

# Quarterly economic commentary

October 2005

Vol 30 No 3

**Outlook and appraisal** ..... 3

**The economic background**

The world economy .....16

The UK economy.....19

**The Scottish economy**

Forecasts of the Scottish economy .....21

Scottish Chambers' Business Survey.....25

Overview of the labour market.....30

**Economic perspectives**

The impact of Scotland's economy on the environment:  
a note on input-output and ecological footprint  
analysis.....37

The impact of Scotland's economy on the environment:  
a response.....45

A constructive critique of the Treasury's country and regional  
analysis of public expenditure.....47

## Information for subscribers

The Quarterly Economic Commentary is published four times a year. Annual subscription rate for 2005 is £85.00. Single paper copies of an issue cost £22.50. Queries should be addressed to Isobel Sheppard, Fraser of Allander Institute, Sir William Duncan Building, 130 Rottenrow, Glasgow, G4 0GE, t: 0141 548 3958, e: [fraser@strath.ac.uk](mailto:fraser@strath.ac.uk)

## Notes to contributors

The editors welcome contributions to the Economic Perspectives section. Material submitted should be of interest to a predominately Scottish readership and written in a style intelligible to a non-specialist audience. Contributions should be submitted to the editors.

Articles accepted for publication should be supplied electronically and conform to the guidelines available from Isobel Sheppard, Fraser of Allander Institute.

The copyright for all material published in the Quarterly Economic Commentary rests with the University of Strathclyde.

Fraser of Allander Institute  
University of Strathclyde  
Sir William Duncan Building  
130 Rottenrow  
Glasgow G4 0GE

t: +44 (0) 141 548 3958  
f: +44 (0) 141 548 5776  
e: [fraser@strath.ac.uk](mailto:fraser@strath.ac.uk)  
w: [fraser.strath.ac.uk](http://fraser.strath.ac.uk)

# Outlook and appraisal

## Overview

The Scottish economy weakened appreciably during the first quarter of this year. The growth of consumer demand is weakening in Scotland and the favourable position relative to the UK is closing. Rising energy and transport costs are the consequence of the surge in the price of oil and this disproportionately disadvantages Scotland, with its relatively large land mass and dispersed population outside the central belt. Manufacturing output continues to be weak and tradable services such as finance and business services have not picked up from weakness in the latter part of 2004. But the jobs market remains buoyant.

Against this background we continue to forecast somewhat weaker growth this year in Scotland compared to 2004 of 1.8% in 2005, 1.9% in 2006, and 2% in 2007. These forecasts for Scotland should be compared with UK forecasts of 2%, 2.3% and 2.6% for 2005, 2006 and 2007, respectively. Strong

net jobs growth is forecast to continue with increases of 27, 000, 28,000 and 36,000 forecast for this and the next two years. This in turn has the effect that the outlook for unemployment is low and stable, with the ILO rate predicted at 5.3% this year, 5.2% in 2006 and 5.1% in 2007.

The scale and effects of public spending in Scotland is increasingly scrutinised. A paper in this Commentary by Jim and Margaret Cuthbert offers a constructive critique of the UK Treasury's country and regional analysis of public expenditure in PESA 2005. Using previously unpublished data obtained under the Freedom of Information Act they highlight a range of systematic errors in PESA, which have the effect of overstating general government expenditure in Scotland by £500 million, or 1% of aggregate expenditure and 1.5% of identifiable expenditure from 116.5 to 114.3 relative to UK. This analysis has implications for the Scottish Executive's estimates of Scotland's public expenditure, tax revenues and the fiscal balance between the two, serving to slightly lower the net borrowing estimate from 11.3% to 10.6% of GDP in 2002-03. This makes relatively little difference to the outcome of the GERS' estimates but we do share the Cuthbert's concern at the Scottish Executive's failure to adequately check its source data.

In this Outlook & Appraisal, we also scrutinise the estimates provided by Scottish Enterprise of public spending levels in the LEC areas of Scotland and its significance to economic activity in those areas. These estimates led Sir John Ward, Chairman of Scottish Enterprise, to assert that the public sector was at "Eastern Bloc" levels in areas such as Ayrshire.

Our examination concludes that in producing estimates of public sector spending in relation to gross value added or GVA in the LEC areas of Scotland, Scottish Enterprise have conflated three separate issues affecting such areas: first, the degree of *benefit* from public spending; second, the

relative scale of public activities, and finally, whether on account of this scale there are harmful, or crowding out, effects on private sector activity.

In relating public spending to GVA, Scottish Enterprise offer an indicator, which neither measures the benefit of public spending to residents, or measures the scale of public spending activity in relation to economic activity in the areas.

As an estimate of the scale of public spending to local area economic activity, their measure fails to compare like with like and tends to inflate the implied scale of the public sector and artificially deflate actual economic activity in some areas such as Ayrshire. Their measure of public spending does not adjust for imports, indirect taxes and subsidies, while their measure of economic activity would require the addition to GVA of an estimate of net income from outside the areas. Only with these adjustments would the two measures of public spending and area economic activity be compatible. Lack of data prevents the full reconciliation of the errors in the Scottish Enterprise measure.

The debate in the media surrounding Scottish Enterprise's (distorted) figures implied that crowding out effects of the public sector on the private sector were identifiable. This Outlook & Appraisal describes how the real risk of any public sector crowding out of private sector activity at the local area level is most likely to occur on the supply side. This is best measured by relative value added in the public sector to total value added, or given the lack of such data public employment relative to total employment. On this latter measure there is no evidence that the public sector dominates the LEC area economies of Scotland, with shares ranging from 32% down to 23%. However, this does not deny the case for a more efficient public sector, and a critical perspective on the public supply of certain goods and services.

## GDP and Output

After growing faster than the UK in the second half of 2004, the latest data from the Scottish executive suggest that the Scottish economy weakened appreciably during the first quarter of this year. GDP, or gross value added in volume terms, remained flat in the first quarter compared to a rise of 0.4% in the UK (See Figure 1). Over the year to the first quarter, Scottish GDP grew by 2% while the UK economy exhibited growth of 2.7%.

The stagnation of Scottish GDP between January and March came as something of a surprise, since business surveys could be interpreted as suggesting positive growth in the first quarter, if weaker than in the final quarter of last year. The first quarter weakness of the Scottish economy cannot be attributed to a specific sector and was fairly generally spread. Manufacturing output fell substantially by 1.2% thus reversing the recovery of 0.7% experienced in the fourth quarter of 2004. However, UK manufacturing behaved similarly, contracting by 1% compared to an increase of 0.6% in the fourth quarter (See Figure 2). So, while the swing from recovery to contraction was slightly more pronounced in Scotland the direction was much the same as in the UK. In the service sector, output rose by 0.6% in the first quarter, which was only a little slower than the 0.7% rise experienced in the UK. But Scottish service sector growth slowed down from the 0.9% growth of the fourth quarter and the 1.6% growth exhibited in the third quarter last year. UK service sector growth, in contrast, picked up from the 0.6% expansion in the fourth quarter and growth of 0.7% between July and September of last year (See Figure 3).

Within services, we noted in the July Commentary that Scottish tradable services appeared weaker than in the UK in the fourth quarter. This would seem to have continued into the first quarter of 2005. The financial services sector was particularly weak in the first three months of the year contracting by 0.3%. This was mainly due to a fall of 2% in the estimated output of the Scottish banking sector, the first contraction of activity in the sector since the fourth quarter 2003. Financial services in the UK, in contrast, expanded by 1.3% in the first quarter. However, over the year to the first quarter Scottish financial services grew by 9.6% compared to growth of 4.4% in the UK. In addition, hotels & catering services in Scotland strengthened considerably in the first quarter, with output rising by 2.4% compared to no change in output in the sector in the UK. But over the year to the first quarter, the performance of the sector in the UK was stronger with activity rising by 4.2% compared to growth of only 0.8% in Scotland. Of the 8 service sectors for which quarterly data are produced only a further 2 sectors out performed their UK counterparts. Business services & real estate grew by 1.2% in Scotland compared to 0.7% in the UK. Although over the year, the sector was more buoyant in the UK with growth of 5.3% easily exceeding the performance of its Scottish counterpart of 3.2%. The retail & wholesale sector grew by 0.5% in Scotland during the first quarter compared to a small

contraction in UK retail sales activity of 0.1%. These outturn data provide some confirmation of the survey findings that the Scottish high street and retail sales have been holding up better than UK spending during 2005. However, over the year to the first quarter 2005, UK retail sales were stronger with growth of 3.8% compared 2.6% growth in the UK. Of the other sectors, transport & communication (0.1%), the public sector (0.2%) and other services (0.8%) were weaker than their UK counterparts in the first quarter, which grew at 1%, 0.6% and 1.5%, respectively.

Within manufacturing, the sub-sectors most responsible for the overall decline of 1.2% in the first quarter were engineering & allied, metals, drink, textiles and other manufacturing, which contracted by 1.9%, 5.2%, 2.7%, 3.1% and 0.4%, respectively. And within engineering, electronics further cut back production by 2.7% compared to a contraction of 3.4% in UK electronics. However, over the year to the first quarter, Scottish electronics suffered a fall of 5.1% compared to a rise of 1.6% in the sector in the UK. The main Scottish manufacturing sectors turning in a positive performance in the first quarter were the food industry, which grew by 4.2% compared to a small contraction of 0.1% in the UK, and the transport equipment sector which exhibited growth of 6.3% during the first 3 months of the year compared to a fall in output of 3.2% in the sector in the UK. Paper, printing and publishing grew by 0.4% in Scotland in the quarter while the sector cut back production by 1.9% in the UK.

## Public Spending Data: Measurement and Use

In this Commentary, we publish an article by Jim and Margaret Cuthbert, which offers a constructive critique of the UK Treasury's country and regional analysis of public expenditure. Their paper highlights the importance of getting estimates of public spending right, both in terms of accurate measurement, and the correct assignment to UK countries and regions in a post-devolution world. At the beginning of October, we also witnessed a debate in the Scottish media fuelled by statistics produced by Scottish Enterprise on the scale of public spending at the local area (Local Enterprise Company) level in Scotland. This debate highlights the care that is required in the use and interpretation of such data. We shall explain below how the widespread misinterpretation and misuse of the local public spending data engendered a debate that was, with honourable exceptions, uninformed and ultimately sterile.

## UK Country and Regional Expenditure Analysis

Each year the UK government publishes its Public Expenditure Statistical Analysis (PESA), which contains an analysis of identifiable public spending in each of Scotland, Wales, Northern Ireland, and the regions of England. Identifiable expenditure is spending that is to the specific benefit of the residents of each country and region. Non-identifiable expenditure is spending that is to the collective

benefit of the people of the UK as a whole, with defence expenditure being the classic example.

The Cuthbert's paper is based on an analysis of the detailed database for 2003-04 that underpins country/regional expenditure tables in PESA 2005. The database was obtained by the authors under the Freedom of Information Act. What this previously unpublished information allows the Cuthberts to establish is that

- for certain important services such as prisons, court services and nature conservation, the Treasury classifies the spending as identifiable for Scotland but non-identifiable for England, thus the classification between Scotland and England is inconsistent;
- for certain spending by the Scottish Executive, PESA identifies it as wholly Scottish e.g. spending on national museums, art galleries and libraries, while for comparable spending in England a portion of spending is assigned to Scotland, thus there is an asymmetry of treatment between Scotland and England; and
- some spending, such as that on export and tourism promotion, which is wholly to the benefit of England is recorded as being of benefit for all of the UK, thus PESA contains incorrect allocations.

One implication of the Cuthbert's analysis is that the errors in PESA are not random but are systematic, affecting the exercise in each year. For 2003-04, PESA appears to have overstated general government expenditure in Scotland by over £500 million, just above 1% of aggregate expenditure and 1.5% of identifiable expenditure. One implication of this, taken with the underestimate of identifiable English spending, is that identifiable Scottish public spending relative to the UK may be lower than previously thought. Further calculations, undertaken by the Cuthberts at the request of the Institute, suggest that identifiable expenditure in Scotland relative to the UK would fall from 116.4 to 114.3.<sup>1</sup>

A further implication is that the annual report published by the Scottish Executive Government Expenditure and Revenue in Scotland (GERS), which seeks to provide estimates of government expenditures, revenues and the balance between the two, will be affected by the errors in PESA. GERS draws on PESA for its expenditure estimates and so, on the Cuthbert's analysis, would appear to overstate Scottish public spending. This also implies that the estimate of fiscal balance will be distorted in GERS, with net borrowing (broadly the imputed fiscal deficit) somewhat lower. On the Cuthbert's further calculations, net borrowing in 2002-03, excluding North Sea Revenues (Table 5.1 in GERS, 2003 – 2003) falls from £9,260 million to £8,710 million, that is from 11.3% to 10.6% of GDP. The revision makes relatively little difference to the outcome of GERS' estimates but we do share the Cuthbert's concern

at the Scottish Executive's failure to adequately check its source data.<sup>2</sup>

Moreover, the Institute strongly supports the Cuthbert's recommendations for fundamental change in the way that the Treasury prepares both PESA and the Treasury Funding Statement. The recommendations require inter alia

- comparability of treatment of expenditure in England and the devolved territories,
- the creation of a non-identifiable expenditure category within England,
- improved guidance on the attribution of identifiable expenditure within PESA, and
- the publication of comparative analyses of expenditure on devolved services for the devolved territories and England.

One real policy benefit of implementing these changes is that it might force Whitehall departments to "take devolution seriously". That is, consider whether the way they are delivering their services is compatible with the evolving reality of their responsibilities under devolution.

### ***Public Spending Within Scotland***

In early October, Sir John Ward, Chairman of Scottish Enterprise, addressed a meeting of MSPs in Edinburgh on boosting Scotland's growth rate. Reportedly, Sir John argued that Scotland was too dependent on the public sector. Indeed, he went further and suggested that in some areas of Scotland, such as Ayrshire, with public spending at more than 70% of economic activity, the dominance of the public sector was at "Eastern Bloc levels". A short paper from Scottish Enterprise staff, which offered supporting data and statistics, buttressed Sir John's speech. The speech brought criticism from local MSPs and led to an extensive debate in both written and electronic media.

Unfortunately, while some newspapers reprinted some of the key data from the Scottish Enterprise paper, no one, as far as we are aware, sought to examine the accuracy of the data and statistics supplied by Scottish Enterprise. The Institute has looked closely at these data and we conclude that there is no basis for the charge that there are areas of Scotland where the economy is so dominated by the public sector that it resembles the old Soviet Union or Eastern Bloc. Of course, such a conclusion should be unexceptional. Had Sir John been aware that, even in the years immediately before the Wall came down, the public sector in the Eastern Bloc economies produced almost all the net national product, he presumably would not have made such a remark.<sup>3</sup> But we can go further and suggest that the public sector in Scotland and in LEC areas such as

Ayrshire is far from the dominant economic activity painted by Sir John and some in the media.

*Conceptualising public spending and local economic activity*

The paper from Scottish Enterprise expresses estimated public spending in each LEC area as a share of estimated net output or gross value added (GVA) in the area. The paper cautions that there may be some methodological errors in both sets of estimates because “assumptions and judgement” are used to allocate public spending and GVA to LECs. However, our concern is that in expressing their measure of public spending over GVA at the local area, and even Scottish, level Scottish Enterprise have made several conceptual errors.

The effect of these errors is to inflate the implied scale of the public sector in the measure of public spending and to artificially deflate actual economic activity in some areas, such as Ayrshire. In other parts of Scotland, Lothian and Grampian for example, some of the errors may work in reverse, to artificially inflate economic activity. In fact, by expressing estimated public spending as a proportion of GVA Scottish Enterprise is comparing apples with pears and not like with like. Here’s why.

It is useful, first, to remind readers that when discussing the economic activity of an area, or nation, output, expenditure and income are identical by definition. In other words, measures of output, expenditure and income in an economy are simply three ways of looking at the same thing. This follows intuitively because individuals produce goods and services (output) for which they are paid an income, which is then spent. Of course, some income may be saved and not spent by the income earner. But national income accounting definitions treat saving as identical to investment, thus ensuring that expenditure, income and output are the same.

It is, therefore, perfectly meaningful to express a component of spending over a measure of output to gauge the importance of the component, in our case public spending, to economic activity in the area or nation. However, the spending and output measure must be measured on the same basis. This is not the case with the measures adopted by Scottish Enterprise.

Spending (E)<sup>4</sup> adds to economic activity (Y)<sup>5</sup> in an area when all the elements of spending that flow outside the area are removed. The most significant element flowing outside the area will be on imports (M) of goods and services into the area and payments outside the area, while indirect taxation (T) to central government will be another outflow. In addition, any subsidies (S) associated with the spend coming from central government in the area will be an inflow. So,

$$Y = E - M - T + S$$

The measure that Scottish Enterprise has for public spending in each area is composed of estimates of spending on 3 big expenditure categories: local authorities, social protection, and health. These categories account for 72% of public spending in Scotland, with the residual other spending category accounting for 28%. This latter category is found by subtracting the other 3 elements from the GERS estimate of public spending to the benefit of the Scottish people. Other spending therefore includes other identifiable elements such as transport and higher education spending, and non-identifiable elements, such as defence, UK debt interest, EU transactions and international services provided by the UK government.

It should be clear from this description of the spending elements that Scottish Enterprise’s measure is essentially E and not Y. That is, public spending is measured at market prices, with no adjustment for indirect taxes (T) or production or price subsidies (S), and with imports (M) not removed. The failure to remove M is crucial because there will be large public and private import components.

It is important to understand that spending that is to the benefit of the Scottish or Ayrshire citizen may not be incurred in the country or area, either directly or by local suppliers to the public sector, and so is part of M and will have no direct impact on area economic activity. On the public side, spending on capital equipment for the health and local authority services is likely to have a high import component. Similarly, in the other public spending category, the services of defence may be obtained from spending on ships, missiles, aircraft, and military bases none of which may be produced or located in Ayrshire or Scotland. Much the same can be said for UK debt interest and international services.<sup>6</sup> Likewise, on the private side there will be a high import component at the LEC area level. This is relevant to a key part of public spending because social protection payments are made direct to private individuals who will spend a large part of this income on goods and services produced outside the area.

We now turn to Scottish Enterprise’s measure of economic activity (Y). This is gross value added at basic prices estimated on a workplace basis.<sup>7</sup> GVA is an estimate of the sum of value added by resident firms, i.e. total sales (including exports) minus total purchases (including imports). GVA is therefore a measure of the supply of goods and services from the domestic economy. But as a measure of activity in the economy, viewed as the economy’s spending or its income, GVA is deficient because it does not equal Y. GVA omits net income from outside the country or area (N). This is the balance of income received from ‘abroad’ minus income paid ‘abroad’. Hence,

$$Y = GVA + N$$

So, in summary, Scottish Enterprise actually measure:

$E_G$  / GVA

when for consistency they should have measured:

$$(E_G - M - T + S) / (GVA + N)$$

where  $E_G$  is government spending to the benefit of an area.

$E_G$  will be greater than  $(E_G - M - T + S)$  at the LEC area level and even at the Scottish level. Looking first at  $M$ , identifiable public spending in Scotland on public administration is, from the Scottish input-output tables, associated with imports of 13% of spending. For the non-identifiable elements such as defence and international services, the import element will clearly be much higher and will be close to 100% in some areas. For public spending such as social security payments that are paid directly to households the import element will be high. From the Scottish input-output tables, 56% of Scottish consumer expenditure at purchasers' prices is satisfied by imports from outside Scotland, and at the smaller LEC area levels the import component will be considerably above that. Finally, the size of net taxes that is indirect taxes minus subsidies ( $T - S$ ) is just above 8% of total final demand in Scotland and should be much the same at the local area level.

Turning again to the measure of economic activity, the size relative to the local economy of the flows ( $N$ ) of income from and to 'abroad' is likely to increase the smaller the country or area. There will be a greater likelihood of 'foreigners' holding property rights, e.g. to profits, in the local economy, and of local residents having property rights to income streams from 'abroad'. The use of GVA as a measure of economic activity might be more acceptable at the nation state level where the flow of net income from abroad is relatively smaller with GNP and GDP, or GVA, more closely aligned. But not we would submit at the local area level.

There are several key factors that are likely to make  $N$  large in relation to the GVA of many Scottish LEC areas. First, in regions such as Ayrshire, Fife, Dunbartonshire, Renfrewshire and Lanarkshire, there are large commuting flows out of areas. So, the estimate of workplace based GVA will be much lower than if estimated on a residence basis – i.e. in moving from the former to the latter some of  $N$  is transferred into GVA. Conversely, in Glasgow and Lothian it is likely that there are net inflows of commuters, so workplace GVA will be much higher than a residence based estimate. Either way, the use by Scottish Enterprise of a workplace estimate of GVA alone has depressed the measure of economic activity in the former and raised it in the latter areas.

