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CPPR
Centre for Public Policy for Regions

GROWTH AND LABOUR MARKET TRENDS –

TRYING TO MAKE SENSE OF RECENT SCOTTISH ECONOMIC STATISTICS

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EXECUTIVE SUMMARY

The latest CPPR briefing note attempts to reconcile recent shifts in Scottish GDP and Scottish workforce jobs. The major finding is that there are difficult to explain movements taking place in almost every industrial sector of the Scottish economy. Some of these have only emerged post recession, since 2008, while some have been long in the making.

The trends outlined in this new report are important, as they:

- highlight substantial and unexpected shifts in performance over recent years;
- raise questions over whether some of the 'Growth Sectors' (highlighted in the new Economic Strategy that the Scottish Government published earlier this week) can deliver such growth. In particular, Financial and Business services and Tourism (via spend on Hotels & Restaurants) have seen worsening labour productivity post recession and in the case of Hotels & Restaurants for a much longer period;
- potentially challenge the stated success of the Scottish Government's capital acceleration programme, especially in relation to its impact on the Construction workforce;
- outline more clearly than has been done anywhere before how Scottish sectors are faring, post recession, and what this might signal about their future prospects.

The major findings, across the key sectors are:

Real Estate & Business Services (accounting for 20% of output)

This is the largest single industry sector. Output is down about 10% on its early 2008 peak. All of this reduction happened in the first year after the peak, with little pick-up since. Workforce jobs are little changed, although this was after a significant dip, of around 10%, in 2010. The recent jobs revival has not been matched by any revival in Scottish output. UK output peaked in the first half of 2008, then fell by 7% over the next year but has since recovered by 5%, an important bounce back not yet seen in Scotland.

Manufacturing (13% of output)

Scottish output peaked in the first half of 2008 and then fell by 9% over the next year. Since then it has bounced back a little to be 6½ % below its peak. In comparison, workforce jobs have fallen by almost 25% since 2008, which implies a huge labour productivity gain.

Health (9% of output)

Scottish Health output continued to rise over the recessionary period, but has stalled in the last year, whereas in the UK it grew by another 4%. Meanwhile Scottish workforce jobs dipped in 2010, consistent with stalled output, but jumped by an exceptional 11% in the first quarter of 2011, an effect not seen at the UK level.

Financial Services (8% of output)

Financial Services output in Scotland has suffered badly since peaking in early 2007. Output fell for almost three years, by around 22%, and has largely remained at this low level. The decline at the UK level has been far less. Workforce jobs fell by 17% in Scotland, from 2008 to the end of 2009. However, since then they have returned to a level similar to that seen in

2008. The recent workforce rise contrasts with the continued fall in output, suggesting that labour productivity is declining rapidly.

Construction (8% of output)

After peaking in 2008, Scottish output experienced a dramatic (-14%) fall to the end of 2009 but recovered all of this loss, and more, by the second half of 2010, a remarkable turnaround. However, the decline in recent housebuilding starts, down by over 50% in 2010-11 when compared with 2007-08 is in contrast to the recovering output data. Housebuilding typically accounts for around 40% of all Construction industry activity and so it would take a very large jump up in commercial construction (highly unlikely in the current circumstances) or in public sector (non-housing) construction to offset this. Furthermore, Scottish Government capital spend was around 10% lower in 2010-11 vs 2009-10, so this source also looks likely to have caused a downturn rather than an upturn in output.

Workforce job numbers in Scotland peaked in 2008 (up 12% on late 2005), before falling by 25% to early 2010. Since when they have recovered by 20% to 2010(Q3), but are still 10% below their peak. This again suggests a big improvement in labour productivity. There has been less of a fall, relatively, in workforce jobs at the UK level over this period.

Hotels & Catering (3% of output)

Scotland's 2007 output was no higher than it was in late 1999, while UK output grew in line with the economy as a whole over the period (i.e. by over 20%). By contrast, the long-term trend in workforce jobs for Scotland and the UK are similar, with small rises in employment at least up until 2008. This suggests an exceptionally poor labour productivity performance for Scotland. Furthermore, the number of business units recorded as 'hotels and restaurants' rose by over 11% between 1999 and 2008. If true, growth appears to have been wholly at the expense of existing businesses profits.

While the above are the most important recent trends, almost every sector in Scotland, including Retail & Wholesale and Transport & Communications etc, has experienced some strange events over the period analysed. These are outlined in detail in the full report.

Each of these issues is of concern, but the most worrisome at present relate to the lack of any growth in the output of both the Health and Business Services sectors, which together account for 30% of the Scottish economy. Also of concern is the apparent rapid decline of labour productivity in Financial Services and in Public Services as a whole.

The alternative to finding an economic explanation for each of these dramatic shifts in performance is to reconsider the robustness of the data itself and the surveys used to compile it. There are clearly some significant anomalies in the workforce data, highlighted in the main paper, with what look like various serious data/survey discontinuities in specific quarters. If there are problems within the data then they need to be acknowledged and remedied as quickly as possible. Policy responses rely on robust data highlighting where poor or under-performance needs to be tackled.

If, however, the data are correct then they signal some very odd and potentially worrying labour productivity trends for Scotland. These trends could have serious implications for government practice, in relation to public sector activities, and for policy, in relation to support and strategy for important industries.

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GROWTH AND LABOUR MARKET TRENDS – TRYING TO MAKE SENSE OF RECENT SCOTTISH ECONOMIC STATISTICS

This briefing note attempts to reconcile recent, mainly post the recessionary downturn, shifts in Scottish GDP and Scottish employment, both on their own and relative to the UK.

The note covers:

- industry by industry analysis
- a summary of the main issues and problems discovered
- some possible explanations
- further work needed

Scottish vs UK growth rates post recession, by industry sector

Before considering each major industry sector on its own, it is of interest to consider which are the biggest industry sectors in Scotland in absolute terms and which are relatively large, in comparison to the UK as a whole.

Table 1 shows both the weight of each major sector in terms of its contribution to overall output and how Scottish growth compares to UK growth, across industry sectors, since the downturn. It shows this both since 2008q1, the pre recession peak, and for 2007 versus 2010, in order to smooth out the impact of any odd, quarter-by-quarter, data movements.

Table 1: GVA at basic prices (volume indices), % change

	Industry weights		**2008Q1-2011Q1**		**2007-2010**	
	Scotland	**UK**	**Scotland**	**UK**	**Scotland**	**UK**
Total	**1000**	**1000**	**-4.4**	**-3.9**	**-3.8**	**-3.3**
Agriculture	17	7	+2	-7	-1	-6
Mining	15	27	-19	-20	-21	-20
Energy	26	17	-6	-5	+2	-3
Manufacturing	130	128	-6	-9	-6	-10
Construction	76	63	-1	-8	-1	-5
Retail &Wholesale	101	114	+2	-2	+2	-3
Hotels &Catering	32	29	-8	-8	-9	-6
Transport & Communications	69	71	-5	-5	-5	-6
Financial Services	76	77	-12	-9	-17	-3
Business Services	200	233	-10	-2	-6	-1
Public Administration	60	53	-3	0	-3	-1
Education	60	58	+2	+1	+2	+1
Health & Social Work	91	73	+3	+10	+5	+8
Other	49	51	-5	-7	-4	-6

Sources: Scottish Government and ONS

The table illustrates Scotland's relative underperformance in: Financial Services; Business

Services; PAD; and Health & Social Work (HSW). In contrast Scotland has outperformed the UK in: Agriculture; Manufacturing; Construction; and Retail & Wholesale.

