SCOTTISH TRENDS

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An alternative - 'active economy' - measure of Gross Domestic Product (GDP)

Key points

- **GDP includes elements that can be either difficult to measure or lumpy and erratic. Removing these elements allows for an alternative, potentially more accurate, view of the underlying performance of the economy.**

- **Creating such a data series involves the removal of Public Services (like Education, Law and Order and Health) and of Financial Services, both of which, in their own way, are difficult to measure in terms of outputs.**

- **It further involves the removal of erratic, more capital intensive, industries, including Construction, Energy and Mining.**

- **Finally, the Real Estate sector is removed as it largely consists of imputed rent for each household, even when housing is owner occupied, and involves little actual economic activity.**

- **This leaves the basic elements of Private Sector, day-to-day, activity, including Manufacturing and Non-Financial Services - the 'active' elements of the economy, rather than the 'passive' (Public Services) or 'investment' (Construction) elements.**

- **Using the new 'active economy' indicator, the downturn at the time of the 2008-09 recession is more prominent, as it excludes the more protected Public Services sector. In contrast, post recession growth has been faster, as the austerity hit Public Services slowdown is omitted.**

- **Between 2008 and 2015 the 'active economy' of Scotland grew by 6.6%, just a little faster than for the economy as a whole. However, at the UK level the 'active economy' grew by 12%.**

- **Since the start of 2015 the 'active' economy has marginally declined in Scotland, whereas for the UK it has grown by over 4%.**

Introduction

This note outlines an alternative to the full measure of GDP published by the Scottish Government.

The new indicator excludes the more erratic and the more difficult to measure elements of GDP in order to concentrate on core activities based around Manufacturing and Private Sector (non financial) Services. (1)

The note also compares how this new indicator has performed relative to a similar calculation made at the UK level.

Constituent components of GDP

The principal published GDP figure for Scotland is the real terms index of output, GDP(O). That means it is adjusted for inflation (i.e. 'real'), it is indexed to a specific base year (2013=100) and it is based on the output of all industries (e.g. Manufacturing, Construction, Services etc). However, when measuring GDP(O) there are differing degree of data accuracy and of output consistency that apply across different industry sectors.

With respect to data accuracy:

- it is often difficult to measure the output of **Public Services**. For example, with regards to Education, increases in output may be more associated with gains in the quality of school leavers, rather than increased numbers, but the former can be difficult to measure. With regards to the NHS, some output measures, like the number of operations, can be measured but in many areas such measures are not readily available. There may also be problems when comparing Public Services output across the UK. For example, between 2009 and 2015, output in Health & Social Work grew by over 17% in the UK but by less than 6% in Scotland. This degree of divergence suggests that productivity in the NHS in the rest of the UK has been consistently higher than in Scotland, although this is difficult to confirm. As a result, doubt remains over the relative consistency and robustness of the data for Public Services, both in absolute terms and relative to the UK;
- with respect to **Financial Services**, output is again difficult to measure. For example, how best to measure the value added by various obscure or complicated banking activities? There is also the further difficulty of allocating value added by, say, RBS across the constituent countries of the UK.
- with respect to the **Real Estate** sector, while this sounds like it might apply to Estate Agents and the like, in fact it applies to every household. National Accounts treats the housing sector as producing an output that is equivalent to what the rental value would be of every house, regardless of whether it is owned outright or rented. As a result, this sector accounts for around 10% of the economy, even though very little actual economic activity takes place.

With respect to output consistency:

- the **Construction** sector has been highly erratic in Scotland since 1998, which is as far back as published data goes. This is in part due to the fact that Construction relates not just to housing, which in itself can be highly cyclical, but also to very large infrastructure projects, like the Forth Replacement Bridge;

- each of the **Agriculture, Forestry & Fishing,** the **Mining & Quarrying,** the **Energy (Electricity & Gas)** and the **Water & Waste** sectors also show highly erratic patterns of output back to 1998. In some cases, as with Construction, the annual changes can be well over 10% and are usually not related to the wider business cycle;
- the **Other Services** sector can be highly erratic due to, for example, to major sporting events like the Olympics and the Commonwealth Games;
- in contrast to the examples given above, **Services and Manufacturing** have moved up or down by less than 5% in every year since 1998, except for a near 10% fall in Manufacturing at the height of the recession in 2008.

One further area of difficulty, in relation to measuring the growth in Scottish prosperity, concerns the ownership of economic activity. In countries where foreign ownership of domestic output is much greater, or smaller, than domestic ownership of foreign output, then Gross National Product (GNP) is a better measure than Gross Domestic Product (GDP). While we do not have figures for GNP for Scotland there are clearly some areas where overseas (including the rest of the UK) ownership could affect results. Such areas include: Financial Services; Energy; Agriculture; Mining; Construction (2); and Drink. Hence, removal of the sectors discussed previously helps to lessen any such GNP-GDP growth differential.