Another income flow entitlement is to social security payments, or social protection, which will tend to raise  $N$  in many Scottish LECs. The flows of transfer payments

between the regions and areas of the UK do not constitute spending on the UK national product because they are redistributive within the economy and are balanced by tax flows. But they do augment income and expenditure in regions and areas within the UK when the inflow is greater than the tax outflow. Conversely, area income and expenditure is reduced when the tax outflow is greater than the spending inflow.

The flows of social protection payments are large, amounting to 33% of public expenditure in Scotland, and will tend to rise as GVA falls at the sub-national level. So, in Glasgow, Ayrshire and Renfrewshire they amount to 43%, 36% and 35%, respectively, of public expenditure. However, they are inversely related not because the public sector is 'crowding out' private sector activity but because they are, in part, the consequence of weakness and decline in production in the local economy. And historically, in areas such as Ayrshire, Lanarkshire and Fife, declining production in traditional public industries such as coal mining and iron and steel, has played a key role. So, activity will be higher in these economies, not less, due to the net inflow of such income and subsequent spending. There is no intrinsic difference, in terms of the impact on the local economy, between £1 of spending financed by unemployment benefit and £1 of spending financed by dividend payments, or wages earned at a workplace located outside the area of residence.

In producing estimates of public sector spending and GVA in the LEC areas of Scotland, Scottish Enterprise and its Chairman appear to be conflating three separate issues affecting such areas: first, the degree of benefit from public spending; second, the relative scale of public activities, and finally, whether on account of this scale there are harmful, or crowding out, effects on private sector activity.

#### *The degree of benefit from public spending*

We note above that public spending may be made for the benefit of an area even though the spending may not be incurred in the area. Scottish Enterprise's estimates of public spending, like the GERS spending data from which it draws, pulls together all of this spending for each of the LEC areas. But the correct measure of how each citizen in each area benefits, on average, from public spending is not spending divided by GVA but, rather, spending divided by population. Scottish Enterprise provides these data in the paper accompanying Sir John's speech but they were little discussed by Sir John or by much of the media.

What is interesting is that there is no correlation at all between spending per head and the measure of public spending to GVA.<sup>8</sup> So Ayrshire, which has the headline rate of 74% of spending to GVA and ranks 1st, has £8,199 per head and ranks 5th. Of even more interest is Dunbartonshire, which also has 74% of public spending to GVA but has only £6,633 per head and ranks 13th and last on the benefit measure. Conversely, Glasgow has only

51% of public spending to GVA ranking 11th, but has £11,879 per head and ranks 1st on the benefit measure. These differences should have set the alarm bells ringing within Scottish Enterprise on the appropriateness of its spending to GVA measure, as either a measure of benefit or a measure of relative scale.

### *Measures of relative scale of public spending*

On this issue, our analysis above suggests that Scottish Enterprise have significantly over emphasised the importance of public spending and the public sector to economic activity in the LEC areas of Scotland. However, we are unable to directly compute  $(E_G - M - T + S) / (GVA + N)$  for each area. Instead of the inadequate proxy used by Scottish Enterprise a better option would be to examine the relative importance of the public sector supply of goods and services using a measure of value added to economy-wide GVA. This is not perfect because it excludes the public spending that goes straight to households in the form of, for example, social security payments, some of which is then spent in the local area. The estimate for this statistic for the Scottish economy is 22%, based on the 2001 weights used in the Executive's GDP series. Indeed, this could be an over estimate since the sector public administration, education and health, will include some private sector provision, although there will be some public sector workers classified to other industrial sectors e.g. construction, and public corporations. But it is worth noting that there is a debate as to where the public sector begins and ends, so some measures as above include higher education but exclude HM forces whereas other measures exclude the former and include the latter.

Unfortunately, at the local area level in Scotland we do not have published GVA estimates for the public services. However, we have the next best thing, which is the employment in those services. The Scottish Enterprise website provides this information for each LEC area and when expressed as share of total employment gives us the information presented in Figure 5. These data show that, in 2002, 28% of Scottish employment could be classified to public services. But in so-called 'Eastern Bloc' areas such as Ayrshire, public sector employment is only a little higher at 30%. Indeed, at this level it is nowhere higher than 32% in Tayside and no lower than 23% in Grampian and 25% in Lanarkshire. If one reduces the spatial scale one can find 43% in the Western Isles, 38% in Orkney and 38% in Skye and Lochalsh, but there is no suggestion from these figures that they are being ground under the heel of some people's soviet.

### *Crowding out effects*

The final issue is whether the scale of the public sector has harmful, or crowding out, effects on private sector activity in LEC areas. Scottish Enterprise presented no evidence on this, but this didn't stop its Chairman and some media

commentators from implying that such crowding out effects were great.

So, how can crowding out occur?

Such effects can occur either from the supply side, or from the spending side.

On the supply side, we have seen that the public sector constitutes less than 28% of employment. This is not dominant. However, there may be a case that the growth of the civil service in Scotland, paying a premium in terms of job security, pension rights, and holidays on comparable private sector jobs, may have served to reduce the incentive to private sector initiative such as new firm starts and so served to crowd out some private sector activity. But it must be said that, so far, there is no evidence to prove the point. Nonetheless, there may be a strong case for improving the efficiency of public sector supply in Scotland, which is not subject to the market incentives experienced by the private sector. And, there could reasonably be some areas of public sector supply, such as water, where private sector supply might be more efficient.

On spending, it is clear that spending to the benefit of local residents is greater than the supply of goods and services by public sector in an area. It is also the case that when allowance is made for imports and net taxes public spending is still greater than public supply. This is because income is transferred, through for example social security payments, to households, who will spend some of that income on private sector supplied goods and services in the area.

So, can this public sector spending crowd out the private sector in other ways?

At the level of the national monetary union, one possibility is that public sector borrowing to finance spending will cause the interest rate to be higher and so crowd out private sector investment through that route. But since the UK interest rate is given to Scotland and areas such as Ayrshire there can be no local specific crowding out through that route.

Since the bulk of public spending is financed by taxation then one clear possible negative effect is the disincentive effect of such higher taxation on private sector supply. Again the jury is out on whether higher taxation generates economy-wide disincentives, dampening growth and supply. Some of the most progressive, fast growing economies such as Finland and Sweden have high tax rates and tax burdens, while others such as the USA are low tax economies. There does not appear to be much relation between the level of taxation and economic efficiency and growth. Moreover, much of the public spending in LEC areas such as Ayrshire, Dumfries, Lanarkshire and Fife is financed by taxation levied outside the area, so no local crowding out effect there. Indeed, the same can be said to a lesser extent of Scotland, which

while ostensibly bearing a public spend that is 55% of total GVA, the amount financed by taxation of Scottish residents is only 43% of GVA. The difference is paid by the English taxpayer, which will not squeeze the private sector in Scotland.

Another potential route for crowding out is that public spending decisions may divert local resources by price and other routes away from more efficient outcomes that would result if the private sector had instead made the spending decisions. This is indeed a possibility and is the obverse of the supply-side disincentive effect of higher taxation. If public spend and taxes are lower then more spending decisions are made by the private consumer rather than civil servants and public sector workers and they may indeed be more allocatively efficient. But again Scottish Enterprise's aggregate public spending figures offer no guidance as to whether this might in fact be occurring. It is worth recalling that around 33% of Scotland's public spending, and 36% of Ayrshire's, is accounted for by social protection payments, where there is no distortionary effect, since it is private individuals who make the decisions on the spending of that income. And, as we have seen, in Ayrshire's case, particularly, such spending will be only partially financed by the Ayrshire taxpayer, while in Scotland as a whole it is only four fifths financed by Scottish taxation.

So, Scottish Enterprise, in relating their chosen measure of public spending to GVA, have failed to compare like with like. Public spending should be measured and compared according to the issue or question that one wishes to address. If one wishes to establish the degree to which such spend is to the benefit of an area's population then total spend per head of population would appear to be the appropriate measure.

However, if one wishes to identify the relative scale, or contribution, of such spending to economic activity in an area then spending should be estimated net of imports and net taxes, while workplace GVA should be adjusted to allow for net income from 'abroad'. In the absence of these adjustments, the two measures of public spending and workplace GVA cannot sensibly be related to one another as Scottish Enterprise has done.

In these circumstances, and given that the greatest risk of public sector crowding out at the local level would appear to be on the supply side, then an indication of the relative dominance of the public sector is best measured by its relative value added, or failing that, relative employment. On this latter measure there is no evidence that the public sector dominates the local economies of Scotland, although this does not deny the case for a more efficient public sector, and a critical perspective on the public supply of certain goods and services.

In the light of this, we suggest you think again Sir John.

## Outlook

There is considerable uncertainty in the world economy, particularly about the course of oil prices. The rapid rise in the price of oil, which has doubled in dollar terms since the beginning of 2004 although softening somewhat in recent months, has begun to fuel inflationary expectations. This appears particularly to be the case in the United States, where further interest rate rises above the current 3.75 per cent are anticipated. This expectation has further affected the performance of equity markets in the US, Europe and London specifically, where the largest fall this year occurred on the anniversary of the 1987 stock market 'crash'.

But while inflationary expectations appear to be on the rise, GDP growth is weakening. But this weakening is occurring from a high point, with output expanding at 5.1% in the world economy in 2004, the strongest growth seen for 28 years. The growth of world trade was also strong in 2004 at 9.1%, with GDP growth in China and Japan clearly benefiting from a strong expansion of net trade. However, growth of the world economy is still forecast to be around 4.5% this year and at the same rate in 2006. So, we are seeing the risk equation rebalancing towards a greater fear of higher inflation in the first instance rather than lower growth. But, of course, such an outturn would inevitably damage future growth performance especially if the monetary authorities misjudge the scale and timing of future interest rate rises in their attempt to dampen inflationary expectations.

In the United Kingdom, growth appears to have weakened by more than in the US but still remains a little stronger than in the Euro zone. The UK economy grew by 0.5% in Q2 compared to 0.8% in the US, 0.8% in Japan and 0.3% in Europe. Moreover, revisions to earlier UK GDP estimates reveal that growth over the 4 quarters to 2005 Q2 was, at 1.5%, the lowest annual growth rate for twelve years.

Prospects for the UK economy in the second half of 2005 and into 2006 are uncertain. Consumption growth continues to be sluggish, with retail sales particularly weak, as the savings ratio has risen. However, there are some signs that the housing market has begun to strengthen again and the jobs market remains unusually strong despite the weakening in GDP growth. Indeed, some observers have gone so far as to argue that official measures of output growth, particularly in the service sector, may be understating the true rate of economic growth, which would fit better with the position in the jobs market. Yet, employment growth may have been over recorded, or firms may be hoarding labour in anticipation of an upturn in the New Year. One other favourable indicator is the contribution of net trade to growth, which was positive in the first half of the year. While the desired improvement in net trade, with switching away from domestic consumption, was mainly driven by a slow down in the growth of imports as consumer demand growth

weakened, there has been some pickup in export performance.

With UK growth now below trend, and no evidence of much earnings pressure in the labour market, the risk of a take-off of inflation through excess demand pressures would appear to be low. In addition, the labour supply would appear to be growing fairly quickly, in part due to the higher rate of population in migration, which offers the possibility, if sustained, of a welcome rise in the trend rate of overall GDP growth. The main inflationary risk then comes from the rise in the price of oil, its effect on fuel costs, the consequent lowering of the real consumption wage of the workforce and the potential threat of rising inflationary expectations leading to higher wage and price claims. So far, there is little evidence of rising inflationary expectations. But the MPC is being understandably cautious in holding interest rates at 4.5%, which are likely to remain unchanged into the New Year.

In Scotland, as noted above, the economy stagnated in the first quarter and was generally weaker than the UK. Official data are about to be published for the second quarter and we would expect to see some improvement on the unrevised first quarter results. The Institute's Scottish Chambers' Business Survey (SCBS) for the second quarter revealed a rising sales trend in manufacturing, construction, wholesale and tourism. However, sales growth weakened in retailing and business confidence weakened in all sectors. The latest SCBS findings for the third quarter again showed trends in firms' sales and order books continuing to weaken. Yet, confidence rose in manufacturing and the tourism sector. Evidence from the SRC/RBS retail sales monitor also suggests a slowdown in sales with the favourable gap between Scotland and the rest of the UK beginning to narrow.

One key factor that appears to be starting to influence consumer spending, prices and economic activity in Scotland is rising energy and transport costs as fuel prices rise, following the surge in the dollar price of oil. The latest SCBS clearly shows that many more firms in the third quarter were under pressure from this source to raise product price than in the second and third quarters of the year. Yet, while there are apparent downward pressure on the rate of growth of output in Scotland and upward pressures on the rate of growth of prices, the labour market remains remarkably buoyant. The bank of Scotland's labour market barometer for August signalled an improvement in Scottish labour market conditions for the 25th consecutive month, with the rate of improvement above the UK average. However, there was some evidence of a softening in the strength of the jobs market, which is also evident from other sources in the UK. These figures might also indicate that output growth may be being under-recorded to a degree in Scotland as speculated in the UK.

Bringing all these influence into our forecasting process, we continue to forecast somewhat weaker growth in Scotland this year compared to 2004. Despite the uncertainties we expect that growth will be stronger here in the second half of this year and so continue to predict growth of 1.8% this year and much the same performance, 1.9%, in 2006. We anticipate that while growth will remain a little below trend, financial services, business services, hotels & catering, construction, and a still better performance from retailing than in the UK, will keep the growth rate up. But manufacturing will continue to contract in 2005. Further slight improvement in the rate of growth is predicted in 2007, with a forecast of 2%. These forecasts for Scotland should be compared with UK forecasts of 2%, 2.3% and 2.6% for 2005, 2006 and 2007, respectively.

The relative strength of the jobs market in relation to output growth is maintained in our present forecast, reflecting the continuing net job creation in key service sectors. Net job increases of 27, 000, 28,000 and 36,000 are forecast for this and the next two years. This in turn has the effect that the outlook for unemployment is low and stable, with ILO rate predicted at 5.3% this year, 5.2% in 2006 and 5.1% in 2007. The claimant count rate is forecast to be 3.6%, 3.4% and 3.3% over the same the same three years.

The main downside risk to these forecasts is an unexpected deterioration in inflation expectations that forces the MPC to push rates further than anticipated. As of today this looks unlikely. A further caution is caused by the volatility of the stock market, which if additional major falls were to be experienced could along with the earlier contraction of house prices produce a negative wealth effect on consumption and investment. And that could be the harbinger of recession.

Brian Ashcroft  
21 October 2005

---

## Endnotes

<sup>1</sup> This estimate uses the PESA 2003-04 data to adjust the 2002-03 data in GERS, which assumes no change in the relevant relative expenditure data between the two years.

<sup>2</sup> The Cuthberts have wider philosophical and data differences with the GERS publication, which the Institute does not share.

<sup>3</sup> In East Germany, for example, the private sector contributed no more than 3% to net national product in 1985.

<sup>4</sup> Spending (E) in an economy will normally comprise consumption (C), investment (I), government spending (G) and exports (X), where X includes income received from abroad.

<sup>5</sup> Technically, Y is defined as Gross National/Regional Expenditure at *basic prices*. The removal of all indirect taxes and subsidies adjusts expenditure at *market prices* to expenditure at *factor cost*. To get to GRE at basic prices we add in net production taxes, which in the UK is the cost of local authority rates, to GRE at factor

cost. GVA, which is discussed below is measured at basic prices. At the UK level in 1997, the disparity between the basic price and factor cost estimate was around 2%.

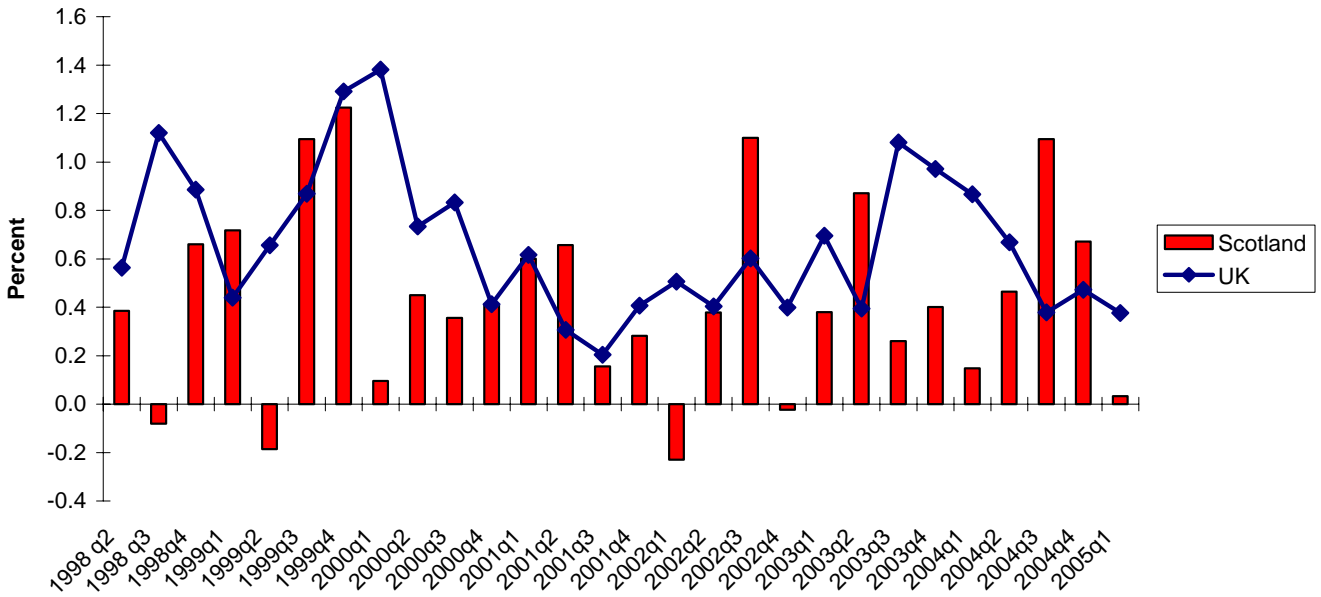
<sup>6</sup> Defence, international services, and UK debt interest account for 11% of the GERS estimate of Scottish public expenditure in 2002-03.

<sup>7</sup> 'Workplace' basis means that the measurement of GVA is assigned to areas where production establishments are located. The alternative measurement is a 'residence' basis, where the

measurement of GVA is assigned to where people live. Clearly, dormitory areas with few firms will have much lower GVA on a workplace basis, and much higher GVA on a residence basis: think Bearsden! The difference between the two therefore becomes greater the smaller the area and the more the area cuts across commuting flows i.e. is just a part of a functional economic area such as travel to work area (TTWA). Most LEC areas in Scotland cut across or are only part of a TTWA.

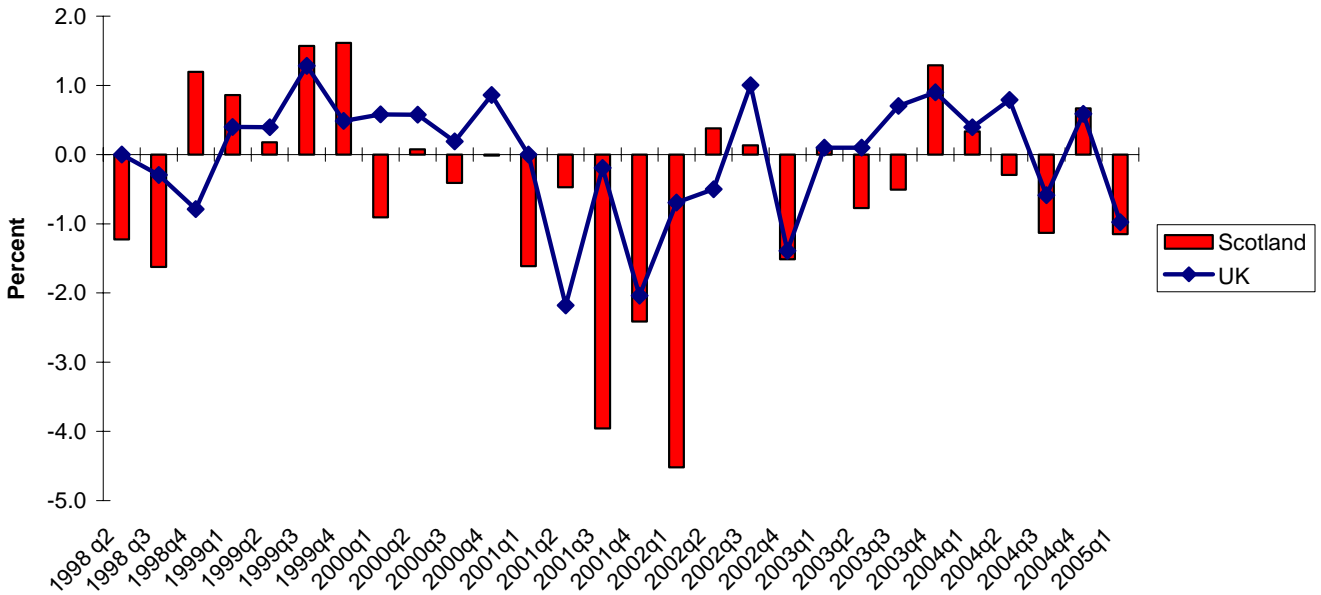
<sup>8</sup> The Pearson product moment correlation coefficient is 0.077.