The worrying aspect of this comparison is that the biggest negative growth differences are seen in the sectors of Business Services and HSW, which are both very large, together accounting for almost 30% of the economy, while the biggest positive growth differences are seen in the sectors of Agriculture, which is very small, and Construction, where the data is highly erratic and prone to substantial revision.

Annex 1 illustrates how this UK recession has compared with previous ones, going back to the 1970s. It highlights that while output has fallen relatively far, employment has not fallen by as much as in most past recessions.

Growth patterns by main industrial sectors

This section looks at Scottish GDP and workforce[1] data sector by sector. It considers the situation in Scotland and how consistent the data appears to be across the two measures. It also considers the situation with respect to the UK and offers possible explanations for such differences.

Manufacturing

While it might have been expected that Manufacturing took a hit at the start of the recessionary period, it would have been hoped that this position would quickly reverse in light of sterling's depreciation against the euro and the dollar, where our main export markets lie. Since 2007, sterling has fallen in value against both the dollar and the euro by over 20%.

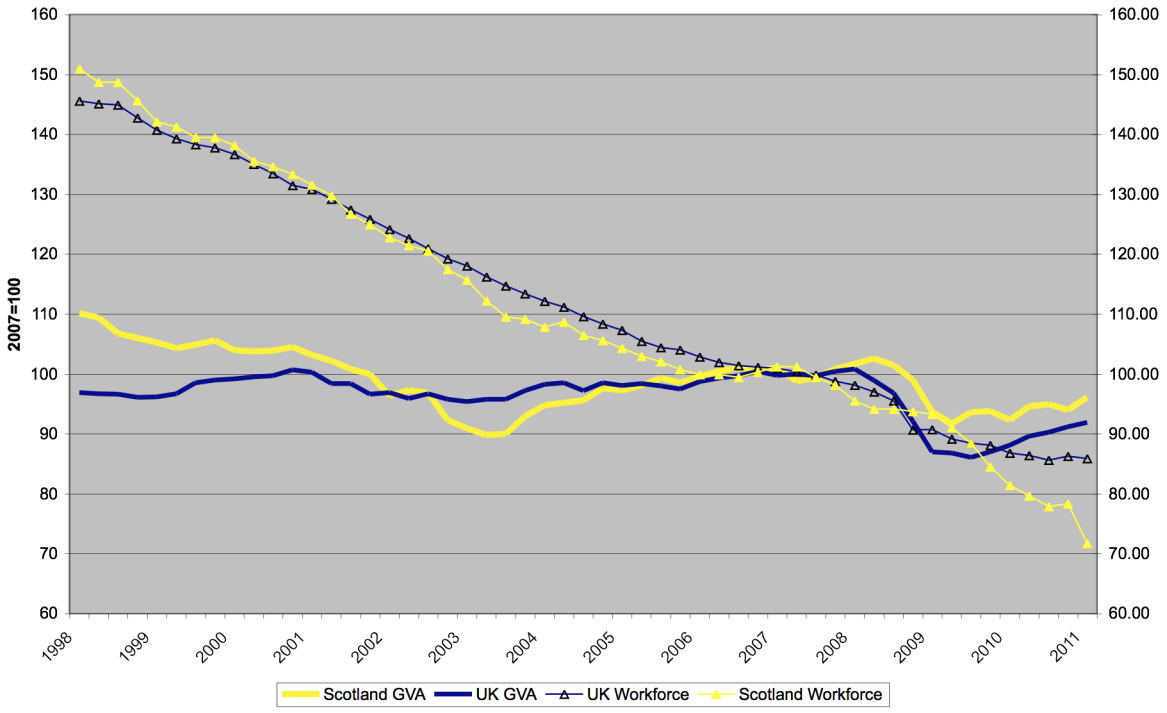
Overall, Scottish Manufacturing output peaked in 2008q2 and then fell by 9% over the next year. Since then it has bounced back a little to be 6½% below its peak. In comparison, workforce jobs in Scottish Manufacturing have fallen by almost 25% over the same period. If accurate, this implies a huge labour productivity gain, which should help with on-going competitiveness.

At the UK level, Manufacturing output fell by almost 15% after 2008q1 and is still 9% below its recent peak. However, the number of workforce jobs fell by only 12½%, half the Scottish fall.

The apparently relentless long term decline in the Manufacturing workforce since 1998 has occurred during good times and bad and also at the UK level. In that sense the recent rapid decline in the workforce is simply an acceleration of what has gone before.

[1] Workforce jobs figures are a measure of jobs rather than people employed. These can be full-time, part-time, self employed, employee or government supported trainee jobs.

Figure 1[2]: Manufacturing GVA and workforce



Given that Scottish (non-UK)[3] exports are concentrated in the areas of Drink, Chemicals and Engineering (mainly Electrical and Instrument Engineering), it is of interest to look at their recent output performance.

Drink (23% of Manufacturing exports weight in 2007) – excluding erratic quarterly under and over performances, output has changed little since the recession started.

Chemicals (13% of Manufacturing exports weight in 2007) – after peaking in 2008q3, output fell by around 25% to the end of 2009, since when it has recovered a little (around 5%, although 2011q1 was noticeably higher).

Electrical and Instrument Engineering (29% of Manufacturing exports weight in 2007) – output held up until the end of 2008, but then plummeted by 13% in the first quarter of 2009, since when it has largely remained flat at this lower level.

Other Engineering (17% of Manufacturing exports weight in 2007) – Mechanical Engineering has held up at about the same level of output as experienced in 2008 while Transport Engineering experienced an initial fall in 2009 but has since bounced back strongly to be above the pre-recession output level.

Overall this is a disappointing result for exports-biased Manufacturing industries in Scotland, given the size of the recent depreciation, and the implied boost in competitiveness from job cuts, particularly so in relation to Electrical Engineering. However, it is not particularly out of line with what has happened in the same industries at the UK level.

[2] All charts show GVA and Workforce jobs indexed to 2007 = 100.

[3] Clearly there will have been no currency depreciation in relation to the rest of the UK.

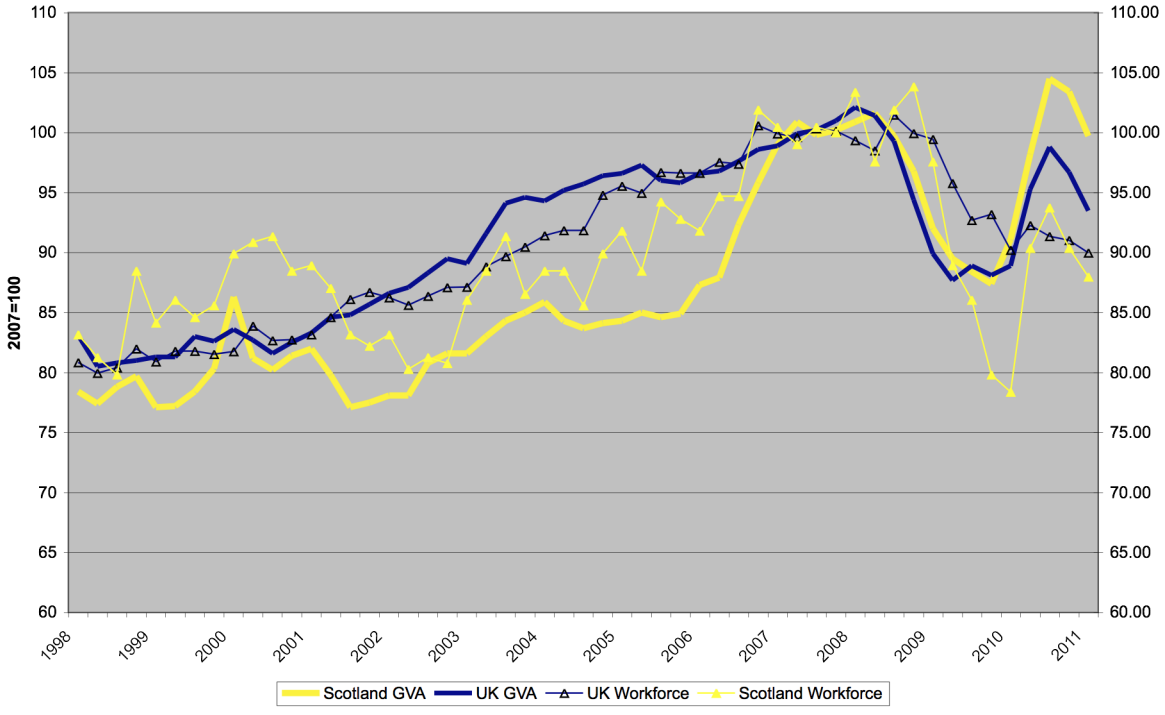
An important issue that warrants further study in this area concerns the diverging employment performances of Scottish Manufacturing versus the UK. In particular, the Scottish decline seems exceptionally large. When the UK regional picture is considered there is a clear distinction between good and bad performers. While the Manufacturing workforce in Yorkshire & Humberside and in the East Midlands have been unaffected (and those in the North West, South East, Wales and Northern Ireland suffered workforce reductions of 10% or less) those in the East and London, as well as in Scotland, have suffered losses of over 20%.

