145	154	161	176	174	171	183	219
N: Administrative and support service activities	174	180	192	200	185	197	191	201
O : Public administration & defence; social security	180	177	181	177	146	162	154	155
P : Education	199	200	192	208	208	197	200	196
Q: Human health and social work activities	384	399	383	398	401	381	372	371
R : Arts, entertainment and recreation	75	81	75	84	71	78	76	80
S : Other service activities	63	65	63	58	59	68	74	64

*Source: Labour Market Statistics (First Release), Scotland, September 2012; * Workforce jobs are a measure of jobs rather than people*

Note: There are revisions from previous figures and as of September 2011 ONS are highlighting figures with a coefficient of variation greater than 25%

Total workforce job figures are a measure of jobs rather than people. Total seasonally adjusted jobs for the quarter ending June 2012 (the latest available figures) stood at 2,668 thousand 2,309 thousand employee jobs, 343 thousand self employed jobs, HM forces and supported trainees 15 thousand). Table 4 indicates

the sectoral breakdown and provides some indication of both the impact of the recession and the recovery on sectors, although the trends need to be considered with some caution.

Table 5 outlines the changing patterns of full time and part time employment, and highlights the growth in the numbers of part time workers in Scotland, the latest data (July 2011 – June 2012), over the past year the number of employees has fallen by 25 thousand whereas the numbers of self-employed have risen by 25 thousand.

Table 5: Trends in total, full, part time, temporary and part time who could not find a full time job.

	All in employment							
	Total	Employees	Self employed	Full-time workers	Part-time workers	Workers with second jobs	Temporary employees	Could not find full-time job
Apr 2007 - Mar 2008	2,533	2,248	267	1,900	630	96	126	60
Jul 2007 - Jun 2008	2,544	2,254	271	1,912	629	98	125	61
Oct 2007 - Sep 2008	2,550	2,262	269	1,916	631	98	119	61
Jan 2008 - Dec 2008	2,529	2,243	268	1,900	626	99	116	64
Apr 2008 - Mar 2009	2,527	2,245	267	1,899	624	101	117	65
Jul 2008 - Jun 2009	2,515	2,235	264	1,880	632	103	123	73
Oct 2008 - Sep 2009	2,502	2,219	265	1,855	644	101	127	81
Jan 2009 - Dec 2009	2,492	2,210	265	1,844	645	102	133	84
Apr 2009 - Mar 2010	2,471	2,186	267	1,816	652	101	132	90
Jul 2009 - Jun 2010	2,464	2,181	265	1,804	657	99	126	96
Oct 2009 - Sep 2010	2,469	2,187	264	1,801	664	98	127	99
Jan 2010 - Dec 2010	2,472	2,185	268	1,796	672	97	125	107
Apr 2010 - Mar 2011	2,474	2,185	270	1,799	671	98	126	110
Jul 2010 - Jun 2011	2,471	2,181	274	1,796	672	95	131	114
Oct 2010 - Sep 2011	2,464	2,167	283	1,789	672	96	126	114
Jan 2011 - Dec 2011	2,464	2,167	283	1,785	676	96	121	114
Apr 2011 - Mar 2012	2,464	2,156	293	1,776	684	97	125	118
Jul 2011 - Jun 2012	2,473	2,156	299	1,779	687	100	118	115

Source: Labour Market Statistics (First Release), Scotland, September 2012

Note: 1. Includes people who did not state whether they worked part time or full time

2. The split between full time and part time employment is based on respondents' self classification

Table 5 indicates the numbers of full time workers in Scotland since the peak in employment have declined by 135 thousand whilst part time employment numbers recovered very quickly and are now 56 thousand higher and self-employed 28 thousand higher. The changing trends in full and part time employment since October 2007 – September 2008 are shown in figure 2. The rising number of self-employed indicates some substitution of self-employment for employment. The number of those working part time because they could not find a full time job is 55 thousand higher than the peak in employment, suggesting that increasing numbers of workers were taking part time employment in the absence of full time work.

Figure 2 illustrates how the employment 'recovery' has been driven more by an increase in part time and self-employment. This changing pattern of employment may help to explain why the link between employment and GDP seems different to previous recessions. Table 6 (2) of the first release indicates that the usual hours of work of self-employed are both lower than for full time employees and have declined. The service sector has not regained the level of productivity that was reached before the crisis, and staff may well be working as hard, although the volume of business had declined, or that the costs of closure of the business outweigh the losses of continuing to trade. Alternatively companies may well continue to 'hoard' labour due either to perceptions of skill shortages and recruitment difficulties, or due to the costs of

redundancy. Alternatively structural changes in energy and extraction may be contributory factors, as might the belief that the economy is moving to a less skilled and to a period of lower productivity.

Tables 6 and 7 of the Labour Market statistics [First Release] provide information of the claimant count. The figure for September indicates a total of 135,700 thousand claimants, down 4.3 thousand for the year. Of interest are the differing trends in the claimant count for men and women. The claimant count for men, 92 thousand was down 4 thousand over the year, whereas the comparable figure for women, 43.8 thousand, was 0.3 thousand lower than a year ago.

Figure 2: Trends in full, part time and self-employment since Jan 2004 (Oct 2007 – Sept 2008 = 100)

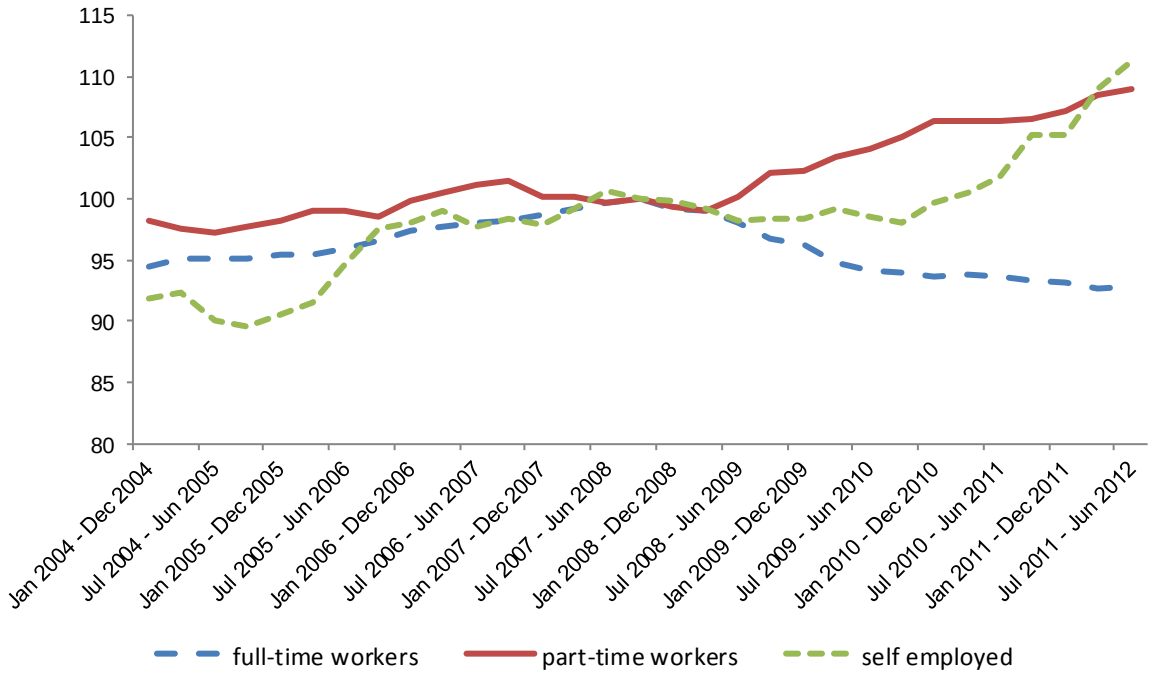


Table 6 provides some limited indications of the experience of unemployment in terms of claimant count by age and duration. The latest figures suggest that 38.5 thousand have been claiming benefit for more than a year, up 14,900 over the year and 12.3 thousand have been claiming for more than 2 years, up 6.6 thousand over the year.

Table 6: Total claimant count and computerised claims by age and duration (Numbers and percentage change over year to September 2012)

	All computerised claims	All computerised claims Up to 6 months	All computerised claims Over 6 and up to 12 months	All computerised claims All over 12 months
All 16+ numbers	135,400	73,200	23,700	38,500
All 16+ % change over year	-2.9%	-13.4%	-24.4	63.0%
All 18 – 24	37,900	24,300	6,400	7,200
All 25- 49	75,000	38,400	13,400	23,200
All 50 and above	21,700	9,800	3,800	8,200

Source: Labour Market Statistics (First Release), Scotland, September 2012

Concerns as to the rates of pay increases amongst senior executives reflect wider concerns as to the increasing gap between the low and high paid. Wilkinson's and Pickett's analysis of the social consequences of inequality (2009) offers a wide ranging analysis of the impact of inequality. Data from the OECD (2011) indicates that income inequality amongst working age persons has risen faster in the UK

than in any other OECD country since 1975 as is now well above the OECD average. The share of the top 1% of income earners increased from 7.1% in 1970 to 14.3% in 2005; in 2012 this has increased to 15% of all income.

Trends in public sector employment are now considered in more detail a separate section in the Commentary. As the section indicates public sector employment in Scotland continues to decline, although at a slower rate than previously. The latest data at the time of writing this section (Q2 2012) indicates that there were 580,100 (548,100 excluding public sector financial institutions) employed in the public sector in Scotland, a decrease of 16,700 (2.8%) over the year. Employment in the devolved public sector declined by 11,400 (2.3%) to 487,600, due mainly to declines in health (1,900), further education (1,900) and local government employment (7,000).

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Cliff Lockyer
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Public Sector employment in Scotland

Protest action against government cutbacks took place in October, and this, together with action over pay claims and changes to terms and conditions of employment, may well herald more action over the winter months. The UK Government has announced proposals, to be detailed in the forthcoming Public Services Pensions Bill to increase the retirement age and to effectively reduce pensions for the majority of public sector staff, although ring fencing those within 10 years of retirement.

Table 1: Number of people employed in Scotland (headcount)

		Total employment	Private sector		Public sector		Public sector *Excluding public sector financial institutions*	
		Level	Level	Percentage	Level	Percentage	Level	Percentage
Q2	1999	2,245,000	1,699,600	75.70%	545,100	24.30%	545,100	24.30%
Q2	2000	2,306,000	1,756,400	76.20%	549,400	23.80%	549,400	23.80%
Q2	2001	2,335,000	1,782,800	76.30%	552,400	23.70%	552,400	23.70%
Q2	2002	2,332,000	1,771,400	75.90%	561,000	24.10%	561,000	24.10%
Q2	2003	2,396,000	1,822,000	76.10%	573,700	23.90%	573,700	23.90%
Q2	2004	2,441,000	1,853,900	76.00%	587,000	24.00%	587,000	24.00%
Q2	2005	2,429,000	1,831,500	75.40%	597,500	24.60%	597,500	24.60%
Q2	2006	2,467,000	1,865,600	75.60%	601,300	24.40%	601,300	24.40%
Q2	2007	2,553,000	1,957,000	76.70%	595,600	23.30%	595,600	23.30%
Q2	2008	2,536,000	1,941,000	76.50%	595,100	23.50%	595,100	23.50%
Q2	2009	2,480,000	1,849,500	74.60%	630,900	25.40%	591,400	23.80%
Q2	2010	2,448,000	1,825,900	74.60%	621,700	25.40%	585,000	23.90%
Q2	2011	2,489,000	1,891,700	76.00%	596,900	24.00%	563,100	22.60%
Q2	2012	2,465,000	1,884,700	76.50%	580,100	23.50%	548,100	22.20%

Source: Quarterly Public Sector Employment series, Scottish Government, Office for National Statistics

Notes

1. *Figures have been rounded to the nearest hundred. Total employment has been rounded to the nearest thousand.*
2. *Public sector financial institutions include Northern Rock (classified to the public sector from Q4 2007), Royal Bank of Scotland Group plc and Lloyds Banking Group plc (both classified to the public sector from Q4 2008).*
3. *Between Q3 2010 and Q2 2011 estimates for the civil service include temporary field staff recruited to carry out the 2011 census.*

As table 1 indicates public sector employment (excluding public sector financial institutions) rose between 1999 and 2006, but since 2006 has declined by 53,500. Although the movement of local authority staff both in and out of arm's length organizations, typically charities, makes comparisons slightly harder.

Public sector employment in Scotland continues to decline, although at a slower rate than previously. The latest data at the time of writing this section (Q2 2012) indicates that there were 580,100 (548,100

excluding public sector financial institutions) employed in the public sector in Scotland, a decrease of 16,700 (2.8%) over the year. Employment in the devolved public sector declined by 11,400 (2.3%) to 487,600, due mainly to declines in health (1,900), further education (1,900) and local government employment (7,000) (see table 2).

Table 2: Public Sector employment by National Accounts classification (headcount) all Q2 figures

	Total Public Sector	National Accounts Central Government Category						Local Gov.	Public Corp	Public Sector Financial Inst.
		Civil Service	Other Public Bodies	NHS	Armed Forces	Further Education Colleges	Total Central Gov.			
1999	545,100	48,500	13,600	129,100	14,900	15,700	221,800	293,500	29,900	
2000	549,400	48,100	14,500	129,900	15,100	15,700	223,200	296,400	29,800	
2001	552,400	48,500	14,700	131,400	14,500	15,700	224,700	296,400	31,200	
2002	561,000	51,200	14,300	134,200	13,500	16,000	229,000	301,800	30,200	
2003	573,700	51,400	15,900	139,100	13,800	16,000	236,200	308,100	29,500	
2004	587,000	52,300	17,000	142,100	14,200	16,000	241,600	315,900	29,400	
2005	597,500	52,000	18,700	144,900	13,200	16,700	245,500	321,700	30,300	
2006	601,300	52,800	18,600	148,300	12,900	16,600	249,200	323,700	28,400	
2007	595,600	50,600	19,800	152,700	12,400	16,700	252,300	318,100	25,200	
2008	595,100	49,600	21,800	155,200	12,100	16,900	255,600	313,700	25,800	
2009	630,900	51,100	21,600	159,300	12,000	16,900	260,800	306,300	24,400	39,500
2010	621,700	50,100	20,800	160,100	12,200	16,000	259,300	301,900	23,800	36,700
2011	596,900	48,700	19,500	155,300	11,900	15,900	251,300	289,000	22,700	33,800
2012	580,100	46,000	19,000	153,400	11,000	14,600	244,100	282,000	22,000	32,000

Source: Quarterly Public Sector Employment series. ONS.

Notes

1. *Figures have been rounded to the nearest hundred. Total employment has been rounded to the nearest thousand.*
2. *Public sector financial institutions include Northern Rock (classified to the public sector from Q4 2007), Royal Bank of Scotland Group plc. and Lloyds Banking Group plc. (both classified to the public sector from Q4 2008).*
3. *Local Government category revised to include SPT.*
4. *A number of local government staff have transferred to arm's length organisations which are part of the private sector. This largely explains the decrease in local government employment between 2008 and 2009.*
5. *Information for further education colleges is based on actual information from Q4 2010.*

Table 3 indicates the changes in headcount by local authority and indicates both a decline in Local Authority employment of 7,000 (2.4%) over the year. As we have noted in previous Commentaries pressures on spending levels will lead to reductions in employment levels, increased charges for services and reductions in the range and depth of services. In September a number of councils announced proposals for further reductions in staffing levels and services together with proposals for increased charges. Glasgow Council was reported as seeking a further 1000 voluntary redundancies and North Lanarkshire some £74 million in cuts.

Table 3:Local Government employment by local authority (headcount) Q4 2006 – Q2 2012 (Not seasonally adjusted)

Year	2006	2007	2008	2009	2010	2011	2012	Annual	Annual
Quarter	Q2	Q2	Q2	Q2	Q2	Q2	Q2	Change	Change %
Local Authority / Joint Board									
Aberdeen City	11,700	11,700	11,600	9,500	9,400	8,900	8,700	-200	-2.3%
Aberdeenshire	13,900	14,000	14,000	14,700	14,900	14,400	13,900	-500	-3.4%
Angus	5,600	5,600	5,700	5,700	5,600	5,600	5,500	-100	-1.5%
Argyll & Bute	5,700	5,600	5,400	5,500	5,200	5,100	4,800	-300	-5.3%
Clackmannanshire	2,700	2,800	2,900	2,900	2,800	2,600	2,600	0	-1.8%
Dumfries & Galloway	8,400	8,300	7,700	8,000	8,300	7,900	7,700	-100	-1.6%
Dundee City	8,500	8,400	8,400	8,200	8,100	7,800	7,300	-400	-5.6%
East Ayrshire	6,900	6,800	6,800	6,800	6,600	6,500	6,300	-200	-3.3%
East Dunbartonshire	4,900	4,800	4,900	5,000	5,000	4,400	4,500	100	1.9%
East Lothian	4,800	5,000	4,900	4,900	4,800	4,700	4,700	0	-0.8%
East Renfrewshire	4,600	4,600	4,700	4,800	4,500	4,500	4,400	0	-1.0%
Edinburgh, City of	21,000	20,800	20,200	19,300	18,800	18,100	17,700	-300	-1.8%
Eilean Siar	2,500	2,500	2,600	2,500	2,500	2,500	2,500	0	-1.7%
Falkirk	7,600	7,900	8,000	8,200	7,800	7,900	7,400	-500	-5.9%
Fife	24,400	23,900	23,000	23,300	23,100	21,900	21,400	-600	-2.6%
Glasgow City	37,800	32,700	32,200	23,800	23,100	21,700	21,300	-300	-1.6%
Highland	12,700	12,800	12,700	13,000	13,000	12,400	10,100	-2,300	-18.8%
Inverclyde	5,200	5,200	4,900	4,900	4,700	4,500	4,400	-100	-2.8%
Midlothian	4,400	4,500	4,800	4,700	4,800	4,600	4,800	100	2.7%
Moray	5,100	5,100	5,100	5,300	5,100	5,000	5,000	0	-0.3%
North Ayrshire	7,400	7,400	7,400	7,300	7,200	6,700	6,700	-100	-0.8%
North Lanarkshire	18,400	18,300	18,000	17,900	17,500	16,700	16,300	-400	-2.5%
Orkney Islands	2,200	2,200	2,100	2,400	2,400	2,400	2,400	0	-0.2%
Perth & Kinross	5,800	6,000	6,100	6,300	6,100	5,900	5,900	100	1.2%
Renfrewshire	9,400	9,200	8,900	8,900	8,400	7,600	7,600	0	0.6%
Scottish Borders	5,800	5,800	5,800	5,800	5,700	5,700	5,500	-200	-2.7%
Shetland Islands	3,600	3,700	3,800	4,000	4,200	4,100	3,900	-200	-6.0%
South Ayrshire	6,000	5,900	5,800	5,600	5,600	5,400	5,300	-100	-1.1%
South Lanarkshire	16,500	16,500	15,700	15,900	15,800	14,700	14,800	100	0.8%
Stirling	4,600	4,600	4,400	4,400	4,400	4,000	4,300	300	6.7%
West Dunbartonshire	5,900	6,000	6,300	6,500	6,300	6,200	5,700	-400	-7.2%
West Lothian	8,200	8,300	8,400	8,500	8,500	7,900	8,000	100	1.1%
Total Fire Joint Boards	5,800	5,800	5,800	5,800	5,700	5,600	5,500	-100	-2.0%
Total Police Joint Boards	24,400	24,100	23,300	24,700	24,800	24,000	5,500	-100	-0.5%
Total Valuation Joint Boards	600	700	700	700	600	600	23,900	0	-2.8%
Total Regional Transport Partnerships (SPT)	700	700	700	700	700	600	600	0	-6.7%
SCOTLAND	323,700	318,100	313,700	306,300	301,900	289,000	282,000	-7,000	-2.4%

Source: Joint Staffing Watch Survey, Scottish Government

Notes: 1. Figures are rounded to the nearest hundred.

2. Totals may not add up to the sum of the parts due to rounding

3. Figures for fire service staff exclude volunteer and retained fire-fighters

4. There are minor adjustments to police numbers for Dumfries and Galloway and Fife

5. Figures for Dundee City and Falkirk reflect some transfer of staff to charitable trusts

Education

In secondary education proposals to increasing working hours have been announced, essentially eliminating 'protected time' the time allowed for marking and for preparation. Although data from the OECD suggests that Scottish teachers work above average hours compared to counterparts in other countries.

Within the education sector the numbers employed in Scottish Further education colleges had declined by 1,300 over the year to Q2 2012 to 14,600, and by 2,300 since Q2 2009) and further reductions are inevitable. As noted in the previous Commentary the publication of the Scottish Government's Reform of Post 16 Education and subsequent consultation paper outlined the Government's proposals for a very rapid restructuring of 35 colleges into 12 regions with a programme of mergers, collaboration, sharing services and courses. Of concern has been the rapid introduction of the changes, with a series of mergers, new structures and revised delivery of courses. There is much to suggest that rapid changes can be less effective.

Reform continued in the Higher education sector with a number of universities continuing to restructure, reduce costs and continuing with voluntary severance schemes. In September there were calls for industrial action to be considered by university staffs over the pay offer of 1% for 2012/2013. A further problem for universities has been the reduction in the numbers of overseas students and hence income, due in part to the UK Government seeking to reduce numbers of migrants seeking to enter the UK and to delays progressing applications by the UK Border Agency.

Health

The numbers (headcount) employed in the NHS fell by 1,900 to 153,400 Q2 2011 – Q2 2012 (see table 2). Notwithstanding political claims a significant proportion of recent job losses are nursing staffs. Pressures on the NHS appear to be increasing, in September there were concerns that hospitals were discharging patients earlier and this was leading to increased pressures on GPs who already were experiencing increased pressures and targets. Proposals to introduce performance appraisal of doctors was announced in October. At the UK level there are concerns that cutbacks to the NHS are leading to increased migration of doctors leaving the UK.

A study of the funding of the NHS to 2021/22 (IFS and Nuffield Trust published July 2012) highlights concerns as to the sustainability of free care and hospital services in Scotland in the medium term. Their analysis of the situation in England suggests:

> *"Combining the Dilnot Commission recommendations with keeping English NHS spending constant as a share of national income, public spending on the NHS and social care would increase by 2.8% a year in real terms. All other areas of public service spending, however, would grow at just 0.3% a year over the seven years from April 2015, in the absence of any tax increases, borrowing increases or further cuts to welfare spending."*
>
> *"Public funding for health is set to be tight until at least the end of the decade. If NHS productivity does not increase sufficiently fast to bridge the gap between funding and demand pressures, then access to and quality of care is likely to deteriorate. Serious thought must be given to options for the NHS. These include reconsidering the range of services available free of charge to the whole population or the level of taxation needed to finance those services in the future." (IFS 2012:5).*

Currently NHS spending in Scotland is roughly a third of the annual Scottish budget. As the Audit Scotland's report noted the NHS budget rose by £232m in 2011-12 in cash terms. "The Scottish government's 2011 spending review outlined a 4.2% real-terms decrease in NHS funding in the five years to 2014-15." There are clearly pressures building in the system from increasing costs, rising expectations and increasing demand, and changes to policies are increasingly inevitable. Concerns as to the rising pressures and spending constraints confronting the Scottish NHS were more evident in the latest Audit Report who noted 'it will be difficult to reduce costs while maintaining high-quality services' and it was uncertain as to whether the current cost cutting measures would be successful.

Welfare

In September proposals to close the Remploy factories in Edinburgh and Aberdeen were announced, this is part of national policy of closing, over time, all 54 Remploy factories across the UK. In the year to September 2011 there were some 45,400 disabled workers in Scotland who are economically active but unemployed (GMB analysis, Brighton Conference). The unemployment rate at September 2011 amongst economically active disabled was 11.2%, compared to 7.5% for non-disabled unemployed.

Emergency Services

As noted in the previous Commentaries the background to the Police and Fire Reform (Scotland) Bill and the current concerns are well summarised in A SPICe Briefing published 20th February 2012. Financial

issues of the proposed reforms have been discussed in the Police Reform Programme, Outline Business Case September 2011 and more recently the issues have been summarised in a SPICe Briefing (20th February 2012).

In Scotland the appointment of the new chief constable for the national police force led to some clarification as to the scale of initial job losses, with up to 3,000 mainly support jobs (in HR, finance and procurement etc.) to be lost, mainly by voluntary redundancies and early retirement, and to proposals to reduce police estates by 20%, implying some reductions to the number of police stations. It is likely that some of the civilian job losses will lead to police officers taking back some of this work, and the trend towards a more porous divide between police officers and civilian staffs, a feature of future years, reduced in the period to 2015. The protection of police officer numbers may well be by standardising terms and conditions and at the expense of reductions in hours, overtime and conditions.

The plans by West Midlands and Surrey police forces to contract out up to £1.5 billion worth of services (see the June 2012 issue of the Commentary) are under some reconsideration following problems experienced by G4S at the Olympics.

Transport

Threats of industrial action had surfaced over possible changes to west coast ferries currently operated by Calmac, however, in September it was announced that the tender process was to be delayed by three years to 2016. Serco, awarded a six year contract in May 2012 to operate Northlink ferries, has announced reductions to services and up to 36 job losses, notwithstanding initial claims that there would be no redundancies and no changes to timetables.

Pay and Conditions

Major possible changes to public sector terms and conditions of employment for staff below the level of senior civil servants emerged in a letter sent to all civil service HR directors, leaked to the Guardian (10th October 2012). This asks HR directors across the civil service to have outline plans ready by the end of the year to consider: cuts in holiday entitlements; lengthening working weeks and reduce flexible working. In addition the Guardian article suggests the document includes other areas that could be changed: including annual and occasional days' leave; hours of work; probationary periods and sick pay. Also the document requests a review of family friendly flexitime, travel and expenses, disciplinary procedures and performance management.

The broad objectives would appear to seek to reform terms and conditions of employment to make them. The Guardian article quotes the director of the civil service human resources and capability group as stating the "civil service reform plan states that each department will undertake a review of their terms and conditions. Your review should ensure that your department…. Continues to be a good employer, offering terms and conditions comparable, but not beyond what a good employer would provide." The implication is that staff will become more 'flexible and collaborative' in a 'transformed civil service'.