Figure 1: Scottish and UK Quarterly GDP Growth, 1998 q2 to 2005q1



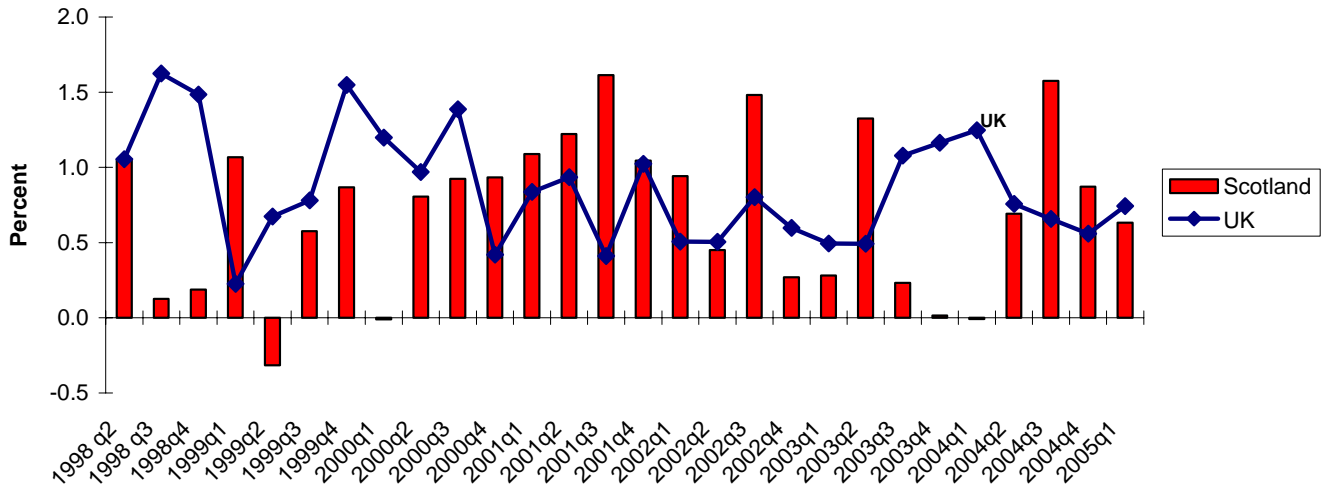
Source: Scottish Executive and FAI calculations

Figure 2: Scottish and UK Manufacturing GVA Growth at constant basic prices 1998q2 to 2005q1



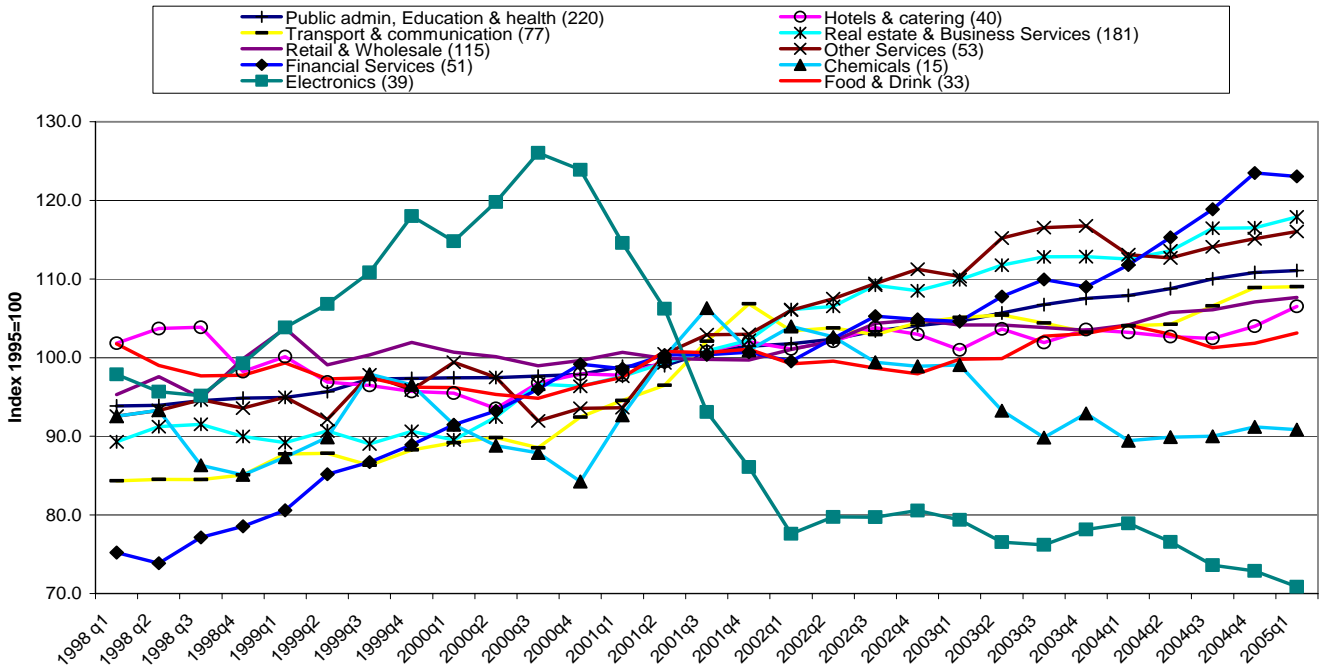
Source: Scottish Executive and FAI calculations

Figure 3: Scottish and UK Services GVA Growth at constant basic prices 1998q2 to 2005q1



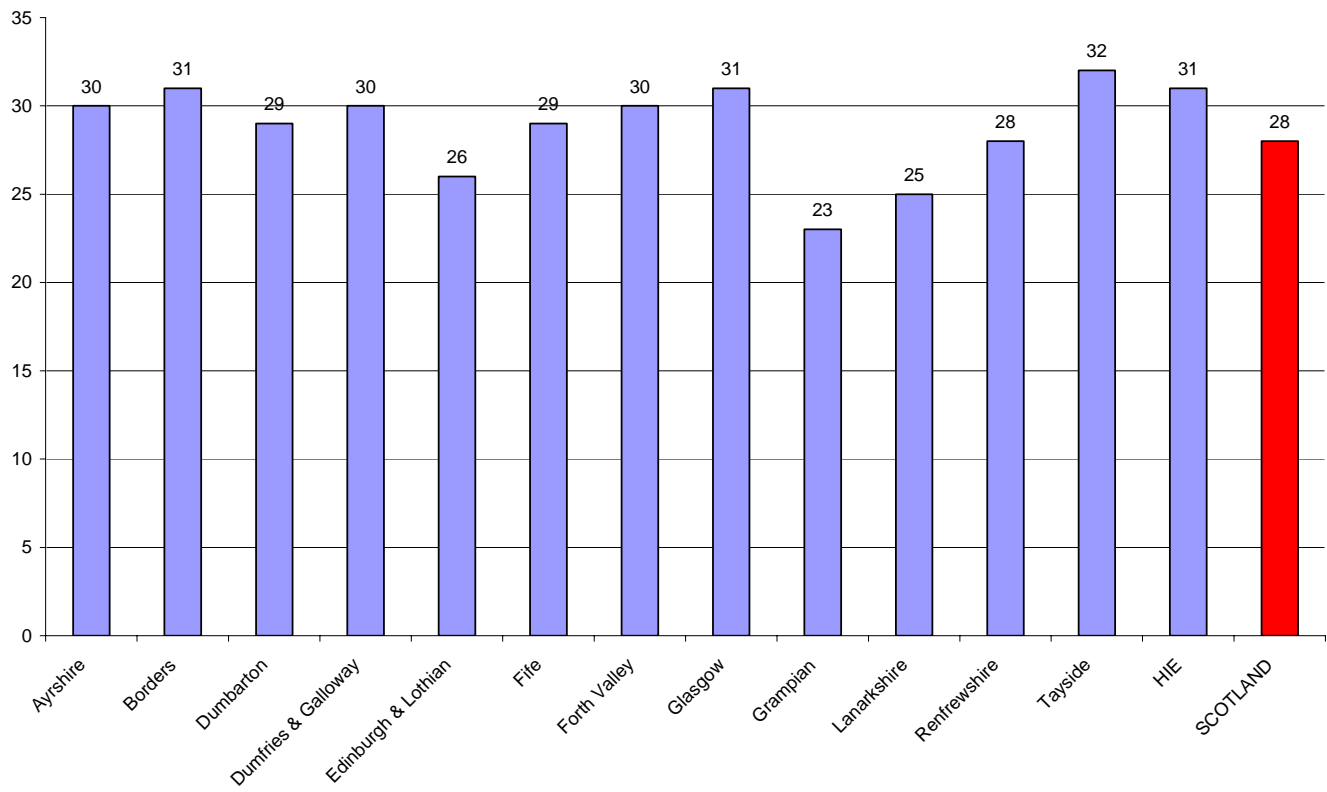
Source: Scottish Executive and FAI calculations

Figure 4: Growth of Key Sectors 1998Q1 to 2005Q1



Source: Scottish Executive and FAI calculations

Figure 5: Public Services Jobs in Scottish LEC Areas Percent Total, 2002



Source: Annual Business Inquiry, 2002

# The economic background

## The world economy

### Overview

2004 was a record year for the world economy as it grew by 5.1 per cent, the strongest growth seen for 28 years. The main impetus to growth was strong domestic demand in the US, Canada, the UK, France and Spain. Oil exports from Russia, Mexico and OPEC made a significant contribution to growth. World trade grew by 9.1 per cent in 2004 with Japan and China experiencing strong gains from net trade. Both the US and Japan grew considerably above trend level but the Euro Area remained the weakest of the major blocs although growth improved to 1.7 per cent.

### Outlook

World growth is forecast to be 4.5 per cent in 2005 close to 4.5 per cent in 2006. Clearly the world economy is expected to slow in 2005 and activity will probably remain around that level in 2006. Some major economies will however see a slight pick-up in growth. The growth in world trade is forecast to be strong in the next two years. Japan and the UK are forecast to have significantly lower levels of growth whereas Germany, which was in recession at the end of 2004, is forecast to pick up slowly across the forecast horizon. France is expected to grow slightly more strongly than Germany and the Euro Area as a whole should perform slightly better than in recent years. Stronger global growth has increased pressure on oil supplies. The increase in oil prices has been much stronger than analysts forecast. Obviously this has increased inflationary pressures such that both the Federal Reserve and the ECB have become more hawkish, although the ECB have yet to raise rates. The outlook for the period 2005 to 2007 remains relatively promising despite a slight slowing in growth from previous levels.

### United States

Real GDP grew by 3.3 per cent on an annualised basis in the second quarter of 2005. Growth was slightly weaker than first quarter growth, 3.8 per cent, because of a slowing of inventory investment. Consumer spending grew by 3.7 per cent on an annual basis in the first half of 2005 compared to growth of 3.8 per cent last year. Investment spending in the US has also continued at a strong pace and has done so since the beginning of 2004. At current growth rates investment is expected to rise by 11 per cent this year. Net trade was also stronger than expected. There are signs that government spending is moderating and it is anticipated that this will continue throughout 2005.

The current account has increased to \$195 billion (6.4 per cent of GDP, a staggering level) in the first quarter. The deterioration (since 1997) is mostly on the trade account

**Table 1: Forecasts of the main world economy indicators**

	% Growth in real GDP				Unemployment rate (%)			
	2004	2005	2006	2007	2004	2005	2006	2007
US	4.4	3.9	3.8	3.5	5.5	5.4	5.2	5.3
Japan	2.6	1.4	1.7	1.5	4.7	4.5	4.5	4.4
Euro zone	1.7	1.5	2.0	2.1	8.8	8.9	8.8	8.6
Germany	1.0	1.2	1.3	1.5	9.6	9.7	9.6	9.6
France	2.1	1.5	2.2	2.3	9.7	9.9	9.7	9.4
OECD	3.4	2.6	2.9	2.7	6.7	6.7	6.4	6.4

	Inflation rate (%)				Short term interest rate (%)			
	2004	2005	2006	2007	2004	2005	2006	2007
US	2.2	2.7	2.7	2.6	1.6	3.4	4.2	4.5
Japan	-0.6	-0.4	-0.2	0.2	0.0	0.0	0.2	0.4
Euro zone	2.2	2.7	3.7	3.0	2.1	2.1	2.2	2.4
Germany	1.5	0.8	0.8	1.2	n/a	n/a	n/a	n/a
France	1.5	1.7	2.0	2.1	n/a	n/a	n/a	n/a
OECD	1.8	2.0	2.3	2.2	n/a	n/a	n/a	n/a

Note: Inflation rate is measured by consumer prices.

Sources: OECD Latest Release, [www.oecd.org](http://www.oecd.org), the National Institute Economic Review, **193**, July 2005.

and the largest share of this deterioration is from China (24 per cent) while NAFTA and the EU account for 18 per cent and 17 per cent respectively. Exports have increased significantly but imports rose at an even faster rate. Part of this is due to oil imports and the increased value of oil imports but also because the rate of growth in the US is higher than its partners. The dollar remains relatively competitive and is having little effect on trade. The revaluation of the Chinese currency has been helpful; a decline in oil prices would also be beneficial as would an increase in the private savings rate. The personal savings rate turned negative in July reaching its lowest level since the 1930s. Given this and the strong increases in US house prices then the risk of a correction to US consumption has increased.

In August annual consumer price inflation rose to 3.6 per cent but when food and energy are excluded this is only 2.1 per cent. Headline inflation had moderated to 2.1 per cent in June compared to 2.4 per cent in March. At the September meeting of the US Federal Open Market Committee the interest rate was increased from 3.5 per cent to 3.75 per cent. The language of the Committee also suggests that there will be little let up in the monetary policy cycle. The projection for interest rates is to move from an accommodative stance to a neutral position.

While the effects of the hurricanes Katrina and Rita were tragic they are probably going to have little long lasting economic impact. Given the two affected states account for 2 per cent of US GDP and that most of the negative effects

will be seen in the third and the fourth quarters, it is expected that 2005Q3 growth could slip by less than 1 percentage point and that fourth quarter growth could be reduced by perhaps half of the decrease in the third quarter. Prior to these events growth in the US was expected to be close to 4.5 per cent in 2005 and the forecast for 2005 is 3.9 per cent. Reconstruction is likely to offset some of the negative effects of the hurricanes.

Growth in manufacturing, household consumption, residential investment and business investment continued in 2005. The ISM manufacturing survey recorded its highest reading in two years while the non-manufacturing index declined from 65 in August to 53.3 in September. There was a significant improvement in the labour market as employment only declined by 35,000 when the expectation was a net reduction of 150,000. Overall the trend in employment is a monthly increase of 208,000 over January to August 2005 compared to an average of 180,000 for 2004. Job losses were mainly in retailing and leisure although a loss of 27,000 jobs was due to a strike at Boeing. Unemployment increased to 5.1 per cent in September from 4.9 per cent in August. This is expected to decline to below 5 per cent by the end of 2005.

The outlook for the US economy remains optimistic with forecast growth of 3.9 per cent in 2005 and 3.8 per cent in 2006. We expect interest rates to be 3.4 per cent this year and 4.2 per cent in 2006 as inflation is forecast to be 2.7 per cent in both 2005 and 2006.

## Europe

Real GDP increased by 0.3 per cent in 2005Q2 following a 0.4 per cent increase in the first quarter. The most important driver of change in the second quarter was the building of inventories which contributed 0.2 percentage points to GDP. Domestic demand remains weak with the net effect from consumption on GDP close to zero while investment growth increased from -0.2 per cent to 0.2 per cent. Gross capital formation contributed 0.1 percentage point to GDP in 2005Q2. Real net exports made a contribution close to zero. Private consumption remains relatively weak and retail sales fell in July by 0.5 per cent but increased by 0.9 per cent in August. Car registrations decreased by significantly in the first two months of the third quarter after a 1.7 per cent increase in 2005Q2.

Both the industrial and service sector has added to growth recently with value added in the industrial sector being considerably higher than that recorded in the service sector. Industrial activity (excluding construction) was stronger at the beginning of the third quarter after recording an increase of 0.2 per cent in July compared to 0.4 per cent in June. In the capital goods sector the three month moving average is growth of 0.9 per cent compared to 0.5 per cent for consumer goods. New orders decreased by 1.2 per cent in July following a strong rise of 3.1 per cent in June and 2.2 per cent growth in the second quarter. Both the European Commission's and the European PMI indices improved in September and are above the levels recorded in 2005Q2. The strengthening of industrial confidence comes from improving order books. It should be noted that the level of confidence is still at a relatively low level. The suggestion is one of modest improvement in industrial activity in 2005Q3.

The ECB held rates at 2 per cent again although the language it used was more aggressive. This was no more than was expected because it is doubtful that even if they cut rates that there would be a significant upturn in domestic demand from most European countries. The expectation is that inflation remains contained in the medium-term. Headline inflation was 2.5 per cent in September compared with 2.2 per cent in the previous two months. A major factor is the increase in oil prices. There is no clear evidence of domestic inflationary pressure and a round of modest wage increases may act as a break in the cycle of inflation. Money and credit have continued to grow over the quarter with the annual rate of M3 growth at 8 per cent driven primarily by the low level of interest rates.

Employment increased by 0.2 per cent in the second quarter of 2005 following an increase of 0.1 per cent in the first quarter. This was mainly due to an expansion in the industrial sector. Employment in services grew by 0.3 per cent in 2005Q2. This indicates a gradual improvement in the labour market in the third quarter. There has however been a significant increase in both part-time employment and self-employment. Unemployment was 8.6 per cent in August following 8.5 per cent in July. This was an increase

of 140,000 whereas in the previous three months the average decline was 120,000. The data has been heavily influenced by a rise in German unemployment.

The outlook for the Euro Area is that it still urgently requires labour market reforms to improve its sluggish performance. The forecast of the Euro Area GDP growth is 1.5 per cent this year and 2 per cent next year. Inflation is expected to remain on target but unemployment will probably be at relatively high rates.

## Japan

GDP increased by 0.8 per cent on a quarterly basis in 2005Q2. This is the equivalent to an annual growth rate of 3.3 per cent. There has been a significant upward revision here (up from 0.3 per cent giving an annualised rate of 1.1 per cent). This is due to increased contributions from business investment and inventories. Private domestic demand in Japan remains strong. In the first quarter private consumption grew by 1.1 per cent.

Headline CPI and CPI excluding fresh food declined on an annual basis in August whereas producer prices increased by 1.7 per cent on an annual basis reflecting the rise in the oil price. There has been some weakening of indicators over July and August but overall the outlook for Japan remains favourable although some weaknesses remain.

Chinese growth was 9.5 per cent in 2004 and second quarter growth gives an annualised figure of 9.1 per cent. China revalued its currency by 2.1 per cent in July but more importantly changed from a fixed rate to a managed float. There are strict government based restrictions on investment and this is likely to continue to prevent overheating. Chinese exports are unlikely to decline significantly even as the forecast for world trade growth is to decline from 9 per cent to 6 per cent this year.

Kenneth Low  
14th October 2005

# The UK economy

slowed from 3.7 per cent in the second quarter of 2004 to 2.1 per cent in the first quarter of 2005. GDP is estimated to have grown by 3.2 per cent in 2004. Net trade reduced GDP by 0.7 percentage points but most of the growth was driven by household consumption.