Construction

Given the importance of the housing bubble in the story of the recent economic crash, along with house price falls and a tightening of mortgage loans regulations, it might have been expected that the Construction industry would suffer for some time post the onset of the recession. However, this has not been the case. After peaking in 2008q2, output did experience a dramatic (-14%) fall to the end of 2009 but then recovered all of this loss, and more, by the second half of 2010, a remarkable turnaround. Indeed, while official figures for the second half of 2010 showed Construction output to be at an all time high Manufacturing and Services were still well below their peak levels at this time.

Workforce job numbers for Construction in Scotland peaked in 2008q3 (up 12% on 2005q4), before falling by 25% to 2010q1. Since when they have recovered by 20% to 2010q3, but were still 10% below their peak at that point. As with Manufacturing, this suggests a big improvement in labour productivity in Construction since the start of the recession.

Figure 2: Construction GVA and workforce



Output growth in the 3 years leading up to the recession was much slower in the UK, at just over 5%, versus Scotland, at 20%. Thereafter the fall in output was of a very similar scale. The UK has not recovered to the same extent since bottoming out and in late 2010,

remaining 4-5% below its previous peak. However, even at this level, doubts have been expressed by UK commentators over whether such a strong bounce back has indeed taken place.

In terms of workforce jobs, the UK has seen a continuing gradual decline rather than Scotland's pattern of a big fall followed by a substantial rise. Overall, the UK decline from peak to 2011Q1, is still smaller, at -11%, than Scotland's, at -15%.

Furthermore, Scottish output data from this industry was completely re-profiled in October 2010, including downward revisions of between 11-13% for 2003 to 2005. This left a profile for Construction growth of only 5% over the near decade from 1996 to 2005 (i.e. a growth rate of well under 1% per year), followed by an 18% jump up in the next 2 years to 2007. By way of comparison, the pre-revision figures showed growth of +22%, 1995-2005, followed by +2% 2005 to 2007. This is a quite extraordinary level of data revision and completely reverses the sectors growth story over that period. It has never been explained in terms of the economic story behind it, only by reference to changed statistical sources.

Meanwhile for the UK as a whole, Construction output rose by 23%, 1996-2005, and by 3% 2005 to 2007, much more in line with Scotland's pre-revision figures.

The growth of output from 1996 to 2005 of only 5% for Scotland seems very low when considering the rise in housebuilding starts of over 25% from the late 1990s to the mid 2000s, as well as the growing importance of PFI/PPP style investments over this period.

Equally the decline in recent housebuilding starts, down by over 50% in 2010-11 when compared with 2007-08 is in contrast to the output data. Housebuilding typically accounts for around 40% of all Construction industry activity and so it would take a very large jump up in commercial construction (highly unlikely in the current circumstances) or in public sector (non-housing) construction to offset this.

Furthermore, Scottish Government capital spend was around 10% lower in 2010-11 vs 2009-10 (and due to fall by over 20% in 2011-12). So this source also looks likely to have caused a downturn rather than an upturn in output.

We are left with a picture that is hard to comprehend and the possibility that output and employment surveys are being overly optimistic at present.

The recent Scottish recovery, principally in terms of job gains, in this sector has been claimed to be in no small part due to the Scottish Governments decision to accelerate public sector capital investment into 2009-10. However, during that financial year Construction employment continued to fall, and at a faster pace than for the UK as a whole. It was not until the second quarter of 2010 that it increased. Even now Scottish employment in Construction has fallen by more in Scotland than in the UK on their earlier peak levels.

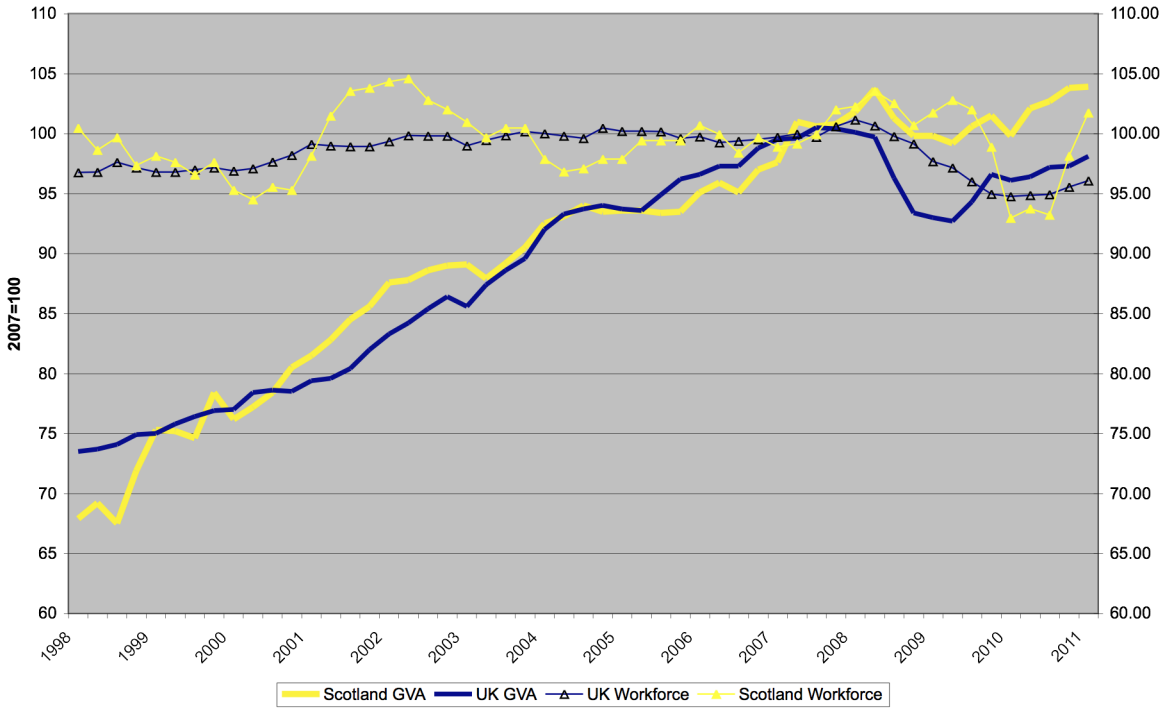
The Construction sector would appear to suffer from considerable data uncertainty which makes it problematic to explain any apparent trends. As a result, any short or long term findings in this area are not easy to determine and make effective policy intervention very difficult. However, it seems clear that far greater resources need to go into attempting to corroborate and explain the trends that the economic data throws up.