Notwithstanding the apparent declining UK Government support for regionalising public sector pay a number of consultancy and interest groups have cited 'apparent' differences between public and private sector pay rates and the benefits to be derived by restraining public sector pay rates until they match comparable average private sector rates. We noted in the June Commentary a number of well-founded reservations to such proposals, and cited both the conclusions in the Incomes Data (2011) 'Location-based pay differentiation. We noted that in many respects national pay structures with orderly variation are the least bad option from all perspectives, they are simple and less time consuming to manage, minimize claims of unfairness, limit competitive bidding for scarce skills, can recognize labour market segmentation, that some occupations have national and even international labour markets, whilst others operate in local labour markets. The Office for National Statistics noted several reasons why differences between the public and private sector employment would contribute to differences in average earnings:

1. 'The public sector has a higher proportion of skilled jobs – widening in recent years as lower skilled jobs have been outsourced;
2. 'The public sector has a higher proportion of older employees and earnings tend to increase with age and experience;
3. 'The public sector workforce contains more people with a degree or equivalent qualification;
4. 'The gap between the highest and lowest earners is higher in the private sector than the public sector;'

In addition:

1. There are certain aspects relating to earnings that are not collected by either ASHE or the LFS, including data on self-employed and on bonuses;
2. An appreciation of the segmented nature of labour markets would further indicate why relating pay of some occupations to only local labour markets would be inappropriate.

'After accounting for gender, age, occupation, the region the job is located in and factoring in qualifications, the public sector, on average, earned 8.2% more per hour (excluding overtime) than the private sector in 2011…. Despite using a detailed level of occupation classification in order to remove many of the differences in jobs between the public and the private sector, some differences remain meaning that the pay in the two sectors for certain occupations may not be directly comparable.'

Wider concerns

In the years 2009/2010 and 2010/2011 it is estimated that spending on R & D in Government departments declined considerably, with spending on R & D in Transport down 47.8%, Education down 12.1% and in Environment and Rural Affairs down 15.5%. Whether reductions in research spending coupled with limits on pay increases will have an adverse effect on staff turnover is unclear, however, staff turnover rates of 28% in 2011 in the Treasury have been reported.

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Cliff Lockyer
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Exploring key economic sectors and groups of sectors in Scotland; 1998, 2004, 2007

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Introduction

Different methods and criteria exist for determining 'key' economic sectors. The Scottish Government identifies a number of 'key' sectors, although it is not clear which metrics it used to choose these. It is likely that these sectors are considered to be 'key' in delivering the Scottish Government's policy priorities. This differs from a more formally defined economic approach to determining key sectors. However, even within the economics literature, there are different ways of thinking about which sectors are 'key'.

This short paper presents one approach to determining individual and groups of 'key' sectors. We will explain why these approaches are not necessarily equivalent, and what value is added in moving from considering sectors individually to analysing the impact of sectors in groups. We begin with a non-technical overview of the methods we employ, before discussing the database used in this analysis. We then present the results of applying this method for Scotland for three time periods: 1998, 2004, and 2007. We mainly focus on sectoral output, but we also include one set of results which look at key employment sectors.

In the discussion of our results we concentrate on two things. First, we are interested in which sectors are identified as important in Scotland in each time period. Second, we investigate how those sectors have changed between 1998, 2004 and 2007.

Economic key sectors

The economic motivation for assessing 'key sectors' usually stems from a desire on the part of policymakers to identify those sectors on which the government should focus support in order to increase overall economic growth. Although this literature largely started in the context of developing economies, the applicability of some of the arguments to developed economies was soon recognised.
The arguments took two main forms. The first was that government should attempt to stimulate economic activity directly, and therefore it should focus attention on expanding those sectors of the economy which are large demanders of the output of other sectors in the domestic economy. The rationale being that if these sectors grow, they will stimulate other sectors of the domestic economy which provide inputs to this sector.

The second argument for identifying key sectors, which has only really been put forward in the context of developing countries, was that governments should attempt to identify sectors which are potential 'bottle-necks' in the supply chain. It is argued that expanding these sectors would facilitate the expansion of other sectors in the economy, and hence stimulate economic growth.

The measures used in this paper identify those sectors of the Scottish economy which support the greatest proportion of domestic output, employment, etc., individually or collectively. This could then be used to help inform decisions about the sectors on which the government focuses its sectoral economic growth policy.

The Scottish Government Economic Strategy (2007)[i] notes:

> *"…the job of government should be to facilitate and accelerate the growth sectors and to provide the necessary environment to make sure that it happens in Scotland.[ii]"*

Currently, the Scottish Government identify seven "key" domestic sectors These are[iii]:

- Creative Industries (including digital)
- Energy (including renewables)
- Financial and Business Services
- Food and Drink
- Life Sciences
- Tourism
- Universities

There is a 'Key Sector Statistics Database' maintained by the Scottish Government on the sectors listed above (with the exception of Universities). This database contains a number of important economic statistics relating to these sectors (employment, number of businesses in each key sector, etc.). However, it is not clear how these 'key' sectors have been selected, except a note on the Scottish Government website which states:

> *"…certain sectors offer particular opportunities for growth - in all or part of that sector - due to existing comparative advantages or through the potential to capitalise on Scotland's unique natural assets[iv]."*

Whilst the Scottish Government website indicates that 'comparative advantage' and 'growth potential' are the important determinants of which sectors are identified as key sectors it is unclear how these terms are measured and how the selection of the 'key' sectors proceeds on the basis of these metrics.

Methods

We employ two related methods to quantify the contribution of particular sectors to total economic output. The first is the hypothetical extraction of individual sectors of the economy; the second is the hypothetical extraction of groups of sectors in the economy. The hypothetical extraction of individual sectors has a reasonably long history in regional economics, but to focus analysis on the extraction of groups of sectors is a recent innovation. In order to move from considering key sectors to key groups of sectors, we employ a methodology developed by Temurshoev (2010)[v] which made this computationally intense analysis much more efficient so that the numerical analysis contained in this paper can be run from a standard desktop computer.

What is hypothetical extraction? Hypothetical extraction (HE) is a counterfactual analytical tool which identifies how much domestic economic activity would be reduced if a particular domestic sector did not exist. That is to say, all domestic production in the sector is assumed to cease and all domestic use of the sector's output is now assumed to be met by imports. Economic activity can be measured in a number of ways. Here we focus mainly on sectoral output, but we also present one set of results using sectoral employment.

Why is the HE approach superior to simply considering the size of each sector relative to the size of the Scottish economy? Because the impacts of a particular sector are more complex: crucially, each sector acts simultaneously as a buyer of goods and services from other sectors in the economy, and a supplier of goods and services to other sectors of the economy[vi]. A measure of the importance of an individual sector should take these interactions into account. The HE approach captures these inter-relationships, in so far as they are represented in the input-output database. The input-output database is a set of economic accounts which detail the relationships (in terms of purchases and sales) between different sectors of the economy. Miller & Blair (2009) present a very thorough description of this modelling environment.

However, it is precisely these inter-relations between sectors which explain why sectors which are ranked highest in an individual key sector analysis need not be those found in the highest ranked key groups of sectors. To see this, we take a simple example. Diagram 1 represents a schematic set of Input Output (IO) accounts. Each sector's purchases are represented by the elements down the appropriate column. The sector's sales are represented by elements along the corresponding row. For example, Sector 3 has purchases of intermediate inputs identified down the fourth column of Diagram 1 from (1,3) to (6,3) and purchases of non-produced inputs (labour, capital and land) of VA3. The same sector sells intermediate inputs to other domestic sectors. These are shown in the fourth row of Diagram 1 as entries (3,1) to (3,6). Sales to final demand (household consumption, investment and exports) are given as F3.

Diagram 2 shows Sector 3 being extracted from the input output database. This is what occurs where the impact of hypothetical extraction is calculated for a single sector. The removal of all the transactions that directly involve Sector 3 means that the output of the economy falls not only by the amount produced by that industry, but also by the intermediate inputs and (where appropriate) consumption goods needed to support that output. This is reinforced by further downward multiplier effects.

As in Diagram 2, Diagram 3 shows a set of accounts in which Sector 3 has already been extracted. However, Sector 5 has now also been removed. Sector 3 buys from Sector 5 (i.e. cell (5,3)) and in this same transaction, Sector 5 sells to Sector 3. Similarly Sector 5 buys from Sector 3 (i.e. cell 3,5) and in the same transaction, Sector 3 sells to Sector 5. In a HE individual key sector analysis the extraction of either of these sectors will involve the removal of both of these transactions. In a sense, therefore, if we sum the individual HE values for Sectors 3 and 5 these transactions are removed twice. However, in a HE key group analysis (with a group size of 2), the simultaneous extraction of both sectors 3 and 5 means that the impact of the removal of these shared transactions is only counted once.

Diagram 1

	Sector 1	Sector 2	Sector 3	Sector 4	Sector 5	Sector 6	Final Demand
Sector 1	1,1	1,2	1,3	1,4	1,5	1,6	F1
Sector 2	2,1	2,2	2,3	2,4	2,5	2,6	F2
Sector 3	3,1	3,2	3,3	3,4	3,5	3,6	F3
Sector 4	4,1	4,2	4,3	4,4	4,5	4,6	F4
Sector 5	5,1	5,2	5,3	5,4	5,5	5,6	F5
Sector 6	6,1	6,2	6,3	6,4	6,5	6,6	F6
Non-produced Inputs	VA1	VA2	VA3	VA4	VA5	VA6	

Diagram 2

	Sector 1	Sector 2		Sector 4	Sector 5	Sector 6	Final Demand
Sector 1	1,1	1,2		1,4	1,5	1,6	F1
Sector 2	2,1	2,2		2,4	2,5	2,6	F2
Sector 4	4,1	4,2		4,4	4,5	4,6	F4
Sector 5	5,1	5,2		5,4	5,5	5,6	F5
Sector 6	6,1	6,2		6,4	6,5	6,6	F6
Non-produced Inputs	VA1	VA2		VA4	VA5	VA6	

Diagram 3

	Sector 1	Sector 2		Sector 4		Sector 6	Final Demand
Sector 1	1,1	1,2		1,4		1,6	F1
Sector 2	2,1	2,2		2,4		2,6	F2
Sector 4	4,1	4,2		4,4		4,6	F4
Sector 6	6,1	6,2		6,4		6,6	F6
Non-produced Inputs	VA1	VA2		VA4		VA6	

What we are trying to identify in the hypothetical extraction of multiple sectors, are the groups of sectors in the economy which *jointly* support the greatest volume of output, employment or whatever the metric of interest is. Where two sectors have a large volume of trade with each other, a key group of sectors is less likely to include both sectors. In other words, the larger the values in the two green squares in Diagram 3, the less likely Sector 3 and Sector 5 are to be found together in the highest ranked group of key sectors. It

is also for this reason that the sum of the supported output from hypothetically extracting each sector individually, will not sum to the total output in the economy. This is because, in extracting each sector individually, most elements are extracted more than once. [vii]

Why does sectoral interdependence matter? Because if the government is interested in an economic development policy at the sectoral level, it would likely wish to identify sectors which are not highly interdependent. In other words, if supporting the construction sector leads to increased demand for the output of the cement sector, it makes little sense to subsidise both, unless you are seeking to support a 'cluster' of industries. Were you trying to support a cluster of industries, it is unlikely that you would be basing the identification of these industries upon the approach demonstrated in this paper anyway.

Assuming that the identification of 'clusters' is not the aim, if the government is supporting one sector and is seeking other sectors to aid, it should identify sectors which do not already benefit indirectly from its support of the first sector. The useful thing about the hypothetical extraction of key groups, therefore, is that highly interdependent sectors are less likely to appear together in the top ranked key groups of sectors. Nonetheless, we acknowledge that it is still the case that if two sectors are both large enough, even if they are highly interdependent they are likely to appear in highly ranked key groups of sectors.

Data

The Scottish Government provide Input-Output tables on a comparable basis for the years 1998 – 2007. [viii] In order to make the analysis presented here more accessible, we focus on three years: 1998, 2004 and 2007. We operate at the most disaggregated level possible, which is 126 sectors. Table A1 in the Appendix lists these sectors.

Results

Although we work at the 126 sector level, in order to facilitate the presentation of the results we focus on a subset of highly-ranked sectors. A fuller set of results is available from the authors.

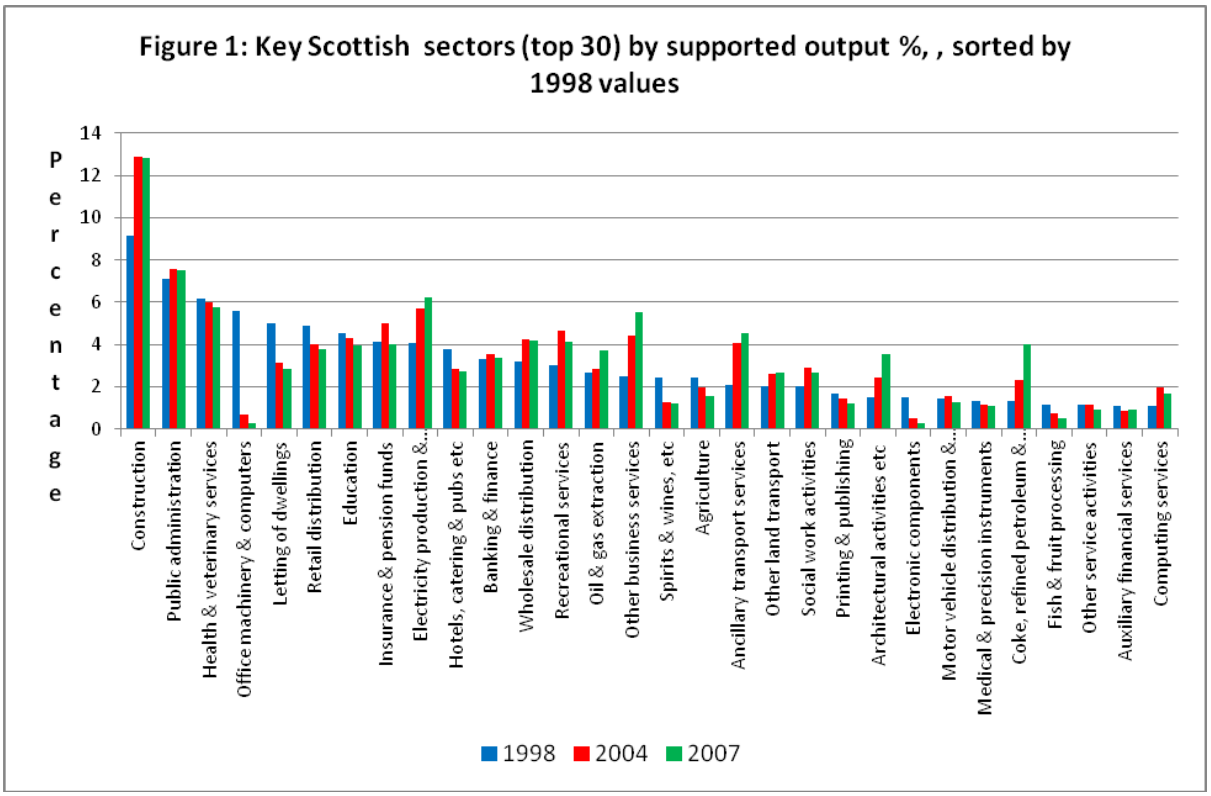
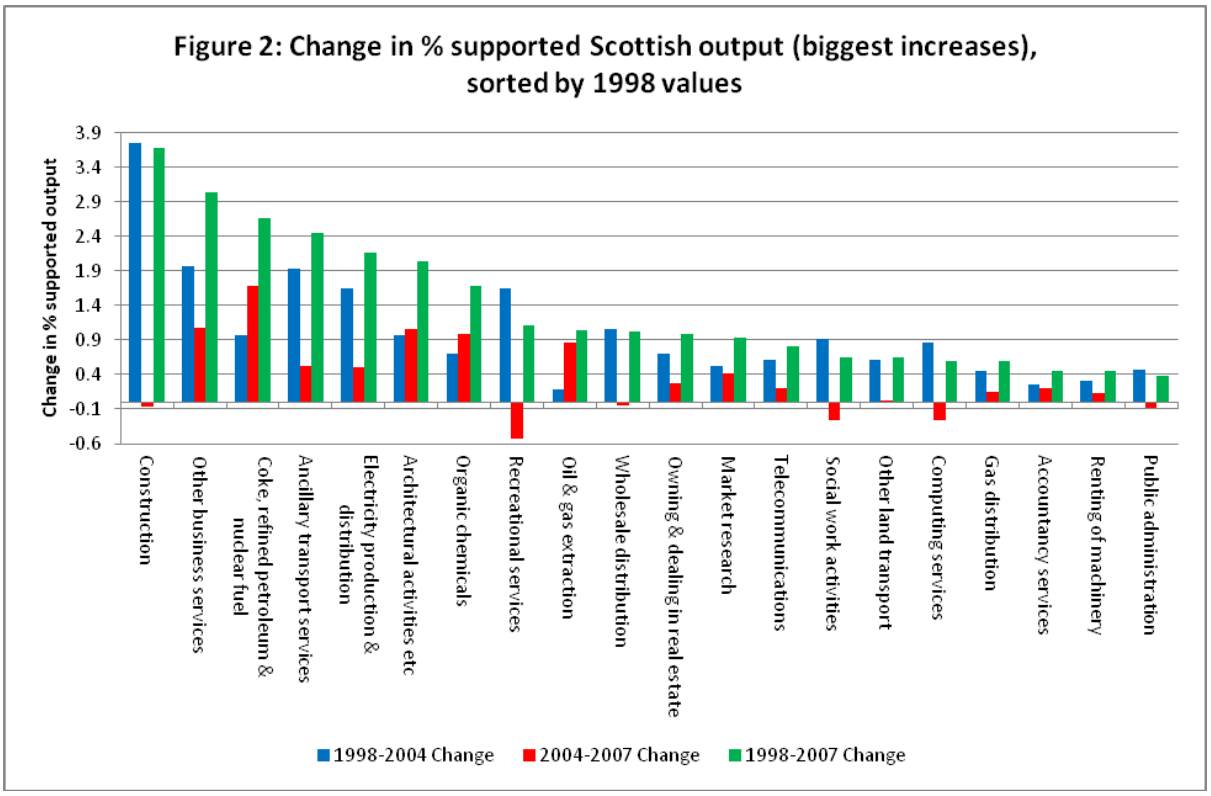
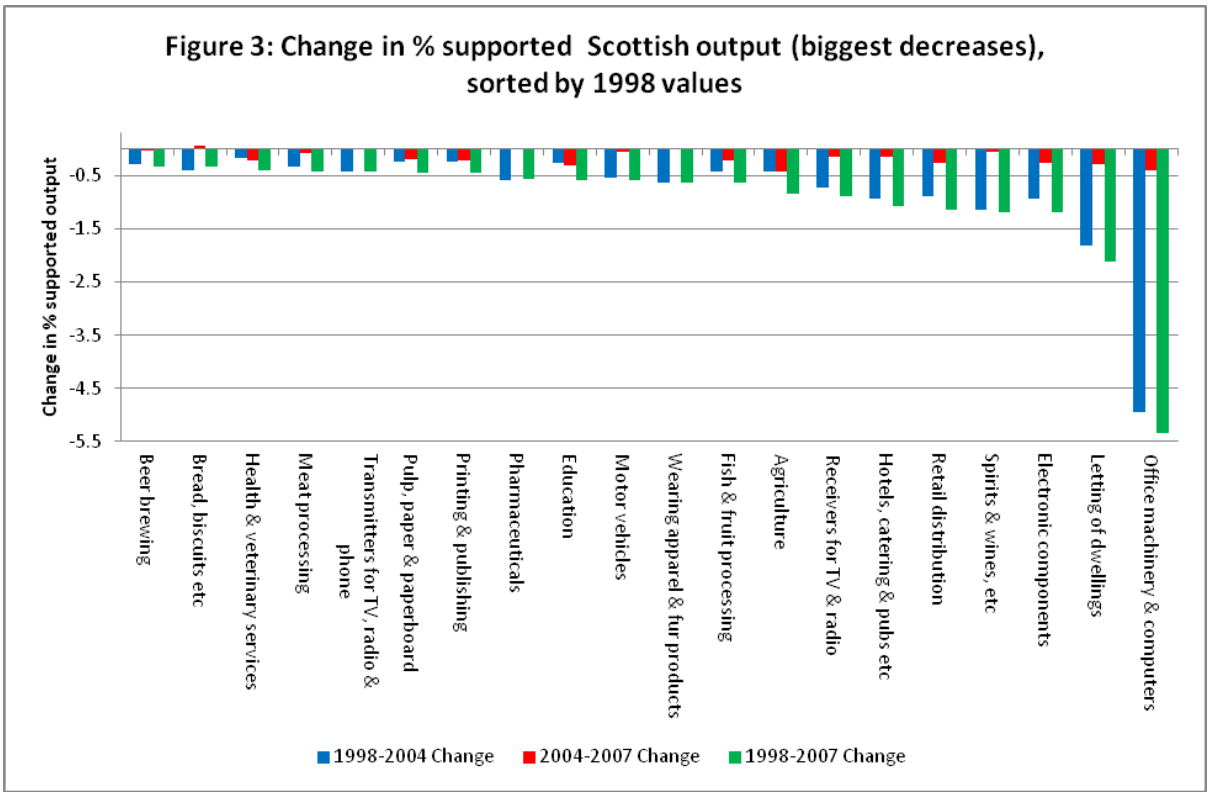


Figure 1 presents the results from the individual HE key sector analysis of Scotland for the years 1998, 2004 and 2007. In this approach each sector is hypothetically extracted individually and the subsequent reduction in economic activity quantified. The vertical axis records the % reduction in total output in the economy which would (hypothetically) occur if that sector were wholly closed down in Scotland. The sectors are ordered in Figure 1 in terms of the 1998 results.

The ranking of the "Construction" and "Public administration" sectors does not change across the 3 years we consider here. However, there is considerable change in the importance of some of the other sectors in

the Scottish economy over this time period. The most obvious example is 'Office machinery and computers'. In 1998 this was the 4th most important sector in the Scottish economy. According to the individual HE measure, in 1998 it supported nearly 6% of Scottish output. But by 2004 it supported less than 1% of Scottish output.





Sectors which significantly grow in importance include the 'Electricity production and distribution' sector, the 'Other business services' sector, and the 'Ancillary transport services' sector. Figure 1 illustrates the

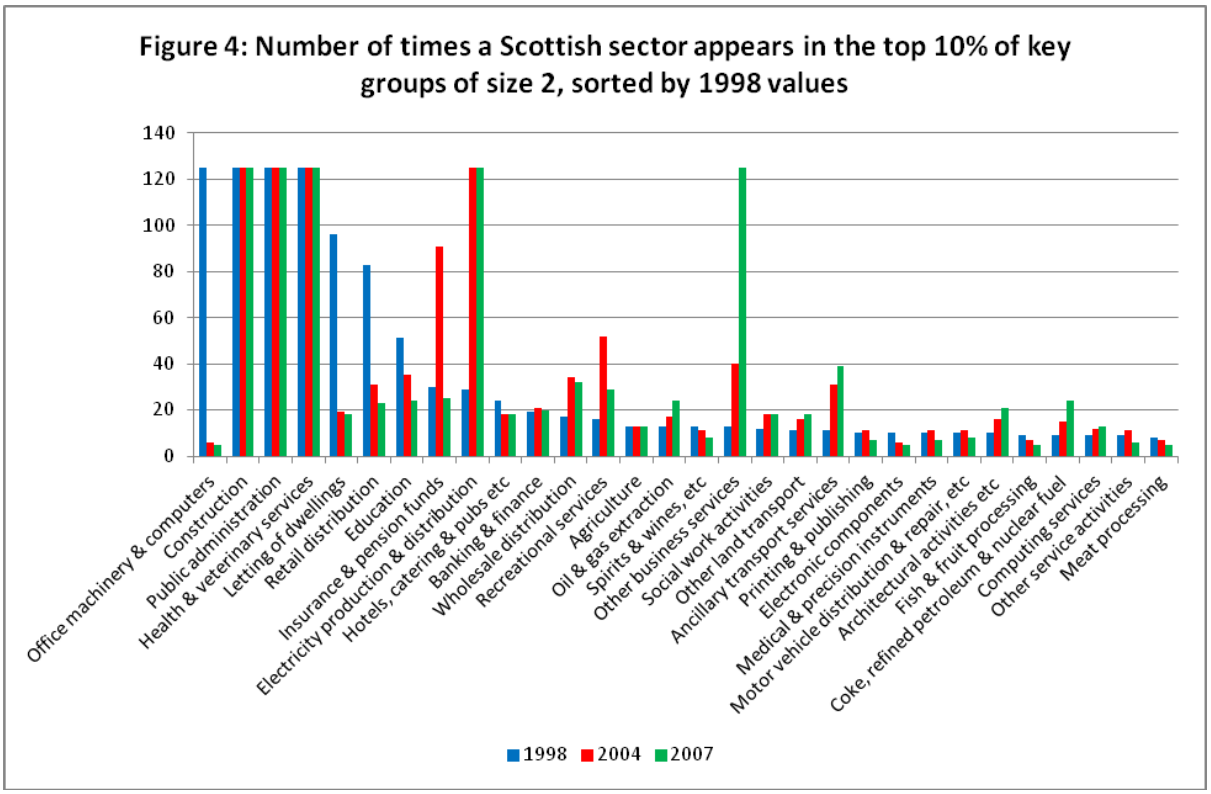
changes in the sectoral composition of the Scottish economy across this period. Some sectors become more important, some less important, others barely change in importance in terms of supporting domestic output (for instance the 'Banking and finance' sector).

Figure 2 identifies those sectors with the biggest percentage change in supported output for the period 1998-2007. We decompose this change into two sub-time periods: 1988-2004 and 2004-2007. Figure 2 shows that the biggest increase in supported output (an increase of 3.7% of Scottish output) occurred in the "Construction" sector, but that this was wholly concentrated in the first sub-period. In fact, in the period 2004-2007 the share of Scottish output that is supported by this sector showed a small decline. However other sectors showing large increases in importance over the whole period had growth concentrated in the second sub-period, for example "Coke, refined petroleum and nuclear fuel" and "Architectural activity".