## Overview

The US, Japan, China and the UK were growing at above trend levels in 2004. This year growth has slowed slightly due to increasing oil prices but growth is still relatively strong in the US, China, and the UK and in other non-Japan Asian economies. Some emerging economies are also growing relatively strongly. While the oil price has risen there does not appear to be sustained global inflation simply because the dependency on oil is less than it was; oil revenues are recycled more quickly now; monetary policy is more appropriate and there is no spiral effects because of increased wage demands on the back of oil price increases. Consequently inflation is more subdued.

UK national accounts underwent rebasing to 2002 prices and there have also been significant data revisions. In the second half of 2004 the economy decelerated (and into the first quarter of 2005). There was also below trend growth in the second quarter of the year. Annualised UK GDP growth

## Outlook

The consensus forecasts for the main UK economic indicators taken from a monthly survey by HM Treasury of City and other independent forecasters are presented in Table 1. Real GDP growth was 3.2 per cent in 2004 and is forecast to be 2.0 per cent in 2005 (revised down from 2.5 per cent in our last forecast). We forecast growth of 2.3 per cent in 2006 (similar to our previous forecast). Inflation (whether measured by CPI or by RPIX) remains on target and both are forecast to be close to target over the period. Unemployment remains at low levels and employment growth is relatively buoyant. The current account is forecast to improve in the short-run but to widen in the medium-term. PSNB is forecast to rise from £33.4 billion 2004-05 to £39.2 billion in 2005-06, a considerably worsening. Thereafter it is expected to improve.

**Table 1: Independent forecasts of the UK economy**

	2004	2005	2006	2007
Real GDP growth (%)	3.2	2.0	2.3	2.6
Inflation rate (CPI %)	1.4	2.2	1.9	2.0
Inflation rate (RPI %)	3.0	2.6	2.4	2.5
Inflation rate (RPIX %)	2.2	2.3	2.4	2.5
Claimant count, million	0.85	0.88	0.92	0.91
Employment growth (%)	0.6	0.5	0.3	0.4
Average Earnings (%)	4.3	4.3	4.4	4.4
ERI (1990=100)	102.0	101.6	99.1	98.2
Current account (£ billion)	-28.1	-24.3	-25.8	-27.8
PSNB (£ billion)	33.4	39.2	38.6	38.0

**Source:** National Statistics, National Institute Economic Review, **193**, July 2005 and "Forecasts for the UK economy", HM Treasury, September 2005. Note: PSNB is given for financial years, e.g. 2003/04

## Output growth

UK chained volume measure of GDP increased by 0.5 per cent in the second quarter of 2005. This was revised up by 0.1 percentage point. This is the fourth quarter in a row where UK GDP growth has been below trend. This is now the slowest rate of growth since the recovery from the period 1990-1991. The level of GDP is now 1.5 per cent higher than it was in the second quarter of 2005. In the first quarter GDP growth was only 0.3 per cent. Growth has slowed considerably in the first half of 2005. GVA at basic prices grew by 0.5 per cent in the second quarter

compared to 0.3 per cent in the first quarter. GVA is now 1.4 per cent higher than it was in the same quarter of the previous year.

## Components of demand

Consumption grew by 0.4 per cent in the second quarter (revised up from 0.2 per cent) while government spending grew by 0.5 per cent. Investment spending increased by 1 per cent. Exports had an impressive performance growing by 4.4 per cent while imports only grew by 1.9 per cent in

the second quarter. The UK trade deficit widened from £3.9 billion in July to £5.3 billion in August. This was primarily because of a £1.4 billion payout by Lloyds for hurricane Katrina. The deficit in the three months to August was £11.6 billion compared to £11.1 billion for the previous three months. We note that the Bank of England is continuing to interpret this data (investment and exports) with caution. This is because of past heavy revisions and possible seasonal adjustments still to come. The UK balance of payments data shows the UK has a deficit that represents 1 per cent of GDP. The deficit is £3.1 billion for 2005Q2 compared with a revised deficit of £7.3 billion (-2.5 per cent of GDP) in the first quarter. A deficit of £4.8 billion was recorded with the EU compared to £6.7 billion in the previous quarter.

The largest quarterly growth was seen in agriculture (1.1 per cent); electricity, gas and water supply (1.0 per cent) and business and finance services (0.8 per cent). In the service industries the strongest growth was in health and social work (1.2 per cent) while real estate and business services grew by 1.0 per cent. Only manufacturing declined (by 0.2 per cent) in the second quarter although transport and storage services growth was flat.

Manufacturing activity had increased by 0.1 per cent in July but energy output declined by 1.9 per cent. Industrial production was therefore 0.3 per cent lower than it was in June. The SIPS survey suggested that manufacturing activity had strengthened slightly. The CBI survey of manufacturing orders declined in August. The three month growth rate for retail sales grew by 0.7 per cent in July, despite a decrease in retail sales in July. There may be some very modest improvements in the UK housing market after the considerable slowing in the UK housing market. Car registrations also fell in the three months to August.

## Prices

Import price inflation increased to 2.7 per cent in the second quarter, up from -1.0 per cent a year ago. Manufacturing price inflation grew by 13.4 per cent in July 2005. This probably reflects a rising oil prices. Manufacturing output prices increased to 3.1 per cent in July. CPI inflation was 2.3 per cent in July, up considerably from the 1.1 per cent recorded in September 2004. Interest rates have been on hold in the UK and this is probably going to continue into 2006. If the UK recovers at a slower pace then there may be a further cut in interest rates but perhaps not until 2006.

## The labour market

Employment in the UK was 28,759,000 in June-August 2005, an increase of 103,000. This is equivalent to an employment rate of 74.8 per cent. In March-May 2005 the number was 28,656,000 which was a decrease of 24,000. Unemployment fell from 1,424,000 in March-May 2005 to 1,417,000, a decline of 7,000. The unemployment rate was

4.7 per cent in June-August 2005, unchanged from the previous period. Claimant count unemployment increased to 875,500 (2.8 per cent) from 867,300 (2.8 per cent). In June-August 2005 the number of economically active people was 30,080,000 (78.5 per cent) and this rose to 30,176,000 (78.6 per cent) in June-August 2005, an increase of 96,000. There were 17,639 (21.4 per cent) people who were economically inactive in June-August compared to 17,633,000 (21.5 per cent) in March-May 2005.

Self employment fell to 3,622,000 in June-August from 3,638,000 in March-May. Average earnings increased by 4.2 per cent in the twelve months to August 2005. Full-time employment increased from 21,341,000 in March-May to 21,445,000 in June-August 2005. The increase was 43,000 men and 61,000 women. The number of people with second jobs declined slightly over the same period.

The outlook for the UK economy remains promising despite a slowing of growth. Forecast growth for 2005 is 2.0 per cent and 2.3 per cent for 2006. It may be that the outlook for the third quarter of 2005 could be relatively muted but it is likely that the outturn for the fourth quarter will demonstrate strong growth in the period prior to Christmas. There is a clear requirement to balance the tax revenues and public spending otherwise the Golden Rule will be broken and the long-term macroeconomic stability will be jeopardised. The main downside risks to the UK economy are the lack of activity in the Euro Area, a sustained high oil price and significant imbalances in the world economy.

Kenneth Low  
15<sup>th</sup> October 2005

# The Scottish economy

## Forecasts of the Scottish economy

### **Economic background**

Growth in the world economy has clearly weakened but remains relatively strong. The outlook for 2005 and 2006 is for growth to return to trend although some economies are still growing above trend growth rates. The Euro Area remains a problem in that it has very weak domestic demand and in particular German demand is relatively poor. The good news is that Germany has come out of recession and there are signs, especially surveys and forward looking indicators, that suggest that during 2006 and 2007 the Euro Area will start to grow at a more measured pace. This is important for both the UK and Scottish economies. The US continues to drive the world economy but China is becoming an increasingly important player on the world stage. World trade is forecast to remain buoyant although below the levels seen in 2004. Again there are implications for both the UK and Scottish economies particularly for trade links with China and the Far East as European export markets remain depressed.

UK GDP growth has been disappointing in the first two quarters of 2005 after growth of 3.2 per cent in 2005. Most analysts and forecasters have revised downwards their UK GDP growth forecast to a range of 1.5 to 2.0 per cent for next year. The Chancellor in a recent speech signalled that the Treasury recognises that growth will probably be nearer to 2.6 per cent than the official Treasury forecast of 3 to 3½ per cent. Manufacturing grew by 1.9 per cent in 2004 while construction has provided the UK with a much needed boost of 3.4 per cent. The service sector grew by 3.7 per cent last year. Data for the first two quarters of 2005 however demonstrates the weakness of UK manufacturing and relatively low growth in services (0.3 per cent in 2005Q1 and 0.6 per cent in 2005Q2). Growth in UK consumption was also relatively weak with 0.1 per cent in the first quarter and 0.4 per cent in the second quarter.

### **The Scottish economy**

Scottish GVA grew by 1.9 per cent in 2004 and in 2005Q1 growth was flat. Over the last four quarters on the preceding four quarters growth was 2.0 per cent. Agriculture declined by 0.4 per cent in 2005Q1 compared to growth of 1.9 per cent at the same time last year. Construction growth was 0.3 per cent in the second quarter compared to 2.4 per cent for the same period in the previous year. Growth in the services sector was 0.6 per cent in 2005Q1 whereas it was flat in 2004Q1.

The UK outperformed Scottish services in all but two categories on an annual basis. The two exceptions were: financial services where Scotland grew by 9.6 per cent compared to 4.4 per cent in the UK and the public sector where Scottish growth was 3.0 per cent compared to growth of 2.3 per cent in the UK. Annual growth in Scottish hotels and catering was relatively weak at only 0.8 per cent but other services declined by 0.8 per cent. The other sectors with relatively strong growth in Scotland (using annual growth) were transport, storage and communications services (2.8 per cent) and real estate and business services (3.2 per cent). While the housing market may have slowed slightly it is less probable that this will have an important effect in Scotland. The same is probably true of retail sales and both these sectors have grown by 0.5 per cent and by 1.2 per cent respectively in 2005Q1. Hotels and catering grew by 2.4 per cent in the second quarter and these three sectors outperformed their UK counterparts in 2005Q1.

Construction output increased by 3.2 per cent on an annual basis (only 2.7 per cent in the UK) and growth in the first quarter was only 0.3 per cent (0.6 per cent in the UK). However, construction grew by 7.3 per cent in 2004 (only 3.7 per cent in the UK) and despite our previously over optimistic forecast in the last quarter a number of factors have slowed growth in this sector. There is undoubtedly a bottleneck in spending with significant delays in getting from the design, planning and contract stage of a major construction project to an operational phase. There are also some labour shortages as workers move to higher paid jobs within the industry. We remain optimistic about the construction sector but have factored into our forecast some of the constraints on growth.

Scottish manufacturing declined by 1.2 per cent in 2005Q2 and for the last four quarters on the preceding four quarters output declined by 0.3 per cent. Within manufacturing only food (4.2 per cent), transport equipment (6.3 per cent) and paper, printing and publishing (0.4 per cent) recorded positive growth in the first quarter of 2005. The UK also had three sectors that recorded positive growth in 2005Q1. Annual growth for these three sectors in Scotland was 1.3 per cent, 9.8 per cent and 0.2 per cent respectively. In Scotland metals (-5.2 per cent), mechanical engineering (-7.5 per cent), electronics (-2.7 per cent) and other manufacturing (-1.1 per cent) all showed significant declines in output in the first quarter of 2005. Overall manufacturing in Scotland remains weak. Undoubtedly the monetary policy committee's decision to raise interest rates to 4.75 per cent when they did hit both UK and Scottish manufacturing. The reduction in UK rates was a welcome break but has not been enough to stimulate a significant boost in demand or to increase investment. Manufacturing is more likely to grow steadily as demand builds elsewhere (in Scotland, the UK and in Europe) rather than to small cuts in the UK interest rate.

Scottish manufactured exports fell by 1.0 per cent in 2005Q2 and by 2.7 per cent over the year. This compares with a decrease of 2.5 per cent in 2005Q1 and an annual decline of 2.7 per cent. Food exports have grown by 21.8 per cent on annual basis in 2005Q2 compared to a decline of 12.7 per cent for 2005Q2 on 2005Q1. In the first quarter food exports grew by 10.4 per cent. On a quarterly basis for the second quarter exports of drink grew by 2.3 per cent; mechanical engineering by 4.4 per cent and transport equipment by 3.4 per cent. Electronics exports declined by 3.6 per cent in 2005Q2. It is clear that food is the fastest growing export sector but only has a weight of 1.7 per cent. The weight of electronics is 44.5 per cent and drink (mostly whisky) is 15.8 per cent. It is these two sectors that have a significant effect on total exports.

LFS Employment rose by 18,000 over the year to 2,462,000 in June-August 2005 giving an employment rate of 75.5 per cent. LFS employees increased from 2,194,000 in March-May 2005 to 2,228,000 in June-August 2005, an increase of 34,000 over the quarter and 32,000 over the year. Self-employment declined by 12,000 over the year and by 2,000 over the quarter. Full-time employment increased to 1,871,000 by 36,000 over the quarter but increased by 24,000 on an annual basis. Part-time employment decreased by 4,000 over the year and by 3,000 in the last quarter. LFS unemployment declined from 147,000 to 131,000 in June-August 2005. This gives a rate of 5.1 per cent. This compares to claimant count unemployment of 85,700 in September 2005 or 3.2 per cent. The trend in employment appears to be rising and the trend in unemployment appears to be falling. The number of economically active people is 2,594,000 (79.5 per cent), an increase of 2,000 on the year but was a decline of 11,000 on the quarter. The labour market performance is relatively good and we expect this to continue.

The Scottish economy has had a mixed performance over the recent months. Construction growth has boosted growth with services sector growth being disappointing and manufacturing has been weak. We are still looking to the Euro Area to improve domestic demand significantly before we will see a considerable improvement in manufacturing particularly in drink and electronics.

## The forecast in detail

### GVA

The forecasts of chain-linked GVA are presented in Table 1 for the period 2005 to 2007.

We are forecasting Scottish GDP growth of 1.8 per cent for 2005 and 1.9 per cent for 2006. Despite weaker data for 2005 Q1 (and probably Q2) for Scotland and for both quarters in the UK we believe that activity will pick up in the second half of 2005, particularly in the fourth quarter. We also believe that the service sector will deliver stronger

growth and that manufacturing will only pick up in 2006. Even then recovery will be slow and gradual as we rely on European markets to stimulate demand for manufactured exports. We are forecasting that Scottish growth will be just below long-run trend growth in the years 2005 to 2006 but to grow slightly above trend in the next two years. The Scottish service sector has significant drivers of growth in it notably financial services, real estate and business services but also the important public sector and transport and communications services. Growth is expected to pick up in these sectors and to remain relatively strong in retail and hotels and catering in the second half of 2005.

**Table 1 Main Forecasts of the Scottish Economy, 2005-2007**

	2005	2006	2007
GDP	1.8%	1.9%	2.0%
Agriculture	0.8%	1.6%	0.5%
Manufacturing	-0.4%	0.7%	1.4%
Construction	3.7%	2.0%	1.6%
Services	2.4%	2.2%	2.2%

Source: Fraser of Allander Institute, October 2005

**Final demand**

Consumption remains an important driver of final demand in Scotland and consumption may not have declined in Scotland to the same extent as it has in the UK. Government expenditure remains important to the Scottish economy and we expect investment to pick up more strongly in 2007 and 2008. Tourism performance has been mixed, although probably better than expected. Overseas demand remains the weakest sector and we are forecasting a gradual increase over 2005-07 for tourist demand. Export markets remain problematic and it will probably be 2007 before Euro Area domestic demand is strong enough to stimulate this sector significantly.

**Output**

Agriculture output is forecast to grow by 0.8 per cent in 2005 and by 1.6 per cent in 2006. Mining and quarrying is forecast to grow by over 0.4 per cent in 2005 and decline by 0.2 per cent in 2006. In 2005 electricity, gas and water supply is forecast to contract by 3.3 per cent but to grow by 1.6 per cent in 2006. The latter sectoral growth forecasts do however depend on the strength and depth of recovery in Scottish manufacturing. There are also clearly uncertainties over Scottish Power and their HQ functions if a hostile bid were made for the company.

Manufacturing is forecast to contract by 0.4 per cent in 2005 and to grow by 0.7 per cent in 2006. Stronger growth

is forecast for 2007 and 2008 (close to 1.5 per cent per annum). Within manufacturing textiles and electronics remain significant concerns. ORNF, chemicals and other manufacturing are the sectors most likely to have a steady but slower growth profile. Food, drink, paper, printing and publish and transport equipment are more likely to provide significant growth within manufacturing.

Services are forecast to grow by 2.4 per cent in 2005 and by 2.2 per cent in both 2006 and 2007. Services may grow above trend growth in 2007-08. Services continue to be driven by financial services and real estate and business services. The strong growth in the service sector also drives employment growth. Tourism remains important for services growth and we expect that to improve in 2007 and 2008. We also believe that the retail and hotel and catering sectors are more resilient than their UK counterparts in the current economic slowdown but we do not expect them to grow as fast as the UK sectors when growth upturns again.

Construction growth in 2005 is forecast to be 3.7 per cent and 2.0 per cent in the following year. This strong growth is driven by public sector investment and private housing demand. There is no significant sign of a slowing for housing demand and we expect this to pick up in the future.

**Employment**

Our medium-term forecasts of employment are presented in Table 2 with the net employment change figure in brackets. The employment figures are calibrated on the employer's quarterly survey series as given in Table B.16 in Labour Market Trends, National Statistics.

Employment is forecast to increase to 2,285,300 in 2005 and to 2,313,700 in 2006. This is a net job change of 26,700 and 28,400 respectively. Employment gains across the period 2006-08 are close to trend. The service sector still drives employment gains across the forecast horizon. Already the Scottish economy has on an annual basis created 15,000 jobs according to the workforce series or using LFS data, 18,000 jobs up to the period June 2005.

As in previous forecasts and labour market analysis it is clear from Table 2 that job creation is largely delivered by the service sector. In 2005 we forecast 31,700 jobs and in 2006 a further 26,300 jobs. Manufacturing is forecast to shed 3,200 jobs in 2005 and only to create 400 jobs in 2006. There will be a considerable increase in jobs in 2007 with a net job gain of 35,600 forecast. Job creation in construction is not so significant now as it was in our previous forecast. Agriculture, electricity, gas and water supply and mining and quarrying are forecast not to have any major net job change.

**Table 2 Forecasts of Scottish Employment and Net Employment Change, 2005-2007**

	2005	2006	2007
Total employment (000s)	2,285.3 (26,700)	2,313.3 (28,400)	2,349.4 (35,600)
Agriculture	36.6 (-100)	36.8 (200)	36.5 (-200)
Manufacturing	246.3 (-3,300)	246.7 (400)	248.1 (1,400)
Construction	150.4 (2,000)	153.5 (600)	157.7 (600)
Services	18,15.5 (31,700)	1,841.4 (26,3000)	1,874.7 (32,900)

Source: Fraser of Allander Institute, October 2005

### Unemployment

Our forecasts of unemployment are given in Table 3. Both the ILO measure and claimant count measure are presented. The preferred measure of unemployment however is ILO unemployment as given by the LFS. Our forecast for ILO unemployment is 140,000 (5.3 per cent) in 2005 and 136,000 in 2006 (5.2 per cent). The claimant count measure of unemployment (those registered and receiving Job Seekers Allowance (JSA)) is forecast to be 90,000 (3.6 per cent) in 2005 and 86,100 (3.4 per cent) in 2006. The outlook for unemployment is relatively low and stable. Unemployment remains at historically low levels. There are no significant movements in unemployment predicted in the near future. The UK and Scottish labour markets are both performing well. Despite a possible build

of inflationary pressure due to higher oil prices there are no signs of wage pressures that are not in line with non-inflationary output growth.

**Table 3 Forecasts of Scottish Unemployment, 2005-2007**

	2005	2006	2007
ILO Unemployment (levels)	140,000	136,400	130,000
Rate	5.3%	5.2%	5.1%
Claimant count (levels)	90,000	86,100	81,900
Rate	3.6%	3.4%	3.3%

Source: Fraser of Allander Institute, July 2005

Once again the outlook for the Scottish economy is good while services remain the key sector driving growth and employment. We expect a marginal moderation of consumption next year and we believe investment, tourism and exports will strengthen the economy. Government spending is as before an important driver of the economy. We are forecasting a slight dip in growth in 2005-06 but thereafter we are forecasting that growth will be close to trend for the rest of the period. Construction growth is strong and forecast to remain so until 2007. Manufacturing is weak and unlikely to recover until 2006. A pick-up in the Euro Area and a depreciation of sterling will help exporters. We remain optimistic about the labour market and continue to forecast rising employment and low and stable unemployment.