Retail and Wholesale

Once again, it might have been expected that the Retail & Wholesale (R&W) sector would be badly damaged as a result of the recession. A combination of higher unemployment, low or negative real wage rises and an attempt to reduce debt levels should all conspire to produce lower demand for consumer goods and so impact on this sector.

R&W output is about the same now as it was in 2008q2, after dipping in between, but only by 4% over 13 quarters. Workforce jobs saw a 10% fall in 2010 but are now back to a similar level as seen in 2008. It is not clear whether this large jump was 'real' or caused by the shift in survey method being used.

Figure 3: Retail & Wholesale GVA and Workforce



UK R&W output suffered more, down 8%, and remains slightly lower even now. Workforce jobs are similarly lower than at their peak, by around 5%.

Overall, Scottish R&W seems to have been less affected than the UK as a whole since the recession, in terms of both output and jobs. It is unclear why this should be the case.

It is also unclear how output managed to remain relatively high in 2010 while employment dipped by around 10%. This could have been due to labour hoarding, although the R&W sector does not at first sight seem the most obvious place for this to occur, being relatively low skilled.

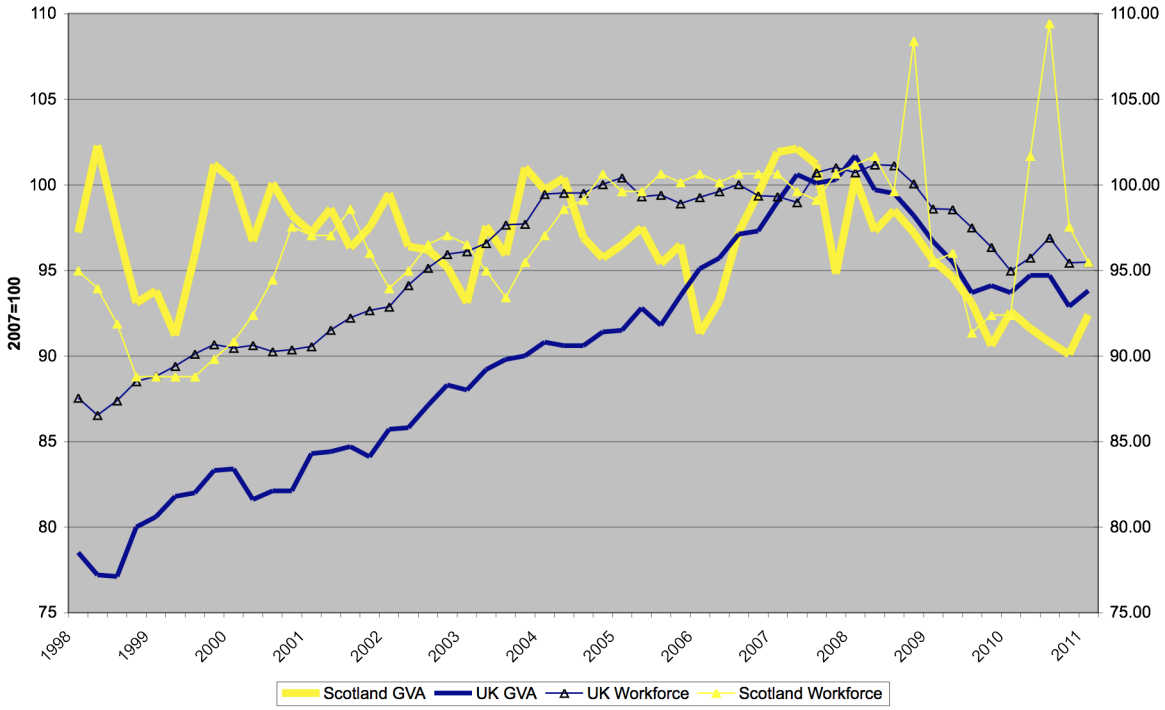
Hotels and Catering

Hotels & Catering (H&C) should also be under pressure, both from reduced levels of domestic consumption and from reduced levels of non-domestic consumption, via lower levels of overseas tourists. The latter impact may be compensated for, to some degree, by more homestay tourism replacing overseas tourism. However, it is unlikely that this would compensate in full for a fall in international tourists staying and spending in Scotland.

Scottish H&C output remains about 10% below its 2007 peak. Workforce jobs are erratic[4], having peaked in 2008q4 and again in 2010q3, but are currently just below the average seen in 2007.

Output in H&C at the UK level also fallen and remains 8% below its 2008q1 peak. Workforce jobs are down 5% over the same period.

Figure 4: Hotels and Catering GVA and Workforce



However, the bigger story here is that even Scotland's 2007 output was no higher than it was in late 1999. A little remarked upon long-term underperformance by this sector. By contrast, the long-term trend in workforce jobs for Scotland and the UK are similar, with small rises in employment having been experienced at least up until 2008, while UK output grew in line with the economy as a whole over the period (i.e. by over 20%). This suggests an exceptionally poor labour productivity performance for Scotland.

Furthermore, the number of business units recorded as 'hotels and restaurants' rose by over 11% between 1999 and 2008. It would appear that this growth has been wholly at the expense of existing businesses profits.

[4] This is also true in other regions, with a 50% rise in H&C jobs since late 2009 in the East and being highly erratic in Wales. See page 19 for more on erratic workforce data.

The outlook for H&C does not seem very promising. If output was unable to grow over the relatively prosperous and leisure orientated period post 1999, then there seems little reason for it to start growing now.

This sector is badly in need of a thorough examination. If the data is to be believed then it has performed very poorly, in relative terms, over more than a decade. However, the data itself must be closely scrutinised as this finding appears to conflict with the growth in the number of businesses in this sector since 1999 and with common experience in towns and cities across Scotland. A full examination of the industry would also allow us to gauge whether a renewed approach to the Tourism industry, and any related government strategy, is warranted.