Figure 3 shows the same time decomposition for the sectors experiencing the largest decreases in supported output. By far the largest decline has been in "Office machinery and computers", whose supported output fell by 5.4% of Scottish output during this time period. Note that almost all the industries shown in Figure 3 decline more during the earlier sub-period (1998-2004), although it is important to note that this was a longer time period.

Table 1: The maximum number of groups of different sizes in a 126 sector economy.

Group size	# of potential groups (based on 126 sector economy).
2	7,875
3	325,500
4	10,009,125
5	244,222,650
6	4,925,156,775



Moving to the key group analysis, we start by noting from Table 1 the number of different combinations of the 126 sectors that are possible for each group size. Recall that each sector can only appear once in any

one group and that the hypothetical extraction is simultaneous. For instance, this rules out Sector 3 and Sector 5 appearing as one two-sector group and Sector 5 and Sector 3 appearing as another. Given the number of different groups being evaluated using this measure, we focus our analysis on the top 10% of key groups of sectors. That is, we look only at those 10% of groups of sectors which support the largest % of total economic output (and later employment) in Scotland.

Figure 4 shows how many times each sector appears in the top 10% of key groups of size 2, ordered by the 1998 ranking. For key groups of this size the maximum number of times a sector can appear is 125. From Figure 4 we can see that in 1998 there were 4 sectors which appeared the maximum number of times in the top 10% of key groups of sectors. These were: 'Office machinery & computers', 'Construction', 'Public administration', and 'Health & veterinary services'. Only 3 of these sectors still appear the maximum of 125 times in 2004 and 2007. 'Office machinery & computers' is replaced by the 'Electricity production and distribution' sector in 2004 and 2007. Detailed inspection of Figure 4 reveals that some sectors are becoming less important over time ('Education', 'Retail distribution', and 'Letting of dwellings') whilst other sectors become more important according to this measure ('Electricity production and distribution', 'Other business services', and 'Ancillary transport services').

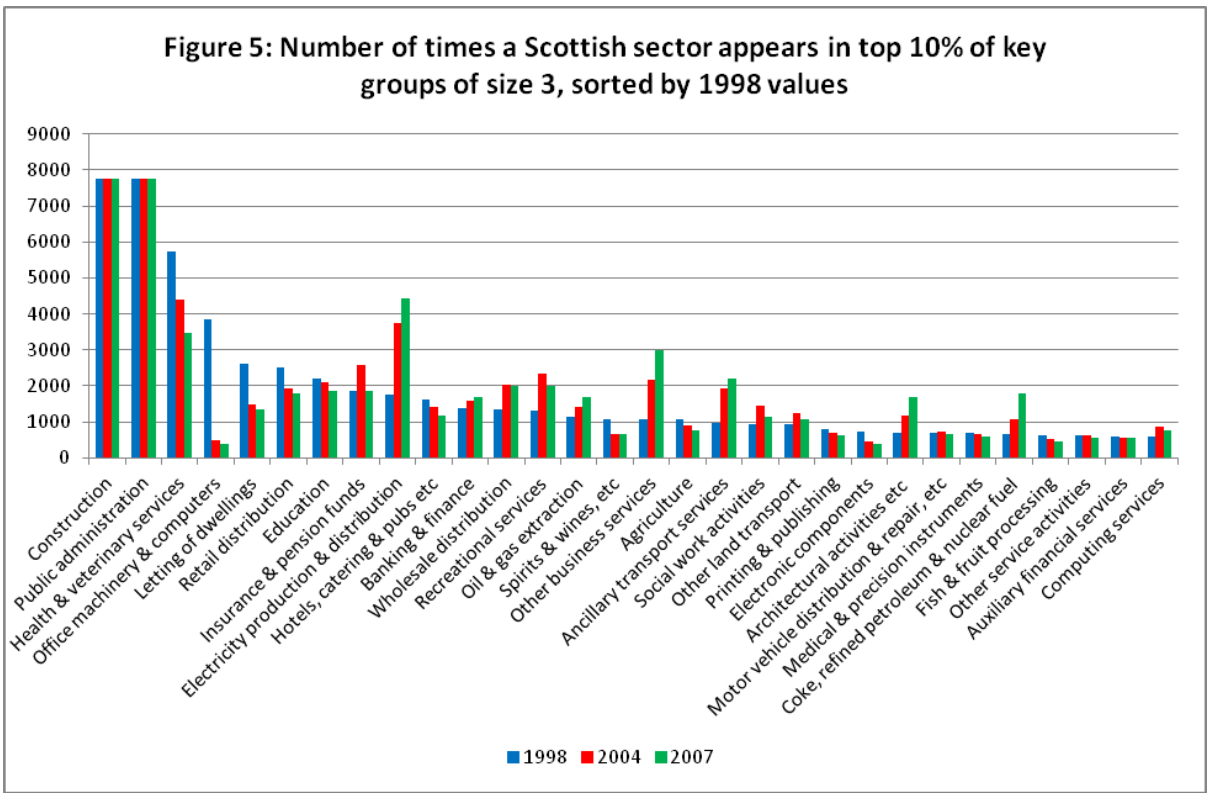
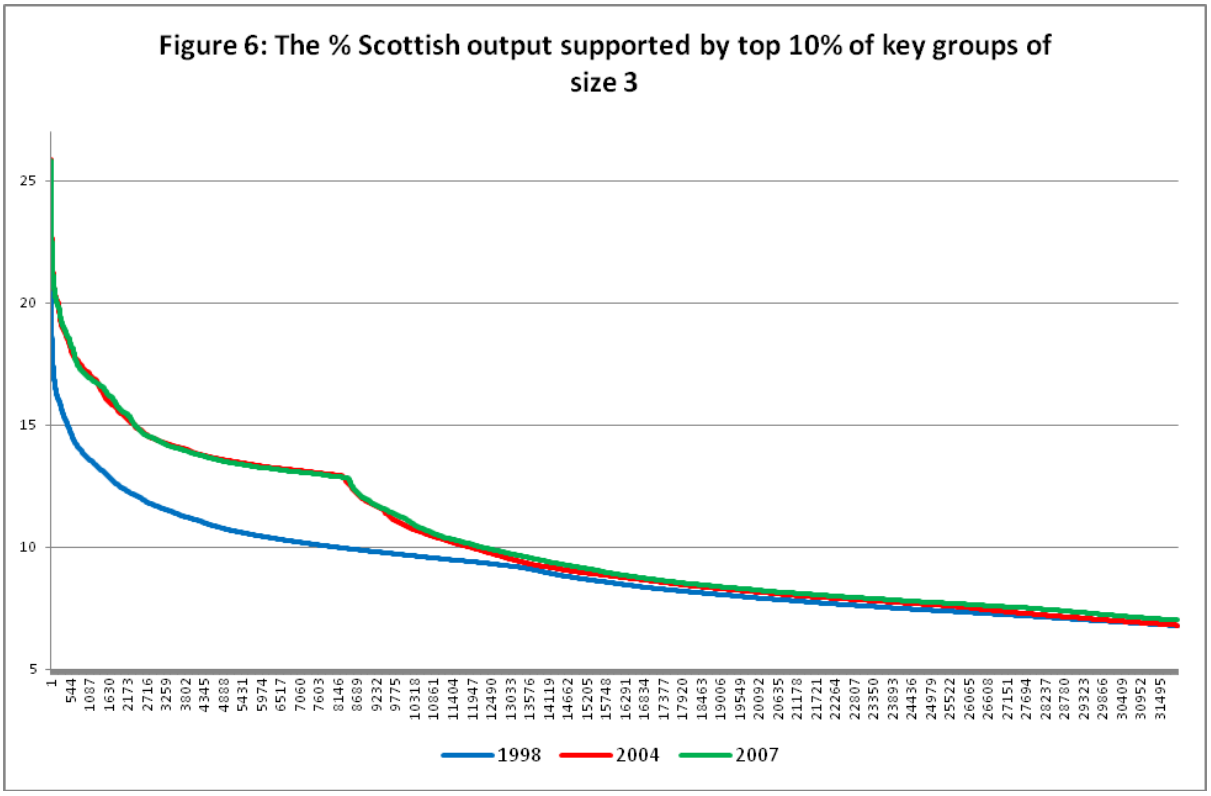


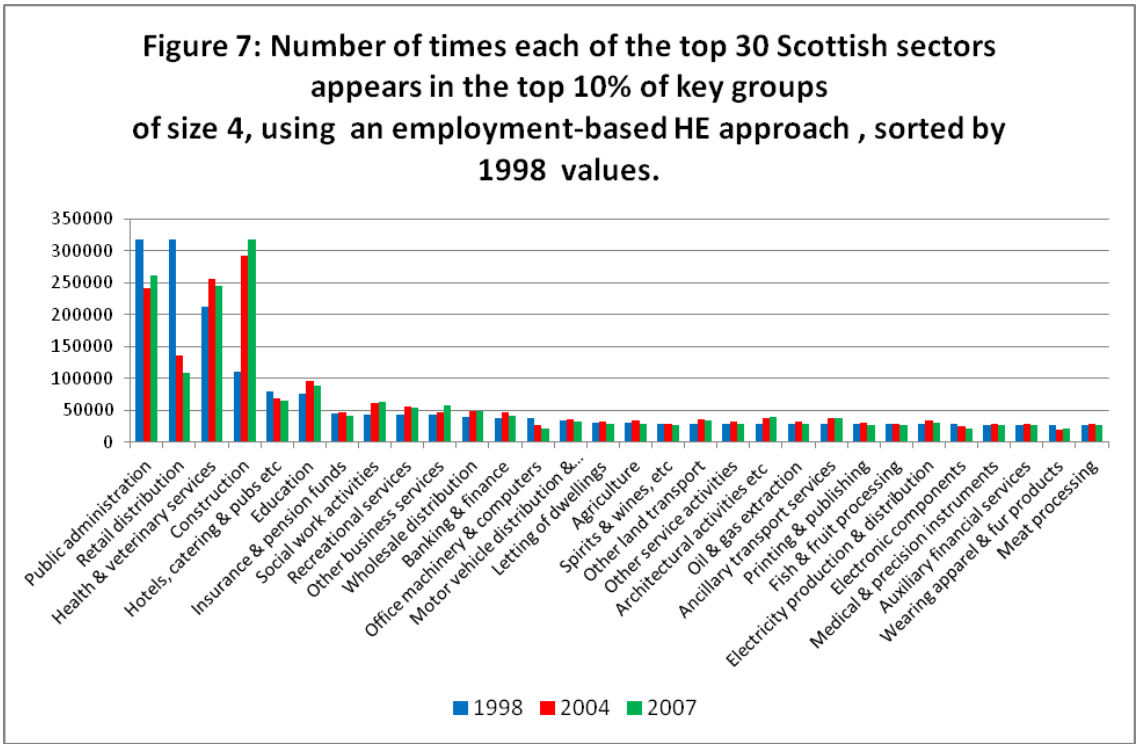
Figure 5 extends the analysis to groups of 3 sectors. Again, we concentrate on the top 10% of key groups, and report the number of times each sector appears in the top 10% of key groups of size 3. In this case the maximum number of entries is 7,750. Only two sectors now appear the maximum number of times in all three time periods. These are 'Construction' and 'Public administration'. Again certain sectors become less prominent over time, according to this measured. These are 'Health & veterinary services', 'Office machinery & computers', 'Retail distribution', and 'Letting of dwellings'. Sectors becoming more important over time include, 'Electricity production and distribution', 'Other business services' and 'Ancillary transport services'.

Figure 6 shows how the output supported by the top 10% of key groups of size 3 has changed over time. On the horizontal axis the top 10% of groups of size 3 are ordered by supported output. On the vertical axis the % of output in the Scottish economy supported by each of these key groups is shown. For example, entry number 1 is the 3 sectors whose joint hypothetical extraction would produce the largest % fall in Scottish output. This is the group of sectors "Construction", "Public administration" and "Health and veterinary services", and these sectors support 22% of Scottish output in 1998 using the joint HE method.

Figure 6 shows that in 2004 the highest ranked key 3 sector groups supported a greater % of output in Scotland than they had in 1998. Again, taking the key top 3 sector group as an example, in 2004 the same sectors made up the top key group as in 1998 but they now supported 26% of Scottish output, as

measured using the joint HE approach. In 2007 there was a further increase in the output supported by the top groups of sectors.



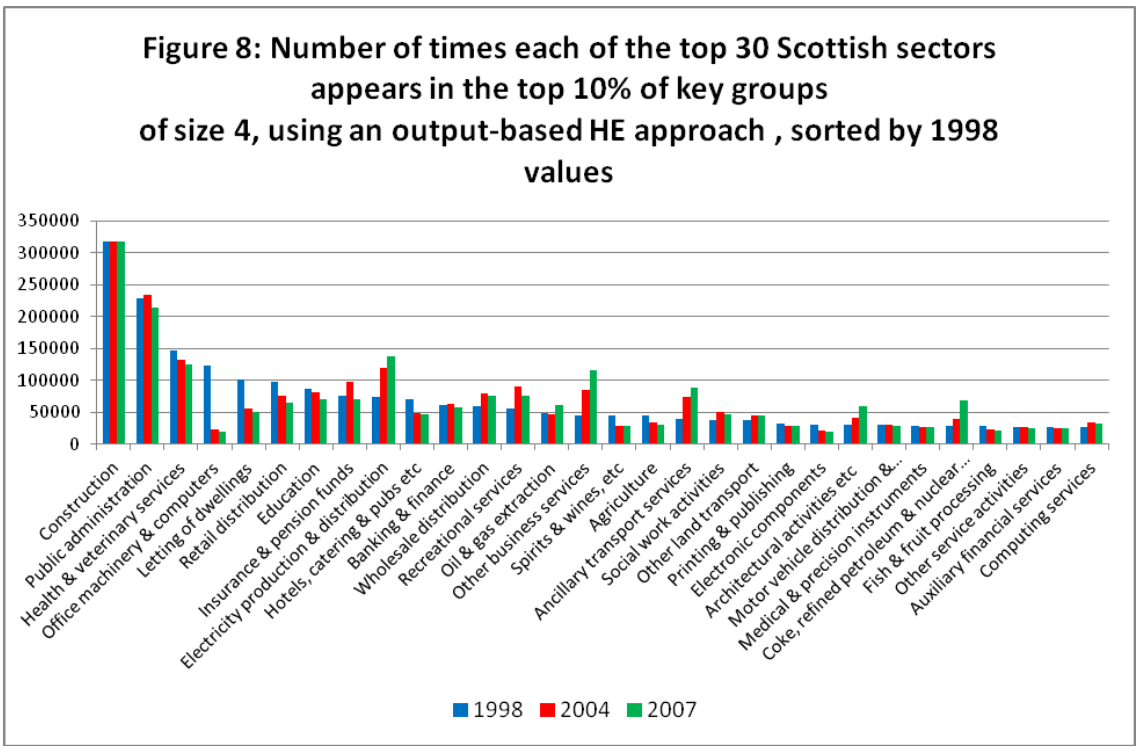


These changes over time might have a variety of causes. First they could represent greater specialisation in the Scottish economy (i.e. a greater proportion of the Scottish economy being supported by fewer sectors). This finds some support from Figure 4 which shows that for key groups of size 2 there were 2 more sectors in 2007 than in 1998 which appeared the maximum number of times in the top 10% of key groups of size 2. This might suggest that fewer, larger, sectors are dominating the Scottish economy in

2007 compared to 1998. Alternatively, it could indicate that the largest sectors in the Scottish economy are becoming less interdependent. Or, it could be a combination of both of these effects.

For a more direct comparison of the results based on the hypothetical extraction of individual sectors and groups of sectors, we have included Table 2. This shows the sectors which appear in the top 20 key groups of sectors in 1998, 2004 and 2007 in Scotland. The numbers in brackets after the sector name denote the ranking of that sector according to the hypothetical extraction of individual sectors in each of these years. What is clear from these tables is that the largest few sectors do appear in the top one or two key groups of sectors. However, it does not take long for this relationship to start to break down.

If the key group ranking simply followed the key sector ranking, we would expect the sectors ranked 1, 2 and 3 by the key sector ranking to be the key group. This group would then be followed by groups comprising 1, 2, 4 then 1, 2, 5 etc. etc. In fact, in 1998, while the top three sectors by the key sector ranking do appear in the top group, and the next group comprises those sectors ranked 1, 2, and 4, thereafter the relationship breaks down. The 3rd ranked group comprises sectors 1, 2, and 6. This is followed by 1, 3 and 5. Of course the largest sectors dominate the ranking, but what is interesting is that we can see which sectors are more interdependent than others. For instance sectors 1, 2 and 6 are less interdependent than 1, 2, and 5, and hence are ranked higher by the key group of size 3 ranking (even if this only translates to a less than a 0.4% difference in terms of supported output).



Employment

The results presented in the preceding section could be replicated for sectoral employment instead of sectoral output. We present here one set of results that focus only on the top 30 sectors using a group HE measure. However, in this case we increase the group size to 4. This increases the maximum number of times that a sector can occur in the top 10% of groups to 317,750. In Figure 7 we show the 30 sectors which appear most frequently in the top 10% of key groups of size 4 according to the joint hypothetical extraction approach based on sectoral employment, for 1998, 2004 and 2007. On this measure “Retail distribution” joins “Construction”, “Public administration” and “Health and veterinary services” as a key sector. The equivalent results for sectoral output are given in Figure 8. In 1998 two sectors, “Public administration” and “Retail distribution” appear the maximum number of times in the employment ranking, but only one “Construction” in the output ranking. However, in the 2007 only one sector is ranked the maximum number of times in both the output and employment measure. This sector is “Construction”.

Conclusion

This paper has attempted to identify the key sectors in the Scottish economy. It has used a newly operationalized approach for determining key groups of sectors, alongside the more traditional hypothetical extraction of individual sectors. Comparing across the three years considered here, is useful in illustrating changes in the sectoral composition of the Scottish economy over the 9 year period under

examination. Looking at the employment supported by key sectors is also of interest and it is worth noting that the same kind of results could be generated for other variables linked to output. That is to say, we could identify key individual, and groups of, industries in the generation of pollution, water use, etc.

Table 2: The sectoral composition of the top key groups of sectors 1998, 2004, 2007.

1998 KS=3			
%	Sec #1	Sec #2	Sec #3
22.028	Construction (1)	Public administration (2)	Health & veterinary services (3)
21.513	Office machinery & computers (4)	Construction (1)	Public administration (2)
20.782	Construction (1)	Retail distribution (6)	Public administration (2)
20.772	Office machinery & computers (4)	Construction (1)	Health & veterinary services (3)
20.397	Construction (1)	Letting of dwellings (5)	Public administration (2)
20.349	Construction (1)	Public administration (2)	Education (7)
20.039	Construction (1)	Retail distribution (6)	Health & veterinary services (3)
19.876	Construction (1)	Insurance & pension funds (8)	Public administration (2)
19.861	Electricity production & distribution (9)	Construction (1)	Public administration (2)
19.683	Construction (1)	Hotels, catering & pubs etc (10)	Public administration (2)
19.68	Construction (1)	Education (7)	Health & veterinary services (3)
19.647	Construction (1)	Letting of dwellings (5)	Health & veterinary services (3)
19.549	Office machinery & computers (4)	Construction (1)	Retail distribution (6)
19.2	Office machinery & computers (4)	Construction (1)	Education (7)
19.152	Office machinery & computers (4)	Construction (1)	Letting of dwellings (5)
19.137	Construction (1)	Banking & Finance (11)	Public administration (2)
19.117	Electricity production & distribution (9)	Construction (1)	Health & veterinary services (3)
19.099	Construction (1)	Insurance & pension funds (8)	Health & veterinary services (3)
18.957	Construction (1)	Wholesale distribution (12)	Public administration (2)
18.944	Construction (1)	Hotels, catering & pubs etc (10)	Health & veterinary services (3)

2004 KS=3			
%	Sec #1	Sec #2	Sec #3
25.898	Construction (1)	Public administration (2)	Health & veterinary services (3)
25.478	Electricity production & distribution (4)	Construction (1)	Public administration (2)
24.642	Construction (1)	Insurance & pension funds (5)	Public administration (2)
24.476	Construction (1)	Public administration (2)	Recreational services (6)
24.298	Electricity production & distribution (4)	Construction (1)	Health & veterinary services (3)
24.099	Construction (1)	Other business services (7)	Public administration (2)
24.041	Construction (1)	Public administration (2)	Education (8)
23.927	Construction (1)	Retail distribution (11)	Public administration (2)
23.895	Construction (1)	Wholesale distribution (9)	Public administration (2)
23.783	Construction (1)	Ancillary transport services (10)	Public administration (2)
23.452	Construction (1)	Insurance & pension funds (5)	Health & veterinary services (3)
23.403	Construction (1)	Banking & Finance (12)	Public administration (2)
23.367	Construction (1)	Health & veterinary services (3)	Recreational services (6)
23.096	Electricity production & distribution (4)	Construction (1)	Insurance & pension funds (5)
23.012	Construction (1)	Other business services (7)	Health & veterinary services (3)
23.007	Construction (1)	Education (8)	Health & veterinary services (3)
22.975	Electricity production & distribution (4)	Construction (1)	Recreational services (6)
22.903	Construction (1)	Public administration (2)	Social work activities (14)
22.865	Construction (1)	Letting of dwellings (13)	Public administration (2)
22.786	Construction (1)	Hotels, catering & pubs etc (15)	Public administration (2)

2007 KS=3			
%	Sec #1	Sec #2	Sec #3
25.813	Electricity production & distribution (3)	Construction (1)	Public administration (2)
25.506	Construction (1)	Public administration (2)	Health & veterinary services (4)
24.954	Construction (1)	Other business services (5)	Public administration (2)
24.519	Electricity production & distribution (3)	Construction (1)	Health & veterinary services (4)
24.163	Electricity production & distribution (3)	Construction (1)	Other business services (5)
24.102	Construction (1)	Ancillary transport services (6)	Public administration (2)
23.809	Construction (1)	Public administration (2)	Recreational services (8)
23.725	Construction (1)	Other business services (5)	Health & veterinary services (4)
23.672	Construction (1)	Wholesale distribution (7)	Public administration (2)
23.581	Construction (1)	Public administration (2)	Education (11)
23.523	Construction (1)	Insurance & pension funds (10)	Public administration (2)
23.505	Coke, refined petroleum & nuclear fuel (9)	Construction (1)	Public administration (2)
23.483	Construction (1)	Retail distribution (12)	Public administration (2)
23.175	Electricity production & distribution (3)	Construction (1)	Ancillary transport services (6)
23.114	Oil & gas extraction (13)	Construction (1)	Public administration (2)
23.097	Construction (1)	Banking & Finance (15)	Public administration (2)
22.897	Electricity production & distribution (3)	Construction (1)	Recreational services (8)
22.836	Construction (1)	Ancillary transport services (6)	Health & veterinary services (4)
22.769	Electricity production & distribution (3)	Construction (1)	Education (11)
22.763	Electricity production & distribution (3)	Construction (1)	Wholesale distribution (7)

APPENDIX

Table A1

Industry/Product Groups:		
Agriculture, forestry & fishing	1	Agriculture, hunting and related service activities
	2.1	Forestry planting and related service activities
	2.2	Forestry logging and related service activities
	3.1	Fishing and service activities incidental to fishing
	3.2	Fish farming and related service activities
Mining	4	Mining of coal and lignite; extraction of peat
	5	Extraction of crude petroleum and natural gas, service activities incidental to extraction; mining of uranium and thorium ores
	6	Mining of metal ores
	7	Other mining and quarrying
Manufacturing	8	Production, processing and preserving of meat and meat products
	9	Processing and preserving of fish and fish products; fruit and vegetables
	10	Vegetable and animal oils and fats
	11	Dairy products
	12	Grain mill products, starches and starch products
	13	Prepared animal feeds
	14	Bread, rusks and biscuits; manufacture of pastry goods and cakes
	15	Sugar
	16	Cocoa; chocolate and sugar confectionery
	17	Other food products
	18.1	Spirits and wines
	18.2	Beers and ales
	19	Production of mineral waters and soft drinks
	20	Tobacco products
	21	Preparation and spinning of textile fibres
	22	Textile weaving
	23	Finishing of textiles
	24	Made-up textile articles, except apparel
	25	Carpets and rugs
	26	Other textiles
	27	Knitted and crocheted fabrics and articles
	28	Wearing apparel; dressing and dying of fur
	29	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness
	30	Footwear
	31	Wood and wood products, except furniture
	32	Pulp, paper and paperboard
	33	Articles of paper and paperboard
	34	Publishing, printing and reproduction of recorded media
	35	Coke, refined petroleum products and nuclear fuel
	36	Industrial gases, dyes and pigments
	37	Other inorganic basic chemicals
	38	Other organic basic chemicals
	39	Fertilisers and nitrogen compounds
	40	Plastics and synthetic rubber in primary forms
	41	Pesticides and other agro-chemical products
	42	Paints, varnishes and similar coatings, printing ink and mastics
	43	Pharmaceuticals, medicinal chemicals and botanical products
	44	Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations
	45	Other chemical products
	46	Man-made fibres
	47	Rubber products
	48	Plastic products
	49	Glass and glass products
	50	Ceramic goods
	51	Bricks, tiles and construction products, in baked clay
	52	Cement, lime and plaster
	53	Articles of concrete, plaster and cement; shaping and finishing of stone; manufacture of other non-metallic mineral products
	54	Basic iron and steel and of ferro-alloys; manufacture of tubes and other first processing of iron and steel
	55	Basic precious and non-ferrous metals
	56	Casting of metals
	57	Structural metal products
	58	Tanks, reservoirs and containers of metal; manufacture of central heating radiators and boilers; manufacture of steam generators
	59	Forging, pressing, stamping and roll forming of metal; powder metallurgy; treatment and coating of metals
	60	Cutlery, tools and general hardware
	61	Other fabricated metal products
	62	Machinery for the production and use of mechanical power, except aircraft, vehicle and cycle engines
	63	Other general purpose machinery
	64	Agricultural and forestry machinery
	65	Machine tools
	66	Other special purpose machinery

	67	Weapons and ammunition
	68	Domestic appliances not elsewhere classified
	69	Office machinery and computers
	70	Electric motors, generators and transformers; manufacture of electricity distribution and control apparatus
	71	Insulated wire and cable
	72	Electrical equipment not elsewhere classified
	73	Electronic valves and tubes and other electronic components
	74	Television and radio transmitters and apparatus for line for telephony and line telegraphy
	75	Television and radio receivers, sound or video recording or reproducing apparatus and associated goods
	76	Medical, precision and optical instruments, watches and clocks
	77	Motor vehicles, trailers and semi-trailers
	78	Building and repairing of ships and boats
	79	Other transport equipment
	80	Aircraft and spacecraft
	81	Furniture
	82	Jewellery and related articles; musical instruments
	83	Sports goods, games and toys
	84	Miscellaneous manufacturing not elsewhere classified; recycling
Energy and water	85	Production, transmission and distribution of electricity
	86	Gas; distribution of gaseous fuels through mains; steam and hot water supply
	87	Collection, purification and distribution of water
Construction	88	Construction
Distribution & catering	89	Sale, maintenance and repair of motor vehicles and motor cycles; retail sale of automotive fuel
	90	Wholesale trade and commission trade, except of motor vehicles and motorcycles
	91	Retail trade, except of motor vehicles and motorcycles, repair of personal and household goods
	92	Hotels and restaurants
Transport & communication	93	Transport and railways
	94	Other land transport; transport via pipelines
	95	Water transport
	96	Air Transport
	97	Supporting and auxiliary transport activities, activities of travel agencies
	98	Postal and courier activities
	99	Telecommunications
Finance and business	100	Banking & finance
	101	Insurance and pension funding, except compulsory social security
	102	Auxiliary financial services
	103	Real estate activities with own property, letting of own property, except dwellings
	104	Letting of dwellings, including imputed rent
	105	Real estate activities on a fee or contract basis
	106	Renting of machinery and equipment without operator and of personal and household goods
	107	Computer and related activities
	108	Research and development
	109	Legal activities
	110	Accounting, book-keeping and auditing activities; tax consultancy
	111	Marketing research and public opinion polling; business and management consultancy activities; management activities of holding companies
	112	Architectural and engineering activities and related technical consultancy, technical testing and analysis
	113	Advertising
	114	Other business services
Public admin etc.	115	Public administration and defence; compulsory social security
Education, health and social work	116	Education
	117	Human health and veterinary activities
	118	Social work activities
Other services	119	Sewage and refuse disposal, sanitation and similar activities
	120	Activities of membership organisations not elsewhere classified
	121	Recreational, cultural and sporting activities
	122	Other service activities
	123	Private households employing staff and undifferentiated production activities of households for own use

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[i] http://www.scotland.gov.uk/Resource/Doc/202993/0054092.pdf
[ii] http://www.scotland.gov.uk/Resource/Doc/202993/0054092.pdf (p27)
[iii] For more on this, see: http://www.scotland.gov.uk/Topics/Economy/Key-Sectors
[iv] http://www.scotland.gov.uk/Topics/Economy/Key-Sectors
[v] Temurshoev, U. (2010), Identifying Optimal Sector Groupings with the hypothetical extraction method. Journal of Regional Science, 50: 872–890.
[vi] In the context of sectoral employment, sectors not only employ people directly, they also employ individuals indirectly through their supply chain.
[vii] Hypothetical extraction of individual or groups of sectors is therefore not an accounting measure. Standard IO attribution, where the output supported by the final demands of each sector can be calculated, is an accounting measure. The sum of the economic activity attributed to individual sectors using standard IO attribution equals the total economic activity of the economy.
[viii] These tables are available from: http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/input-output.