Kenneth Low  
18th October 2005



## Business Forecasting Services

The Fraser of Allander Institute offers a confidential forecasting service to public and private sector clients with:

- Quarterly reports with forecasts of all the main Scottish economic indicators for the next five years, plus analysis and comment on the UK and world background
- Six monthly reports with regional forecasts of the Scottish Enterprise and HIE LECs
- Client briefings with the opportunity to influence the forecast
- Access to detailed sectoral information from the influential Scottish Chambers' Business Survey

Independent research by Business am rated the Institute as the "most accurate" forecaster in 1999-2000 of the six leading groups who produce Scottish forecasts.

For further information contact the Institute on 0141 548 3958 or [fraser@strath.ac.uk](mailto:fraser@strath.ac.uk)

# Scottish Chambers' Business Survey

Strathclyde University's Fraser of Allander Institute in collaboration with the Scottish Chambers' of Commerce conducts the quarterly Chambers' Business Survey. In the present survey, which was conducted in September and early October, around 350 firms responded to the questionnaire.

## Business Performance

### Recent past and next three months

Business confidence was weaker in all sectors than in the first quarter. Nevertheless, confidence continued to rise in manufacturing and tourism, but turned downwards in construction and the decline strengthened in wholesale and retail distribution.

Rising trends in orders and demand were reported in manufacturing, construction, wholesale and tourism, however, the outturn in demand in all sectors was weaker than had been expected.

Manufacturing respondents reported an increase in the volume of work in progress and a slight decline in stocks of finished goods. Average capacity used eased to 77% and the percentage reporting working below optimum levels rose to 50%. Construction firms reported a slight easing in average capacity used, but stronger rising trends in work in progress, and expect these rising trends to strengthen further in the second half of 2005.

In the service sector wholesale respondents reported a modestly rising trend in sales. In contrast declining sales were again more widely reported by retail respondents, and little improvement is anticipated for the third quarter. Only 49% of retail respondents (compared to 75% a year ago) reported rising or level trends in sales. Tourism respondents reported good second quarter results, and expect rising visitor numbers from all areas in the third quarter, although demand from abroad remains weak.

The likelihood of price increases eased in manufacturing, wholesale and retail. The rising trend in room rates in the tourism sector was broadly the same as in the second quarter of 2004.

Concerns as to the levels of orders/sales and competition rose slightly amongst manufacturing and more significantly amongst construction respondents in the second quarter,

being cited by 42% of manufacturers, 70% of construction and 36% of tourist respondents.

Pay increases in the first quarter were slightly higher than in the previous quarter, and ranged from 3.2% in wholesale to 6.0% in construction. Recruitment activity was generally higher in the service and construction sectors than in manufacturing.

### Expectations for the next twelve months

Manufacturing respondents anticipate more modestly rising trends in orders, turnover and profitability over the next twelve months. Construction respondents expect rising turnover but more modest increases in profitability over the next year.

Retail respondents are again less confident as to the forthcoming year, and continue to expect declining trends in turnover and profitability. In contrast rising turnover, and more modestly profitability continue to be expected amongst tourism respondents.

## Manufacturing

### Optimism

The rise in business confidence, a feature of the last three months continued at slightly more modest levels.

### Orders and Sales

The rising trend in total orders continued at more modest levels, and the outturn was less than expected. Respondents now expect some modest easing of trends in the third quarter. Rising trends in orders from all areas were again reported in the first quarter. Expectations for the next twelve months, whilst positive, are now weaker than three months ago.

The rising trend in the level of work in progress continued at more modest levels and a further easing in the rate of increase is expected. A higher proportion (50%) reported operating at below optimum levels compared to quarter one (35%).

### Finance

The downward trend in cash flow ended, but firms downgraded their expectations as to the trends in turnover and profitability over the next year. Price pressures eased and concerns as to raw material costs remained widespread whilst concerns as to pay costs remained unchanged in the second quarter.

### Investment

48% reported revising investment plans for mid 2005 to mid 2006, and rising trends in investment and leasing were again reported. Investment in the current quarter was again

mainly directed towards increasing efficiency and for the replacement of equipment. Investment for R & D and to develop new markets/products, declined further.

### Employment

Employment continued to strengthen, and a higher percentage (58%) sought to recruit staff.

**Table 1 Manufacturing – key results**

	Q2 2005		
	Up	Level	Down
<b>Business Optimism</b>	28.9	48.1	23.0
Trends in actual orders			
Total new orders	42.8	30.9	26.3
Scottish orders	27.7	52.6	19.8
Rest of UK orders	27.4	48.3	24.3
Export orders [33.5% = N/A]	21.7	31.3	13.5
Trends in expected orders			
Total new orders	33.6	45.5	20.9
Scottish orders	21.5	61.0	17.6
Rest of UK orders	25.8	56.1	18.0
Export orders [35.1%= N/A]	20.9	32.7	11.3
<b>Av Capacity used</b>	77.3		
Invest in plant/equip.	31.2	52.1	16.7
<b>Cash flow past 3 mths</b>	22.9	56.6	20.5
Turnover next 12 mths	47.5	38.5	14.0
Profitability next 12 mths	38.2	32.7	29.2
Price change next 3 mths	23.4	72.0	4.6
Pressures to raise prices from			
<b>Pay settlements</b>	37		
Raw material costs	71		
Finance costs	12		
Other overheads	37		
Transport costs	43		
Employment trends			
Total actual employment	29.4	52.4	18.2
Total expected next 3 months	24.8	67.6	7.6
Average pay increase	3.7		

## Construction

### Optimism

Business confidence eased in the second quarter, notwithstanding rising trends in actual and expected orders and work in progress.

### Contracts

The rising trends in the value of new contracts continued, driven by both public and private commercial sector work. The level of domestic build work contracts eased and little improvement is forecast, but public orders are expected to increase. Firms continue to report rising trends in the level of work in progress and 35% expect the level of work in progress to rise over the next six months.

69% reported operating at or above optimum rates in the first quarter, however, average capacity used eased to 87%.

Respondents are more cautious as to future profit margins and now expect little change over the next year, and 60% expect building and other costs to rise in the year to mid 2006. Both turnover and profitability are again expected to strengthen over the next twelve months, but at more modest rates than had been estimated in the first quarter.

The level of new contracts, shortages of skilled labour, planning delays and the availability of contractors were seen as the four factors most likely to restrict activity over the next quarter.

### Investment

The rising trends in investment and leasing ended. Once again investment authorised in the second quarter was mainly for the replacement of equipment and to increase capacity.

### Employment

The rising trend in employment continued. 63% sought to recruit staff (76% in the previous quarter) and 41% reported increasing pay by an average of 6.0%.

**Table 2 Construction – key results**

	Q2 2005		
	Up	Level	Down
<b>Business Optimism</b>	7.4	70.4	22.2
<b>Trends in actual orders</b>			
Total new orders	40.7	44.4	14.8
Public sector orders	33.3	42.9	23.8
Private commercial	33.3	45.8	20.8
Domestic/house build	15.0	55.0	30.0

**Trends in expected orders**

Total new orders	33.3	48.1	18.5
Public sector orders	33.3	47.6	19.0
Private commercial	21.7	56.5	21.7
Domestic/house build	15.8	57.9	26.3

**Trends in work in progress**

Actual	26.9	61.5	11.5
Expected	34.6	53.8	11.5

**Capacity used**

87.1
------

Invest plant/equip.	14.8	66.7	18.5
Leasing plant/equip	8.3	58.3	33.3

**Employment trends**

Actual employment	29.6	63.0	7.4
Expected next 3 months	20.0	80.0	0.0

**Average pay increase**

6.0	
Percent recruiting staff	63
Recruitment difficulties inc.	23

**Wholesale distribution**

**Optimism**

The decline in business confidence strengthened in the second quarter, notwithstanding slightly better than anticipated sales.

**Sales**

A modestly rising trends in sales was reported; this increase is forecast to continue through the third quarter. The proportion reporting rising or level sales trends (72.7%) was little changed from the previous quarter (72.4%)

Once again the level of competition, along with business rates were seen as the factors most likely to restrict sales over the third quarter.

Expectations of price increases eased again, but still remain widespread. This may underpin the expectations as to slightly declining profitability trends over the next twelve months.

Concerns as to transport costs eased from the five year high reported in the previous survey. Nevertheless, transport costs together with raw material costs were the once again the most widely cited pressure on prices.

**Investment**

Investment changes were at the margin, affecting only a third of respondents.

**Finance**

A more modest rising trend in cash flow was reported and expectations as to trends in turnover improved for a further quarter. However, respondents are more cautious as to the trends in profitability over the next twelve months, and a slight net decline is now forecast.

**Employment**

Rising trends in employment were reported as 42% sought to recruit staff. 27% increased pay by an average of 3.16%.

**Table 3: Wholesale distribution – key results**

	Q2 2005		
	Up	Level	Down
Business Optimism	21.2	45.5	33.3
Trend in actual sales	33.3	39.4	27.3
Trend in expected sales	39.3	28.6	32.1
Investment plans	18.2	66.7	15.2
Cash flow past 3 months	30.3	48.5	21.2
Turnover next 12 months	48.5	30.3	21.2
Profitability next 12 months	28.1	40.6	31.3
Price change next 3 Months	42.8	43.8	12.5
Pressures to raise prices from			
Pay settlements	18		
Raw material costs	54		
Finance costs	9		
Other overheads	24		
Transport costs	61		
Employment trends			
Total actual employment	12.1	78.8	9.1
Expected next 3 months	21.4	71.4	7.1
Average pay increase	3.16		
Percent recruiting staff	42		
Recruitment difficulties	40		

## Retail distribution

### Optimism

For a further quarter the declining trends in confidence continued and deepened, as sales trends were again weaker than anticipated.

### Sales

Declining trends in sales were widespread with 50% of respondents reporting declining sales, and 46% anticipating declining sales in the third quarter.

For a further quarter competition, business and interest rates were again identified as the three factors most likely to inhibit sales over the next quarter.

### Investment

Changes in investment plans were at the margin, affecting only a third of respondents, nevertheless, a slight decline was reported.

### Finance

The rising cash flow trends ended and a decline was reported. Overall, respondents are again more concerned as to profitability and turnover trends over the next twelve months, with 38.9% anticipating declining turnover and 49.4% declining profitability over the next twelve months, although expectations as to turnover and profitability were stronger amongst larger retailers. Price pressures were again most strongly anticipated by smaller firms.

### Employment

The slight decline in employment re-emerged, and this decrease is expected to continue through the third quarter. 46% recruited staff, and 47% reported difficulties in recruiting suitable staffs. 41% increased pay by an average of 4.12% (compared to 3.88% in the previous quarter).

**Table 4: Retail distribution – key results**

	Q2 2005		
	Up	Level	Down
Business Optimism	8.9	45.6	45.6
Trend in actual sales	13.5	36.0	50.6
Trend in expected sales	11.8	42.4	45.9
Investment plans	14.6	66.3	19.1
Cash flow past 3 months	12.4	61.8	25.8
Turnover next 12 months	22.2	38.9	38.9
Profitability next 12 months	19.1	31.5	49.4
Price change next 3 months	37.8	53.3	8.9

Pressures to raise prices from	
Pay settlements	28
Raw material costs	23
Finance costs	18
Other overheads	48
Transport costs	43

### Employment trends

Total actual employment	13.8	71.3	14.9
Expected next 3 months	5.1	80.8	14.1

**Average pay increase** 4.12

Percent recruiting staff	46
Recruitment difficulties inc	18

## Tourism

### Optimism

A rising trend in business confidence was reported.

### Demand

The outturn in demand was marginally weaker than anticipated, nevertheless, for a further quarter rising trends in demand were reported for total, rest of UK and Scottish demand, although demand from abroad remained weaker than a year ago. Average occupancy, at 70%, was at the same level as a year ago

Overall 34% of business was local trade [22% in quarter two 2004], 43% tourist trade [51% in quarter two 2004] and 32% business trade [31% in quarter two 2004].

### Finance

The rising trends in turnover and profitability continued, although at more modest rates than a year ago. The rise in room rates, continued, but was slightly less than had been forecast.

Concerns as to the lack of demand were generally lower than in the second quarters in previous years.

### Employment

Changes in employment were reported by 27% of respondents, and the increase was mainly in the increased employment of part time staffs.

### Recruitment

81% sought to recruit staff, and 31% reported that difficulties in recruiting staff had increased, overall 70% of those recruiting reported difficulties in recruiting suitable

staffs, most notably in the recruitment of chefs/cooks. 44% increased pay by an average of 5.7%.

**Table 5: Tourism – key results**

---

	Q2 2005		
	Up	Level	Down
Business Optimism	32.4	41.2	26.5
Trends in demand/visitors			
Total demand/visitors	41.2	32.4	26.5
Demand from Scotland	30.2	52.4	17.5
Demand from Rest of UK	23.4	56.3	20.3
Demand from abroad	24.6	38.5	36.9
Business Trade	31.1	41.0	27.9
Trends in expected demand			
Total demand/visitors	35.4	43.1	21.5
Demand from Scotland	16.9	66.1	16.9
Demand from Rest of UK	22.4	63.8	13.8
Demand from abroad	28.8	45.8	25.4
Business Trade	21.1	49.1	29.8
Capacity used	70		
Investment	25.8	60.6	13.6
Turnover past 3 months	42.9	40.5	16.7
Profitability past 3 months	47.6	42.9	22.7
Average daily rate	35.4	50.8	13.8
Expected average daily rate	33.8	53.8	12.3
Employment trends			
Total actual employment	16.4	73.1	10.4
Expected next 3 months	14.5	82.9	1.6
Average pay increase	5.7		
Percent recruiting staff	81.4		
Recruitment difficulties	70		

---

# Overview of the labour market

The latest figures on the labour market<sup>1</sup> in Scotland are summarised in Table 1. Labour Force Survey (LFS) data show that in the three months to May 2005 the level of employment fell by 6 thousand, to 2,443 thousand. Over the year to May 2005, employment increased by 22 thousand. The employment rate – as a percentage of the working age population – fell slightly to 75.1 per cent, down 0.2 percentage points on the previous quarter. Over the year to May 2005, the employment rate was up by 0.6 per cent. Figure 1 provides an account of quarterly LFS employment over a three-year period to February 2005.

The preferred International Labour Organisation (ILO) measure of unemployment rose by 5 thousand to 149 thousand during the period March to May 2005<sup>2</sup>. The ILO unemployment rate in the three months to May 2005 rose slightly to 5.7 per cent. This represents a fall of 0.3 per cent relative to the same period a year earlier (6.0 per cent).

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). Table 1 shows that the level of the economically active fell by 2 thousand over the last quarter to May 2005. There were 2,591 thousand economically active people in Scotland during March to May 2005. This comprised 2,443 thousand in employment and 149 thousand ILO unemployed. Taking account of the increase in ILO unemployment (of 5 thousand) and the fall in the number in employment (of 6 thousand), the total number of economically active people in Scotland fell by 2 thousand between March and May 2005. The corresponding level for those of working age economically inactive rose to 636 thousand, up 3 thousand on the previous quarter, and down 11 thousand on the same period a year earlier.

Scottish claimant count unemployment – a count of claimants on unemployment related benefits – is detailed in Table 2<sup>3</sup>. The most recent (seasonally adjusted) claimant count figure for August 2005 stood at 85.0 thousand, up 0.1 thousand from the previous month. The claimant count rate in August 2005 remained at 3.2 per cent, down from 90.0 thousand (3.4 per cent) compared in August 2004.

Figure 2 plots ILO and claimant count unemployment for three-month periods as an index for the period March-May 2000 to March-May 2005. Claimant count unemployment has been generally falling since March-May 2000, and continued that fall throughout 2004. By comparison, ILO unemployment has fluctuated more widely, but still generally on a downward trend and most likely reflects

movements between the level of employment and the number of people economically active at any one time. Hence, the difference between the ILO and claimant count definitions mirrors the distinction between those actively seeking work (but are jobless) and those who are eligible for unemployment benefit payments.

The Office for National Statistics (ONS) had deferred releasing figures for vacancies due to distortions in the data since May 2001, resulting mainly from the introduction of Employer Direct<sup>4</sup>. ONS have very recently made available a wide range of Jobcentre Plus vacancy data, which should form the basis of vacancy data in the future. At the moment, ONS have such concerns over the appropriateness of these data as a labour market indicator that they are not due to be included in the labour market statistics First Release. Our intention is to monitor these data to see if they can be used for future reports on the labour market in Scotland.

Labour Force Survey (LFS) data provide the industrial composition of the total number of individuals in employment within Scotland. Data released through NOMIS has taken a rolling four-quarter average on this measure. Table 3 shows that for September 2002-August 2003 to March-May 2005, the percentage share of employment within manufacturing fell 0.1 per cent to 11.7 per cent. This is down from 12.2 per cent from the four quarter average beginning one year previously. The share of employment within services fell marginally to 75.2 per cent from the previous four-quarter average to the most recent one, which represents a small reduction (0.2 per cent) from the rolling four-quarter average beginning one year previously. The percentage share of employment within the Banking and Finance sector remains steady at 13.5 per cent.

The most recent figures for the number of employee jobs by industrial activity are detailed in Table 4. Employee job figures are a measure of jobs rather than people. Total seasonally adjusted employee jobs for the quarter ending March 2005 stood at 2,285 thousand, up 11 thousand from the previous quarter, and 28 thousand higher than the same period a year earlier. The number of jobs in the manufacturing industry fell to 235 thousand over the last quarter, down 2 thousand when compared against the same quarter one year earlier. The number of jobs in the service industry fell over the last quarter to 1,059 thousand, 13 thousand lower than the quarter ending December 2004, but 12 thousand higher than the same period ending a year earlier.

Table 5 and Figure 3 show the proportion and numbers of workers employed as managers and senior officials, professionals, associated professionals, and technical occupations. These professions can be grouped together under the classification 'highly skilled jobs'<sup>5</sup>. The most recent data (shown in Table 5) indicate that during for the most recent four-quarter average, the share of highly

skilled employment within Scotland and Great Britain stood at 38.6 per cent and 41.2 per cent respectively. This is slightly higher than the previous quarter for Scotland (38.3 per cent) and higher than the previous quarter for Great Britain (41.1). Figure 3 illustrates that the proportion of employment in Scotland in highly skilled jobs has been rising steadily over recent years but continues to lag slightly behind Great Britain.

### Outlook

Scotland's labour market continues to perform strongly in light of global uncertainty. Overall UK unemployment remained unchanged over the last quarter, remaining at 4.8 per cent, while Scotland's unemployment rate increased by 0.2 per cent over the same period to 5.7 per cent. Scotland's employment performance continues to improve, and the employment level and rate in Scotland remains close to its highest level since 1992 (before which consistent records are unavailable). The employment rate in Scotland remained close to historically high levels at 75.1 per cent in the three months to May 2005. The claimant count rate remained at 3.2 per cent in August 2005 while the number unemployed and claiming benefit remains low at 85.0 thousand. The outlook for the labour market remains healthy when compared to historical standards for Scotland, with labour market sentiments expecting relatively low unemployment and high employment to continue over the next few years.

no longer used to calculate rates for sub-regional areas, relate to the sum of claimants and workforce jobs for the corresponding mid-year (National Statistics).

<sup>4</sup>Employer Direct involves transferring the vacancy-taking process from local Jobcentres, to regional Customer Service Centres (National Statistics).

<sup>5</sup>Highly skilled jobs include sections 1-3 of the Standard Occupational Classification (SOC). Figure 4 illustrates the trend in the number of workers in highly skilled jobs between Q1 1993 and Q1 2003, as an index (1993=100). However, pre-2001 data relates to SOC 1990, and post-2001 data relates to SOC 2000, therefore, the absolute levels of highly skilled jobs over this period should be interpreted with slight caution.

Grant Allan  
27<sup>th</sup> September 2005

---

### Endnotes:

<sup>1</sup>The Census 2001-consistent population figures at local authority level were released in February 2003. This has allowed the production of interim regional LFS estimates. The population data only cover the periods up to mid-2001. The data presented here are taken mainly from Labour Market Statistics, October 2004 and are consistent with the updated LFS data available on NOMIS from Summer 2004. This information has been release for rolling four-quarters averages, making it impossible to identify individual quarters over time. Labour Market Statistics continue to report data for Scotland at the quarterly level, so this will continue to form the basis of our analysis of movements in the labour market between quarters.

<sup>2</sup>The Labour Force Survey definition of ILO unemployment takes precedence over the claimant count measure. ILO unemployment is much less sensitive to changes in the regulations governing unemployment benefit, and conforms to a widely accepted standard to allow for more meaningful cross-country comparisons.