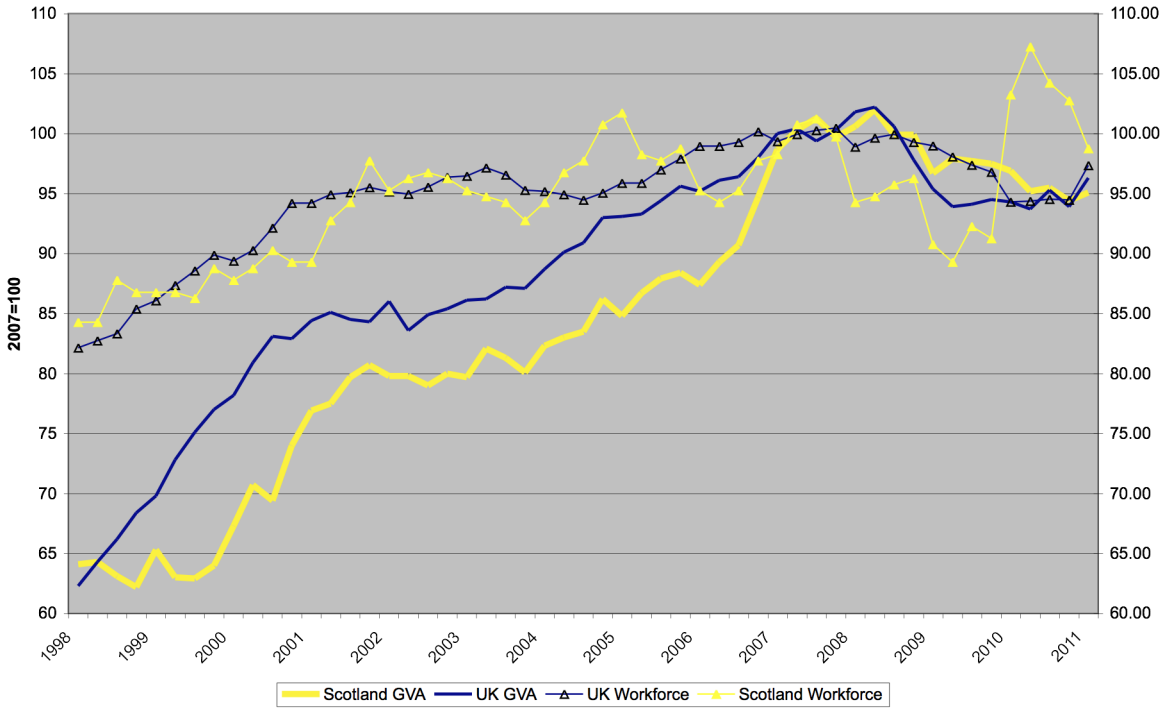
Transport and Communication

This is not a sector that might so clearly be affected by the downturn, although demand for transport services might decline along with falling sales.

Transport & Communications (T&C) output is down 7% on its 2008q2 peak. Workforce jobs, by comparison, are up by 5%. This seeming anomaly can be sourced to a dramatic one-off rise in Transport related jobs in the first quarter of 2010, up 13%. Again, this large jump may have been caused by the shift in survey method being used. If not, it suggests a significant worsening of productivity over the last 15 months. This is particularly strange as it is caused not by labour hoarding but by an increase in employment, a highly unlikely event.

For the UK, output is similarly down, 6% on its peak, and workforce jobs are down by 3%.

Figure 5: Transport & Communications GVA and Workforce



Prior to the recession, T&C was one of the fastest growing sectors in Scotland, primarily due to Communication, which grew by 35% from the middle of 2006 to its

peak level in the middle of 2008 (and by 160% since 1998). It is not well understood exactly where or why this very strong performance occurred.

In general, the Communications side of this industry is not very well understood and more knowledge of the causes of its rapid recent growth would be welcome.

Financial Services

Like Construction, Financial Services is one of the sectors most likely to experience a hard, and long lasting, hit from the recession. Some activities are likely to be scaled down or even disappear, in light of some of the financial products which helped bring about the downturn.

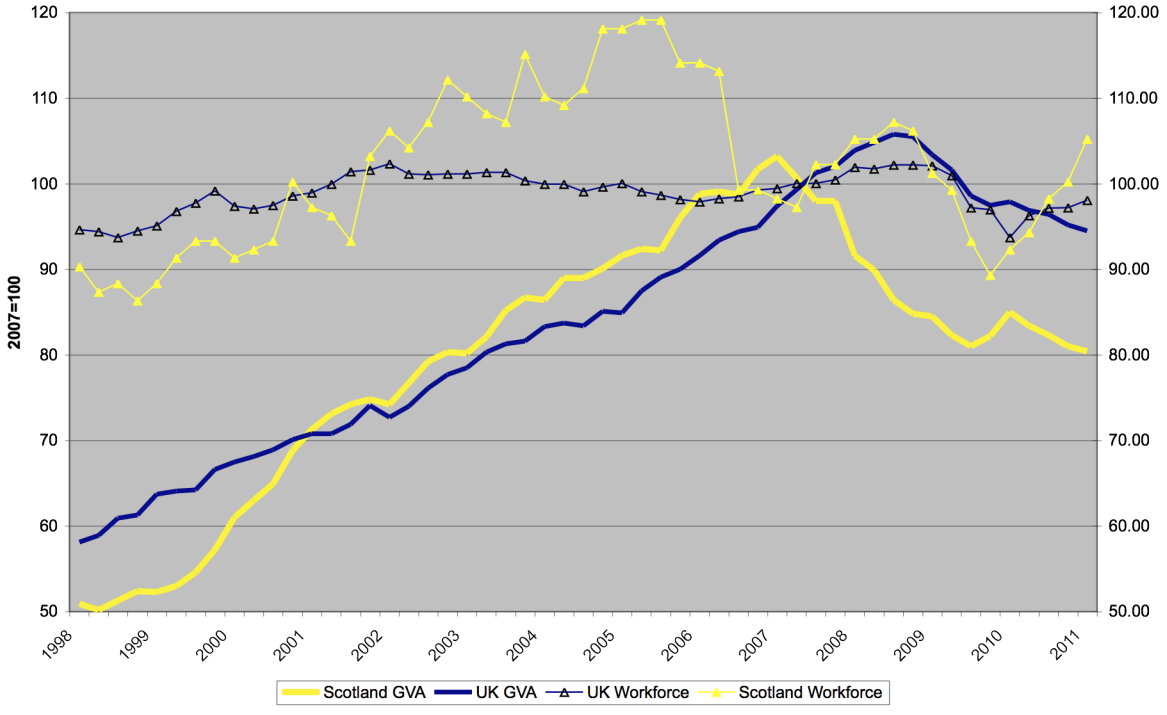
As might be expected then, Financial Services output in Scotland has suffered badly since peaking in 2007q1. Output fell for almost 3 years, by around 22%, and has largely remained at this low level since.

Workforce jobs fell by 17%, from 2008 to the end of 2009. However, since then they have returned to a level similar to that seen in 2008. (Note: Scottish jobs in this sector peaked in 2004 and had already fallen by over 10% by 2008. However, most of this fall was experienced in one quarter (2006q3). This looks likely to be due to a data discontinuity, so that the data pre and post this point are not truly comparable.)

The recent rise in Scottish workforce jobs has been gradual and so cannot easily be put down to survey issues. This upward trend is in contrast to the continued fall in output, suggesting that labour productivity is declining rapidly. As with T&C it seems highly unlikely that this reflects the real position.

UK Financial Services output peaked in 2008q3, and has fallen by 11% since. UK workforce jobs peaked in 2008 and fell by 7½ % by early 2010, since when they have recovered by 4%.

Figure 6: Financial Services GVA and Workforce



A better understanding of the relative differences between the Financial Services sectors in Edinburgh and in London would aid our understanding of how they operate, as well as our ability to support or promote the industry in Scotland.

In particular, recent conflicting trends in output (falling) and jobs (rising) need to be understood, as well as large jumps, quarter on quarter, in recent back data.

Real Estate & Business services

This sector might again be expected to suffer during the downturn, especially on the Real Estate side as house sales fall. At a fifth of the economy, this is the largest single sector and so will be impacted on by the experience of other businesses as a whole.