The Scottish Public Finances 2010-11 - Surplus or Deficit?

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The Fiscal Context

The annual publication of the Government Expenditure and Revenues in Scotland Report (known as GERS), which is compiled by professional economists in the Scottish Government, is a highly political event.

The stated aim of GERS is to enhance public understanding of fiscal issues in Scotland, by estimating a set of public sector accounts. It does so by both estimating total government revenue and expenditure in Scotland, then calculating a net fiscal balance. A fiscal deficit, however, is not a financial problem, as it is part of the UK public accounts and simply measures the gap between spending and revenues in Scotland (McCrone, 1999; Goudie, 2002).

GERS was first published in 1992, and then developed and expanded in 1995, since when it has been published annually. It was described as

> *"an important element in the debate about Scotland's future. This debate has generated a range of claims and counterclaims about the size of Scotland's Budget deficit or fiscal deficit, and the implications for Scottish living standards under constitutional options open to the people of Scotland".*
> *(Scottish Office, 1995)*

It has always been subject to political spin by Scottish Ministers (Heald and McLeod, 2002), firstly to attack devolution, then independence, and now the SNP use the report to support their economic case for independence in the referendum process.

Scottish Finance Minister John Swinney claimed "that Scotland continues to contribute more to the UK Treasury than we receive in public spending" (Scottish Government, 2012a). This led to one respected economic analyst to describe this as "statistical massaging", arguing that political leaders must not be allowed to tailor findings in government expenditure reports (Young, 2012).

Arguments over GERS accuracy have generally been between the SNP and the other political parties, rather than between experts. Whilst GERS is based on estimating techniques and the UK's public expenditure statistics, researchers in the area have accepted that it maps out the broad magnitude of Scotland's fiscal position (Heald et al, 1998; MacKay and Wood, 1999; Bell and Christie, 2002), and therefore "the kind of fiscal position from which an independent Scotland would start" (Murkens, Jones and Keating, 2002).

Accounting for the Fiscal Deficit

The long-term fiscal deficit has resulted from a long established system of incremental budgeting, with allocations to departments and devolved administrations based on political judgements of expenditure need, irrespective of fiscal contributions. In a unified system, fiscal transfers occur automatically, and nine of the twelve regions of the UK have allocations which exceed their tax contributions (Midwinter, 2004).

What complicates the Scottish position is the treatment of North Sea revenues as ex regio (not attributed to any regions in the UK) in the public accounts. In this paper, a geographical share of North Sea revenues is attributed to Scotland. In a paper for the Scottish Parliament's Finance Committee, I showed that from 1996 Scottish shares of all other taxes fell from being broadly equivalent to our population share, to less than it each year, averaging 8.3% of tax yields, and 8.6% of the population (Midwinter, 2007). The GERS report regularly publishes fiscal balances on this basis, and with oil revenues attributed to Scotland on the basis of an estimated geographical share, the most relevant measure for an independent Scotland.

Since its victory in the 2011 Scottish parliamentary election, the SNP Administration has been undertaking a public consultation exercise prior to its independence referendum, and published two papers favouring independence. The first considers options for fiscal autonomy, and argues that:

> *"The current framework significantly constrains the ability of the Scottish Government to boost Scotland's long term competitiveness through, for example, introducing a simpler and more competitive regime. It also constrains the ability to take short-term measures to stabilise the economy, through, for example, tax cuts or significant increases in public investment"*
>
> *(Scottish Government, 2009a).*

This is, however, wholly consistent with the reservation of macroeconomic responsibility with the central state as happens in most countries, and the devolution of microeconomic functions to support the economy. It does not mean action is not taken.

Similar arguments are set out in the consultation paper (Scottish Government, 2009b), identifying the creation of a "Sovereign Wealth Fund" based on Scotland's oil and gas reserves, and cutting corporation tax to enhance growth, as desirable initiatives.

The SNP has stated its view that "Scotland pays its way" (SNP 1997; 2001) for the past fifteen years, whilst acknowledging that surpluses in the 1980s were because of the high tax yields from oil and gas. In public accounting, this also reflected the attribution of privatisation proceeds as revenues (Midwinter, 2000).

The consensus among researchers, however, is of a recurring structural deficit and high levels of public spending over the 20th Century (Lee, 1995; Woods, 2001; Bell and Christie, 2002; Goudie, 2002; Midwinter, 2007; and Calmans Independent Expert Group, 2008).

By contrast, Hallwood and Macdonald (2006) who favour fiscal autonomy under devolution or independence, observe that "the Scottish budget deficit probably varies from negative to positive and back again", although they offer no financial evidence that this is indeed the case, data readily available in the GERS series.

So does the reported fiscal surplus stand up to scrutiny? In fact, GERS 2010-11 shows that in only two years out of five did Scotland record a current budget surplus of £552m in 2006-7, and £999.3m in 2009. But this is not a measure of the fiscal position Scotland would inherit on independence, as it excludes capital expenditure, which is funded as capital from current expenditure within the Block Grant. The actual net fiscal deficit, which the Finance Minister ignored, was £3 and £3.6 billions in these years.

Deficits have increased significantly in recent years as UK revenues fell and borrowing grew in response to the world financial and economic crisis. The net fiscal deficits reported in GERS 2010-11 are shown below.

Table 1: Scotland's Net Fiscal Deficits, 2006-7 to 2010-11

Year	North Sea Revenue (£bn)	Net Fiscal Deficit (£bn)
2006-07	7504	3034
2007-08	7115	3668
2008-09	11740	3734
2009-10	5930	14179
2010-11	7951	10679

Since 1992, GERS has reported fiscal deficits for Scotland, ranging from £2.9 billion to £14.2 billion, whilst North Sea revenues have ranged from £1 billion to £12 billion.

Similar findings were reached in a recent note on Scotland's fiscal position, applying a geographic share of North Sea revenues to Scotland (Ashcroft, 2012). This shows that Scotland had a theoretical surplus in the 1980s, when both oil revenues and privatisation income levels were high. Since 1990, there has been a recurring fiscal deficit, exacerbated since 2008 because of governmental responses to recession. Between 1990 and 2007 the deficit averaged above 3% of GDP, whilst the UK average was below this EU Stability Pact benchmark.

These figures highlight a major gap in the Scottish Government's argument; namely its failure to acknowledge that its high level of dependency on a highly volatile oil and gas revenue will be a recurring budget problem. Even when this yield is high, there would be no surplus to transfer on independence.

This dependency on oil and gas revenues is clear from data reported in GERS which I collated in a paper for the Scottish Parliament's Finance Committee. Since 1993-4, the Scottish public finances have been in a recurring deficit position, even when the North Sea yield was above the £3.2 billion average (see Table 2 below).

Table 2: Oil and Gas Revenues and Net Fiscal Deficit in Scotland's Public Finances 1993-2004

Year	Oil and Gas Revenues (£bn)	Fiscal Deficit (£bn)
1993	1.2	6.9
1994	1.6	6.6
1995	2.4	4.7
1996	3.5	3.6
1997	3.3	2.1
1998	2.6	1.3
1999	2.5	1.5
2000	4.3	1.1
2001	5.2	2.8
2002	4.9	4.4
2003	4.3	6.9
2004	5.2	6.0

Source: A. Midwinter (2007) Report prepared for The Scottish Parliament Finance Committee

The lack of feasibility of implementing their promises to create an oil fund or to cut corporation tax should be clear from the GERS data. Increased scrutiny of this in the news media has resulted in them being qualified by the Scottish Government as only happening when fiscal conditions permit, a key retreat from the claims in their earlier report (Scottish Government, 2009b). This is a belated recognition of fiscal reality.

Conclusion

The claims by the Finance Minister that Scotland is in fiscal surplus within the UK cannot be validated from his government's own data. As a stream of researchers have observed, Scotland has been, and remains, in a net fiscal deficit position since GERS reports began.

Moreover, this selective use of official data for partisan advantage is not new. In opposition, the SNP regularly varied the assumptions underpinning the GERS estimates in their own calculations to deliver a paper surplus (Midwinter, 2002), so this practice has been continued in government.

Similarly, the Scottish Government claims Scotland has been "underperforming" in relative economic growth, based wholly on a single indicator, GDP (Scottish Government, 2010). The Centre for Public Policy and the Regions has argued that GDP per capita is a better measure of changes in living standards (McLaren, 2012), and that Scottish growth has been broadly in line with the UK, and above the OECD average, since devolution. Indeed, the Scottish Government's own data records improved growth rates from 1.8% to 2.3%, but this is ignored. So, there has been no economic underperformance in recent years, nor would there be any fiscal surplus available on independence.

It should also be clear that the fiscal deficit is <u>not</u> a problem within the UK, as it simply reflects the fiscal flows within a unified fiscal system, which recognises higher needs in nine of the twelve nations and regions of the UK. The Finance Minister has presented a false prospectus in his assessment of the fiscal implications of independence.

The Scottish Government's assessment of the fiscal implications of independence contains fundamental errors of fact and judgement, and its claims must be subject to continuing rigorous scrutiny in the referendum process. The structural deficit remains a fundamental problem it is unwilling to address.

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Broadband – Towards a national plan for Scotland

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Abstract

The development of national broadband plans has been used by many countries to join up different areas of governmental and regulatory activities and to set ambitious targets for ubiquitous access to and use of the latest fixed and wireless networks and services. For Scotland this requires working within EU and UK legislative frameworks, which have also provided the bulk of the finance for interventions. It also requires an understanding of the significant weaknesses of urban broadband adoption compared to other UK and EU nations and of its e-commerce supply and demand. While resources are being targeted at rural and remote areas, more are needed to close the social digital divide, which is unavoidable if the stated ambition of being world class is to be achieved.

Introduction

National broadband plans are now commonplace, taking a great many forms and encompassing a variety of activities, reflecting the state of deployment of networks, key sectors of national economies and their competitiveness, together with social concerns (OECD, 2011a) (EC, 2012a). The challenges in formulating a broadband policy for Scotland are formidable. Infrastructure has to be brought to outlying locations (e.g., a croft in Assynt), the services have to be affordable for the poor (e.g., a single parent family living on benefits in Drumchapel), they have to be sufficiently attractive and engaging to be used (e.g., by the elderly), they have to be safe to use (e.g., securing bank account details against fraud) and there has to be training and support. Somehow all of this has to be paid for, involving complex relationships between the various companies, with incentives for investments in new devices, content, applications, services and infrastructure, while enthusiastic adoption by businesses and consumers has to be ensured.

Broadband brought telecommunications back into the political sphere, with questions asked about the performance of a market governed by an arm's length regulator, by whom nearly everything had to be treated as a technical consideration, to be addressed with economic tools. Broadband can and, perhaps, must be addressed at a multiplicity of levels: European Union (EU), member state, nation, district, community, household and individual. Potentially each can play a positive or negative role, requiring some rather ungainly and awkward ducks to be put in a row, if the universal adoption of high speed broadband is to be achieved.

The policy objectives of ubiquitous broadband include improving national competitiveness, boosting growth and creating jobs, which requires close coupling with economic and innovation strategies. There is also the social aim of inclusion, by closing digital divides: with comparable nations and between richer and poorer parts of the nation, plus ensuring full accessibility for the disabled and the growing numbers of the elderly. Territorial integrity requires the provision of broadband services in remoter areas. Universal access to broadband enables e-government, which has the potential to save money for taxpayers and increase access to and improve the quality of governmental services.[i]

Since the general election of 1979 telecommunications in the United Kingdom (UK) has changed beyond recognition, being transformed from direct government provision to the governance of telecommunications markets. A remarkably complex regulatory state has been created, comprised of ministers, committees, commissions, authorities, offices, tribunals and ad hoc industry-led bodies, all intervening in markets. This was made more complicated still by a system of asymmetric powers devolved to national legislatures and a dual British-English identity for Westminster and Whitehall institutions. (Sutherland, 2012)

British Telecom (BT) was split from the Post Office and sold to a multitude of citizen-shareholders, competition was introduced and red callboxes all but disappeared (Cramb, 2012). Mobile telephony became ubiquitous and smartphones have become commonplace. Internet access appeared first as dial-up and then as always-on broadband, with growing numbers of citizens uploading their own or other peoples' content. Faster broadband, using optical fibres, has begun to be offered. Free to air television expanded in scope and became digital and high definition (HD). Commercial terrestrial and satellite television services have proliferated, for some of which people happily pay substantial subscription fees.

Radio has not died as was predicted, but is now digital and accessible over the Internet. Both TV and radio offer a week in which to catch up, when it has not been possible or convenient to watch or to listen to the scheduled broadcast.

While the Scotland Act 1998 reserves legislative powers for Westminster, there remains considerable scope for interventions by the Scottish government, by development bodies, by local authorities, by housing associations and by communities.[ii] Governments at all levels across the European Union (EU) have encouraged and supported the supply of broadband and helped to stimulate demand.[iii] Given the present constraints on spending, such interventions have to be judged with special care to ensure value for money and return on investment.

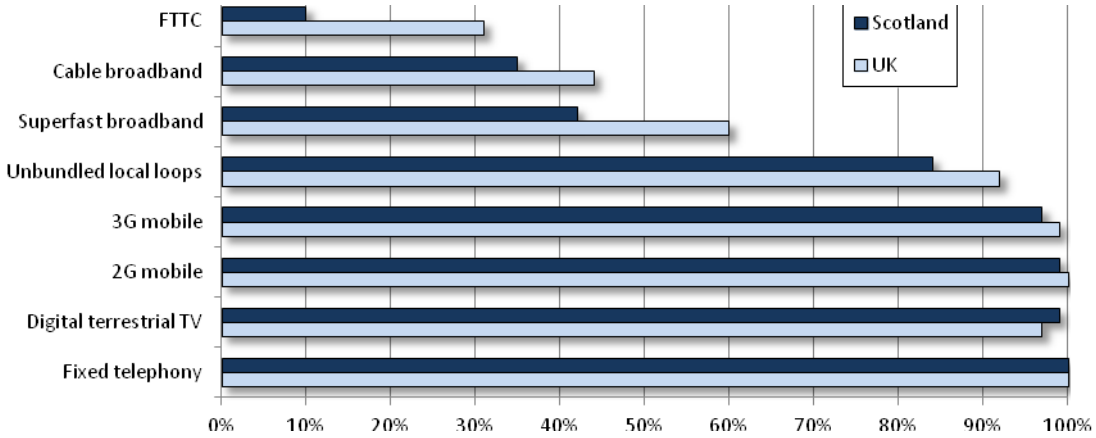
This article examines first the state of broadband in Scotland. It then examines lessons from some other countries and from previous efforts in Scotland. The administrative, legislative and oversight activities of the Scottish and UK governments with respect to broadband are then reviewed. The activities of the European Union are very briefly described. Finally conclusions are drawn and issues identified for further research.

Broadband in Scotland

Fixed broadband services are available both over telephone networks as Digital Subscriber Line (DSL) and, in some locations, as a cable television modem service. The next stage requires replacing the copper wires with optical fibre to street-side cabinets (FTTC) or with optical fibre to the home (FTTH), sometimes known as – echoes of Star Trek – next generation access (NGA).[iv] In some remoter areas the best option for fixed broadband is Ka band satellite, which has become more affordable. Mobile network operators have upgraded their 2G or GSM networks to 3G or UMTS, allowing mobile Internet access, though with many complaints about the insufficiency of coverage. From 30th October 2012, they made 4G or Long Term Evolution (LTE) available, initially in Edinburgh and Glasgow with assurances of wider availability, requiring considerable investment in optical fibre to base stations.

Availability of the various networks in Scotland lags the UK, largely because the population density is about one quarter of the UK average and in the Highlands and Islands drops to about one thirtieth (see Figure 1).

Figure 1 Availability of communications infrastructure in the UK (OFCOM, 2012c)



At the centre of UK broadband policy has been the unbundling of the copper local loops, from BT exchanges to homes, allowing competitive access for third parties to supply telephony and broadband. The Openreach agreement between BT and OFCOM was made under the threat of referral to the Competition Commission in terms of the Competition and Enterprise Acts, rather than using the Communications Act (Cadman, 2010) (Cave, 2006) (Whalley & Curwen, 2008). It was argued that non-discrimination and accounting separation would have continued to have been insufficient to deter behaviour of BT that was intended to sabotage access. The evolving agreement has been of such complexity that few people understand it (OFCOM, 2012b). The economics of unbundled services favour urban areas, so that availability in rural areas has lagged, both at the UK level and in the overall level for Scotland, with some rural loops too long for a broadband service (see Figure 2).

A survey of 1,000 small and medium sized enterprises (SMEs) was conducted in the autumn of 2010 (Scottish Government, 2011b). Some 95 per cent of SMEs with 10-249 employees were connected to the Internet, though this fell to 72 per cent for those firms with less than 10 employees. The majority of non-users perceived the Internet to offer only limited benefits, with 20 per cent not using the Internet because of a lack of skills and 13 per cent indicating concerns about cost, but only 1 per cent citing non-availability.

The vast majority of businesses using the Internet had broadband, with a small minority using dial-up and another small number using dedicated business broadband services, while 5 per cent used mobile broadband. More remote locations suffered slower speeds (see Figure 3).

Figure 2 Availability of unbundled loops in the UK (OFCOM, various years)

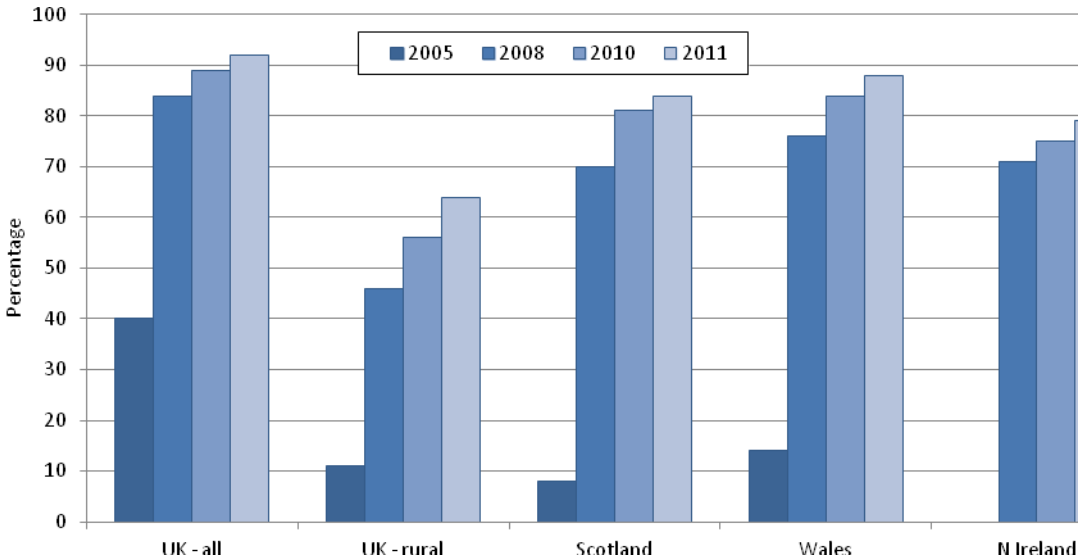
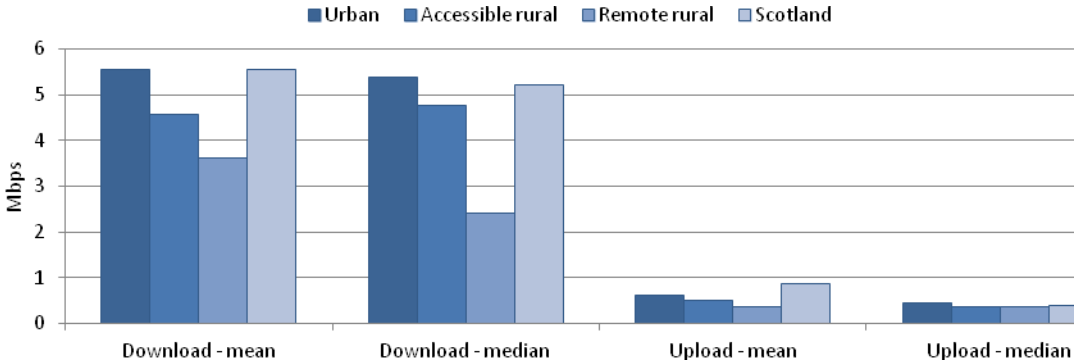


Figure 3 Actual speeds of business broadband in 2010 (Scottish Government, 2011b)



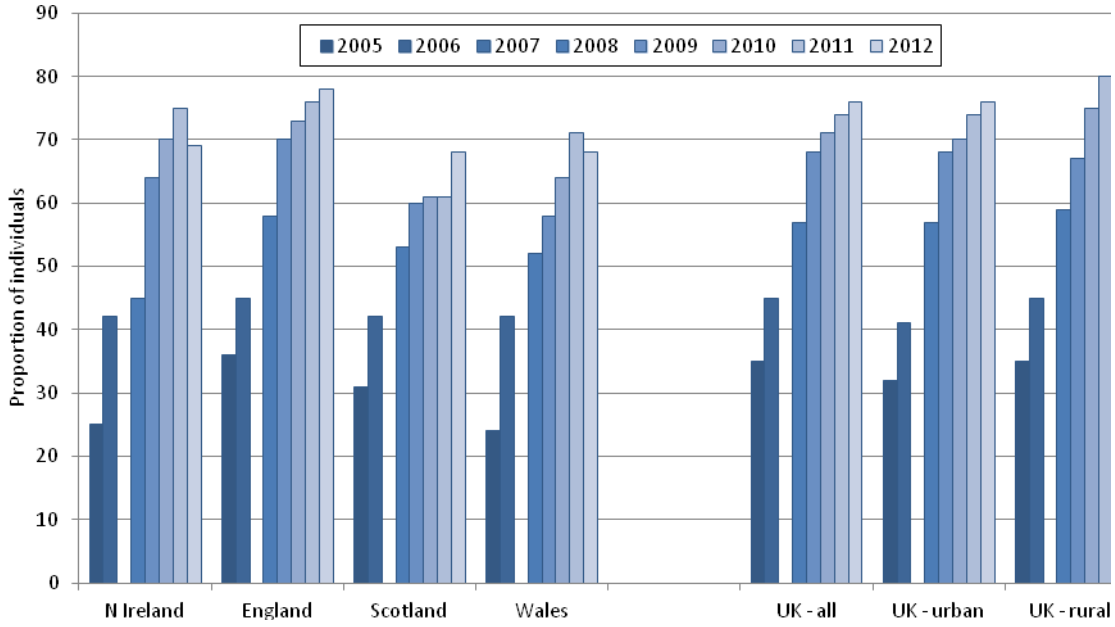
UK businesses have made considerable progress in their adoption of e-commerce, already representing 8 per cent of GDP, with the Boston Consulting Group (BCG) forecasting an annual growth of a remarkable 11 per cent, in part due to a surge in m-commerce enabled by the widespread use of smartphones and tablet computers (BCG, 2012). While data for Scotland are disappointingly limited, it appears that e-commerce lags the UK by a considerable margin, notably in (SQW, 2012):

- Exports;
- Adverts for e-commerce related jobs; and
- Consumers using search engines.