<sup>3</sup>All the seasonally adjusted claimant count series have been revised back three years (to January 2000), following the latest ONS annual review. The denominators used to estimate the workplace-based regional and national claimant count rates have been updated and revised back to 1996. These workplace-based denominators, which are

**Table 1: Recent developments in the Scottish labour market**

		<i>Level (000s)</i>	<i>Rate (%)</i>
Employment*	Mar-May 2004	2,421	74.5
	Jun-Aug 2004	2,437	75.0
	Sep-Nov 2004	2,446	75.2
	Dec-Feb 2005	2,449	75.3
	Mar-May 2005	2,443	75.1
ILO Unemployment**	Mar-May 2004	156	6.0
	Jun-Aug 2004	147	5.7
	Sep-Nov 2004	142	5.5
	Dec-Feb 2005	144	5.6
	Mar-May 2005	149	5.7
Economically active*	Mar-May 2004	2,577	79.4
	Jun-Aug 2004	2,584	79.7
	Sep-Nov 2004	2,587	79.7
	Dec-Feb 2005	2,593	79.9
	Mar-May 2005	2,591	79.8
Economically inactive***	Mar-May 2004	647	20.6
	Jun-Aug 2004	639	20.3
	Sep-Nov 2004	638	20.3
	Dec-Feb 2005	633	20.1
	Mar-May 2005	636	20.2

Source: Labour Market Statistics (First Release), National Statistics

Notes:

(1) Data available as of 28<sup>th</sup> September 2005.

(2) Data taken from Table 1 of Labour Market Statistics for July 2005, ONS, and are not directly comparable with previous series taken from NOMIS.

\* Levels are those aged 16 and over, rates are for those of working age (16-59/64)

\*\* Levels and rates are for those aged 16 and over. Rate is a proportion of economically active

\*\*\* Levels and rates are for those of working age

**Table 2: Claimant count unemployment\***

(000's)		Claimant count (seasonally adjusted)		Claimant flows (seasonally adjusted)	
		Level	Rate	Off-flow	On-flow
2003	January	100.0	3.8	25.7	27.2
	February	100.0	3.8	26.3	26.2
	March	99.8	3.8	26.8	26.1
	April	99.7	3.8	26.3	26.2
	May	100.3	3.8	25.4	25.9
	June	100.8	3.8	25.7	26.0
	July	99.8	3.8	25.5	25.1
	August	98.6	3.7	25.5	24.8
	September	99.6	3.8	25.6	25.2
	October	99.4	3.8	24.9	24.8
	November	98.6	3.7	25.0	24.5
	December	97.9	3.7	24.8	24.5
2004	January	96.2	3.7	24.1	23.8
	February	96.2	3.7	24.3	24.1
	March	95.8	3.6	24.2	23.5
	April	94.5	3.6	24.1	22.9
	May	92.7	3.5	24.6	22.8
	June	91.4	3.5	24.5	22.8
	July	89.9	3.4	23.2	21.8
	August	90.0	3.4	22.4	22.2
	September	90.9	3.5	22.2	22.2
	October	90.1	3.4	22.7	22.1
	November	88.9	3.4	22.9	22.0
	December	87.7	3.3	23.4	22.2
2005	January	86.3	3.3	23.4	21.7
	February	85.9	3.3	22.6	21.9
	March	86.1	3.3	22.2	21.6
	April	86.5	3.3	21.3	21.4
	May	86.7	3.3	21.3	21.2
	June	86.0	3.3	21.5	20.8
	July	84.9	3.2	21.5	20.6
	August	85.0	3.2	21.4	21.6

Source: National Statistics, Nomis (Benefits Agency Administrative system)

(1) Data available as of 27th September 2005

\* Levels are those claiming unemployment benefits, rates are those claiming benefit divided by workforce jobs plus claimants.

**Table 3: Industrial composition of total in employment (LFS), percentage share**

	<i>Manufacturing</i>	<i>Banking &amp; Finance</i>	<i>All services</i>
Dec 2002-Nov 2003	12.6	13.6	75.3
Mar 2003-Feb 2004	12.3	13.5	75.3
Jun 2003-May 2004	12.2	13.4	75.4
Sep 2003-Aug 2004	12	13.3	75.4
Dec 2003-Nov 2004	11.9	13.5	75.4
Mar 2004-Feb 2005	11.8	13.5	75.3
Jun 2004-May 2005	11.7	13.5	75.2

Source: National Statistics, Nomis (Labour Force Survey)

Notes:

- (1) Where manufacturing covers SIC section D, banking and finance covers section J and K and all services covers sections G-Q (including Banking and Finance)  
(2) LFS data taken from Nomis are rolling averages of four quarters, and are consistent with the population estimates published in February and March 2003

**Table 4: Employee jobs by industry, OOs**

SIC92	All jobs (seasonally adjusted)	Agriculture Forestry & Fishing		Mining Energy & Water Supplies Industries		Construction	Service Industries		Public Administration and Other Services
		A-Q	A,B	C,E	D		F	G-K	
Mar-02	2,257	2,248	35	44	276	124	1,042	727	
Mar-03	2,235	2,227	32	40	256	131	1,033	734	
Mar-04	2,257	2,249	28	36	237	149	1,047	753	
Jun-04	2,263	2,262	28	37	238	145	1,056	758	
Sep-04	2,263	2,263	30	37	237	146	1,056	758	
Dec-04	2,274	2,285	31	37	237	154	1,072	754	
Mar-05	2,285	2,275	29	37	235	154	1,059	760	

Source: National Statistics: Labour Market Statistics, Scotland (First Release, Table 5: Employee jobs by industry, July 2005)

**Table 5: Proportion of employment in highly skilled jobs**

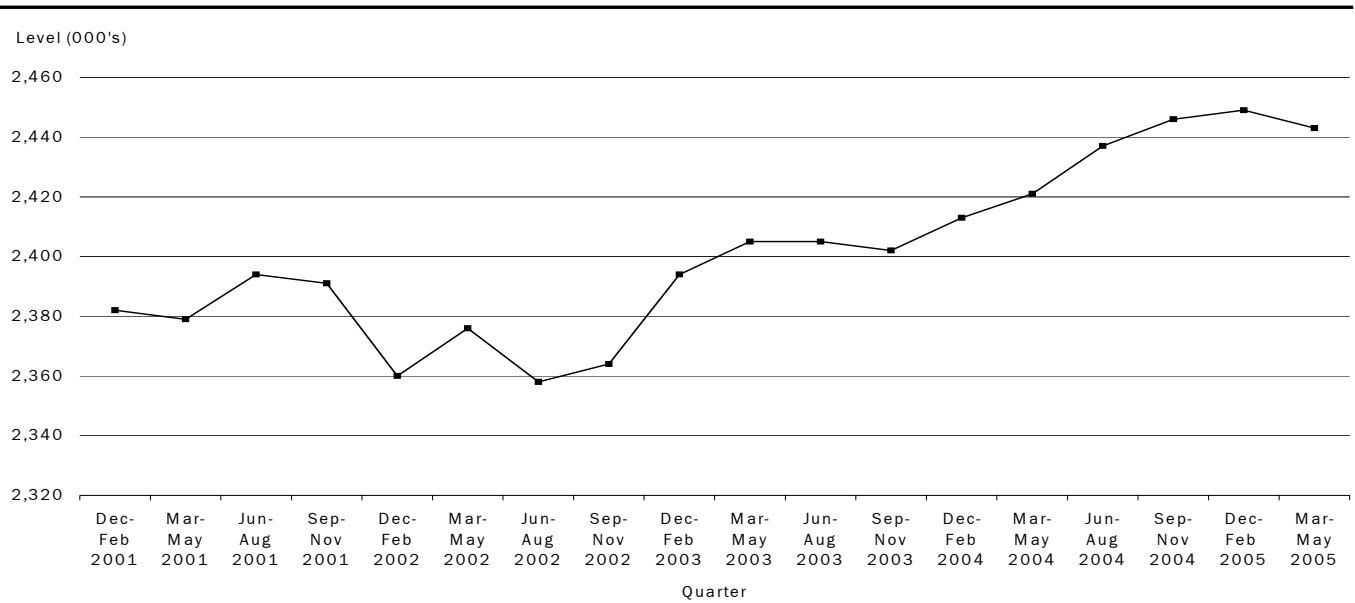
	<i>Level</i>	<i>Scotland Rate (%)</i>	<i>Level</i>	<i>Great Britain Rate (%)</i>
Sep 2002-Aug 2003	887,000	37.1	10,861,000	40.1
Dec 2002-Nov 2003	897,000	37.4	10,931,000	40.2
Mar 2003-Feb 2004	906,000	37.8	11,023,000	40.5
Jun 2003-May 2004	911,000	38.0	11,089,000	40.6
Sep 2003-Aug 2004	920,000	38.2	11,148,000	40.8
Dec 2003-Nov 2004	925,000	38.4	11,220,000	41.0
Mar 2004-Feb 2005	927,000	38.3	11,274,000	41.1
Jun 2004-May 2005	934,000	38.6	11,316,000	41.2

Source: National Statistics, Nomis (Labour Force Survey)

Notes:

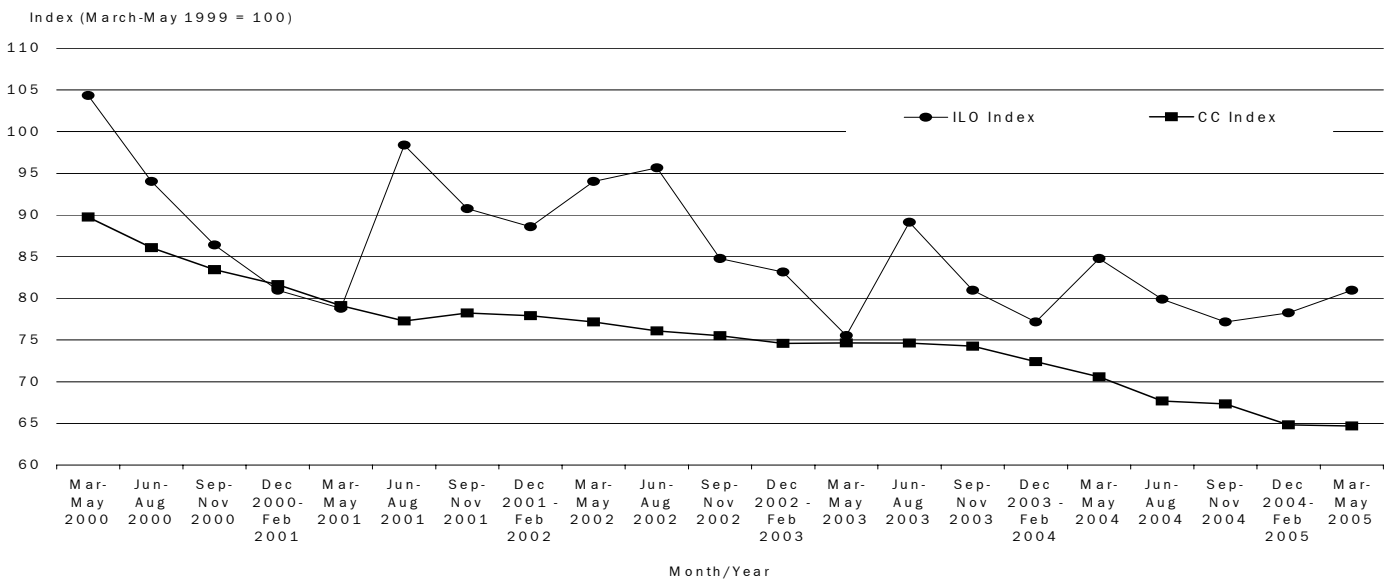
Highly skilled jobs includes sections 1-3 of the Standard Occupational Classification (SOC 2000)

**Figure 1: LFS employment in Scotland for those aged 16 and over, Dec-Feb 2001 – Mar-May 2005**



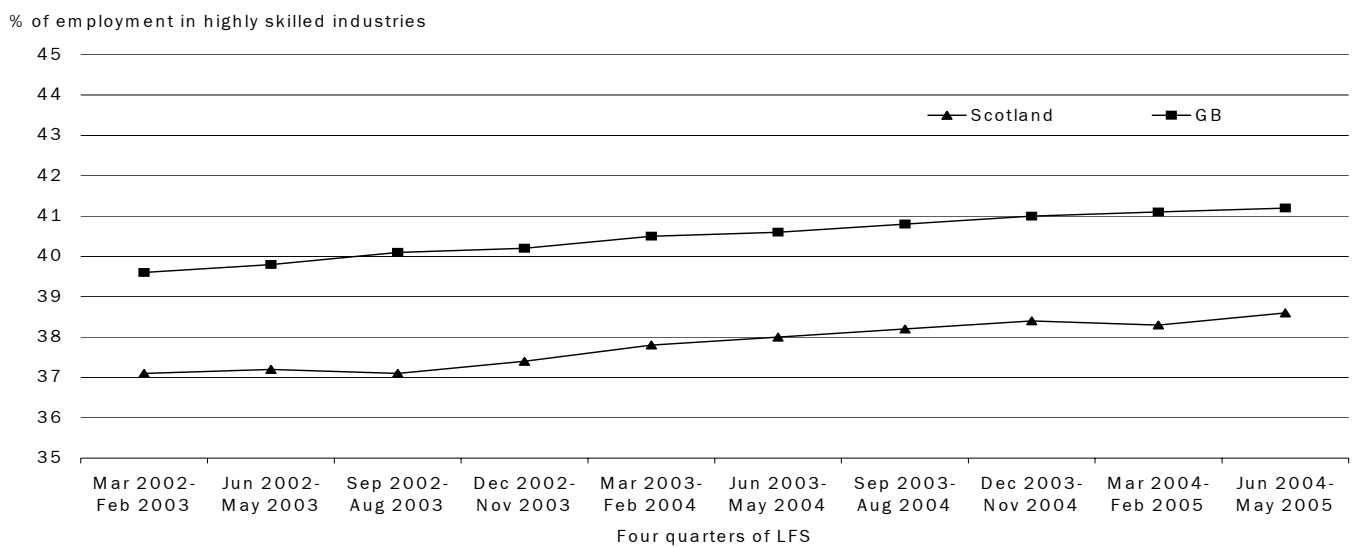
Source: National Statistics (NOMIS)

**Figure 2: Claimant Count and ILO Unemployment in Scotland, Mar-May 2000 to Dec-Feb 2005**



Source: National Statistics (Nomis)


**Figure 3: Employment in highly skilled jobs, Scotland and Great Britain, March 2002-February 2003 to June 2004-May 2005**



Source: National Statistics: Labour Force Survey (Nomis)

Notes:

\* Highly skilled jobs includes sections 1-3 of the Standard Occupational Classification (SOC).



**University of  
Strathclyde  
Business  
School**

## Department of Economics

MSc in Economic Management and Policy

- An exciting programme of professional economics training
- Can be studied in one year full time or part time over two years
- The Department of Economics is renowned for its teaching and research in applied economics
- In 2002, our teaching quality was given the highest rating by the Quality Assurance Agency

The MSc in Economic Management and Policy uses innovative teaching and learning methods, and focuses on decision-making techniques, policy formation, and problem solving in private and public sector organisations.

The programme integrates four key component areas of the professional economist's toolkit: business economics; environmental economics; economic development; and regional policy.

Tel 0141 548 3871  
 Email [pgecon@strath.ac.uk](mailto:pgecon@strath.ac.uk)  
 Website [www.economics.strath.ac.uk/pg](http://www.economics.strath.ac.uk/pg)

In studying for this degree, you will link theory to practice by working in teams in a multi-disciplinary environment, and by applying economics techniques to the solution of business and policy

# Economic perspectives

## The impact of Scotland's economy on the environment: a note on input-output and Ecological Footprint analysis

Ian Moffatt\*, Thomas Wiedmann\*\* and John Barrett\*\*

\*School of Biological and Environmental Sciences,  
University of Stirling

\*\*Stockholm Environment Institute, University of York

### Abstract

Several recent papers examining the impact of the Scottish and Jersey economy on the environment have criticised the Ecological Footprint (EF) method and have suggested the use of input-output (IO) analysis instead (McGregor et al., 2004a; McGregor et al., 2004b; Ferguson et al., 2004; Allan et al., 2004). It is argued that "IO can be used to provide a coherent and practical alternative method to the Ecological Footprint of locating the responsibility and source of resource use and waste/pollution" (Allan et al., 2004) and several aspects of the EF methodology are criticised specifically. In this paper we reply to these critiques and discuss the scope and limitations of both the NCLAS as well as the Ecological Footprint. We argue that EF and IO are complementary methods that can be combined in a meaningful way. We suggest a way forward that helps to improve the scientific understanding of key sustainable development issues.

### Introduction

Input-output analysis (IO) is a well-established method (Leontief, 1966) and its extension by environmental issues in order to consequently attribute resource flows, pollutant emissions and other environmental pressure indicators to final consumption has been taught and practiced for several decades (e.g. Leontief, 1970; Miller and Blair, 1985). Furthermore, several studies have applied IO analysis to calculate the Ecological Footprints of nations and regions (Bicknell et al., 1998; Lenzen and Murray, 2001; Ferng, 2001; Ferng, 2002; McDonald and Patterson, 2004).

Several recent papers (McGregor et al., 2004a; McGregor et al., 2004b; Ferguson et al., 2004; Allan et al., 2004)<sup>1</sup> argue

Opinions expressed in economic perspectives are those of the authors and not necessarily those of the Fraser of Allander Institute

that input-output analysis is a preferred alternative to the Ecological Footprint analysis also being used in Scotland (BFF, 2004). The project undertaken by the Oxford based consultancy Best Foot Forward established the Ecological Footprint of Scotland for the first time. Presently, a further EF study is being undertaken in Scotland, managed by WWF-Scotland, in partnership with North Lanarkshire Partnership and Aberdeenshire County Council, with the research component being undertaken by the Stockholm Environment Institute (SEI), based in York. In this study a hybrid approach of input-output and Ecological Footprint analysis is being employed that has been developed and applied in the 'Reducing Wales' Footprint' project (Barrett et al., 2005; Wiedmann and Barrett, 2005).

It is obvious that the impact of economic activities on the environment are complex. To try and understand the impact of economic and environment interactions and in order to be practicable, simplified models have to be used. Currently, environmentally extended input-output analysis as well as the Ecological Footprint methodology play a major role in understanding these interactions and in offering policy makers and the general public some guidance on the ways to improve both the economy and the environment. The main driver in this process is to try and make development sustainable in the early years of this millennium.

### **Reply to criticisms of ecological footprinting**

Whilst the exploration of alternative methodologies to describe the environmental burden of economic development are to be welcomed without reservation, the method of the Ecological Footprint has been negatively criticised. The three criticisms of the Ecological Footprint raised in the papers by McGregor et al. can be identified as conceptual, data requirements and the measurement unit (standardised global hectares).

#### **a. The conceptual issue**

McGregor et al. (2004) make two conceptual criticisms of the Ecological Footprint. First, they argue that the Ecological Footprint implies that the "consumption in one legal jurisdiction is held responsible for environmental damage that occurs in some other jurisdiction". Second, it is argued that "a country's responsibility usually apply to its own pollutant generation or resource use" (McGregor et al., 2004a, p.30). From a legal perspective this second statement is true if it comes to the implementation of pollution control measures from local pollution sources. The jurisdiction of a country has to ensure that national and international emission standards of pollutants are met by domestic industries. The Kyoto protocol to the UN convention on climate change follows the same principle in that nations are held responsible for the control of greenhouse gas emissions on their territory (UNFCCC, 1997)

The current Ecological Footprint method uses estimates of the resource consumption and waste assimilation

requirements of a given population or economy in terms of its corresponding land area (Wackernagel and Rees, 1996). The 'National Footprint Accounts' (NFA) constitute the underlying methodology with which Ecological Footprints have been calculated for 149 countries of the world (published in the Living Planet Report 2004; WWF, 2004). A detailed description of the NFA method can be found in Monfreda et al. (2004) as well as a methodology paper from the Global Footprint Network (Wackernagel et al., 2004). The NFA calculate the Footprint at national level for the following categories (as an example, values in global hectares per capita for the United Kingdom in 2000 are given in brackets; data source: Moran, 2004): 1) domestic production (4.10 gha/cap), 2) imports (2.36 gha/cap), 3) stock changes (0.01 gha/cap) and 4) exports (1.16 gha/cap). The domestic production Footprint, a main component of the EF, represents the land area used by national production sectors for producing the goods and services for the final consumption of the population, including exports<sup>2</sup>. The Footprints of imported and exported manufactured goods is established by taking into account the embodied energies associated with their production. The accounts then estimate the apparent net consumption of a nation, deduced from 1) + 2) + 3) – 4). This results in the land area – necessary to satisfy the national demand, usually referred to as the 'national Footprint' (5.31 gha/cap).