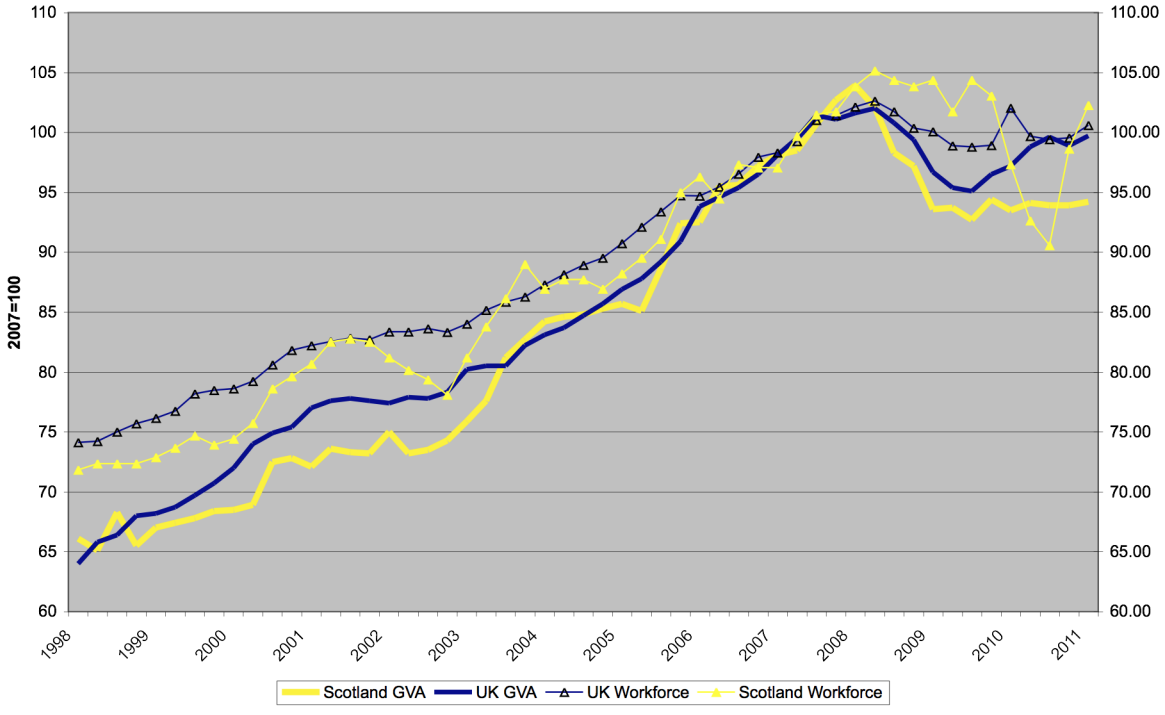
It is not unexpected then to find that Real Estate & Business services (RE&B) output is down about 10% on its 2008q1 peak. All of this fall happened in the first year after the peak, whilst the two subsequent years have failed to exhibit any pick up.

Workforce jobs are little changed, although this was after a significant dip, of around 10%, in 2010. The recent jobs revival has not been matched by any revival in Scottish output.

For Real Estate, jobs fell by almost a third in 2010 on their 2009 peak, but retrieved half of this decline in q1 of 2011. Again, these large jumps may have been caused by the shift in survey method being used. This explanation is supported by the fact that while employment significantly fell then rose, output has remained flat.

UK output peaked in 2008q2, then fell by 7% over the next year but has recovered by 5% in the past two years, an important bounce back not yet seen in Scotland. UK workforce jobs are marginally down on 2008.

Figure 7: Real Estate & Business Services GVA and Workforce



Further research is needed on recent workforce figures, but also to understand why Scottish Business Services have been so sluggish over the last 18 months, when the UK has started to grow again.

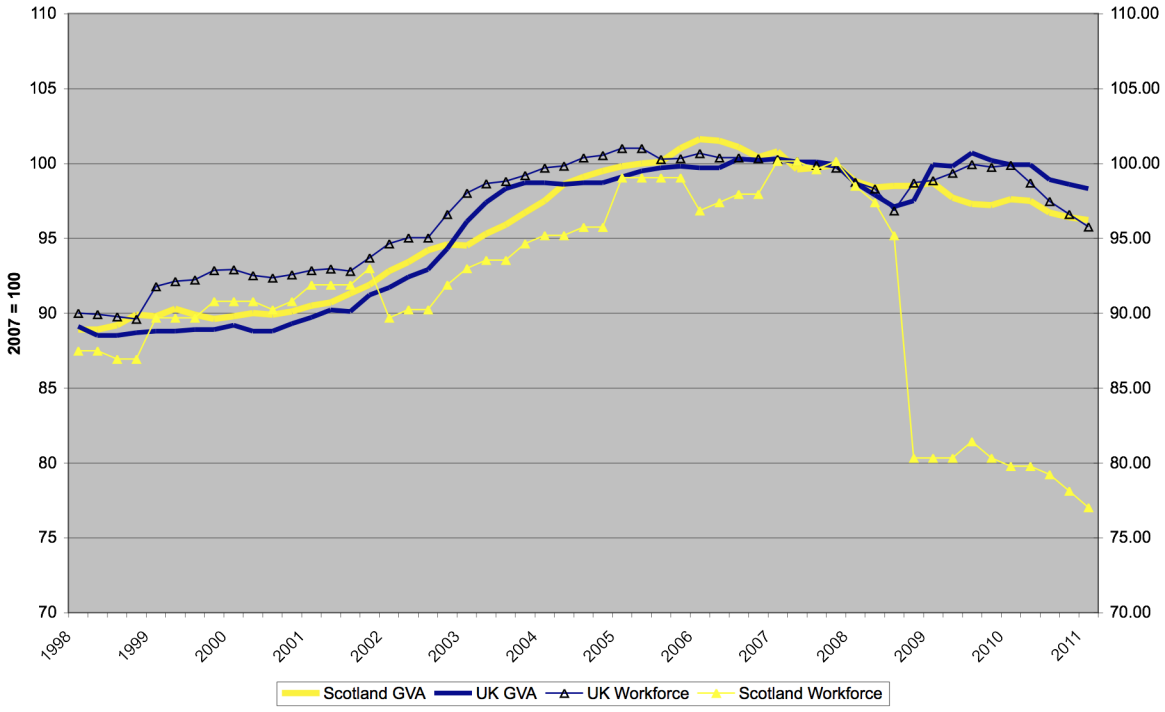
Public Administration & Defence

In this, and the following two public services sectors, a more positive position might be expected to be seen post recession as governments maintained spending levels initially in order to help provide some form of economic stimulus, as well as automatic stabilizers kicking in, in the form of higher employment in relation to training and jobseekers advisors etc.

In fact Public Administration & Defence (PAD) output in Scotland has fallen by 5% since its peak in 2006. Workforce jobs have fallen by 22% over a similar period, but this is almost entirely due to an unexplained reduction of 16% in the last quarter of 2008. Given such a large, one-off, change it seems likely that a data survey problem is the cause[5]. ONS acknowledge that this is a discontinuity but no 'consistent' series has yet been introduced, nor is the problem flagged in the published data.

For the UK, output has been near flat since 2006, while workforce jobs have fallen slightly.

Figure 8: Public Administration & Defence GVA and Workforce



Clarification of, and revisions of workforce data inconsistencies needs to be forthcoming. In addition, some explanation as to why Scotland's PAD output has fallen in relation to the UK would be welcome.

[5] Other such oddities across UK regions include an increase in North East PAD in 2008q4 of 29% (maintained) and in Yorkshire & Humberside PAD in 2009q1 of 24% (since tempered).