Amongst the barriers are a failure to grasp the potential of e-commerce, a lack of critical mass and significant difficulties in the recruitment of people with the appropriate skills. More detailed statistics are needed for e-commerce in Scotland, while networking opportunities for individuals and businesses must also be improved.[v]

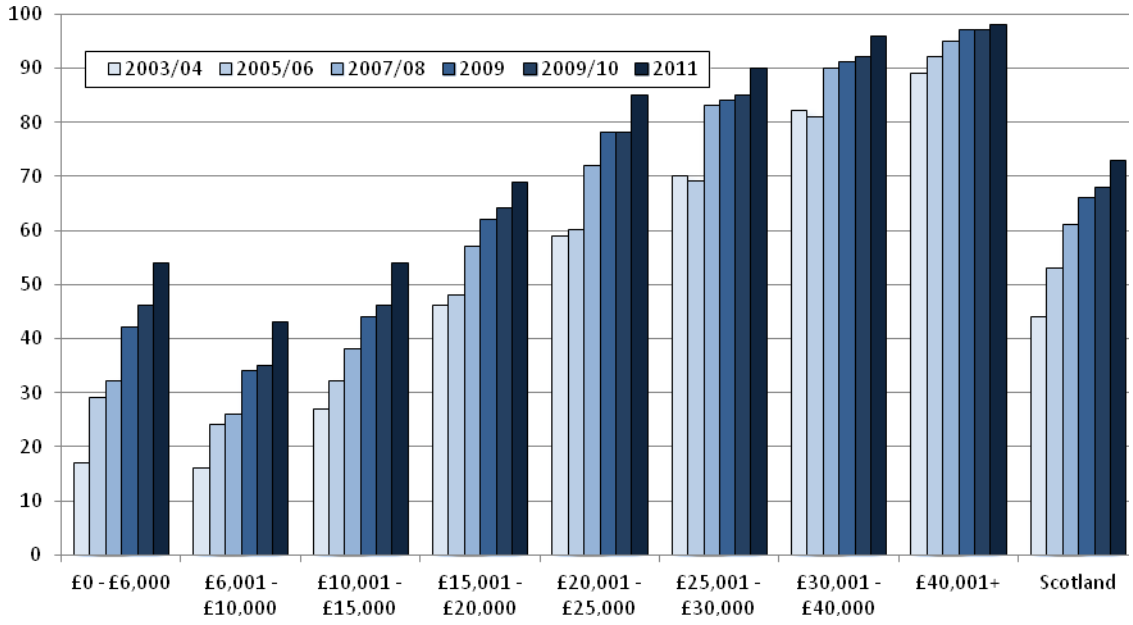
OFCOM publishes annual reports on the communications markets of the UK and breaks this down for the four nations. Unfortunately, the sample sizes for Northern Ireland, Scotland and Wales are small enough that there can appear significant fluctuations in the levels of broadband adoption (see Figure 4). While it is clear that Scotland lags England, it is also quite likely that, despite the 2012 data, it also lags the two other nations.[vi] What is certain is that urban adoption lags rural broadband.

Figure 4 Broadband in first quarter of the year (Source: OFCOM)[vii]



The Scottish Household Survey (SHS) reports Internet access which gives higher numbers than OFCOM, but is less regular giving an impression of growth and stagnations (see Figure 5). While the higher income bands are saturating at close to ubiquitous adoption, the lower income groups are at very much lower levels, greatly affecting the national figure.

Figure 5 Households with Internet access by annual income (SHS, various years)



OFCOM has provided additional data on the poorer performance of Scotland as a broadband adopter (see Table 1). Scotland lagged the UK with some stark differences, notably in those aged 16 to 34 and 55 and over, and where household income is below £17,500 per annum.

Table 1 Broadband adoption (OFCOM, 2011a) (OFCOM, 2012c)

		Age			*Annual household income*		*Households with children*	
	Year	*16-34*	*35-54*	*>54*	*< £17,500*	*> £17,500*	*Children*	*None*
United Kingdom	2011	82%	83%	55%	52%	89%	89%	65%
	2012	83%	86%	59%	56%	87%	90%	68%
Scotland	2011	65%	85%	34%	26%	88%	73%	55%
	2012	78%	85%	45%	34%	97%	85%	60%

A significant factor is the lower level of computer ownership, which until recently was a prerequisite for use of broadband, and a higher proportion of people in Scotland do not use the Internet at all (e.g., not at school, workplace or a public library). A higher proportion of Scots do not use the Internet, predominantly this is a failure to find a reason to do so (see Table 2). There is a similar shortfall in adoption of other technologies (e.g., digital radio and smartphones) suggesting Scotland is the technological laggard of the four nations. The causes seem likely to be cultural and social, that in some ways Scots and, especially, the urban proletariat are significantly less inclined or, at the least, markedly slower to join the hyper-connected world favoured by the rest of the UK.

Table 2 Main reasons for not having a home broadband connection (OFCOM, 2012c)

Reason	*Percentage*
Don't need it	41%
Don't want a computer	25%
Don't have knowledge/skills	19%
Too expensive	18%
Too old to use Internet	18%
Likely to get one next year	17%
Other	6%

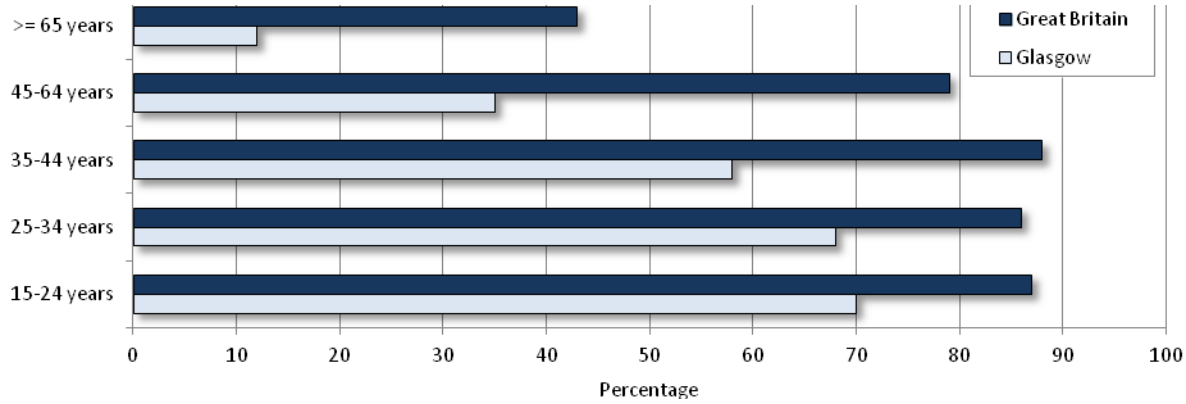
In 2010, OFCOM reported that only 50 per cent of homes in the Greater Glasgow area had access to broadband, compared to 76 per cent for the UK. Glasgow accounted for 11.4 per cent of the Scottish population, which, given its lower broadband adoption rate, weighs heavily on the average for Scotland and on aspirations to be the leading nation. The British Population Survey (BPS) showed Glasgow compared poorly to other British cities in terms of fixed broadband adoption (see Table 3). OFCOM suggested that the population of Glasgow was atypical, with 59 per cent of adults classified as 'hard-pressed'. A recent report points to high levels of Scottish households with a combination of disadvantages, including poor housing, poor health and worklessness, in addition to low income (Bazalgette, Barnes, & Lord, 2010). While broadband take-up was lower across and among all age groups, it was especially so amongst older residents (see

Figure **6**).

Table 3 Fixed broadband take-up, by city (January-September 2011)

	%
Great Britain	76
Glasgow	50
Newcastle	64
Birmingham	72
Manchester	75
Liverpool	77
Bradford	77
Brighton & Hove	81
Leeds	86
St Albans	92

Figure 6 Fixed broadband take-up, by age group in 2011 (Source: OFCOM from BPS)



In public health there is a "Glasgow effect", in which excess mortality is observed in the Greater Glasgow area in a way not seen in comparable UK cities, with death rates having diverged noticeably since the 1980s, failing to follow the improvements achieved elsewhere (Reid, 2011) (Walsh, Bendel, Jones, & Hanlon, 2010). Something more than "just deprivation" has been observed to be at work, which might be related to social capital and social networks, even to societal breakdown. At worst, the work in public health points to methodologies to identify underlying causes at low levels of aggregation. It may also point to issues about differences in behaviour, communications and culture that are common to health problems and to the lower adoption of broadband.

These data point to the need for more analyses, in particular surveys of non-users of the Internet at more detailed levels, in order to inform policy initiatives. Data collection needs to be aligned with Eurostat, in order to ensure comparability of results with other European nations and regions. With better data it will be possible to organise significant efforts along the lines of Go ON UK (formerly Race Online 2012), led by Martha Lane Fox, the UK Digital Champion, to engage and enthuse the non-using groups.

Learning from abroad

There is a wide variety of international experiences in support of broadband from which lessons can be drawn. Some are far from being readily applicable, notably those from the Far East, which are intended to boost domestic manufacturing, which Scotland no longer has. Some depend on very dense demand, in high-rise housing, such as Singapore, which will soon have installed an optical fibre to every home and business. While its population is comparable to Scotland, Singapore is only the size of the Isle of Skye, making its network architecture and market structure inapplicable. The USA has vast rural tracts in which telecommunications needs are met through an expensive programme of subsidies that, even in less austere times, might be thought unacceptable.

Perhaps the highest profile national debate has been in Australia where the 2010 federal election turned, to a significant extent, on the proposal to construct a National Broadband Network (NBN), persuading voters and then key independent MPs to support Labor rather than the Liberals. There was and is a concern in rural and remote Australia that market forces would not deliver broadband comparable to that in the cities, leading the Labor government to begin to roll-out the largest infrastructure project since the Snowy Mountains hydro-electric scheme (BCDE, 2010). Even this will only take the optical fibre network to 93 per cent of homes and business premises, drawing a red line beyond which services are to be wireless, both terrestrial and satellite. The cost could be up to AUD 36 billion, with the payback having been questioned (OECD, 2010a). The effects on competition are still uncertain as the regulator struggles to fine tune the access arrangements for Internet service providers (ACCC, 2011) (ACCC, 2012). It has been a prominent and often passionate public debate about how to achieve the vision of a networked nation.

The Republic of Ireland recognised that a gap existed in the provision of broadband for about a quarter of a million rural homes and businesses. Following a competitive tender, a contract was awarded to "3" (Hutchison Whampoa Ltd) to operate the National Broadband Scheme (NBS) (Government of Ireland, 2010). To facilitate competition, 3 was required to provide wholesale access to other operators. The total value of the investment was €223 million, of which the Government of Ireland contributed €79.8 million, with the remainder coming from the European Regional Development Fund (ERDF). By late 2010 a mobile broadband service, using 3G, with a minimum download speed of 1.2 Mbps and a minimum upload speed of 200 kbps, was operational for those rural areas that lacked other forms of access to broadband. 3 has estimated significant economic benefits from broadband use in Ireland (see Table 4). A Rural Broadband Scheme (RBS), intended to address the last one per cent not covered by any services, received five thousand applications of which almost four thousand qualified for funding (Government of Ireland, 2012). A

group of twenty-nine companies was selected to supply broadband under this scheme, at least of which was able to make an offer to all qualified applicants. Despite the severe retrenchment of its budget, the government allocated €30 million in 2012 for the phased rollout broadband at speeds of 100 Mbps to all second level schools and the Rural Broadband Scheme, this includes funding from the ERDF. A plan for a connected Ireland has recently been launched to ensure speeds of up to 100 Mbps, with a minimum of 30 Mbps for all premises "no matter how rural or remote" (Rabbitte, 2012). The cost is expected to be €350 million, of which half would come from public funds, additionally a digital strategy is to address social inclusion, stimulation of demand and economic growth.

Table 4 Estimated economic benefits from broadband in Ireland by county (three.ie, 2010)

County	*Cavan*	*Clare*	*Kerry*	*Limerick*	*Monaghan*	*Roscommon*
Jobs created	450	490	850	570	290	400
Injection to local economy	€21.6	€23.4	€40.8	€27.4	€13.9	€19.2
Benefit in increased taxes and rates	€3.0	€3.3	€5.8	€3.9	€1.9	€2.7
5 year net present value	€107.5	€116	€203	€136	€69.3	€95

Catalonia used the economic crisis as an opportunity to invest in next generation broadband, developing its *Xarxa Oberta*, a public-private partnership providing an open access network funded within the EU state aid rules (Ganuzaa & Viecens, 2011) (EC, 2010f). One objective was to overcome the conservative investment strategy of Telefónica de España, its relatively high prices and market dominance. The *Generalitat de Catalunya* (2012) has a long established policy for information society developments. It self-provided connections to all municipalities in order to serve several thousand public bodies and their offices, while providing wholesale access to service providers, all overseen by the Spanish regulator.
Nations as diverse as Singapore, Catalunya, Ireland and Australia have chosen to make interventions to ensure market structures and networks are in place to deliver more and faster broadband. It is important to identify lessons applicable to Scotland in order to be able to craft policies that help to achieve world class outcomes.

Learning from the past

Scotland is not without its own precedents. Hi-ISDN was the first attempt by the Highlands and Islands Development Board (HIDB) to accelerate modernisation of the BT network in the early 1990s (Eosys, 1986) (Hamilton, Lough, & Dixon, 1990). With £5 million from the Scottish Office and £11 million from BT, the network was upgraded in 43 exchange areas to provide Integrated Services Digital Network (ISDN). The Network Services Agency was created in parallel to provide value-added services over the ISDN. The justification for the project had been to create jobs in the Highlands and Islands, though foreign direct investment (FDI) could have been more effective (Richardson & Gillespie, 1996).

In the late 1990s, Scottish Enterprise claimed to have found a market failure that it proposed to fill through the Accessing Telecoms Links Across Scotland (ATLAS) project. The first phase, in 2002, was to create a virtual Telecommunications Trading Exchange (TTE) with a backhaul link from London and thus a connection to the global Internet backbone. This was to reduce perceived peripherality and to cut the high costs of international access for businesses and Internet Service Providers (ISPs) (McCormack, 2002). The second phase was to link up thirteen business parks, for which a budget of £26.7 million for capital works and £4 million for operating costs was approved. Thus plc, a service provider, complained to the European Commission (EC), showing a prima facie violation of the state aid rules, which triggered a full investigation and a substantial redesign of the project. After a two year delay, the project was cut back to £9.7 million, limited to passive infrastructure (i.e., ducts, chambers, optical fibres and meet -me- rooms) on only six sites, with the management, maintenance and leasing of dark fibre being outsourced, providing neutral access on a non -discriminatory basis (EC, 2004) (Atlas, 2010). The network was subsequently sold off (SSE Telecoms, 2010).

The Scottish Executive awarded two contracts to Thus (later C&W Worldwide) in 2006 to provide managed broadband services, initially with a wider scope but later narrowed to local authorities and schools: Pathfinder North (£63 million) and Pathfinder South (£27 million). The evaluation could not quantify the benefits, but instead relied on qualitative reviews such as the positive feedback on the use of teaching and administrative support systems running over the Pathfinder networks (Mott MacDonald, 2011). The projects were found to have delivered cost-effective broadband, for example, on Pathfinder North the cost of bandwidth was reduced from £3,323 to £600 per Mbps per annum.

The geography of Scotland will require enduring measures and subsidies to address peripheral regions, if they are to obtain reasonable levels of broadband service. A strategy has to be adopted that maximises the contribution of commercial players and ensures compliance with the EU state aid rules at an affordable cost.

The Scottish legislature and administration

In its first broadband strategy the Scottish Executive (2001a) aimed "to make affordable and pervasive broadband connections available to citizens and businesses across Scotland". All schools were to have access to broadband and all units of the health service would be able to transfer data and use telemedicine services, while local authorities would be able to offer their services over broadband. This strategy was closely linked to its economic plan (Scottish Executive, 2001b). However, it did not define affordability, implicitly viewing household adoption as showing affordability, ignoring those where it was available but not adopted.

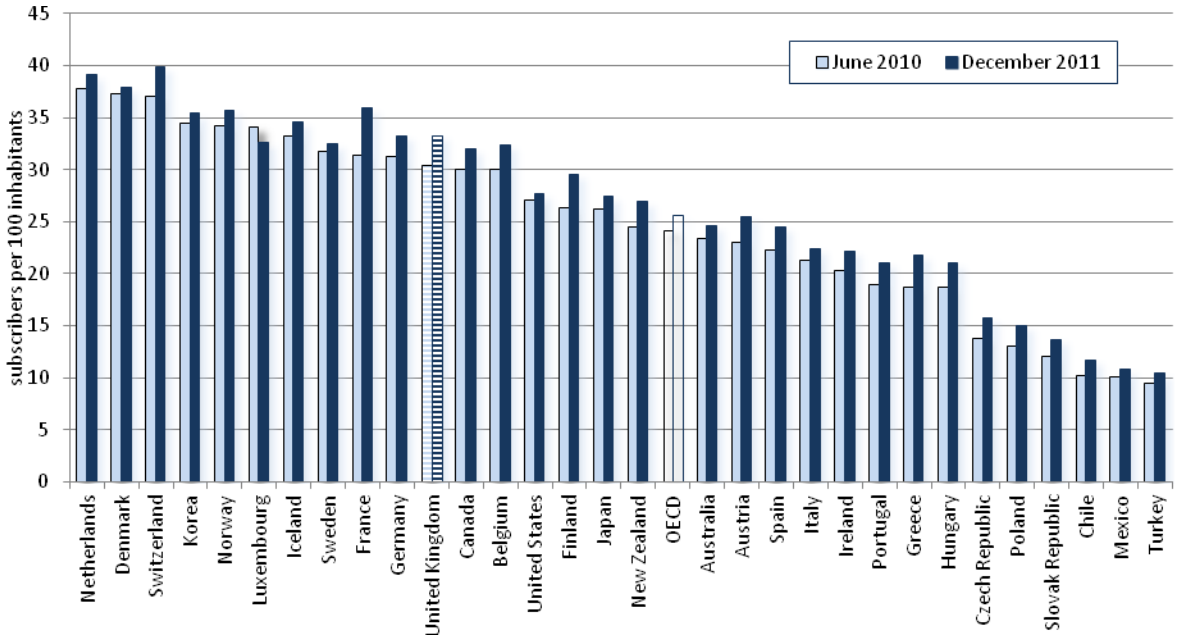
A survey in the first quarter of 2003 found 57 per cent of households had access to a broadband service, though only 25 per cent of business premises and homes had a choice of technology (Analysys Consulting Ltd, 2003). Three gaps were identified:

- Outside the Central Belt infrastructure competition was limited;
- Broadband coverage was low compared to other countries and other UK regions; and
- Business adoption of broadband was very low compared to other countries, and relatively low compared to other UK regions.

The Enterprise and Culture Committee of the Scottish Parliament (2004), while noting the great strides in extending broadband coverage, called for a new strategy, one that would close the digital divide for the 5 per cent of premises that did not yet have broadband coverage. It also wanted work undertaken to encourage adoption of broadband, to "future-proof" the strategy and to measure the benefits of broadband.

By the end of 2005 "affordable access" had increased from 43% to over 99%, following completion of the Broadband for Scotland Rural and Remote Areas Supply-Side Intervention. The Scottish Executive contracted BT to upgrade 378 telephone exchanges to supply broadband DSL, in locations at which it was not considered commercially viable. Consequently, every community (but not every line) had access to broadband at speeds of at least 512 kbps. An evaluation was conducted by means of a telephone survey of 303 businesses and a field survey of 208 households, followed by focus group discussions (Primrose & Fawcett, 2007). This found that the Scottish Executive had not received much credit and that many believed that broadband would have been available in their communities at some time, regardless of the intervention.

Figure 7 Fixed (wired) broadband penetration in June 2010 (OECD, 2010b)



A 2006 study for the Scottish Executive found about 1 per cent of telephone lines, including 47 clusters, still could not obtain broadband at 512 kbps (Mason, 2006). It proposed improving the BT copper loop or installing Wi-Fi based networks with "cost-effective backhaul" at a likely cost of £20 million, with satellite as the backstop.[viii]

The McConnell Administration committed itself to making Scotland a "digitally inclusive society", with accessibility for the disabled and the elderly (Scottish Executive, 2006). To achieve this it called for a joint

approach of the public, private and voluntary sectors. Since 2009 these issues have been considered by the Cross-party Group on Digital Participation in the Scottish Parliament.[ix]

Looking towards high speed broadband, there was concern at the possible creation of a new divide, with speeds from 100 to 1000 Mbps available over optical fibres (SQW Ltd, 2007). The economics of such investments did not appear promising in rural areas, with their long distances and low population densities.

In October 2010, the Salmond Administration set out a "Digital Ambition", stating that:

- Next generation broadband would be available to all by 2020, and significant progress would be made by 2015;[x] and
- The level of broadband adoption would be at or above the UK average by 2013, and should be the highest of the UK nations by 2015.

The aspiration to be average might be thought to lack ambition, especially since it was a UK average rather than an EU or OECD average, let alone a group of socially comparable nations and economic rivals. The UK was, in mid-2010, a little above the OECD average (see Figure 7), though it should be noted that new countries have been joining the OECD reducing the growth of that average.

In revising its economic strategy, the Salmond Administration asserted that improvements to broadband infrastructure and digital service provision would deliver sustainable economic and social benefits (Scottish Government, 2011c). It conceded that "some of the most challenging geography" meant that the market on its own would not deliver broadband across the whole territory (Scottish Government, 2011d). Nonetheless, faster broadband was considered critical for the economic future and for the delivery of social and health services.

In March 2011, the Salmond Administration restated its target: "that next generation broadband will be available to all by 2020, with significant progress being made by 2015" (Scottish Government, 2011a). With only two months before the election it was more of an aspiration than a proposal for implementation. Next generation broadband was not defined, but the EC speed of 30 Mbps speed seemed to have been endorsed, with mention of commercial offers close to that level, but without reference to next generation access (i.e., FTTC and FTTH). It is difficult to tell what was the intended target, how it might have been achieved or what it might have cost.

A white paper envisaged the construction of a "world-class, future proofed infrastructure that will deliver digital connectivity across the whole of Scotland by 2020" (Scottish Government, 2012a). The result was to be speeds of 40-80 Mbps by 2015 for 85-90 per cent of premises (homes and businesses), while by 2020 there would have been a "step change", so that premises would have world class broadband.[xi]

In its procurement plan, the total costs for this were estimated to be £550-£750 million, of which the public sector contribution would be £190-£350 million (Scottish Government, 2012b). The state aid was primarily to come from Broadband Delivery UK (BDUK), funded by HM Treasury, limited to "white" areas, where commercial operators would not go without subsidy. Funding of £212.5 million was identified, £25.5 million from the European Regional Development Fund (ERDF), £68.8 million from BDUK, £40 million from local authorities and also from the UK Spending Review for Scotland with Barnett top-ups. That left a possible shortfall of £50 million to be found from the public sector, though HMG subsequently allocated £32 million in additional funds, almost closing the gap (Scotland Office, 2012). Separately, the Scottish Government has provided £5 million for a community broadband scheme over three years for remote areas (Scottish Government, 2012c).

A report by the Scottish Parliament drew attention to problem of grey areas which might be bypassed by both commercial and government-funded broadband networks (Scottish Parliament, 2012).

The Scottish Government proposed to raise adoption rates, with a view to improving the case for network investments, seeming to believe this could be achieved by the suppliers through the inclusion of take-up clauses in its procurement contracts. It identified the contribution of Scotland's Digital Participation Charter and the Digital Participation Action Group (DPAG), though there seems to be little evidence of activity.

As the data analysed above show the target of being above average is unlikely to be attained, not least since the problems of low adoption rates have not been adequately recognised and because no plan is in place to identify and address the underlying problems. While funds from HMG and the EU, channelled through BDUK and local authorities, will boost availability in rural areas, unless the demand problems are addressed, the dead weight of the cities and, especially, Glasgow, means that the target is almost impossible to achieve.

The United Kingdom – The legislature, the executive and the regulators

Any broadband plan for Scotland has to fit within the general framework of the European Union and United Kingdom treaties and legislation, subject to their complex politico-electoral cycles. In particular it must conform to the EU state aid rules, based on TFEU Article 109 (EC, 2010d). It must also conform to the telecommunications regulatory framework, as transposed into UK law by the Communications Act 2003 and the Electronic Communications and Wireless Telegraphy Regulations 2011, as implemented by the Office of Communications (OFCOM) (Nihoul & Rodford, 2011).

The Brown Administration commissioned a report on next generation broadband. Its author, after warnings that many of issues were remote from the concerns of the general public and, by implication, most politicians, concluded that over time broadband would become an "essential digital utility" and would require an "extensive upgrade of the access infrastructure", the copper wires running from exchanges into businesses and homes (Caio, 2008). Rejecting the case for short term intervention, the report nonetheless warned of the need, over a period of five to ten years, to ensure the widespread availability of next generation networks.