In reply to the criticisms mentioned above it is argued therefore that the Ecological Footprint can be calculated for both consumption and production and – depending of the scope of the study – can apply different principles of responsibility. A method itself does not decide whether to measure production or consumption. Therefore, the criticism can only be aimed at specific projects like the recent Scotland study and not the method itself.

In the case of the Scotland study, the Ecological Footprint is aimed at analysing the impacts of consumption and therefore follows the "responsibility principle" where the impact of resource use is 100% attributable to a nation's residents as one way of calculating the Footprint. Important components of sustainability do lie outside of legal responsibility and can still be considered important. Most importantly, many of the indicators adopted in the UK and Scotland are related to domestic production. While there is still a lot to understand in terms of how to reduce the environmental impact of production, frameworks are in place to monitor improvements overtime. There are currently no indicators that take into account the environmental impacts in other countries that are created through the imports of goods (and the transfer of production capacity in other countries). There is the danger that the current indicators show a decoupling that takes place only within the national boundaries. Thus someone might be deluded into thinking that the trend is towards sustainability whereas in fact unsustainable production processes and emissions have merely been "exported".

It has been argued that in order to achieve equitable reduction targets, international trade has to be taken into account when assessing a nation's responsibility for abating climate change. In alternative to the principle of territorial responsibility, other approaches have been proposed in order to suggest more efficacious and fair policies, mainly distinguishing between consumer and producer responsibility. The recent paper from Bastianoni et al. (2004) provides a good review of the current state of the debate. For a very detailed and sophisticated discussion on a region's responsibility for environmental pressures we refer to Eder and Narodoslawsy (1999).

### b. Data problems

McGregor et al. (2004a, p.30) argue that it is extremely difficult to trace through environmental impacts embodied in imports and that "many of the calculations in Scotland's Footprint apply average UK coefficients to Scottish data". Further, it is claimed that with the EF approach "the CO<sub>2</sub> embodied in the imports that enter ... in Scottish consumption are not reported" (McGregor et al., 2004a, p.31).

The assessment of pollution embodiments in imported goods is a very difficult endeavour and both methods – Ecological Footprinting as well as IO analysis – have to rely on assumptions to tackle the problem. Depending, again, on the principle of responsibility that is adopted for a study, both methods employ a different approach. As demonstrated below, the NCLAS approach chosen by McGregor et al. might need a smaller amount of data but that involves far reaching assumptions, making this approach not more reliable (in terms of data) than other environmental accounting frameworks, including the Ecological Footprint.

One advantage that IO analysis has over the Ecological Footprint is that the former is able to provide a comprehensive framework to assess the direct, indirect and induced changes on the whole economy when the demand for a single product increases or decreases. We completely agree that environmental extended input-output analysis is a well established approach that allows to consequently assign resource flows and pollution generation to elements of final demand. If impacts of consumption are to be assessed holistically however, then additional data are needed, independent from the method employed. In one sense both input-output and Ecological Footprint studies require good quality data and much of this data has to be taken from national and regional surveys.

We agree with economic researchers that if we are to develop meaningful models of sustainable development then we need both a sound accounting framework and more accurate, regionally specific and timely data including trade information (compare Turner, 2003). Traditional Ecological Footprint studies – such as the recent analysis of Scotland (BFF, 2004) – rely solely on detailed data for material and energy flows as well as conversion factors expressed in

physical units. We suggest that the data used in previous Ecological Footprint studies are sound even if they don't include any monetary information. In fact it could be argued that the data used in the recent Scottish input-output studies are no more accurate or precise than those used in Ecological Footprint studies. From a research perspective we need to ensure that our models of the various sectors of the economy are accurately identified and that data sets are comprehensive before exploring policy options, but this applies to both EF and IO methods. As mentioned before, we agree that economic models (based on input-output analysis) have advantages when it comes to the allocation of environmental pressures to final consumption, but this is independent from the availability of physical data.

The criticising economists modelling economic activity, waste generation, treatment and disposal in the Scottish Economy believe that if the Ecological Footprint was used then the associated data problems are too difficult to overcome. They argue that, "prohibitive data requirements would seem to rule out accurate and comprehensive Ecological Footprint measurements by input-output or any other method" (Allan et al., 2004, p.12). They continue that "we find that there are problems even within the UK in terms of data required for measuring the pollution content of inter-regional flows". And it is suggested that Ecological Footprinting "requires an enormous amount of currently unavailable data" (McGregor et al, 2004a). Obviously, there are serious data problems to be overcome in many areas of economic and environmental research but it may be asked how do input-output researchers deal with this problem?

The solution offered by McGregor et al. (2003a, 2003b, 2004a, 2004b) is termed the 'Neo-Classical Linear Attribution System (NCLAS)'. NCLAS allocates all pollution generation and resource use within a territory to the various elements of final consumption within that territory. It does so by endogenising export demand and is thought to be less data intensive than Ecological Footprint calculations. The strategy used is to assume that exports are endogenised within the system and that an "importing sector is attributed the resource use embodied in the domestic export production required to finance those imports" (McGregor, et al, 2004b, p10). Emissions generated by exports (and investment) of the domestic economy are reallocated in the input-output model and redistributed to household and government consumption. Thus environmental impacts embodied in exports are allocated pro rata to the sectors and final demand categories that import. The approach takes the view that exports essentially create the money to finance imports. In other words, the finance and pollutants generated in the production of Scottish exports are attributed to the users of imports for immediate or final demand.

Whilst this is a useful device in that it helps to close the system so that the standard Leontief matrices can be used (Leontief, 1966; Leontief, 1970), it also creates far reaching limitations in order to make the calculations feasible. In

particular, the NCLAS method is restricted to its perspective on local pollution generation within the boundaries of the region or nation under investigation. McGregor et al. rightly argue that this is sensible because it is the legislature or this region or nation that has to “control the pollution generated within its own borders” (McGregor, et al, 2004b, p12). However, the NCLAS approach does not allow to draw conclusions about environmental impacts embodied in imported goods which is of increasing interest for policies on Sustainable Consumption. Certainly, the pollution that is associated with exported Scottish salmon is very different from the pollution associated with imported television sets. A holistic model needs to look at quality and quantity of both pollution at home and abroad.

The NCLAS approach is a short-cut method that absolves the researchers from obtaining specific import data. This makes the method readily available and workable, a main incentive for its creation. It should be borne in mind however, that the assumptions behind the NCLAS approach constitute a limitation of the model which Ecological Footprint analyses do not have.

Tackling the problem of environmental impacts of imports certainly requires a significant amount of research, but we would suggest that it is essential for a comprehensive assessment of consumption. This is why the Stockholm Institute are constructing a trade model that includes both the interactions between the UK and the rest of the world, as well as flows between UK regions and devolved countries.

### c. The measurement problem

The third criticism of Ecological Footprinting raised in McGregor et al.’s papers is the use of standardised global hectares (gha) as units of measurement.<sup>3</sup> This provides a common measurement scale against which the pollutant and resource use is converted to one unit. McGregor et al. (2004a, p.30) note that “this index is a brilliant rhetorical device but is less useful for environmental management, which has to deal with individual problems”.

We agree that the Ecological Footprint, measured in global hectares, is a good device for both rhetorical purposes and educational use (Moffatt, 2000). In rhetoric, the fact that we have only one Earth and that if we continue consuming resources like the USA for instance we will require several other Earth-like planets, has an impact on an audience. From a teaching perspective many people of different ages and social groups can identify with the fact that we only have one Earth and that we have to live on this planet and we must live within its biophysical limits (Ward and Dubos, 1972). It should be recognised that one of the criteria of any indicator of sustainability is that it has to be easily grasped and is capable of being communicated effectively to the public. In this sense the Ecological Footprint and its measurement unit of global hectares per capita is very effective. The Ecological Footprint has been offered as an indicator of sustainable development in the European

Common Indicators study (Ambiente Italia, 2003). There can be no doubt that for many people the Ecological Footprint has a pedagogic appeal but the question for researchers is not whether the Ecological Footprinting or input-output methods are good to look at but are they useful for contributing to the process of making development sustainable.

From a methodological perspective it is important to see if measuring the Ecological Footprint in global hectares is sound. In this case some basic principles of physical science come into play. Ecological Footprint researchers acknowledge that we only have one Earth and at the same time point out that we already exceed the Earth biological capacity to deal with our resource and assimilation demands. As the latest Living Planet Report (WWF, 2004) shows this ‘overshoot’ was estimated to be about 20% in 2001, see Figure 1.

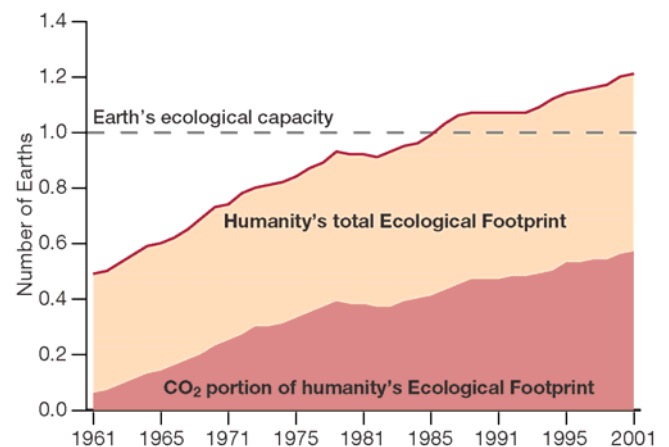


Figure 1: Ecological overshoot - humanity's Ecological Footprint (1961-2001) exceeds the ecological capacity of planet earth, (adopted from WWF, 2004)

It is clear that we cannot live beyond what is physically feasible. From the principles of the conservation of matter we cannot make matter but we can change its form. From the laws of thermodynamics we cannot get any more energy from a machine than we put into it. From ecology we cannot expect a receiving environment to exceed its assimilative capacity without increasing levels of pollution above a natural level and decline in biodiversity. Currently, economic activities such as burning fossil fuels and alteration to the land cover has increased the atmospheric CO<sub>2</sub> burden well in excess of natural levels (Gorshkov, 1995).

The application of scientific principles means that we have to ensure that all our mass balances add up (conservation of mass) and that we do not try to exceed the laws of thermodynamics and that polluting activities do not exceed the assimilative capacities of receiving environments. Given these scientific principles then it is clear that one way of measuring the resources available to humankind is to use the total surface of the Earth as a limiting factor. Ecological Footprinting studies acknowledge that the earth's surface has to provide our basic needs (water, food, fuel) as well as supporting all the rest of life on the planet and to sequesters

atmospheric CO<sub>2</sub> emissions. If this method is adopted then the global hectare is a useful measuring device for accounting for resource use and sequestration of CO<sub>2</sub>. Of course putting these principles of science into economics has not met with much success despite the efforts of Daly's Steady State Economy (Daly, 1977) and work on entropy and economics processes (Georgescu-Roegen, 1971). Those who assume that we can live beyond these means are unaware of, or ignore, the biophysical limitations of the planet.

We acknowledge that the current Ecological Footprint method has its limitations when it comes to the distinction between sustainable and unsustainable use of land and multiple land use which are not appropriately captured within the aggregated measure of 'global hectares' (see e.g. Van den Bergh and Verbruggen, 1999). Various research efforts – mainly by Manfred Lenzen et al. from the School of Physics at the University of Sydney – are under way to specify the way land is actually used and to incorporate it in EF calculations. In Lenzen and Murray (2001) for example they apply input-output analysis to base Footprint estimates on actual – instead of hypothetical – land use and land disturbance in Australia. They also take into account greenhouse gases other than CO<sub>2</sub> and emission sources other than energy use and introduce a new land type category called 'emissions land'.

In a study, using input-output analysis, the researchers (Proops et al, 1999) have examined the use of non-renewable resources that accompany trade to modify the Genuine Savings index (Pearce and Atkinson, 1993). Similarly, Atkinson and Hamilton have calculated an ecological balance of payments for 95 countries; the ecological balance being defined in that study as the use of global resources minus its production of resources from domestic sources (Atkinson and Hamilton, 2002). Unsurprisingly, the OECD countries are net consumers of global resources and the Middle East and North Africa net suppliers. These two input-output studies, using the neo-classical derived Genuine Savings as a measure of sustainability, are diametrically opposed to the findings of the Living Planet Report 2004 (WWF, 2004). While the economic input-output studies, using the Genuine Savings index as a measure of sustainability, show that these nations are still sustainable, the National Footprint Accounts from the Living Planet Report show the clear opposite. The Ecological Footprinting studies – using global hectares as unit of measurement – have shown that our consumption of resources is being played out at the expense of the rest of the biotic resources of the planet and that present consumption levels in wealthy countries are unsustainable.

### A way forward

There is no case of input-output analysis versus Ecological Footprinting and we do not see NCLAS as an alternative to EF as comments and titles from McGregor et al. (2004) might suggest. There are advantages and disadvantages in

both approaches and they constitute two co-existing, even complementary models that answer different research and indeed political question. We can also see clear benefits in using input-output analysis with EF analyses. The Stockholm Environment Institute (SEI) have integrated Material Flow Analysis and Ecological Footprinting using tonnes and global hectares as units, respectively, into an input-output framework using monetary accounts (Wiedmann and Barrett, 2005). The method has been employed in the UK and Wales (Barrett et al., 2005) and is consistent with both standard economic accounting frameworks and the National Footprint Accounts from the Global Footprint Network. As mentioned above, a further EF study employing this method is currently being undertaken in Scotland, managed by WWF-Scotland, in partnership with North Lanarkshire Partnership and Aberdeenshire County Council. Sub-national areas are modelled by combining national IO analysis with locally specific expenditure data. Also, SEI is developing an international trade model that allows researchers to identify different levels of environmental pressures depending on where imports come from.

As sustainable development is concerned with the dynamics of change in both economic and environmental systems it would be very rewarding to model these changes over time. Again the problem of using good quality data over a long time horizon arises. Scotland does have detailed data in the form of input-output tables for such a task (Economics Advice and Statistics, 1998; Scottish Executive, 2002). This would be an important research agenda and could reveal the determinants of the changes in the environment and the economy. These environmental changes may be attributed to changes in the global economy, including policy changes, rather than just normal variations to the environment. The recent attempts to incorporate some sustainability indicators into computable general equilibrium model of the Scottish Economy (Fergusson, et al, 2004) is a welcome step. It should be noted that including dynamics into Ecological Footprinting and input-output studies ought to be encouraged (Moffatt et al, 2001) although this would add to the methodological and data problems rather than simplify them.

Researchers using Ecological Footprints and/or input-output analysis in their studies of environmental/economic interactions are aware of the need for good quality, timely data. It would be useful to have this data at a bottom up level and then environmental and economic policies could be targeted at the level of individual sectors of the economy. At present, however, Scotland has a good set of data for input-output studies and there is no reason why this data and other sources could not be mined to see the usefulness of Ecological Footprinting and input-output methods. It is recommended that Ecological Footprint and input-output researchers examine time series data for Scotland to see the advantages and limitations in the methods they use. This would be a difficult task but a potentially rewarding one for those interested in sustainable development. This would

also clarify some of the methodological difficulties inherent in either the input-output and Ecological Footprint methods and would also be useful for policy makers.

### Concluding comments

This paper has re-examined the three criticisms of Ecological Footprinting raised in several papers on the impact of the Scottish economy on the local environment. We have noted that whilst legally polluters are responsible for controlling their own pollution within their own borders, it is clear that a morally responsible position has also to be adopted. In the case of Ecological Footprinting either a responsibility (consumption) or a territorial (production) principle can be applied. When the territorial principle is used then the legal and geographical boundaries of regulation coincide, when the responsibility principle is used then Ecological Footprinting researchers are concerned with more than their own backyard.

Whilst IO analysis clearly provides a comprehensive framework to enable the inclusion of all upstream impacts of industrial production, it remains just an alternative – albeit sophisticated – attribution method of environmental pressures that needs to be complemented by international trade (balance) models such as the National Footprint Accounts.

When attention is turned to the Ecological Footprinting methodology it can be seen that it is internally consistent and like input-output it uses a valid accounting framework. If a Material Flow Analysis is used then the units are in tonnes and when the Ecological Footprint is used its numeraire is global hectares rather than money.

The fundamental difference between input-output and Ecological Footprinting studies resides in the fact that neo-classical economists tend to subsume the environmental sector as a subset of the economy whilst the environmentalists tend to see the economy as a subset of the environment. This has led to an ongoing debate over whether or not sustainable development can be viewed as “weak” or “strong” (Pearce and Barbier, 2000). Those who favour the weak approach would try to account for environmental problems as wrongly priced goods. Conversely the ecologists see strong sustainability as a pre-requisite for economic activity to continue. Putting a price on the last species or asking what people are willing to pay for the use of the last life belt on the Titanic, may be good for neo-classical theorists, but does not prevent the ship from sinking! This ideological difference, however, cannot be settled purely by adopting one approach. It is, however, vital that the methodological frameworks employed to resolve the problems of economic environmental interactions are carried out in coherent and careful manner. Nevertheless, if this work were pursued then it would cast light, rather than generate heat, on improving our understanding on how to combine policies and co-ordinate measures to better

integrate economic and environmental activity in a socially just way.

It is recommended that Ecological Footprint and input-output analysts should examine sets of time series data to see the advantages and limitations in the methods they use. We contend that despite the different approaches used for Ecological Footprint and input-output investigations both contribute to this debate and practice.