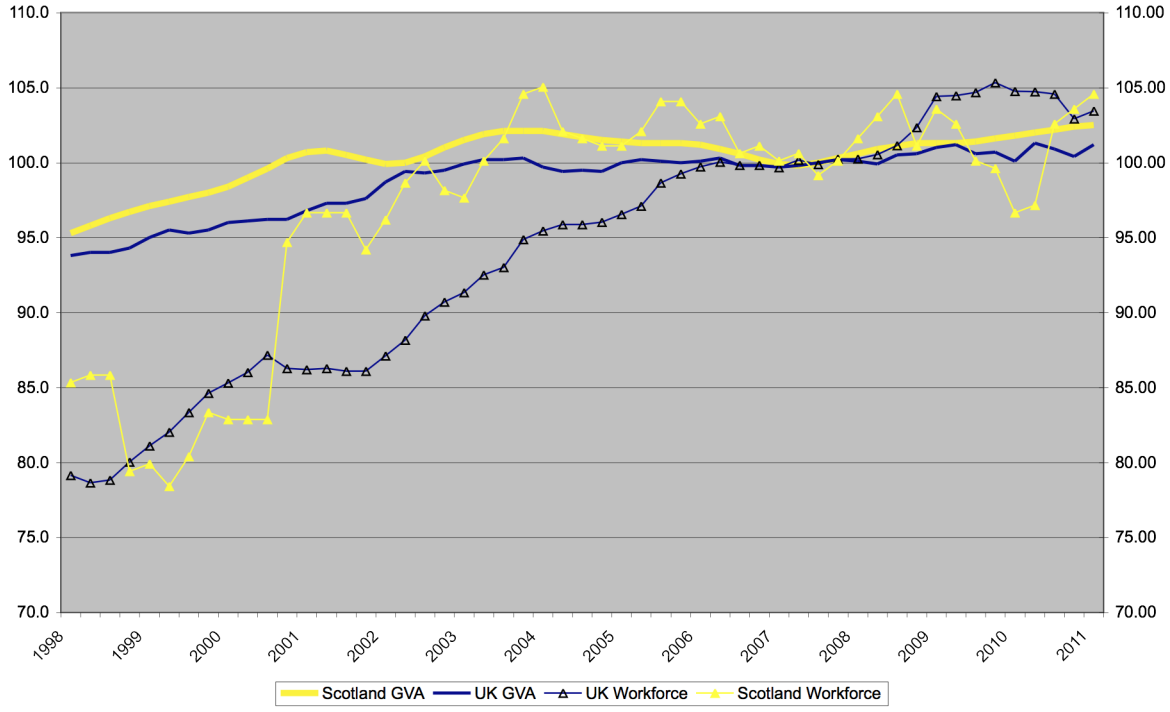
Education

Education output has continued to rise over the recessionary period, although very slowly. Workforce jobs dipped in early 2010 but are now at a similar level as in 2008.

A similar output pattern has been seen for the UK, while workforce jobs are a little higher than in 2008.

Figure 9 again shows a clear data inconsistency in moving from 2001 q3 to q4, up 14% in a single quarter. As with PAD, this discontinuity is recognised but has neither been adjusted for nor flagged up in the published data.

Figure 9: Education GVA and Workforce



As well as obtaining a consistent workforce data series, a look at productivity trends would be useful.

Health & Social Work

Scottish Health output continued to rise after the recessionary period, but has stalled over the last year. Meanwhile workforce jobs dipped in 2010, consistent with stalled output, but jumped by an exceptional 11% in the first quarter of 2011. Again, this large jump seems likely to have been caused by the shift in survey method being used[6].

UK output has continued to grow, including by more than 4% over the past year. Workforce jobs also continued to grow, although they actually fell in the first quarter of 2011, in contrast to the large rise seen in Scotland.

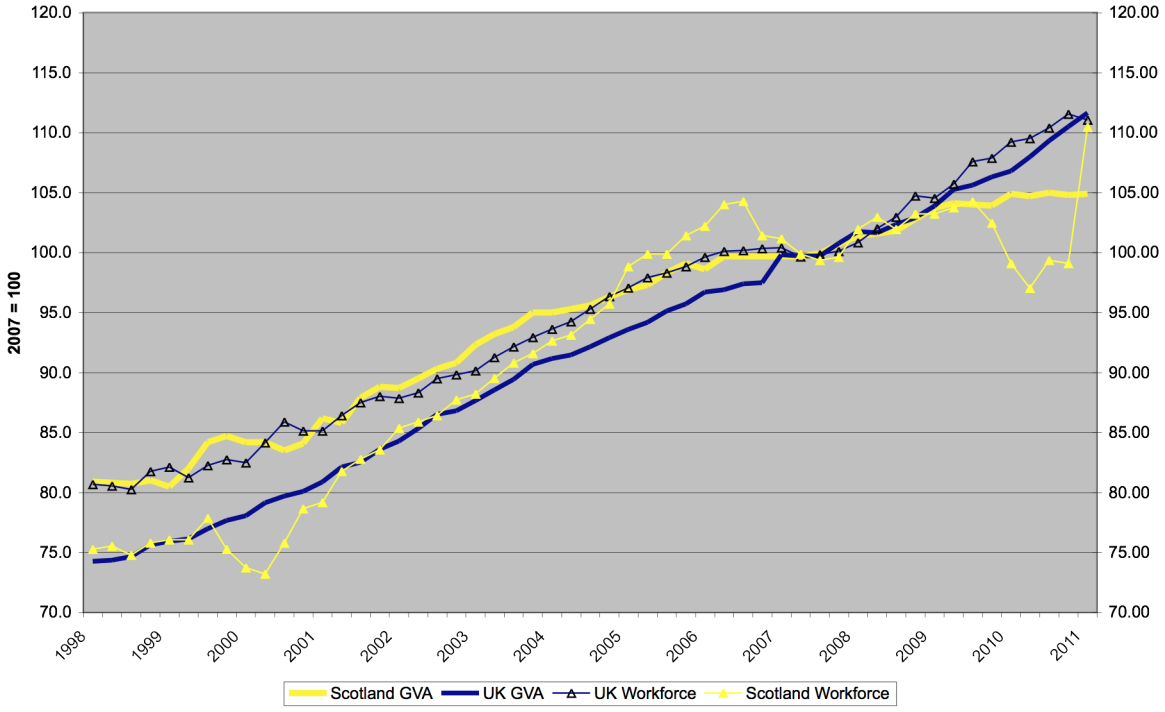
[6] This shift in survey method explanation is supported by the fact that similar odd, and large, quarter by quarter variation has been seen in the East, London, the South East and Wales. Furthermore, figures for those working in the NHS in Scotland (roughly one third of H&SW workforce jobs) show a fall in employment between 2010 and 2011q1.

Health & Social Work (H&SW) output in Scotland has grown by 25% since the first half of 2000. By contrast, workforce jobs have grown by 50% over the same period. This is either incorrect or suggests a very considerable fall in labour productivity over this period.

For the UK the figures are quite different, with output having risen by over 40% while workforce jobs are up by 33%[7].

However, these long-term workforce changes are highly dependent on the start and end dates used. For example, if the dates are changed to between mid 2002 and mid 2010 then the Scottish workforce grows by 13% while GB grows by almost 25%.

Figure 10: Health & Social Work GVA and Workforce



The recent fall then jump back up in employment needs to be reviewed and, where it is found to be necessary, to be corrected.

In addition the back data needs to be considered as a whole and its inconsistency with movements in the UK, where there seems to be little cause for such differential movements to occur. At present such oddities make it difficult to discern any relative productivity patterns between the UK and Scotland.

Finally, the causes behind the recent flat-lining of Scottish output, as opposed to the continued rise in UK output needs to be better understood.

[7] Note: the workforce job rises over this long period are lowest for Wales (+13%, although this is largely due to a seeming data inconsistency in the first quarter of 2010, when workforce jobs fell by 13% over the previous quarter) and then for Northern Ireland (+25%), then England (+35%).