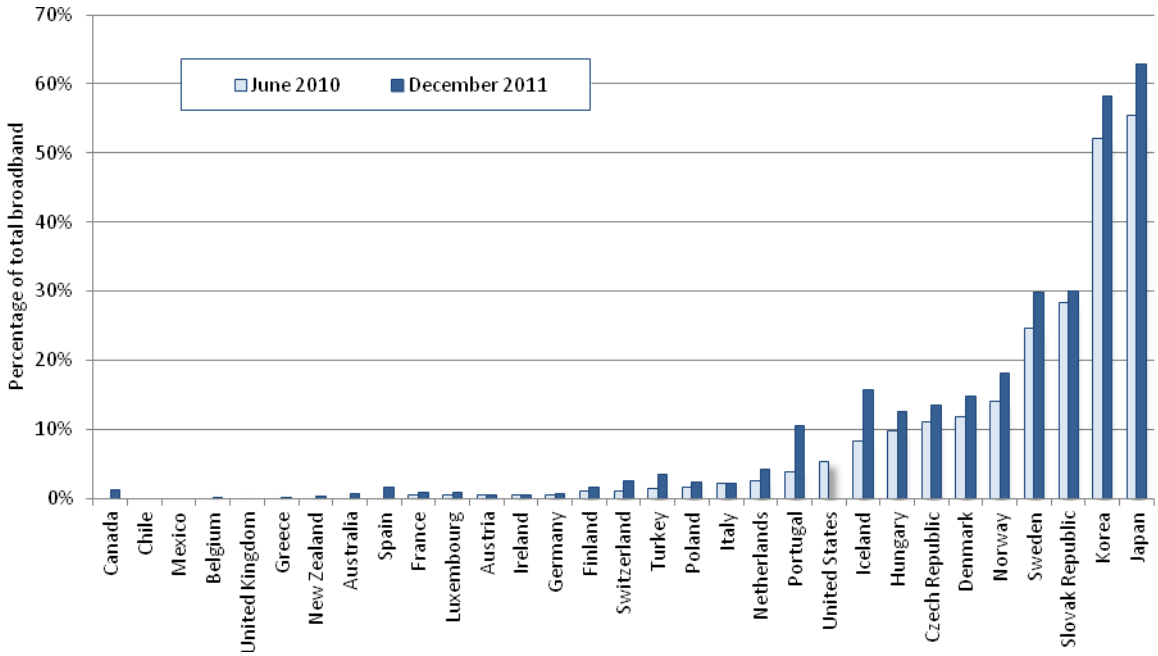
HMG responded with a plan to modernise and upgrade access networks, with a commitment that by 2012 at least 2 Mbps would be available to every home over existing copper wires (HMG, 2009). Affordability was addressed through a £300 million Home Access scheme (now closed), while increasing participation was assigned to a Champion for Digital Inclusion.

The parliamentary Business Innovation and Skills Committee (2009) called for a full-time broadband minister, there having been a succession of multi-tasking ministers, and supported the proposal for a universal service commitment to 2 Mbps as "an appropriate and achievable ambition". However, it considered intervention in next generation broadband markets to be unwise at such an early stage and in the absence of pent-up demand. It rejected the proposal to fund the intervention by a £0.50 monthly levy on all fixed telephone lines, as both regressive and poorly targeted, arguing:

> *In times of great stringency in public expenditure, digital inclusion not Next Generation Access should be the priority for expenditure.*

The Brown Administration rejected the proposal for a full-time minister (HMG, 2010a). It was a position confirmed by the subsequent Cameron Administration, in which Ed Vaizey MP was appointed to cover: arts, media, museums & galleries, telecoms & broadband, digital switchover, creative industries and libraries, while reporting to two Secretaries of State, one from each of the coalition parties. This was later simplified by the transfer of all telecommunications policy issues to the Department of Culture, Media and Sport (BIS, 2011).

Figure 8 Optical fibre as a percentage of total broadband (OECD, 2010b)



In March 2010, the Brown Administration launched the UK National Plan for Digital Participation, to support "everyone who wants to be online to get online, do more online and benefit from the advantages of

being online" (BIS, 2010). It was estimated that the total economic benefits of everyone in the UK being online were in excess of £22 billion (PWC, 2009). However, one recent longitudinal study confirmed that Internet access and use reflected socio-economic status and educational background, thus those already disadvantaged had poorer access to broadband, with the makings of a digital underclass (White & Selwyn, 2012).

The UK general election of 2010 saw broadband given a relatively low profile, with the major parties all agreed it was a good thing, that it ought to be more widely available and fast enough to be "world class". Specific commitments were eschewed, presumably because they would not sway voters and from a fear of the impending spending review.

Compared to other OECD countries, the UK had a slow start in the deployment of optical fibre cables to homes and premises (see Figure 8). While some fibre to street cabinets is being installed by BT, this does not provide either the same speeds or the same degree of flexibility as fibre to the home. Moreover, there is evidence of a lack of enthusiasm amongst consumers to switch and, especially, to pay for next generation services.

The Cameron Administration sought to provide for the rapid rollout of "superfast broadband" in both urban and rural areas, ensuring an acceptable level of availability in those parts of the country that had, until then, been excluded (HMG, 2010b). The change in terminology appears to have been more a reflection of the transition from Brown to Cameron than of any change of technology:

> *In simple terms, the Government wanted the UK to have the best superfast broadband network in Europe by 2015.*

It is still far from clear what this meant in terms of coverage, adoption, speed, technical parameters and the like – a vagueness that must make its achievement less likely.

The UK regulator held consultations on spectrum it proposed to auction for 4G or mobile broadband, which proved unusually contentious (OFCOM, 2011b) (OFCOM, 2012a). It proposed a coverage target of 95 per cent of the population for one licence, which would significantly reduce the price paid at auction as the operator would have had to spend more on base stations and backhaul networks. Not content with this, the Salmond Administration called for the coverage requirements to be raised from 95 per cent of the UK to 98 per cent for each UK local authority. This would have had the immediate effect of transferring funds from HM Treasury to Scotland, by forcing the operator to increase spending on network deployment in poorly populated rural areas. Unlike OFCOM, the Scottish Government did not provide an impact assessment for its proposal, nor even an estimate of the costs.

The Network Design and Procurement Group within BERR (later BIS) was rebranded as Broadband Delivery UK before being transferred to the Department of Culture, Media and Sport (BDUK, 2012). The Cameron Administration assigned £530 million to BDUK in the spending review for 2010-15. Initially there were four rural market pilots, to which a fifth was added, selected to improve understanding of how superfast broadband might be made commercially viable in rural communities:

- Connecting Cumbria;
- Highlands and Islands Next Generation Broadband Project (HIE, 2010);
- Connecting North Yorkshire;
- Borders Broadband; and
- Digital Rutland.

Funding allocations have been made for different parts of the UK (see Table 5). Additionally, HMG has allocated £150 million for super-connected cities and the same sum to improve mobile coverage where it is poor or absent. Edinburgh was one of ten chosen British cities, due to receive between £10 and £25 million.

The Digital Champion, Martha Lane Fox, was re-appointed following the 2010 UK General Election. She set the objective of greatly reducing the number of people who had never used the Internet by the time of the London Olympic Games in mid-2012, (UK Digital Champion, 2010). There were nine million such adults, equivalent to the population of the five largest UK cities. Everyone in work was to learn to use the Internet before retirement, even if that was, quite separately, being delayed. Her project was subsequently re-branded Go ON UK and continues today, seeking to include yet more people.
The position does not permit complaisance, since:

> *Unemployed internet users with lower education levels have incorporated the internet into fewer aspects of their everyday lives over the years and, while their use has increased, they are becoming relatively more disadvantaged compared to other internet users. (Helsper, 2011)*

This presents a specific challenge to HMG since it has adopted a paradigm of "digital by default", that it would make government services accessible in the first instance online (Lane-Fox, 2010).

Despite the present austerity, HMG has allocated £850 million for fixed and mobile infrastructure and supported this by work to encourage adoption by those who have not yet found reasons to use the Internet. Nonetheless, to achieve its target it may be obliged to find additional funds.

Table 5 BDUK allocation of funding

Date	*Fund (millions)*	*Area*	*Notes*
May 2011	£50.0	Wiltshire, Norfolk and Devon & Somerset	Rural pilots "to support the roll-out of superfast broadband to areas that the market alone will not reach"
July 2011	£56.9	Wales	Welsh government invited to match HMG's funding. "to help take broadband to the whole of Wales"
August 2011	£4.4	Northern Ireland	With matching funding 2Mbps to reach 100% of homes
August 2011	£294.8	England	90 per cent of homes and businesses having access to superfast broadband and for everyone in the UK to have access to at least 2Mbps
August 2011 June 2012	£68.8 £101.0	Scotland	90 per cent of homes and businesses, with the Scottish government to provide matching funding

The European Union and the Digital Agenda

Since the adoption of the "Lisbon Agenda" in 2000, the European Union has evolved its economic strategy, focusing on growth and the creation of jobs. In 2010 the EC adopted a renewed strategy for the period to 2020 (EC, 2010a). Related to this is a policy on smart regulation to address incomplete, ineffective, and underperforming regulatory measures (EC, 2010b).

One of the EU flagship policies for jobs and growth is the digital agenda, which is to deliver sustainable economic and social benefits from a digital single market (EC, 2010c). A study for the European Commission showed that completion of the internal market for electronic communications would cause GDP to grow by up to €110 billion, or more than 0.8 per cent (EC, 2012b) (Ecorys, 2011).

Among the objectives set for the digital agenda were:

- By 2013: Broadband access for all;
- By 2020: Access for all at higher Internet speeds (30 Mbps or above) and 50% or more of European households subscribing to Internet connections above 100 Mbps.

While these appear vague, they have to encompass a very diverse range of member states, with quite different levels of infrastructure development and competition. One supporting measure is the radio spectrum policy programme, to ensure at least 1,200 MHz of frequencies are available to operators to meet increased demand for data traffic and to allow spectrum trading throughout the EU (2011).

To help achieve its 2020 objective, the EC adopted a growth package for infrastructure, which recognised the insufficiency of investment in broadband compared to Europe's principal competitors (EC, 2011). It called for an increase in competitive pressure in markets for broadband networks and the development of strategies for public support of the rollout of networks in areas where no business case existed. A Connecting Europe Facility (CEF) of €9.1 billion for telecommunications, from a total of €50 billion, was proposed by the EC and agreed by Council (2012).[xii] It will offer support for broadband networks of up to 50 per cent, plus 75 per cent for the removal of bottlenecks hindering the completion of the Digital Single Market, while project related to the digital platform for the European cultural heritage can get up to 100 per cent. This is expected to "leverage" spending of another €50 billion. In addition to broadband networks, the grants can be used to build infrastructure needed to roll-out:

- e-ID;
- eProcurement;
- electronic health care records;
- Europeana (culture);
- eJustice; and
- customs-related services.

The money would serve to ensure interoperability and to meet the costs of running the infrastructure at European level. In particular, it will help with the construction of trans-national corridors.

The EU thus provides an agreed framework for telecommunications policies and monitors implementation, both of the specific measures and market outcomes. Through the digital agenda it seeks to link the legislation and other measures to objectives for jobs and growth.

Conclusion

The possession of a national broadband plan was once considered *avant garde*, but is now almost mundane, with the risk it is not implemented, serving as shelfware. For the all blue ink in the broadband statements of the Scottish government, there is remarkably little that would need to be changed for Serbia, Slovakia or South Carolina. There are no strong links to those sectors on which economic growth is dependent (e.g., renewable energy, food & drink, tourism and video games), nor is there any recognition of the specific cultural and social problems that have for some time constrained the adoption of broadband in Scotland border. A revision is urgently needed to achieve a much closer coupling with economic policies, social strategies and the realities of network deployment and adoption.

While parts of the general public and some politicians are sceptical about the ability of markets to deliver broadband for all and to do so promptly there has been considerable progress in availability. The economic evidence warns that interventions, even those that are well intentioned, may distort competition and make matters worse, thus careful evaluation is required before initiatives are implemented (Kenny & Kenny, 2011). The Scottish Government needs to adopt the better regulation approach, with consultations and impact assessments for its proposed interventions (EC, 2010e).

It is necessary to judge whether any money allocated to support broadband is being well spent, or if it would not be better used for, say, more front line police officers or to attract foreign direct investment. Thereafter, difficult choices have to be made between encouraging use by SMEs, increasing uptake amongst the poor and improving availability in rural areas, since these cannot all be afforded.[xiii] Insofar as the Scottish Government has answered this question it favours extending rural supply, rather than increasing urban or SME participation. It also seems disinclined to spend its own money, preferring to ask for more from London.

The real challenge is to increase the adoption of services as networks become available, initially to UK levels and, thereafter, to become world class. Scotland has a significant problem of low adoption in urban areas, one that is still poorly explained, which makes network deployment less attractive than in the rest of the UK, compounding the problem of low population density in rural areas. If and when optical fibres are brought close to the homes of the poor, the remote, the elderly and the disabled, there is neither universal enthusiasm nor willingness to adopt and to pay for the services. This needs to be probed by detailed and enduring survey work, at low levels of aggregation, amongst those groups with poorer levels of adoption. With the results of such surveys, it will be possible to design the robust and effective digital inclusion policy that is essential to ensure that those on the wrong side of the digital divide do not become a Scottish digital underclass. For many families paying for an economically viable broadband service may not be interesting or will not be possible. Therefore the Scottish Government must say how it will support and persuade such groups to access broadband, if only to remove the obstacles from accessing essential e-government, e-health and e-education services. Corresponding weaknesses in e-commerce, both supply and demand, also need to be addressed.

Keywords: Broadband, Governance, Internet, Regulation, and Telecommunications.

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[i] See, for example, the Scotland's People database or the Canmore database of the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS).http://www.rcahms.gov.uk/canmore.html

[ii] See Schedule 5 sections C3 Competition and C10 Telecommunications and wireless telegraphy.

[iii] See EC decisions on state aid to broadband at http://ec.europa.eu/competition/sectors/telecommunications/broadband_decisions.pdf

[iv] In 1987, Star Trek was relaunched as the Next Generation. See http://www.imdb.com/title/tt0092455/

[v] This is being addressed by, for example, Scotland IS, Social Media Week and Glasgow for Business Week.

[vi] The UK Office of National Statistics confirmed the poor performance of Scotland in 2010, but did not provide a regional breakdown in its 2011 survey.

[vii] No data were provided for 2007.

[viii] Wi-Fi has significantly shorter range than the metal local loops from telephone exchanges.

[ix] http://dpcrosspartygroup.wordpress.com/ and http://www.scottish.parliament.uk/msps/35694.aspx

[x] There was no definition given of next generation broadband.

[xi] The speeds are strange since they do not match technologies such as DSL or cable modem and must be presumed to be either a compromise by planners or an average.

[xii] The European Parliament has yet to adopt the CEF, it can be tracked at: http://www.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2011/0302(COD)&l=en

[xiii] It is not immediately clear that there are economic or social groups for whom there are benefits from having next generation broadband today, rather than waiting till next year or the year after.

Reforming the banks in the UK. An impact assessment of the draft Bill and alternative capital requirements.

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Introduction

On Friday, 12 October 2012 the UK Government published a draft of the banking reform bill in order to implement "key elements" of the recommendations put forward by the Independent Commission on Banking (henceforth ICB) led by Sir John Vickers. This is the first piece of legislation revising the regulation of the financial sector. Banks will be required to comply fully with ICB recommendations by 2019.

The crisis impacted strongly on the financial sector in Britain where the current level of employment in the industry is far from its peaks in 2007-8. In Scotland, in particular, employment in financial services fell from 105,300 (9.29% of industry total in the UK) in 2008 to 84,400 (7.90%) in 2011.[1] Furthermore, the collapse of some major banks and the consequent government intervention has increased the share of what is formally defined in the statistics as public sector employment in financial services from a mere 1.40% in 2008 to 19.65% in 2011. In Scotland this is even more evident given that the share of public sector employment in financial services has increased from 2.09% in 2008 to 37.15% in 2011.

If the industry has been hit harshly, the public finance has been affected even more. The government intervention in the aftermath of the crisis has taken the form of bank recapitalisation, credit guarantees, special liquidity scheme, and asset protection scheme. The first one has been the most expensive by far, with the government buying shares in troubled banks and currently holding shares in RBS and Lloyds. The total investment has been of £20,313 million in Lloyds (whose value at 31 March 2012 was just £9,278m) and of £45,527 million in RBS (worth £25,054m at 31 March 2012). Northern Rock was also in public ownership since February 2008 when the government injected £1,400m in the bank. After splitting the company in two, the "good one" was sold for £747 million to Virgin Money on 1 January 2012, while the "bad" one is now managed by UK Asset Resolution (UKAR). Bradford & Bingley was also brought into public ownership in 2008 and, after selling its branch network and retail deposit accounts to Santander, it is currently managed by the UKAR. The aim is to run down their closed mortgage books and to pay back the Government loan, which on 31 December 2012 was £46,582m.[2] Differently from bank capitalisation, the other forms of government interventions provide guarantee, liquidity or insurance to banks, which pay fees for such services. Finally, the Financial Services Compensation Scheme, which provides insurance to bank depositors, ran out of cash in 2008/9 because it had to step in to compensate more than 4 million depositors of six financial institutions, which defaulted that year.[3] It borrowed from the government which receives interest payments for this loan.

However financial services remain a strong contributor to the UK economy. They account for more than 10% of the Gross Added Value in the UK, and 9% in Scotland.

It is clear therefore that the aim of the UK government is to reduce the likelihood of further financial crisis as well as the cost for the public purse in the event of a crisis and, at the same time, to retain the UK status as a global financial centre. To this end an Independent Commission on Banking (henceforth ICB), chaired by sir John Vickers, was appointed in June 2010 and its final report released in September 2011 outlines a series of recommendations with the aim of

1. Making banks able to absorb losses better
2. Making it easier and less costly to sort out banks that still get into trouble
3. Curbing incentives for excessive risk taking

The HM Treasury estimates that by implementing the ICB recommendations, the requirements to increased capital could be met by increasing by 5 per cent the overall equity capital within the industry. Arguments have been made that these new capital restrictions, in that they surpass international requirements, might contribute to reduce competitiveness for the UK banking sector. Others have called for a stricter regulation to increase stability. In this regard, the aim of this research is to analyse whether

alterations in levels of the capital requirements in the ICB recommendations will have a substantial effect on the UK economy, furthermore how different levels of capital requirements might impact the stability of the banking sector.

Data and methodology

In the present work we use Cost Benefit Analysis to account for the impact on the UK economy of the proposed reform and of alternative policies including higher and lower capital requirements. We use data from the ICB (2011) final report, HM Treasury (2012a) white paper, and the draft of the banking reform bill (HM Treasury, 2012b), as well as the balance sheet of the major UK banks accounting for as much as 50% of the total assets of the industry.

The analysis includes prices and costs of private character, as well as a predicted cost of externalities. In the case of prices on externalities, these may be difficult to quantify since there exists no obvious market for them. When this is the case, we have to rely on "surrogates" prices, and use the society's marginal willingness to pay for these goods (shadow prices). In reference to the present value calculations, the costs and benefits have been assumed to continue for the timeframe of 30 years, discounted according to the HM Treasury's Green Book guidance with the discount rate of 3,5%(HM Treasury, 2003).

Measuring private cost for the banks

The HM Treasury (2012b) draft of the banking reform bill has estimated **the total private costs** to UK banks to be in the range of £2 – 5 billion annually, and with a **one-off cost of transition** between £1.5 and £2.5 billion. Implementing these requirements will lead to a higher private cost to banks in the UK.[4] The estimated cost to UK banks is the sum of several effects. A portion of this cost is due to the restriction of the implicit government guarantee for banks which are "too big to fail"

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The HM Treasury (2012b) highlights how the proposed reform is assumed to curb the perceived government guarantee by ring-fencing the activities vital for the economy, and making resolution easier in the event of insolvency.[5] However, banks benefit from the scale in which investors assume and trust that the government will not to let a large bank fail. This reduces their cost of funding as investors assume the extent of loss is smaller than if they were to assume no implicit government guarantee. Theoretical evidence estimates the value of this guarantee to be in the range of £6-100 billion for UK banks (Noss and Sowerbutts, 2012). Therefore, as this implicit guarantee is reduced, banks funding costs are likely to increase as risk is transferred from the government and taxpayers back on to the investors.

Implementing ring-fence is assumed to increase costs of operation and to have transition costs. There may be a benefits-loss of diversification in the long run, as bank's ability to subsidise and distribute across borders of structural separation is restricted. Furthermore, they are likely to be faced with upfront transitional costs such as forming new subsidiaries, and continuing operational costs of servicing two bodies rather than one (operating accounting platforms, for example). **Total cost of ring fencing** are estimated "to be in the range £1.7bn – £4.4bn per year with one-off transitional costs in the range £1.5bn – £2.5bn"(HM Treasury, 2012b, p.68). The estimation of the permanent increase of bank's costs is obtained by adding up evaluating capital, funding, and operational costs.

Based on simulations from banks, the HM Treasury (2012b) has estimated annual **operational costs** for major UK banks of an ICB implementation in the range of £100 – £300 million per bank, totalling £400 – £1200 million for the industry. However, it has been assumed that these costs will not incur until two years have passed after implementation. This assumption will also be used in the present work.

Capital cost for ring fencing is estimated in the range of £1500-£3000 million per year and is the single most relevant private cost for the banking industry. The modelling of capital requirement increase in the HM Treasury (2012b) assessment is done through wide-ranging scenario estimations from large UK banks. On the basis of these scenario adaptions, the HM Treasury (2012b) estimated the extent of additional capital needed within the sector. Applying this to estimations for the yearly capital and funding costs, based on historical data and the evidence supplied by the UK banks, they were able to estimate annual capital and funding costs of ICB implementation. In this assessment their estimates for transitional costs, operational costs and funding costs will be used and calculated into net present value terms. The estimates for cost of equity will be based on current levels of equity from aggregated estimated balance sheets published in June 2012 in the Financial Stability Report (Bank of England, 2012). It emerges from the balance sheets that the total value of assets and liabilities of these banks amounts to £7600 billion, where equity is estimated to count for approximately 5 per cent of total liabilities. The HM Treasury has assessed the needed increase for equity capital in the industry to be roughly £19 billion, which amount to 5 per cent, with the BoE balance sheet estimates. The cost of equity capital is valued to a high and low cost of roughly 16 and 8 per cent with a long –run historical average cost of equity to banks of 11.5 per cent (Bank of England, 2012).

Funding costs are estimated to be almost negligible or even negative, with an estimation between –£200 and +£200 million. In fact, expectations are that funding costs for ring-fenced banks would fall with the reform, while, funding costs would increase for non-ring-fenced banks.

Operational costs are due to restructuring to comply with the new regulation and it may vary from bank to bank, depending on their business structure. The HM Treasury has assumed the cost to vary from £50-500 million per bank, and on aggregate this has been estimate in the range of £400-£1.200 million per year.

Finally the bill proposes to give preference to FSCS-insured deposits in the event of insolvency. Therefore this will increase the risk for other senior creditors that in turn will demand a higher risk premium for their funds. The HM Treasury (2012b) estimate the annual cost for the financial sector of **depositor preference cost** in the range 300-700 million per year. The following table summarizes the private cost hypothesis outlined in HM Treasury (2012b).

Table 1. Private costs estimated in HM Treasury (2012b) in £million.

	Min	*Max*	*Ave*
Capital costs	*1500*	*3000*	*2250*
operational costs	*400*	*1200*	*800*
funding costs	*-200*	*200*	*0*
Total ring fencing costs	*1700*	*4400*	*3050*
Depositors preference costs	*300*	*700*	*500*
Total annual private costs	*2000*	*5100*	*3550*
one-off transitional costs	*1500*	*2500*	*2000*

Measuring the external effect of changes in regulation

The increased private costs to banks are transferred over to the investors, employees and customers through reduced returns, lower pay and increased prices. The effect on consumption, investment and GDP is thus dependent on how these increased costs feed through.
Having estimated the costs to private UK banks, the HM Treasury (2012b) projects the impact of these costs on UK GDP by applying the FSA methodology.[6]

The HM Treasury (2012b) estimated that the increase in banks private costs produce a **gross reduction in GDP** of £400-£1120 million per year. In the impact assessment developed in the present paper we measure the ratio between the change in GDP and the private cost estimated by the HM Treasury (2012b) and assume that it increases with some measure of private cost. The ratio relative to the proposed reform in the draft bill is 0.20, meaning that the private cost to the banking system is larger than the overall social cost; this can be explained by the fact that some of the private costs are simply transfers between consumers (and other economic agents) and banks. This is the main reason why the total cost for society is lower than the private cost to banks. However, when the private cost increases we assume that the possibility of offsetting such costs is reduced and the ratio increases.

It is also interesting to evaluate the effect of the reform on public finance. In the draft of the banking reform bill, HM Treasury estimates that **tax revenues** will suffer a reduction in the range of £150m-£400m per annum.[7] This results from the application of the long-run tax-to-GDP ratio, which for the UK has been 35.2 per cent over the last 20 years. A further cost of the reform will arise from the impact on the **value of government's shares** in RBS and Lloyds, which is estimated in the range of £2-£5bn.[8]

Obviously the government strongly believes that the reform will have **large benefits** for the society. The HM Treasury (2012) has in fact estimated that the implementation of the recommendations set out by the ICB may lead to an annually increase in GDP of £2000 – £9500 million. In the draft of the banking reform bill (HM Treasury, 2012b) the average benefit of introducing the provisions included in the bill are estimate in 0.47 per cent of UK GDP, which in 2010/11 terms amounts to £6900 million.[9]

The modelling of these benefits is based on assumptions about the effect of the reform on the probability and cost of future financial crises. The Basel Committee on Banking Supervision (BCBS) compared academic research and collected historic estimates for costs to GDP and the probability of previous financial crises. The present value cost estimates to GDP in the occurrence of a crisis hits values ranging from 16 per cent to 302 per cent of GDP (HM Treasury, 2012) with an average of 63% of GDP. The range is very large due to the presence of permanent and non-permanent effects, and to the difficulty of quantifying rare events of large impact. The probability for a crisis to occur in any given year ranges from 3.5 per cent to 5.2 per cent with an average of 4.5% as computed by ICB (2011). Subsequently, the costs

to the UK economy of a financial crisis are substantial, around 3 per cent of GDP or £40000 million in terms of 2010 GDP (HM Treasury, 2012). The benefit of regulation arises from a reduction in the likelihood and/or magnitude of financial crises. Using ICB (2011) estimation, HM Treasury (2012) quantifies the effect of introducing the new banking regulation. It first of all recognizes the positive effect of reforms already in place, which are likely to have reduced the probability of other financial crisis by 30 per cent, while the measures proposed in the bill are supposed to reduce the probability of the crises by a further 10% and the cost of such an event by 15 per cent. Under such assumptions the benefit of the bill in terms of reduced expected cost of further crisis is estimated to be around £6580m per year.[10]

Data quality

The majority of data is accumulated from the Bank of England, the HM Treasury and the Independent Commission on Banking. The data are estimated based on 2010/11 GDP while the base year for the net present value computation is 2019, when the provisions of the bill will be fully implemented. The estimates count for the major banks in the UK including Banco Santander, Bank of Ireland, Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group(LBG), National Australian Bank, Nationwide, Royal Bank of Scotland (RBS), and Virgin Money (BoE June report 2012). The major banks amount to approximately 50 per cent of the total industry. This might not give a full representation of the UK industry, but should represent the major implications of costs and benefits the industry are likely to face when the new regulation is implemented. Furthermore, the requirements proposed by the ICB differentiates between ring-fenced and non-ring fenced institutions in reference to capital requirements. As this analysis is estimated on aggregated data for major UK banks, this distinction has not been done.