Once the above adjustments are made, we are left with the basic elements of private sector, day-to-day, activity. This includes Manufacturing and Non-Financial Private Sector Services - the 'active' elements of the economy, and excludes the more 'passive' (Public Services) or 'investment' (Construction) elements.

A New Output Indicator - Manufacturing and Private Sector(non financial) Services activity

The new indicator accounts for just under half of the economy. It is a reflection of regular (i.e. non investment) activity by the private sector. As such it offers a good guide as to the underlying strength of the economy.

Table 1 highlights how this indicator has moved in recent years and quarters and compares it with the overall GDP measure, both for Scotland and for the UK.

Results

Growth in the 'active' Scottish economy often looks quite different to that seen in the economy as a whole.

Using the new measure, the downturn at the time of the 2008-09 recession was more prominent, as this indicator excludes the more protected Public Services sector. In contrast, post recession growth has been faster, as the austerity hit Public Services slowdown is omitted.

Between 2008 and 2015, the 'active economy' of Scotland grew by 6.6%, just a little faster than for the economy as a whole. However, at the UK level the 'active economy' grew by 12%. After adjusting for changes in population, this equates to Scottish growth (3.2%) of less than half that seen for the UK (6.7%).

Furthermore, since the start of 2015 the ‘active’ economy has marginally declined in Scotland. In contrast, the UK ‘active economy’ has grown by over 4%.

The recent slowdown in Scotland is not unprecedented, for example the ‘active economy’ fell by almost 1% from 2011 Q4 to 2012 Q3, while the UK ‘active economy’ continued to grow. Nevertheless, for Scotland, the current, essentially flat-lining, performance remains a worrying development that has lasted for 6 quarters.

With negative influences from falling Construction, the North Sea slowdown and Brexit worries likely to affect Scottish output in the short to medium term, the prospect of continuing slow-to-no growth in the economy remain high.

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Table 1: Alternative measures of Scottish and UK economic activity

	Scottish GDP		Scottish 'Active Economy'		UK GDP		UK 'Active Economy'	
	Index	growth	Index	growth	Index	growth	Index	growth
Years								
2008	98.8		97.6		97.5		96.7	
2009	96.5	-2.3	93.5	-4.2	93.3	-4.3	89.2	-7.8
2010	96.8	0.3	93.5	-0.1	95.5	2.4	92.8	4.0
2011	97.8	1.1	95.9	2.6	97.2	1.8	95.5	3.0
2012	97.8	-0.0	96.7	0.8	98.5	1.3	97.5	2.0
2013	100.0	2.3	100.0	3.4	100.0	1.5	100.0	2.6
2014	102.6	2.6	103.1	3.1	103.5	3.5	104.8	4.8
2015	104.7	2.1	104.0	0.9	105.9	2.3	108.3	3.4
1998-2015	6.0		6.6		8.6		12.0	
pop'n adj	2.8		3.2		3.3		6.7	
Quarters								
2014 Q2	102.3		103.0		103.0		104.2	
2014 Q3	103.0	0.7	103.2	0.3	104.1	1.1	105.5	1.2
2014 Q4	103.8	0.8	104.1	0.8	105.0	0.9	106.9	1.3
2015 Q1	104.6	0.7	104.3	0.2	105.2	0.2	107.2	0.3
2015 Q2	104.6	0.1	103.7	-0.5	105.6	0.4	107.8	0.6
2015 Q3	104.7	0.1	103.8	0.0	105.9	0.3	108.6	0.7
2015 Q4	105.1	0.3	104.2	0.5	106.7	0.8	109.7	1.0
2016 Q1	105.0	-0.0	102.8	-1.4	107.2	0.5	110.1	0.4
2016Q2	105.4	0.4	104.0	1.2	107.9	0.7	111.6	1.3
14q2-16q2	3.0		1.0		4.8		7.1	
15q1-16q2	0.8		-0.2		2.6		4.1	

Sources: Scottish GDP October 2016 publication; ONS National Accounts; authors calculations.

End Notes

1. One drawback of the new measure is that it does not fully re-weight the different elements of the economy over time, known as chain-weighting. As a result it is less accurate than the published measure but the degree of mis-measurement introduced is unlikely to be great, especially over short periods of time.
2. Most of these ownership issues are obvious and can be seen in the presence of overseas owned large companies in the Scottish economy. Construction is perhaps a little less obvious but can be an issue especially in large infrastructure projects where highly specialised machinery and workers are employed. The Forth Road Bridge is a good example, as it has boosted Scottish Construction output but had no impact on recorded Construction job numbers in Scotland.