Other Sectors – in brief

Agriculture, Forestry & Fishing

In Scotland, output and workforce jobs in Agriculture, Forestry & Fishing (AFF) have remained fairly flat since 2007.

However, at the UK level output fell by around 18% between late 2006 and early 2010, while workforce jobs rose by around 15% over the same period.

This UK performance is clearly contradictory, with a rise in jobs resulting in a decline in output.

Electricity, Gas & Water supply

Electricity, Gas & Water supply (EGW) output in Scotland has been highly erratic since 2007 but in general trend terms has been fairly flat. Bucking this trend are workforce jobs in Electricity & Gas, which have roughly doubled though, since the end of 2006.

For the UK, output is down about 10% from its 2008 peak. However, workforce jobs are dramatically up, around 80% in Electricity & Gas alone since late 2006.

In both cases the disparities in performance are contradictory with a big rise in jobs resulting in no corresponding increase in output.

ONS explain these large employment rises as being due to (a) a change in methodology and (b) a reclassification of certain businesses. This means that no consistent series is available.

OVERALL ANALYSIS AND MAJOR POLICY ISSUES TO CONSIDER

What can be discerned from these apparent shifts in Scottish output and workforce employment numbers?

ECONOMIC EXPLANATION

Overall, we are left with a number of recent trends that warrant further investigation:

MANUFACTURING
- What has caused the huge labour productivity gain over the past three years?
- Why has this productivity gain not ultimately been reflected in an increase in output?

CONSTRUCTION
- Again what has caused the big labour productivity gain over the past three years?
- Why has this sector behaved so differently to the UK as a whole since devolution?

RETAIL &WHOLESALE
- Why did the large decline then rise in jobs in 2010 not impact on output?

HOTELS & CATERING
- Why has this sector grown so slowly post devolution and behaved so differently to the UK as a whole?

TRANSPORT & COMMUNICATIONS
- What has caused the big loss in labour productivity seen over the past year?
- Why has the Communications sector grown so quickly since devolution?

FINANCIAL SERVICES
- What has caused the big fall in labour productivity over the past three years?
- Why has this sector behaved so differently to the UK as a whole since devolution?

REAL ESTATE & BUSINESS SERVICES
- Why did the large decline then rise in jobs in 2010 not impact on output?
- What has caused the big loss in labour productivity over the past two years?
- Why has this sector's output failed to recover like the UK's over the past year?

PUBLIC ADMINISTRRATION & DEFENCE
- After adjusting for the 2008 data jump, why has labour productivity been falling since 2006, when it was rising from 1998 to 2005?

EDUCATION
- Post 2002 why have there been no labour productivity gains?

HEALTH
- Has employment fallen sharply or risen sharply over the past 18 months?
- Why has output failed to rise over the past year, unlike in the UK?
- Why has labour productivity been declining, especially over the period 2000 to 2006?

Each of these issues is of concern, but the most worrisome at present relate to the flatness (unlike the UK) in output of both the Health and Business Services sectors, which together account for 30% of the economy.

Also worrying is the apparent rapid decline of labour productivity in Financial Services and Public Services as a whole.

STATISTICAL EXPLANATION

The alternative to finding an economic explanation for each of these dramatic shifts in performance is to reconsider the robustness of the data itself and the surveys used to compile it. It is clear that there are some significant anomalies in the workforce jobs data, highlighted above, with what look like significant data/survey discontinuities in specific quarters[8].

ISSUES CONCERNING WORKFORCE JOBS STATISTICS

There are a number of important issues that call into doubt the reliability, quarter by quarter, of the workforce job statistics.

First, is the general point that the smaller sample size, for regions, mean that there is greater quarter by quarter variability in the regional series than for the UK as a whole.

Second, is the change, in 2010q1 from the old 'matched pairs' system to the new 'point in time' system. While this is thought to improve reliability at the UK level, it has had the effect of increasing volatility at the regional level. For example, the very large increase in Scottish Health & Social Work jobs in 2011q1 is thought to be down to rotation of survey 'companies' that meant Scotland took a higher weighting. Equally, the highly erratic Construction figures could also be due to this.

What is less obvious, but probably more important, is whether further errors are lurking within the data. Detailed scrutiny of the data for Scotland's key sector's is now essential.

If there are no real data problems, then they outline some very odd and worrying labour productivity trends for Scotland. If the data problems are real then there are serious implications for the relevance of government policy and what now needs to be put in place in order to help transform what appears to be Scotland's productivity deficit.

These output and workforce figures constitute some of the most important data sources in trying to understand how well our economy is performing. If they cannot be relied upon then extrapolating government policies from their trends is illegitimate. Not only that, it leaves us largely bereft of any source for properly gauging the health of the Scottish economy.

[8] It is possible that some differences over the movement of output versus workforce data could come about through there being a shift to more part-time jobs reducing the overall impact of declining output on jobs. However, in most of the cases outlined in this report the scale of the difference is either so large, or the timescale so short, often over just one quarter, that this is unlikely to account for much of the difference.

CONCLUSIONS

The major finding in this work is that there are difficult to explain movements taking place in almost every industrial sector of the Scottish economy. Some of these have only emerged post recession, since 2008. Some have been long in the making, going as far back as to pre devolution days.

While these issues could be more easily passed over during the relatively good times, when the economy was growing, now that it has stalled and government resources to help address the problems are falling, it is imperative that we try and understand better the true growth paths of our most important industries.

ANNEX 1

Comparison with past recessions

Table 1 shows how, at the UK level, the current recession compares with those endured over in the previous three decades. It illustrates that, in terms of GDP, this recession has been deeper than the previous three. However, in terms of its impact on employment, this recession has proved relatively mild, thus far.

Table 1: Total Adjustment in UK[9] employment & GDP in current and past recessions

Recessionary period	Employment (16+)	GDP
1970s	-1.2%	-3.4%
1980s	-6.5%	-5.9%
1990s	-6.1%	-2.5%
2008 onwards	-2.3%	-6.4%

Source: ONS (taken from Office of the Chief Economic Advisers 'State of the Economy Presentation, July 2011).

Why might this be the case?

One reason could be that while the number of jobs has not fallen by as much as output, there has been a reduction in hours worked via a shift from full-time to part-time jobs. This is certainly true, however, the degree to which this has occurred, anymore than in previous recessions is uncertain.

One area that has behaved differently, in comparison to earlier downturns, is wages. These have been negative for longer during this recession than occurred in the 90s and much lower than in the 80s. This lower wage pressure has helped encourage 'labour hoarding', thus far.

One other peculiarity between this recession and previous ones has an international dimension. In recent decades, the unemployment rate in the UK, and other European countries, has been higher than in the US. This is thought to be because the US labour market is more flexible than those of EU countries. As a result unemployment remains lower in the US.

However, this position has reversed during the current recession, with the US unemployment rate now above that of many EU countries, including the UK. The underlying reason(s) for this change are not well known. Furthermore, the trend has been emerging for some time. In the late 1990s the EU27 unemployment rate was over 10%, due to the unemployment rate in high population countries like France, Italy, Spain and Poland being over 10% (even Germany was over 8%). By comparison the US rate was around 5%. However, by 2009 the US rate had risen to over 9%, while those of Italy and Poland were around 8% and the EU27 was at a similar level to the US. The UK is 7.6%.

[9] Unfortunately we cannot do a similar exercise for Scotland as: for GDP/GVA quarterly data only exists back to 1998 (and it is important to have this data as annual changes can hide the severity of the top to bottom change in output); for workforce jobs consistent regional data only goes back to 1996; hence, none of the earlier periods can be studied for Scotland.