The Impact Assessment

In the present work the costs and benefits of implementing ICB policy recommendations are estimated using different levels of capital requirements. The assessment will examine the impact of the ICB suggestions on loss-absorbency, structural separation and competitiveness with a main emphasis on capital requirements. The HM Treasury has calculated that, in order to comply with ICB policy suggestion, the banking industry as a whole has to increase the equity capital by 5 per cent. In the present paper we will also consider alternative policy options with a stricter and looser version of these capital requirements, of respectively 20 and 1 per cent increase in equity capital and to compare them in terms of efficiency. We therefore compare the following alternative options:

1. Do not implement recommended regulation alternative proposed by the ICB;
2. Implement the recommended regulations included in the draft bill published by the Government which implements key elements of the ICB recommendations and include a 5 per cent increase in Tier 1 Equity Capital;
3. Implement the recommended alternative proposed by the ICB, however with loser capital requirements defined as a 1 per cent increase in Tier 1 Equity Capital;
4. Implement the recommended regulation alternative proposed by the ICB, however with stricter capital requirements defined as a 20 per cent increase in Tier 1 Equity Capital;

In what follows a Cost-Benefit Analysis in terms of social surplus or GDP is developed. The first policy option has zero costs and zero benefits, thus does not contribute to any changes in the regulatory environment and has no effects on the overall economy. This is the baseline for comparison of the alternative policies analysed below.

Effects on the industry

The differences in costs to banks for the policy options derive only from the different costs of equity capital associated with different levels of equity. The costs associated with transition, operation, funding and the restraint of the implicit government guarantee are assumed constant and independent of differences in capital requirements.

Martinez-Miera (2009) estimated the role capital requirements have on the probability of failure for individual banks. His analysis suggested that there does exist a clear relationship in this, however, the relationship is stronger when banks are poorly capitalised. Their analysis also showed some trends of increased risk of failure to banks when requirements are substantially high (by higher than the 20 per cent analysed in this work).

In Table 2 we provide a lower bound, an upper bound, and the average estimated effect of the different policy option on the annual private cost for the firms. In addition to those cost there is a one-off transitional cost estimated by HM Treasury (2012b) in the rage of £1500m - £2500m.

An implementation of increased capital ratios for the banking sector indicates an increased level of leverage ratios in the overall industry. The current level of the leverage ratio is 3.3 per cent, estimated from core capital to tangible assets, and the Tier 1 Capital Ratio is 8.3 per cent. Increasing the equity level in banks with 5 per cent induces a growth in the Tier 1 Capital Ratio of 0.42 per cent to 8.72 per cent and an

improved leverage ratio of 3.5 per cent. Using loser capital requirements has a minor effect on both, improving the Tier 1 Capital Ratio with 0.08 per cent and the leverage ratio with 0.03 per cent. However, tightening the capital requirements result in a boost to the Tier 1 Capital Ratio of 1.66 per cent and an increase in the leverage ratio of 0.63 per cent. Analyzing this in the light of Martinez-Miera (2009) suggests that capital requirements actually could be increased even further without increasing the risk of failure to individual banks substantially.

Table 2: Private annual cost comparison of the different policy options.

	option 2			option 3			option 4		
	Min	*Max*	*Ave*	*Min*	*Max*	*Ave*	*Min*	*Max*	*Ave*
Capital costs	*1520*	*3040*	*2280*	*304*	*608*	*456*	*6080*	*12160*	*9120*
operational costs	*400*	*1200*	*800*	*400*	*1200*	*800*	*400*	*1200*	*800*
funding costs	*-200*	*200*	*0*	*-200*	*200*	*0*	*-200*	*200*	*0*
Total ring fencing costs	*1720*	*4440*	*3080*	*504*	*2008*	*1256*	*6280*	*13560*	*9920*
Depositors preference costs	*300*	*700*	*500*	*300*	*700*	*500*	*300*	*700*	*500*
Total annual private costs	*2020*	*5140*	*3580*	*804*	*2708*	*1756*	*6580*	*14260*	*10420*

An illustrative calculation suggests that banks have substantial capacity to raise additional equity capital. If banks could get an average return on equity (ROE) of approximately 10 per cent, and distributed 70 per cent of this to shareholders, the bank would be able to grow their equity capital at a rate of 3 per cent per annum, not taking increased taxation costs into account. Furthermore, over a period of 5 years this should raise approximately an additional equity of 15 per cent. However, if they were to reduce the amount of dividends paid out on ROE, banks could raise even more new Equity through retained earnings. (HM Treasury, 2012).

It would seem that the most implicit argumentation for this new regulation is to deal with the problems of moral hazard within the industry. One of the greater critics of new regulation has been in reference to how this might affect the lending channel in the economy. Concern has been raised in regards to whether and how the increased costs of capital to banks might reduce banks issuance of lending to the overall economy. There is little doubt in the increase of private costs related to this regulation.

New policy recommendations seem focused on behavioural and incentive driven effects of the regulation. Parts of the sought effect of new policies are to curb banks and managers incentives to be more concerned with the risk of potential investments and not just the high return of the investment. The cost associated with restricting the implicit government guarantee, it is argued, is a cost that has been avoided from the banks side. Research including the Financial Stability Commission's (FSC) and of the BoE show that the increased costs that would transpire with restraining the implicit government guarantee, are costs that have always been there, but have been minimised in that risk has been borne by others rather than the banks themselves, implicitly making funding and capital cheaper.

Admati et al (2010a) has challenged the benefits associated with debt versus equity financing, exploring the link between taxation benefits for debt financing through reduced tax-receipt payments. Banks pay out lower tax when the level of equity is small, increasing debt as means of finance at the expense of equity actually increases their return on equity. Banks as other business are concerned with their return on equity as this often encourages new investors. Making debt financing a "cheaper" alternative for banks, might feed through to their incentive for additional risk taking in that brokers and managers often earn a lot when their trades show good results, however, losses associated with their transaction are usually limited. Due to the asymmetry in the nature of their return, there is an incentive to take riskier positions to increase own compensation (French, et al., 2010). Such bias to select an excessively risky strategy, with a payment obligation that is independent of the bank's asset returns, creates incentives for the bank's shareholders, or for its managers, to take on increased risks (Admati, et al., 2010). Therefore, by reducing (if not removing) the implicit government guarantee and restricting balance sheets by increasing equity to debt financing would limit the incentives to excessive risky strategies.

Effects on the overall economy

The implementation of the ICB recommendations is aimed at the creation of a more stable banking industry, thus limiting negative spill-over effects. However, it is important that banks building of resilience should not come at the expense of the real economy. The argument that the key benefit of the policy implementation is greater financial stability, which in turn would contribute to a higher level of expected

and average GDP in the future, indicates a large payoff of avoiding financial crises. Financial crises, as resent times have shown, are very costly to the overall economy. As a consequence, the benefit of financial stability should be high.

GDP costs associated with the implementation of new regulation are spill-over effects from the increased private costs projected to banks. However, these costs are assumed to be lessened through the spill-over process, and are generally smaller than the private costs. In Table 3 we provide the estimation of annual cost in terms of GDP of the different policy options under scrutiny. We make the assumption that the spill-over increases as the private cost increases, that is, the larger the cost for banks, the larger is the negative effect on social surplus, as a larger part of the private cost is not offset in the economy.[11]

Table 3: Estimation on the annual effect on GDP of the total annual private cost presented in Table 2.

reform	option 2			option 3			option 4		
spill-over on GDP:	20.00%			15.20%			95.00%		
	Min	*Max*	*Ave*	*Min*	*Max*	*Ave*	*Min*	*Max*	*Ave*
total annual social cost	*404*	*1028*	*716*	*122*	*412*	*267*	*6251*	*13547*	*9899*

Implementation of new regulation is expected to accumulate a loss to GDP, as cost are assumed to be transferred through the channels going from the banks and over to the overall economy. The short-term risks to the economy of these implementations are that banks could respond to new regulations by shrinking their balance sheets and cutting back on lending to the economy. This would transfer loss to investment and consumption values in the economy, which could induce effects on employment levels and inflation.

Passing on costs to customers can happen through increased interest margins or stricter lending criteria. Increasing interest rates or tightening lending will feed over to the economy through reduced spending by businesses and households. This may, in the short run, reduce consumption and investment spending. Furthermore, effects could be increased if the implementation of new regulation and the transfer of the increased private costs to banks would incline a reduction in asset prices used as collateral for bank lending.

Although new requirements do induce increased costs to banks, growing capital can increase their capacity and ability to lend as well. Furthermore, if this capital is used to build bigger “loss absorbency cushions” it may also reduce funding costs when increased levels of capital are obtained, as the relationship between capital and lending are closely linked.

The overall effect on the economy will also be influenced by the behavioural response of customers. If there is a shift in the credit demand, from classical banking markets to markets of non-bank financial intermediation the effects of the new regulation might be smaller. In this scenario banks have to internalise a larger amount of their increased costs, which could happen through a reduction in cost of employment by a cut in pay or jobs. Furthermore, the main impact would then fall on bank-dependant sectors such as households and SMEs, as the larger corporations might have the opportunity to obtain their funding from other sources. This would likely induce increased weight again on the more vulnerable participants in the economy in which new policy is estimated to protect, however through another channel than tax-payer funded bail-outs.

A reduction in GDP growth and a downwards pressure on prices and wages would under normal assumptions be expected to lead to a monetary policy response. The effects of the reduction in inflation and GDP growth are likely to be countered by the central bank, with the aim to reduce these effects of the implemented policy.

Tightening the capital requirements above international regulation recommendations, e.g. Basel III, has been one of the major issues of banks. Their argument goes, that increasing requirements above international standards is likely to reduce banks competitiveness against international counterparts. In the long-run, however, by making banks more stable and curtailing the perceived implicit government guarantee, implementing the ICB recommendations is expected to support a more sufficient supply of credit to the economy. To mitigate initial challenges banks are permitted an extended time period to comply with the regulations, starting in 2019.

On the other side, the new policy is implemented in order to reduce the likelihood and the size of future financial crisis. As already mentioned above, the expected costs to the UK economy of a financial crisis have been estimated in the order of magnitude of £40000 million in terms of 2010 GDP. The benefit of the regulation arises from a reduction in the likelihood and/or magnitude of the financial crises. Given that

reforms already in place are likely to have reduced the probability of other financial crisis by 30 per cent, HM Treasury (2012b) estimated that the proposed bill is likely to reduce the probability of the crises by a further 10% and the cost of such an occurrence by 15 per cent. We keep the latter estimation constant for all the policy options as it is more likely to be linked to the ring-fencing strategy, rather than to the magnitude of capital requirements. On the contrary, we assume that the capital requirements linearly affect the probability of a crisis. Under such assumptions the annual benefit of option 2 (the bill) is estimated to be £6580m on average, while the benefit of option 3 is £4676m and £13720m for option 4.

Table 4: Estimated annual benefit of the different policy options.

	option 2	option 3	option 4
annual expected cost of a financial crisis (£m)	40000	40000	40000
annual expected cost of a financial crisis after policies already implemented (£m)	28000	28000	28000
estimated reduction in probability of crises	10.00%	2.00%	40.00%
estimated reduction in cost of crises	15.00%	15.00%	15.00%
estimated benefit of the reform	6580	4676	13720

Now we have all the data needed to compute the net present value of the different policy options. Table 5 summarizes the results under the assumptions of 3.5 discount rate and 30-year time horizon which have been used in HM Treasury (2012).

Table 5: Present value of social benefits and costs associated with the different policy option presented.

	estimated benefit	estimated cost	**net estimated benefit**
option 2	125255	15630	**109626**
option 3	89011	7081	**81930**
option 4	261171	190435	**70736**

The policy option proposed in the bill has the highest net estimated benefit. However this result is very sensitive to the assumptions made on spill-over costs on GDP and on the reduction of the likelihood of the crises. In fact, with assumptions very much in line with those of HM Treasury (2012b) and ICB (2011), it is likely that policy alternative with a larger capital requirement may have higher present value benefit than the one included in the proposed bill. Furthermore, it could be assumed that the size of the private costs that feed over to the GDP, thus the overall economy were larger. Estimations would suggest that doubling this effect still produces a positive result of policy implementation for all levels of increased equity.

One should however not forget the main limitation of the analysis presented here. There might be, in fact, cost effects associated with different levels of requirements which is not measured here since behavioural responses in this are not accounted for. Furthermore, it does not include any potential accumulated market effects which may occur in the wake of implementation of financial regulation. The analysis considers that the amounts of capital needed to meet new regulation are available to banks in the market. Finally, all costs and benefits are estimates of aggregated values. Since the model is static, this does not necessarily converse accurately to reality.

Conclusions

The results of the impact assessment suggest a positive impact of new regulation, should it be implemented. There have been arguments made for both stricter and looser capital requirements of new regulation. The arguments for stricter requirements are based on increasing stability even further and curbing risk incentives. Through a diminished level of risk in the institutions, it has been assumed that bank managers and shareholders are more concerned with the riskiness of their investments and lending if more of their funding is based on equity, and the institutions themselves has to bear losses in the occurrence of a bad investment. The argument for looser capital restrictions is based on that implementation of high capital restrictions, above international level, might infer higher costs which can induce a reduction in lending and competitiveness to the UK banking industry.

From a social point of view the benefits of implementing these capital requirements are estimated to be much larger in comparison to the associated costs and this result still holds when considering policy options with both smaller and larger capital requirements.

Barrel et al.(2010) investigated the role of capital and liquidity standards in the sub-prime crises, and claim that if capital standards had been roughly 4 percentage points of total assets higher, over the last 15 years, the sub-prime crises might well have been avoided. The impact assessment developed in the present work is based on the intuition that larger capital requirements reduce the probability of crises.

One thing to be noted is that the current levels of the leverage ratio in the aggregated values of the industry is in 2011 estimates, are equal to or slightly above the recommended level of the leverage ratio proposed by the new regulatory requirements. Since these numbers is an overall estimate, it is noted that this does not necessarily indicate sufficient levels of Tier 1 Capital within each bank. The Bank of England estimated in their Financial Stability Report published in June, that recent changes in leverage were mainly due to a reduction in risk-weighted assets, and not an increase in equity capital (Bank of England, 2012). Although, a reduction in risk-weighted assets may contribute to a more stable financial system, increased equity capital should contribute to this as well as maintaining the vital services of the system in which the economy depends. The increase in the leverage ratio, thus the reduction of leverage in the sector as a whole, should indicate an increased level of stability within the sector. This is due to that institutions with these increased levels of equity should be better able to absorb losses, give the institutions desired rating by agencies which able the banks to maintain their activities. The average current level of Core Tier 1 Equity Capital seems to be in lines with the regulatory suggestions. However, as this analysis take count for the aggregated results, levels for individual institutions might differ. Increasing capital requirements has substantial effects on banks private costs, however, these costs also depend on the cost of capital in the market.

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[1] The data are gathered from the Office of National Statistics, Business Register and Employment Survey (BRES) 2008 and 2011.
[2] This information are provided by the UK Financial Investments Ltd annual report and accounts 2011/12 presented to the house of Commons on 3 July 2012
[3] Five banks (Bradford & Bingley, Kaupthing Singer & Friedlander, Heritable Bank, Landsbanki Islands, London Scottish Bank) and one building society (Dunfermline Building Society defaulted in 2008/9.

[4] In the assessment supporting the white paper the figure were different, with an implementation cost for the banks of £2,500m and an annual cost of £4000m - £7000m per annum. So, both the transitional cost, and the annual cost has been adjusted downward in the latest HM Treasury estimates.

[5] There have already been made some actions to restrict this perceived guarantee. The Special Resolution Regime has implicitly signalled to the sector that they cannot again expect benefits from bail-outs funded by tax payers to the same extent as before.

[6] The FSA uses the NiGEM model, which is an empirically based model that can be used to assess the impact of changes to banks minimum capital ratios, funding and operating costs on capital prices and economic output. The model utilises long-term historical data to determine impacts on the overall economy of changes to banks costs. The NiGEM model estimates costs to GDP on the basis that banks pass on a high level of increased cost to the overall economy. If this notion is made this would imply that the actual costs affecting the bank's balance sheets and profits are smaller than what initially would be estimated as the direct costs to the industry (HM Treasury, 2012). It is recognised that using historical evidence may not give a true reflection of future trends; this would suggest that the actual spill-over effects might deviate from the estimate assumed in this paper.

[7] The previous estimate published in HM Treasury (2012) was of a gross reduction in tax receipts of £200-500 million annually.

[8] As for previous cases this estimation is less pessimistic than the one in HM Treasury (2012) which was £6-£9 billion.

[9] All the changes from the white paper estimations (HM Treasury, 2012) published in June and the draft of the reform bill (HM Treasury 2012b) published in October are in the direction of lower costs and higher benefits.

[10] This number comes from a direct application of the assumptions put forward in HM Treasury (2012b). However, in the text these are reported to be slightly higher (£6900m) but we have not been able to replicate this exact number. We rely on our computation for consistency with other estimates.

[11] We use the following spill-over function $a + b\,CR^2$ where CR is the increase in capital requirement as a fraction of total liabilities of the banks, and a and b are calibrated so to fit the HM treasury estimations for policy option 1.

The Impact of product designations on innovation. The case of breweries in the United Kingdom

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Introduction

The European Union has a number of interventions which are designed to encourage diverse agricultural production, to protect product names from misuse and imitation, and to help consumers by giving them information concerning the specific character of the products. The three schemes, collectively known as Protected Geographical Status (PGS) are Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), and Traditional Speciality Guaranteed (TSG).

PDO covers agricultural products and foodstuffs which are produced, processed and prepared in a given geographical area using recognised know-how. PGI covers agricultural products and foodstuffs closely linked to the geographical area; at least one of the stages of production, processing or preparation takes place in the area. Finally, TSG highlights traditional character, either in the composition or means of production of agricultural products.

The various designations cited above are focused on regional foodstuffs and after a slow start, British food producers are increasingly using these interventions, as can be seen in Figure 1. UK Government Departments such as the Department for Environment, Food and Rural Affairs (DEFRA) (and their counterparts in the devolved administrations) merely facilitate the enforcement of the relevant European legislation. However, there is a common view by rural development practitioners that these interventions are a useful promotional tool, providing support for regional 'clusters of food producers', as well as enhancing the reputation of the region. In Figure 2 the location of registered PDO, PGI, TSG and applications in the UK is reported showing that there are 10 registered PGS (accounting for to 24% of all registered PGS in the UK) and 2 more applications in Scotland. Several contributions (most recently an Economic Impact Study of the PDO by London Economics, 2012) try to quantify the economic impact of the various forms of protected geographical status.

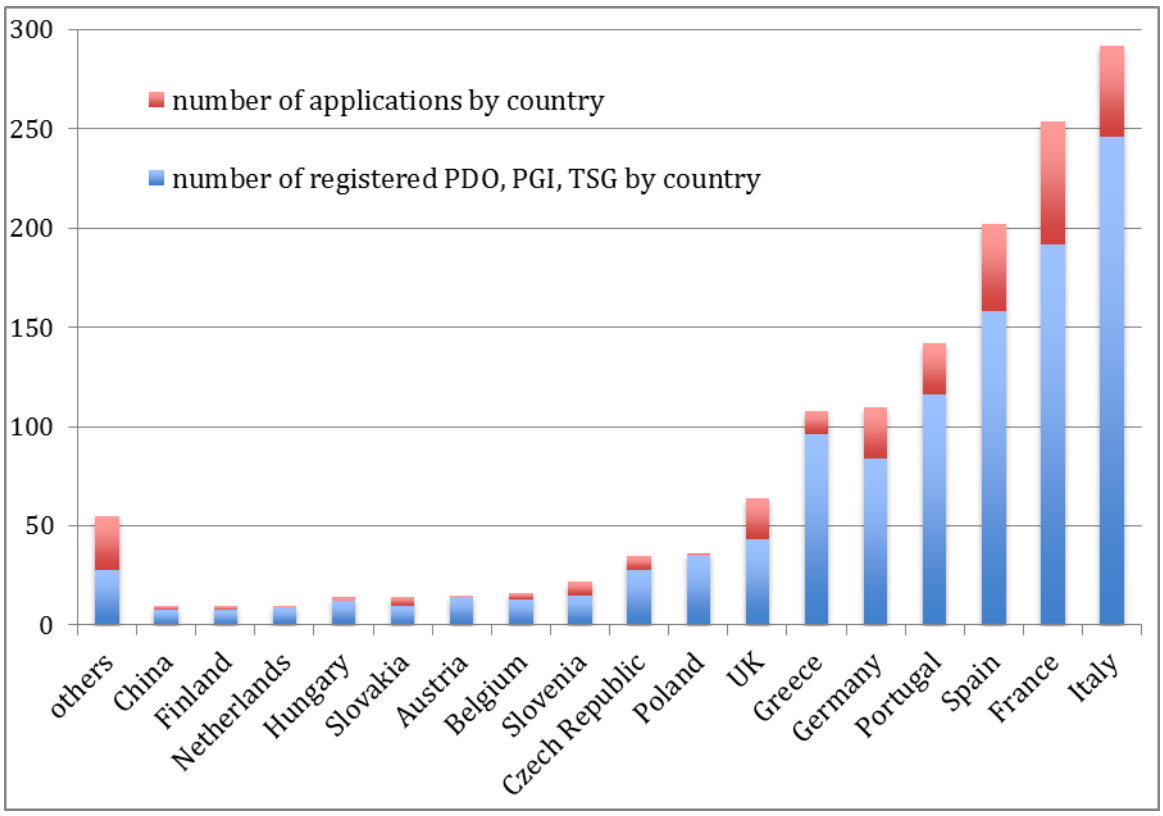
However, there has been limited analysis as to the possible impact of such interventions on the ability of enterprises to enhance their competitiveness through investment in innovation. The aim of the present work is to gain a better understanding of the impact of such policies on the types and levels of innovative activity in firms using PGS schemes.

Although a number of food designations have been initiated in the United Kingdom, the focus of this work is on breweries operating under the PGI definition as there is a definite production process unlike most of the other 25 designated food stuffs which are merely locally sourced items with limited further production (such as Comber potatoes and Devon Clotted cream). As brewing is composed of a number of key production stages, it is distinct from most of the other designated foods stuffs (which have at most two stages in their production process) and it would be anticipated that research, development and innovation would play a role in this industry.

By carrying out structured interview with participating breweries managers and other stakeholders, we seek to identify whether the PGI scheme has had any impact on innovation.

In addition, the brewing market is one of contrasting fortunes: increasing concentration in the high volume low price beer market, but also a rapid expanse in the number of micro-breweries seeking to address need in a fast growing higher price market. Again, it would be anticipated that in such a fast developing and price insensitive market, there would be significant investment in innovation in order to create difference. Only four companies participate in the PGI scheme (the majority of which operate in Kent and Rutlandshire in England), and they will be assessed to see if they comply with the micro-brewery/craft brewery model.

Figure 1: Number of PDO, PGI, TSG and applications by Country. Source: EC Door database.



We believe that the present study is relevant not only for the brewery industry, but also for other industries potentially interested in seeking PGS for their output. For example in Scotland the presence of PGI-PDO is very much concentrated on meat (beef and lamb), salmon, and cheese. This leaves many other potentially interested industries which might benefit from an impact assessment on innovation of PGS.

The industry

The U.K. beer market generated £18 billion worth of sales in 2011 with an increase of 1.1% with respect to 2010. According to Keynote (2012) lager market share in value is 71.47%, while dark beers share was 28.53% up from the 27.10% in 2008. The popularity of real, or cask ales (non-carbonated beer made with traditional ingredients) – has been key to this increase. Real ale's share of the draught beer market – served in pubs and clubs – rose from 5.8% in 2008 to 6.1% in 2010, the first increase for generations.

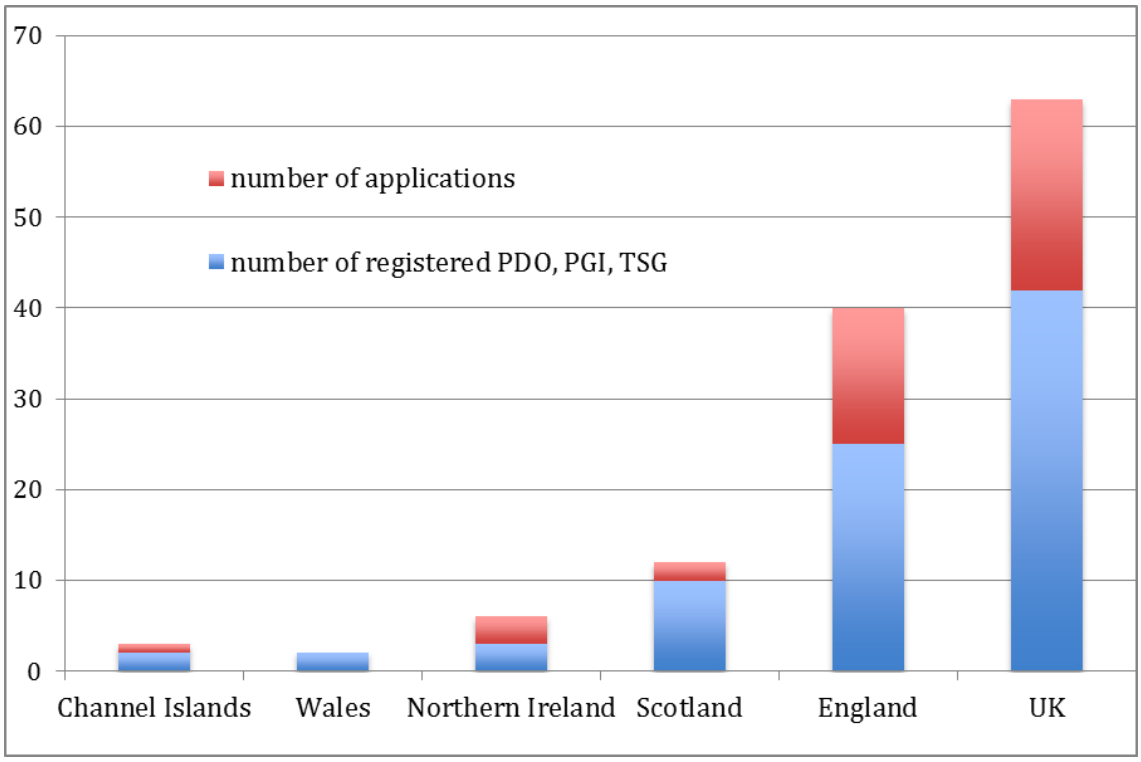
According to Oxford Economics (2012) more than 650,000 workers are directly employed in the beer and pub sector and almost 300,000 jobs are indirectly sustained by the industry. The Gross Value Added (GVA) directly attributable to the sector is in excess of £10 billion and a further £9.5 billion indirectly. In Scotland almost 73000 jobs are directly and indirectly attributable to the beer and pub industry, which also accounts for £1510 million of GVA.

Considering breweries only, more than 18000 employees work for them directly, and 87000 jobs are indirectly related to breweries. The sector also contributes almost £4 billion to the UK GVA.

The supply side

The majority of lager beers are produced by just four large breweries: Scottish and Newcastle (who produce Foster's and Kronenbourg); Coors (from the U.S.); Inbev (who produce Stella Artois, from Belgium) and Carlsberg of Denmark. These beers are produced using modern industrial brewing methods to fairly standardised recipes. This has, arguably, led to a two tier system of production, with mass produced lower quality beers supplying a large nationwide market, whilst craft brewed beers are beginning to make significant inroads in attracting customers who enjoy traditionally brewed ale.

Figure 2: Number of PDO, PGI, TSG and applications in the UK. Source: EC Door database.



There is a common perception that the brewing industry in the United Kingdom is in long term decline. According to data from the Brewery History Society, the number of distinct breweries in England fell from 1,324 in 1900 to 141 in 1975. However the figure of 141 breweries in 1975 does not give a true picture of the extent of concentration, as a large share of the industry was controlled by the 'big four' brewers. The concentration ratio or in this case the Herfindahl Index (a measurement of concentration within an industry and measured by taking the sum of the market share of all forms within the industry and squaring it) records that for brewing industry in the UK it is 2362. A HI greater than 1800 implies significant effects. This illustrates that the brewing sector is highly concentrated.

Table 1: Regional distribution of breweries in the UK.).

Regions	**number of breweries and brewing company premises**
South East	116
London	23
East	106
South West	127
West Midlands	90
East Midlands	92
Yorkshire & The Humber	105
North West	121
North East	31
Wales	47
Scotland	55
Northern Ireland	6
UK	919

Source: Oxford Economics (2012

Two essential technological factors which enabled this concentration were: (a) technical change in brewing which made the product more easily transportable; and (b) a reduction of transport costs over the last 100 years. One particular development which was particularly influential was the development of 'keg' beer, or 'brewery conditioned' beer which was sterilised in the brewery and had CO2 added, making it easier to transport over large distances. However this sterilisation approach has proven the great catalyst for the real ale movement, which initially went into decline, but has been subsequently re-established through the campaigning work of the Campaign for Real Ale (CAMRA). CAMRA sought to preserve real ales through a number of mechanisms: including the promotion and quality control of new/existing real ale brands and breweries, the development of new supply chains, such as encouraging the take up of real ale by bar chains and the supermarkets and finally encouraging Government support through changes to regulation and taxation. This organisation has in essence developed a new market which technology had sought to replace.

The technological factors cited earlier in turn led to a succession of mergers and acquisitions accompanied by the closure of small breweries and the relocation of production to new, large scale breweries and the substantial investments made by the four big brewers in developing national brands of beer which could be sold over the whole country. These brands could be highly standardised products with little regional variation.

However there has also been a counter trend within brewing, with a significant increase in the number of micro-breweries in the UK. The UK now has over 900 breweries, of which 700 are microbreweries which have developed since 1975. In Table 1 the regional distribution of breweries is reported, showing that 55 of them are located in Scotland.

Although these micro-breweries also produce beer, there is a perception that their product is differentiated from the beer produced by the four nationwide brewers. In short, micro-breweries are often single site operations and seek to develop a 'local based product', which commands a higher price due to its premium quality. The real brands are considered local because there is variation in terms of either production techniques and/or sourcing of local materials. The micro-breweries in large part produce 'real ale'. 'Real ale' is matured by secondary fermentation in the container (cask) from which it is dispensed and is therefore a living product and is not pasteurised or filtered and no extraneous carbon dioxide is added. Although the 'keg beer' (produced by the 4 main brewers) is brewed using the same primary fermentation process as real ale, it is subsequently pasteurised. Therefore no further conditioning can take place in the container ('keg') from which it is served, and is known as 'brewery-conditioned' beer.

The four dominating large brewers did not established themselves is this segment of the market. As Vaizey (1960, p. 84) highlighted, one reason for this choice is that economies of scope in brewing are of limited importance while economies of scale are very important. Berghoff et al (n.d.) state: "large batch size often hinders the major brewers' success in the craft brewed market because the production of small batches, necessary to produce the product variety and freshness demanded by craft-beer drinkers, does not fit profitably into scale production operations''.

On the other side craft brewers (the US term) and real ale brewers (UK term) obviously cannot achieve the same economies of scale in production as the big brewers. But since small batch production is the appropriate scale for real ales then small brewers don't really suffer a competitive disadvantage to the large brewers, because production of small batches doesn't really fit the business models (and large scale plant) of the large brewers. So technology can help explain the co-existence in the same market of firms of very different scale.

An essential characteristic of the new entry into the brewing market has been its greater regional dispersion, with many of the micro-breweries located in villages or even on isolated farms. An explanation is that the regional and local origins of a beer have become an important characteristic of the product in the eyes of the consumer – or, "place is what we drink" (Swann, 2006). The best-informed consumers (which thanks to Camra they mostly are) may know the production heritage of each brand of beer, but the less well informed may judge production heritage by geographical origins, hence the perceived need to use geographical indicators such as PGI/PDO.

The demand side

Both on-trade (beer consumed in the premises it is purchased on) and off-trade (beer consumed away from the place it was purchased) have witnessed troubles in recent years. The on-trade distribution channels are struggling due to regular pub closures, with approximately two pubs being closed every day. The off-trade is problematic for the industry because of falling prices caused by stiff supermarket competition, which reduces the profit margins for all businesses involved in the manufacture and sale of beer. The on trade market is particularly significant for micro-breweries as they do not have the wide distribution networks that the four leading breweries have. Due to the comparatively short life span of real ale and its highly localised nature, its distribution is often highly focused to key geographies and the number of free houses (i.e. pubs which are able to choose which beer they sell) within that area.

The rise of real ale and the growth in the number of micro-breweries was in large part driven by a consumer advocacy organisation, the campaign for real ale (CAMRA). CAMRA was set up in the 1970s by beer drinkers to campaign against the rising tide of pub and brewing closures due to the consolidation process of the big breweries. From the very start, the organisation was charged with preserving traditional methods and regional specialities and with a membership of over 95,000 and a degree of influence much greater than that, can be said to have had a significant impact on the subsequent growth of microbreweries. CAMRA has had a significant demonstration effect to the market and has created a discerning market for specialist beers in the UK that appreciate the qualities of real ale and appreciate regional and local variety.

In addition, to PGI/PDOs, the real ale sector has developed a number of awards/quality symbols of its own (such as the Annual National and Regional awards run by CAMRA and organisations such as Federation of Small Brewers and various supermarket awards), these not only promote new and emerging brands to both established and new markets (particularly the supermarket awards) but also provide an element of quality assurance to consumers. Award winning beers often command premium prices.

Product designations and its economic impact

Product designation or Protected Geographical Status is a legal framework defined in European Union Law to protect the names of regional foods. Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG) are geographical indications within the framework. The law ensures that only products genuinely originating in a specified area are allowed to trade under a certain name. The purpose of the law is to protect the reputation of the regional foods and eliminate the unfair competition and misleading of consumers by non-genuine products which may in some way be inferior. Only products which meet the various geographical and quality criteria may use the protected indication.

Protected indications are treated as intellectual property rights by the Customs Regulation 1383/2003 and infringing goods may be seized by customs on import. The preamble to the Regulation cites consumer demand for quality foodstuffs and identifies a number of goals for the protection regimes, including:

a) the promotion of products with specific characteristics, particularly those coming from less favoured or rural areas;
b) the improvement of the income of farmers, in return for a genuine effort to improve quality;
c) the retention of population in rural areas; and
d) the provision of clear and succinct information to consumers regarding product origin.

The rationale for granting any intellectual property rights is the furtherance of the public interest. Product designations are used to balance competing interests in the market place, to protect consumers from misinformation and producers from ‘unfair’ business practices.

The protected designations of origin (PDO) and protected geographical indications (PGI) govern definitions for food and certain other agricultural products. The label Traditional Speciality Guaranteed (TSG) is a similar protected term which does not impose any restrictions on the geographical origin of the product.
The Protected geographical indication is the name of an area, a specific place or, in exceptional cases, the name of a country, used as a description of an agricultural product or a foodstuff:

a) which comes from such a specific area, place or country;
b) which has a specific quality, goodwill or other characteristic property attributable to its geographical origin; and
c) whose production, processing or preparation takes place within the determined geographical area.

To receive the PGI status, the entire product must be both traditionally manufactured and at least partially produced within the specific region and thus acquire unique properties.

The PDO is more specific about the method of production and like the PGI is also linked to a specific geography. The guidelines specify that a product does not receive product designation protection only because of its point of origin but it must also comply with a given set of criteria related to content and production methods. These practices reflect local tradition and if they became extinct, it would mean the end of an associated method of production. However, the maintenance of production methods is not enough, there is a need to ensure potential consumers are aware of the ‘uniqueness of the product’ and so they must be provided with accurate information related to this history and point of origin.

Finally, the Traditional Speciality Guaranteed (TSG) is a trademark for an agricultural product or a foodstuff and must be manufactured using traditional ingredients or ‘must be characteristic of its traditional

production process'. Unlike PGI/PDO status, TSG does not have to be manufactured in a specific geographical area.

Enforcement (of the rules cited above) is carried out by Member State authorities, acting within rules laid down at EU level (Article 10 of Regulation 510/2006). Article 10 designates competent authorities to take responsibility for ensuring that the obligations are met. In the UK, the application process is administered by an independent consulting company commissioned by the Government (Food from Britain), which receives applications, liaises with applicants and helps with the completion of those applications.

Economic Impact of product designations

The central economic contention of product designations is that it is in the interest of a producer to try in some way to differentiate their product/s from those of others. This has traditionally evaded producers of agricultural products usually due to perceived expense. Product designation may provide producers with a new or an extra means to identify their products as distinct and thereby attract further purchases from consumers. This may be particularly important for small scale producers who may not have the necessary means to promote the individual brand at the national/international level.

A study by the OECD (1995) identified a number of factors that influence the success of small, rural enterprises that target niche markets. The two main factors that emerged were: market access and differentiation. The study found that an approach to addressing these factors is to work collectively (i.e. groups of enterprises operating in the same sector) in order to develop a competitive advantage.

These groupings of enterprises (or in the case of PGIs may be individual enterprises) exhibit the characteristics of a monopoly in that they segment the production market and erect barriers on producers which limit entry at two levels. First, only producers within the demarcated area qualify for participation and secondly, only producers who comply with the code of practice may be involved. These institutional barriers facilitate the formation of a monopolistic cartel which encompasses all producers within the designation who comply with the code of practice. However, for producers located within the designation, geographical indications retain local, public good characteristics of non-rivalry and non-exclusion. By limiting entry and functioning as a barrier to trade, these collective monopolies thus eliminate competition from similar products produced elsewhere, thereby improving market access for those producers entitled to use the designation.

The product designations can be viewed as being both protectionist and a market based tool encouraging local companies to trade internationally. The PGI can be construed as creating a market where none previously existed. In terms of the beer market, it may be viewed as 'creating an ethical food market' based on the initial premise of preserving local tradition and utilising local materials.

Linked to this creation of a new market is that the PGI definition provides an opportunity to nurture infant companies, as it provides a form of protection against further new entrants or for existing companies to differentiate their production methods to address the new market. In addition, the localised sourcing of the materials (based on the tight geographical definition) brings with it discernible advantages to localised sourcing and the development of strong local supply chains, which is only trading with those companies that comply with the PGI definition. Finally, through stimulating so many new starts there is an opportunity to enhance overall competition within the highly concentrated beer market, through the development of strong niche products.

Product designation is a legal framework defined to protect the names of regional foods. There are four possible functions for geographical indications, the first of which is an origin function, with designations being used as an indicator of the origin from which the products come. The second function relates to a quality function, with designations symbolising qualities which certain products have or which consumers associate with them. The third such function relates to the investment or advertising function, where designations are variables upon which investment/consumption decisions are made. Finally the culture-protecting function of designations achieved by preserving traditional production methods, habits of consumption and cultural identity. PDO/PGIs first and foremost defend the geographical name of the protected products against misuses, such as lowering of quality which may either harm the health/satisfaction of the consumer or cause harm to the reputation of the product type through its replacement with an inferior product. The PDOs also have the potential to 'steady commercial relations and reducing uncertainty on the trade of the goods, particularly to distant markets, where there is an awareness of the product type, but who do not have an existing trading relationship with particular companies. This ability to market the product to new or premium markets brings with it the potential to gain a higher premium price than non PDOs or PGIs as they facilitate the opening of new commercial channels, particularly with foreign large based retailers or through the collective product promotion thanks to the presence of a collective organisation in charge of organising, defending and promoting the PDO or PGI production system represented.

It is clear that the impact on innovation has not been considered in either the initial development or the subsequent implementation of the PDO/PGI scheme. Therefore, any impact on innovation by the scheme would be viewed as entirely incidental and would not be recorded as a matter of course in any impact analysis.

Innovation

The economic literature has identified the importance of innovation to the continued competitiveness of the enterprise and the growth of economic systems. There is therefore general consensus that innovative activity is the driving force of change and growth. The definition of innovation, however, should not be restricted to scientific and technological change only. It is a concept applicable to any dimension of firms' structure, for example to organization as well as managerial innovations.

Economic theory suggests that there is not a linear relationship between size of the company, competitive market structure, and the propensity to innovate. High levels of competition, as well as monopoly, do not provide the best environment for innovation. Intermediate level of competition seems to favour more innovative activity (Tirole, 1988). Markets operating under oligopolistic competition are therefore more supportive of investment in innovation. Given that the PDO scheme favours differentiation and therefore some form of oligopolistic competition, the question must be posed as to the balance between the protection afforded and the restrictions of activity that can be supported. In addition to Tirole's analysis of the impact of size and market concentration on the propensity to invest in innovation, Kamen and Schwartz (1982) and Mansfield (1983) have identified a number of other factors which may possibly impact on decisions to invest in innovation. These are:

a) Current and expected profitability of investments;
b) The rate of diffusion of good practice into the enterprise;
c) The ability of the owner/manager to put innovation into action; and
d) The impact of external constraints such as regulation and labour regulations.

The Community Innovation Survey (CIS) for the UK has been used to provide a benchmark in the assessment of the variables affecting the decision to invest in innovation on a cross sectoral basis. The CIS was conducted in the UK by the Department of Trade and Industry and had a reference period of 1994 to 1996 and had the aim of explaining the drivers of innovation in manufacturing as well as in the service sector. Over 70% of medium high and high technology firms introduced new products compared with 53% of medium-low tech and 46% of low technology firms doing product innovation. For process innovation the report identifies that there is much less of a division between high and low technology industries and a substantially lower proportion of companies overall has done it. Also for organisational innovation (such as the introduction of email, Investors In People and benchmarking schemes) there is no significant difference between low tech, medium low tech and medium high technology industries with only enterprises in the high technology category being more innovative than the rest. For organisational innovation the proportions of firms in all groups answering that they were undertaking it was much higher than other forms of innovation. Some 70% of low technology firms (such as brewers) engaged in organisational innovation. The report identified that medium high and high technology industries rely more markedly on internal resources for both product and process innovation than do the lower technology industries.

The Brewing sector has traditionally been thought of as a low technology industry. Therefore, following the CIS report findings, it would be anticipated that microbreweries:

1. Are less likely to do product innovation;
2. Have a tendency to do process innovation; and
3. Tend to the implementation of certain types of organisational innovations, such as the use of ICT and benchmarking systems to track the performance of competitors as well as use of schemes such as Investors In People.

These hypotheses related to low technology industries such as micro-breweries (and for the impact of the scheme) will be subsequently assessed in the findings section.

Methodology and findings

The focus of this study is to assess the impact of PDO designation on the ability of breweries participating in the scheme to undertake innovation. The methodology has been designed to take on board a triangulation approach, first checking the hypotheses from the economic literature and the findings of the CIT report with primary research data obtained from the four participating companies and other stakeholder organisations, including relevant sector bodies (CAMRA and SIBA); and the Certification bodies operating on behalf of DEFRA.

Given both the small number of potential stakeholders and participating companies and the highly qualitative form of the information to be collated, it was felt that the most appropriate survey method was the use of semi structured telephone interviews. Owing to commercial sensitivities only aggregated (anonymised) responses are reported in the following paragraphs.

Size

A natural assumption about the size of companies in receipt of PDO/PGI would be small scale microbreweries producing between 5,000 -30,000 hectolitres of beer per year and employing on average 15 staff. Of the approximately 900 microbreweries in the UK some 90% would be of this scale. The four beers protected under PDO/PGI are:

- Kentish Ale and Strong Kentish Ale;
- Rutland Ale; and
- Newcastle Brown Ale.

However, three of the four PDO/PGIs are under the control of larger scale breweries, with one (Newcastle Brown Ale) belonging to the Heineken Brewing Group. Rather than PDO/PGIs being the preserve of small scale micro-breweries, for three of the four examples they are part of a wider portfolio of beers. But the original contention remains in place, whether there is an impact on innovation of participating in the PDO/PGI scheme. The three participating companies are potentially illustrative of large, medium and small scale breweries operating in the UK.

Rationale for being involved in the scheme

A number of the respondents stated that the decision to enter the scheme was determined over a decade previously. At the time of choosing to enter the scheme, it was felt that there was a need to demonstrate the traditional nature of the product through an internationally recognised accredited scheme, particularly as it was viewed as being important to enter new export markets in continental Europe and the US.

The PGI scheme was believed to have the necessary accreditation and was judged to be sufficiently international as to assist entry into the aforementioned markets. However, the importance of the scheme to the marketing strategy within the various companies has declined in recent years, as there is neither the domestic nor international awareness of the PGI to make it sufficiently cost effective as a centre piece of any brand specific promotional campaign.

The respondents stated that the PGI scheme no longer carried the premium they originally thought it would have within their industry. Rather the various respondents stated that they now promote the quality of their brands using other industry specific awards and merely continue to use the PGI marque on their bottles as a legacy of their previous strategy.

Innovation

The respondents themselves tended to be from a range of technical and professional backgrounds and thereby provided definitions of innovation wider than simply those related to investment in new products and processes. They also identified organisational innovations such as the introduction of new management systems. Although investment in new products and processes were important to the wider company and the regulated brand, such as improvements to bottle design and production techniques, the majority of innovative activity was non drastic and had minor incremental improvements to internal processes such as performance monitoring, new marketing initiatives (use of CRM systems) and adoption of new financial reporting structures.

Each of the participating companies within the Scheme had also introduced other complementary brands to their product range since joining the Scheme, which were marketed in conjunction with the participating brand even though they did not comply with the PGI Scheme.

Competitive environment

Each of the respondents stated that they have a portfolio of brands of which the participating brands is merely a small part. However, the portfolio of brands represents a clear market segmentation. Although each of the respondents recognised the other participating brands (to the scheme) these were not seen as the main competitors, rather they were just part of a very crowded market, which was divided into roughly three key segments: namely distribution through own tied houses (pubs owned by the brewery), distribution through free houses (pubs which are independent of the breweries) and distribution through the large supermarkets.

Each of these distribution networks brings about its own issues and a differentiated level of importance for quality schemes such as the PGI. In their own tied houses, these tend to be clustered in certain regions and the PGI beers are actively promoted to a very well informed local audience who know the history and

heritage of the brand and are willing to pay a premium for it. This is perhaps the market segmentation for which the PGI marque is the most important, but is also the one with the least potential growth (the target group tends to be male and middle aged, significantly loyal to a brand with little switching).

However within the other two distribution approaches, free houses and large supermarkets, the PGI marque is of less importance compared to other variables such as brand recognition to individual customers (usually through brand specific advertising or winning awards) or the development of cost effective distribution agreements with these bodies.

The supermarket sector is seen as the most important for future growth and all respondents have sought to develop new working arrangements (such as improvements to their distribution networks and customer relationship management tools) to strengthen these relationships. Although the brand still brings a premium, it is promoted within the shops and the national media as one in a portfolio of complementary products.

Investing in innovation

Respondents stated that the scale of their enterprises meant that external sources of finance were not used for their standard investment in innovation. Rather most innovation was not usually capital intensive but was about incremental changes to processes and services delivered by the company. Given the nature of this mature sector, most significant capital investment was due to replacement due to end of commercial life, rather than investment in new 'kit' as a result of significant innovation/change in production method.

Although respondents did not give exact figures on expenditure related to research and development, they stated that this was relatively low compared to expenditure on new initiatives such as the adoption of new management systems (in particular, new marketing initiatives).

Complying with the 'approved definition' and innovation

Respondents stated that what went into the bottle or cask could not be changed, either in production method, sourcing of raw materials or location of production due to the approved definition. However, this was only a small part of the total production process (in terms of costs and added value) and that the definition did not constrain them in areas where they most heavily invest in innovation (both financially and in time) such as improvements to marketing and distribution. The PGI status was not seen as a limitation to innovation, rather it was as constraining as any of the other recipes which they used to prepare beer and with such a knowledgeable market (both in terms of supermarket purchasing managers and the buying public) there was little opportunity or rationale to change production methods.

Respondents all cited the Newcastle Brown constraint, regarding relocation, which might in the future prove difficult to abide with, however the geographic interpretation was at the county level rather than site specific.

Summary and conclusion

The preamble to Regulation 1383/2003 set the following objectives for product designation, including:

- the promotion of products with specific characteristics;
- the improvement of the income of farmers;
- the retention of population in rural areas; and
- the provision of clear and succinct information to consumers regarding product origin.

As in other sectors, participants of the real ale designation are promoting a product which is traditional and is constrained in its production process, use of raw materials and geographical location. It therefore complies with the spirit of the first objective of the Preamble. However, these are only one small part of the overall process of adding value within beer production, as in common with most other lifestyle the majority of the added value comes from the marketing and distribution of the beer.

Unlike other sectors, the participants of product designation in the brewing sector are not small scale, artisan ran businesses, rather they are large scale, technically sophisticated and often with a large professional workforce. The impact to farmers is through the local supply chain for raw materials, which accounts for only a small part of the total costs of the production process and given the scale of the breweries, purchasing power rests with them. Although there is a geographical constraint on the sourcing of raw materials, the materials themselves (water, hops and barley) are easily sourced from other locally based suppliers, thereby weakening any bargaining position on the part of farmers.

Breweries had their origins in local communities and sourced their workforce from the surrounding farms and villages. However, the increasing scale and professionalism of breweries and particularly of those participating in the scheme does not provide opportunities for the local sourcing of direct employment. Where there is an impact on retention of local population is through local supply chains, including the use

of local farmers. However, unlike other PDOs/PGIs the direct employment opportunities and consequent impact on retaining population is minimal.

The original rationale for companies seeking to participate in product designation was similar to that cited by respondents to the London Economics report, which stated that PDO/PGIs were entered into for:

> '*economic reasons such as marketing, gaining/securing market share to keep businesses viable or profitable through the protection of the use of names or sending quality assurance signals to consumers.*'

In common with other sectors, consumer awareness of PDOs/PGIs within the brewing sector is low and for a sector as competitive as the real ale sector, there is a need to augment brand recognition and sending quality assurance signals to consumers through additional marketing. Unlike a decade earlier, the brewing sector now has a number of quality assurance / awards schemes which are better known to the target markets for real ale than PDOs/PGIs and so have largely superseded them.

In summary, the PDOs related to real ale in the UK do still comply with the objectives of the scheme, but the participants are very distinct to those who use the scheme in other sectors. Those participants are small scale, locally based artisan businesses who have a direct impact on farmers' incomes, retention of population and provide clear messages to the buying public as to quality and source. The real ale sector is a modern business in the guise of an artisan enterprise.

Returning to the central contention of this report, the impact of product designation on the capacity of breweries to undertake innovation, the simple answer is that it is minimal. The sector (and the individual participant companies) is of a scale and level of sophistication in which innovation is all pervasive, although production methods, raw materials and location are constrained they are but a small part of the overall process. Rather most innovation relates to improvements to process and service, which are driven by a need to meet the demands of an increasingly dominant market (the supermarkets) and is facilitated by a highly mobile and professional workforce which has the opportunity to identify emerging trends and the absorptive capacity to put the necessary innovations into practice. Product designation within the brewery sector is a legacy of a previous initiative, rather than a constraint to future innovation.

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