### References

- Allan G, McGregor P, Swales K, Turner K and Hanley N, 2004. Modelling the relationship between economic activity and waste generation, treatment and disposal in the Scottish Economy. Scotecon report, University of Stirling. 13 pp
- Ambiente Italia, 2003. European Common Indicators: Towards a Local Sustainability Profile. Final Report, Milan, Italy
- Atkinson G and Hamilton K, 2002. International trade and the ecological balance of payments. *Resources Policy*, 28, 27-37
- Barrett, J., Birch, R., Cherrett, N., Wiedmann, T., 2005. Reducing Wales' Ecological Footprint – Main Report. Stockholm Environment Institute, University of York; published by WWF Cymru, Cardiff, UK; March 2005. <http://www.walesfootprint.org>.
- Bastianoni, S., Pulselli, F.M., Tiezzi, E., 2004. The problem of assigning responsibility for greenhouse gas emissions. *Ecological Economics*, 49, 253– 257
- BFF (2004) Scotland's Footprint: A Resource Flow and Ecological Footprint Analysis of Scotland. Best Foot Forward Ltd., Oxford; [www.scotlands-footprint.com](http://www.scotlands-footprint.com).
- Bicknell KB, Ball R, Cullen R and Bigsby HR, 1998. New Methodology for the Ecological Footprint with an application to the New Zealand Economy. *Ecological Economics*, 27, 1499-160
- Daly, H. E., 1977. *Steady-State Economics: The Economics of Biophysical and Moral Growth*. WH Freeman, San Francisco
- Economics Advice and Statistics, 1998. *Input-output Tables and Multipliers for Scotland, 1998*. Scottish Executive Enterprises and Lifelong learning Department, Glasgow
- Eder, P. and Narodoslowsky, M., 1999. What environmental pressures are a region's industries responsible for? A method of analysis with descriptive indices and input-output models. *Ecological Economics*, 29, 359–374

- Ferguson L, McGregor PG, Swales KJ, Turner KR and Ping Yin Y, 2004. Incorporating Sustainability Indicators into a Computable General Equilibrium Model of the Scottish Economy. Department of Economics, University Strathclyde, Report 04-13, 50pp
- Ferguson, L., McGregor, P.G., Swales, J. K. and Turner, K. R., 2004. The environmental 'trade balance' between Scotland and the rest of the UK. Scotecon, University of Stirling.
- Ferng, J.J., 2001. Using composition of land multiplier to estimate Ecological Footprints associated with production activity. *Ecological Economics*, 37, 159-172.
- Ferng, J.J., 2002. Toward a scenario analysis framework for energy footprints. *Ecological Economics*, 40, 53-69.
- Gergescu-Roegen N, 1971. Entropy Law and Economic Process. Harvard University Press, Massachusetts
- Gorshakov, V.G., 1995. Physical and Biological Bases for Life. Stability Verlag, Berlin
- Lenzen, M. and Murray, S.A., 2001. A modified Ecological Footprint method and its application to Australia. *Ecological Economics*, 37:229-255.
- Leontief W, 1970. Environmental Repercussions and the Economic Structure: An input-output approach. *Review of Economic Statistics*, Vol. 52, pp. 262-277.
- Leontief, W., 1966. Input-Output Economics. Oxford University Press, New York
- McDonald G W and Patterson M G 2004 Ecological Footprints and interdependencies of New Zealand regions. *Ecological Economics*, 50, (1-2): 49-67.
- McGregor PG, McLellan D, Turner KR, and Swales JK, 2003a. Attribution of pollution generation to local and Private and Public demands in a small open economy: results from a SAM based neo-classical Linear attribution System for Scotland Paper presented to the Regional Science Association International, British and Irish Section , St Andrews University 212 August 2003 (mimeo)
- McGregor, P.G., McNicoll, I.H., Swales, J.K. and Turner, K.R., 2001. "Who Pollutes in Scotland: A Prelude to an Analysis of Sustainability Policies in a Devolved Context", Fraser of Allander Institute, University of Strathclyde. *Quarterly Economic Commentary*, 26(3), 23-32.
- McGregor, P.G., Swales, J.K. and Turner, K.R., 2003b. 'Tracking Pollution Generation in a Small Open Economy: A Neo-Classical Linear Attribution System for Jersey', mimeo, Fraser of Allander Institute, Department of Economics, University of Strathclyde.
- McGregor, P.G., Swales, J.K. and Turner, K.R., 2004a. The impact of the Scottish economy on the local environment: an alternative to the Ecological Footprint? Fraser of Allander Institute, University of Strathclyde. *Quarterly Economic Commentary – Economic Perspectives*, 29(1):29-34.
- McGregor, P.G., Swales, J.K. and Turner, K.R., 2004b. An input-output Based Alternative to "Ecological Footprints" for Tracking Pollution Generation in a Small Open Economy. *Strathclyde Discussion Papers in Economics*, no. 04-04. Glasgow, University of Strathclyde, 38pp.
- Miller R E and Blair P D 1985 Input-Output Analysis: Foundations and Extensions. Prentice-Hall, Englewood Cliffs, New Jersey
- Moffatt I, Hanley N and Wilson MD, 2001. Measuring and Modelling Sustainable Development. Parthenon Carnforth
- Moffatt, I., 2000. Ecological Footprints and sustainable development. *Ecological Economics* 32:359-362.
- Monfreda, C., Wackernagel, M., Deumling, D., 2004. Establishing national natural capital accounts based on detailed ecological footprint and biological capacity accounts. *Land Use Policy*, 21:231–246.
- Moran, D., 2004. Updated version of the National Footprint Account spreadsheet for the United Kingdom in the year 2000. Personal communication, Global Footprint Network, Oakland CA.
- Pearce D and Atkinson GD, 1993. Capital Theory and the measurement of sustainable development: an indicator of weak sustainability. *Ecological Economics*, 8(2), 103-108
- Pearce D and Barbier E, 2000. Blueprint for a Sustainable Economy. Earthscan London
- Proops J, Atkinson G, von Schlotheim B and Simon S, 1999. International trade and the sustainability Footprint. *Ecological Economics* 28, 75-97
- Scottish Executive, 2002. Input-output tables and Multipliers for Scotland. Government Statistical Services (<http://www.scotland.gov.uk/input-output>)
- Turner, KR, 2003. The additional precision provided by regional-specific data: the identification of fuel-use and pollution generation coefficients in the Jersey economy. *Strathclyde Discussion Papers in Economics*, no. 03-09. Glasgow, University of Strathclyde.
- UNFCCC, 1997. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Annex A (<http://unfccc.int/resource/docs/convkp/kpeng.pdf>)
- Van den Bergh, J.C.J.M. and Verbruggen, H., 1999. Spatial sustainability, trade and indicators: an evaluation of the 'Ecological Footprint'. *Ecological Economics*, 29:61-72.

Wackernagel, M. and Rees, W., 1996. Our Ecological Footprint: Reducing the human impact on the Earth. New Society publishers, Canada

Wackernagel, M., Monfreda, C., Moran, D., Goldfinger, S., Deumling, D., Murray, M., 2004. National Footprint and Biocapacity Accounts 2004: The underlying calculation method. Global Footprint Network, Oakland, CA, USA. Download at: <http://www.footprintnetwork.org>  
Ward B and Dubos LR, 1972. Only One Earth. Penguin, Harmondsworth

Wiedmann, T. and Barrett, J., 2005. The Use of Input-Output Analysis in REAP to allocate Ecological Footprints and Material Flows to Final Consumption Categories. REAP Report No. 2, Stockholm Environment Institute, York, UK.

WWF, 2004. Living Planet Report 2004, World-Wide Fund for Nature International (WWF), Global Footprint Network, UNEP World Conservation Monitoring Centre. WWF, Gland, Switzerland. (<http://www.panda.org/livingplanet>)

---

## Endnotes

<sup>1</sup> All four papers are referred to as "McGregor et al., 2004".

<sup>2</sup> Another example for production Footprint calculations is given in Ferng, 2001.

<sup>3</sup> One global hectare reflects the productivity of a world average bioproductive hectare.

# “The Impact of Scotland’s Economy on the Environment: A Response”

Grant Allan<sup>†</sup>, Peter McGregor<sup>‡</sup>, Kim Swales<sup>‡</sup>, and Karen Turner<sup>\*</sup>

<sup>†</sup> Fraser of Allander Institute, University of Strathclyde

<sup>‡</sup> Fraser of Allander Institute, Department of Economics, University of Strathclyde and Centre for Public Policy for Regions, University of Glasgow and University of Strathclyde.

<sup>\*</sup> Fraser of Allander Institute and Department of Economics, University of Strathclyde

This is a short response to the paper by Moffatt et al (2005) which comments on some of our earlier work. Our work uses a specific Input-Output (IO) based technique, labelled a Neo-Classical Linear Attribution System (NCLAS), to measure the impact of domestic consumption on the domestic environment. We have presented this as an alternative to the currently popular Ecological Footprint approach.

The key point to be made is that there are more similarities than differences between these two approaches. In general, there is no incompatibility between environmental IO and the Ecological Footprint techniques. Both seek to attribute pollutant generation, resource use and environmental damage to elements of final demand and, as Moffatt et al (2005) show, a number of studies adopting the Ecological Footprint approach actively use IO accounts and methods. Further, if interest in the Ecological Footprint generates more and improved environmental data, this should also benefit IO environmental analysis. However, important differences between ourselves and Moffatt et al (2005) do remain.

The main conceptual difference between our approaches comes from the NCLAS procedure that we use for the IO environmental accounting.<sup>1</sup> As outlined in Moffatt et al (2005), the NCLAS method allocates the domestic output, and therefore the accompanying environmental damage, generated in the production of exports pro-rata to importing sectors and final demand activities. This generates an environmental accounting framework that rigorously attributes all domestic pollution, environment degradation and resource use to individual elements of private and public domestic consumption. However the “national Ecological Footprint” is derived from a similar accounting structure except that in this case the environmental costs embedded in the imports required directly or indirectly for domestic consumption are attributed to that consumption.

We agree with Moffatt et al (2005) that the two accounting methods are complementary. In aggregate both approaches will attribute total world comparable environmental damage to total world consumption, but they do so in different ways that give different results for individual consumption expenditures. They embody slightly different viewpoints. Further, whilst an aggregate Ecological Footprint can be calculated for the production in a particular area, such a procedure cannot allocate Footprint values to individual elements of domestic consumption.<sup>2</sup> This is the strength of the NCLAS approach

However, we disagree with Moffatt et al (2005) when they assert that the NCLAS approach is a short-cut method or a method that makes particularly restrictive assumptions. Further they are wrong to say that the “main incentive for its creation [is] that it absolves the researchers from obtaining specific import data”. In fact the main stimulus to devising the NCLAS method was finding that much of the pollution generated in Scotland and Jersey, for which the legislatures have formal responsibility, could not be attributed to domestic consumption using conventional (including Ecological Footprint) methods. Therefore if one’s concern is with the environmental impacts generated within a particular geographical area, the NCLAS accounting framework is the more useful.<sup>2</sup> Moreover, as Moffatt et al (2005) agree, it is precisely at this geographical level that environmental policy, even international policy, operates.

A second difference relates to the data problems associated with accurately measuring the national Footprint. We are, in general, much more sanguine than Moffatt et al (2005) about the reliability of existing environmental data. Further, we believe that the data problems associated with measuring the embedded environmental effects of imports are of a much higher magnitude than those involved in measuring domestic environmental effects. Moffatt et al (2005) seem to accept this. However, they assert that: “... it could be argued that the data used in the recent Scottish input-output studies are no more accurate or precise than those used in an Ecological Footprint studies.” However, they fail to provide supporting evidence for this argument.

Finally, despite the case presented in Moffatt et al (2005), we remain sceptical about the validity of combining all environmental impacts into one measure, standardised global hectares.

The Ecological Footprint is a very powerful pedagogic tool but in our view it is at present too crude to give practical policy advice. However, the NCLAS focuses on the policy relevant commitments using data that the associated governments have in their power to collect directly. Moffatt et al (2005) state that “... Ecological Footprint researchers are concerned with more than their own backyards.” Our response would be that there is plenty of environmental work to be done in our own backyard and that the NCLAS is the most appropriate accounting method to do it.

## References

Moffatt, I., Wiedmann, T. and Barrett, J. (2005), "The Impact of Scotland's Economy on the Environment: A Note on Input-Output and Ecological Footprint Analyses", Quarterly Economic Commentary, Fraser of Allander Institute, University of Strathclyde, Volume 29, No 1, pp29-34.

---

## Endnotes

<sup>1</sup>The value generated for the Ecological Footprint would in this case be equal to that calculated with the NCLAS IO system.

<sup>2</sup>Whilst the Ecological Footprint can be calculated in aggregate on a production basis, this cannot then be broken down and attributed to particular elements of domestic consumption.

# A Constructive Critique of the Treasury's Country and Regional Analysis of Public Expenditure

Jim Cuthbert and Margaret Cuthbert

## Introduction

1. The accurate measurement and control of public expenditure is fundamental to successful government: it is essential at each of the stages of policy development, implementation, and monitoring. This paper is concerned with issues in the measurement of public expenditure in the post-devolution United Kingdom: in particular, we provide a constructive critique of the expenditure data currently published by the Treasury.

2. Our study is based on two regular exercises carried out by the Treasury:

a. the publication of the annual Public Expenditure Statistical Analyses (PESA), which contains an analysis of public expenditure attributable to the countries/regions of the UK. This attributable expenditure is known as identifiable: the remainder, (with minor exceptions), is known as non-identifiable.

b. the publication of the biennial Treasury Funding Statement for the Devolved Administrations (TFS), which sets out the procedures used in setting the budgets for the devolved administrations of the UK.

3. The starting point for this study was information obtained by the authors under the Freedom of Information (FOI) Act: namely, the fully detailed data base which underpins the PESA country/regional expenditure tables.

Access to this detailed data transforms the potential for analysing and understanding the published public expenditure figures, and also the operation of devolution. It is now possible to check, at individual sub-programme level, whether the classifications used in PESA are consistent with the split between devolved and reserved responsibilities in the TFS: in fact, in important respects, they are not consistent. Moreover, it is now possible to gain an understanding of exactly what expenditure is included in particular published PESA aggregates: the results of this are sometimes surprising.

4. The structure of the paper is as follows:

Section 1 gives background on PESA and TFS, and outlines the basic approach used in the current study.

Section 2 considers the treatment of expenditure which is on devolved functions and which is not identifiable in PESA. We show that there is a significant error in one of the key PESA statistics: at least £4.4 billion of expenditure on certain services in England is treated as non-identifiable, while expenditure on the corresponding services in Scotland is treated as identifiable: this affects the comparison of identifiable expenditure between the two countries.

Section 3 considers expenditure on devolved functions which is identifiable in PESA. One of our findings is that there is an asymmetry between Scotland and England in the way certain of these services are handled in PESA, which again affects the identifiable expenditure comparison between the two countries, though the effects of this error will be relatively small.

Section 4 considers reserved functions. It is shown that there are areas of ambiguity, and some apparent mistakes, in the way certain expenditure is classified in PESA.

Section 5 outlines the benefits of publishing considerably more of the detailed information underlying PESA than has been the practice to date.

Section 6 identifies the implications of our findings for the annual Government Expenditure and Revenues in Scotland (GERS) exercise carried out by the Scottish Executive.

Section 7 contains our conclusions and recommendations: these include detailed suggestions for improvements which are required in the conduct of the PESA and TFS exercises, and for the publication of data.

## Section 1: Background on the Public Expenditure Statistical Analyses and the Treasury Funding Statement.

### The Public Expenditure Statistical Analyses

1.1 PESA, (Treasury, 2005), is the primary source of outturn data on public expenditure in the UK. The country and regional analysis, (CRA), section shows public expenditure identifiable to Scotland, Wales, Northern Ireland and also the English regions. As the Treasury itself says of the CRA, "These National Statistics are widely used as the main source of regional spending data by analysts inside and outside Government." (ref: Treasury Guidance.)

1.2 The definition of identifiable expenditure is given in para 8.13 of PESA as

"that which can be recognised as having been incurred for the benefit of individuals, enterprises or communities within particular regions",

while non-identifiable expenditure is

“that which is deemed to be incurred on behalf of the UK as a whole: e.g., defence expenditure.”

The basic principle, therefore, is that expenditure should be allocated to a country/region on the basis of who benefits from the relevant service, rather than on the basis of the location where the relevant service is provided.

1.3 The CRA data is based on an annual Treasury exercise carried out with Whitehall Departments, in which departments split each of the identifiable sub-programmes by country/English region. The Treasury combines this data with those relating to the devolved administrations, and local authorities, to produce the CRA analysis.

1.4 We note here two points from the guidance issued to departments on how to allocate identifiable expenditure, (ref: Treasury Guidance):

a. All transfer payments, (including current grants and subsidies to companies), are regarded as identifiable, on the basis of the residence or location of the grant recipient. (para 32 of guidance).

b. Spending on collective services by central government bodies is only regarded as identifiable where services are delivered at a regional or local level, and are mostly for the benefit of a regional or local community: (page 8 of guidance).

1.5 The data set used here, obtained under the FOI Act, is consistent with the aggregate figures published in the CRA of PESA 2005. It consists of data for 2003-04 expenditure by central government and public corporations, cross-classified by department (of which there are 49): expenditure function (18 categories): sub-function (59 categories): sub-programme (796 categories): whether capital or current: whether identifiable or non-identifiable: and, if identifiable, by country/region of England (13 categories).

### Treasury Funding Statements (TFS)

1.6 Every two years, the Treasury produces a statement on the funding of the devolved administrations. “The purpose of this statement is to set out the policies and procedures which underpin the exercise of setting the budgets for the devolved administrations, and to inform those inside government and outside how the funding process operates.” (Treasury, 2004). The TFS is the only detailed source showing which sub-programmes are reserved and which devolved.

1.7 The TFS also sets out for each sub-programme within each relevant Whitehall Department, information on whether or not the function relating to that sub-programme is devolved to Scotland, Wales, or Northern Ireland, or is reserved.

### Bringing the CRA and TFS data together

1.8 Technically, it should be possible to consider each item of expenditure as being cross classified by whether it is identifiable or non-identifiable in PESA: and whether the corresponding function has been classed as reserved or devolved in the TFS. Such an exercise would give a classification of expenditure, as set out in the following diagram:

	Non-Identifiable	Identifiable
Devolved	A	B
Reserved	C	D

In fact, it is not possible to carry out a complete reconciliation, because the sub-programme breakdowns used in the two Treasury sources are not wholly consistent. Nevertheless, much that is of considerable interest does emerge from even the partial reconciliation that is possible. The following three sections discuss expenditure falling in cell A, cell B, and cells C and D respectively.

### Section 2: Expenditure on devolved functions which is non-identifiable in PESA: (Cell A above)

2.1 All Scottish Executive expenditure is regarded by the Treasury as identifiable. One might expect, therefore, that expenditure on the same services undertaken by Whitehall departments in England would be identifiable in the PESA database. However, comparison of the detailed PESA data with the TFS for 2002 and 2004 indicates that there are at least 82 expenditure cells, accounting for almost £4.4 billion of expenditure in England, where this expenditure is classed as non-identifiable in PESA, but where the corresponding functions in Scotland are devolved (and therefore identifiable).

2.2 The main departments where this occurs, and the corresponding amounts of expenditure falling into this category, are shown in the following table.

### Expenditure on devolved functions which is non-identifiable in PESA: 2003-04

	£ million
Home Office	2,758
DEFRA	500
Constitutional Affairs	491
Office of Deputy Prime Minister	375
Other Departments	273
Total	4,397

For each department, the main functions contributing to the above table are:-

Home Office: operation of the prison system in England.  
 DEFRA: functions such as English Nature and the Countryside Commission, along with a large number of environmental protection measures.

Department for Constitutional Affairs: the Court Service Agency and judicial salaries for England.

Office of the Deputy Prime Minister: the Valuation Office Agency, Central admin., and non-domestic rate collection for England.

2.3 Para 8.17 of PESA 2005 states that “figures for expenditure per head in the regions of England and the countries of the UK are therefore directly comparable.” This statement is contradicted by the fact that, as we have just seen, at least £4.4 billion of expenditure in England on functions which are devolved to Scotland is excluded from the basis of identifiable expenditure in England, while expenditure on the same functions in Scotland is included in identifiable expenditure in Scotland. This means that the comparison of identifiable expenditure between Scotland and England is not on a like for like basis, with identifiable expenditure in England being understated by at least 1.45% relative to the expenditure base used to describe identifiable expenditure in Scotland.

2.4 This problem has arisen because PESA is intended to fulfil the functions of providing both (a) English regional comparisons and (b) country comparisons such as between England and Scotland. As it is impossible to identify English expenditure on some functions to the regions, the basis of comparison between English regions is different from that between England and Scotland. The present formulation of PESA, embodying a single concept of identifiable expenditure, is therefore too simplistic to enable both of these functions to be accomplished without error. In the next paragraph we outline the change which requires to be made in PESA to correct the problem.

2.5 The services listed at the end of para 2.2 would normally be regarded as general collective services for the whole of England: but since they have Scottish counterparts, they are not collective for the whole of the UK. As noted above in para 1.4b, the Treasury guidance on PESA classifies general collective services as non-identifiable. On this basis, the services in question would reasonably be classified as non-identifiable for regions within England, but identifiable between the countries of the UK. However, the CRA survey and database only have one category for non-identifiable, meaning non-identifiable for all countries/regions of the UK.

It would appear therefore, that what requires to be done to correct the error is to introduce a new “non-identifiable in England” category into PESA: and when making public expenditure comparisons comparing Scotland and England, to add the “non-identifiable in England” category to identifiable in England to put the comparison on the same basis as identifiable in Scotland.

### 3. Identifiable expenditure on devolved services (Cell B)

3.1 The Scottish Executive accounted for some £14,281m of identifiable expenditure in Scotland on devolved services in 2003-04. In addition, £168m of expenditure by Whitehall departments was identified to Scotland in 2003-04 on services which are devolved to Scotland. This expenditure is spread over some 7 departments and some 50 or so individual sub-programme cells of expenditure.

3.2 This £168 million comprises expenditure of three main types.

- a. where a Whitehall department is administering a devolved service for Scotland effectively as an agent of the Scottish Executive.
- b. where, in the course of administering a devolved service for England, nevertheless some of the resulting expenditure can be validly attributed as benefiting Scotland under the rules of PESA.
- c. where the attribution of expenditure to Scotland appears questionable.

3.3 Examples of the first category are:

- a. expenditure undertaken by the now defunct Strategic Rail Authority on the franchising of rail operators. Rail franchising is a devolved service to the Scottish Executive: but this function was administered by the SRA acting in consultation with Scottish Executive Ministers. In 2003-04, SRA expenditure attributed to Scotland under this head was just over £30 million.
- b. expenditure by the Criminal Injuries Compensation Agency: the CICA, which is listed in PESA under the Home Office, administers criminal injuries compensation for the whole of Great Britain, and is funded jointly by the Home Office and the Scottish Executive: the amount of expenditure identifiable to Scotland is £33m.

3.4 The second category of expenditure in para 3.2 arises where a Whitehall department is administering a devolved service in England, but where some of the beneficiaries can nevertheless be identified as being resident in Scotland. This could occur, for example, (a) where Scottish residents visit a national museum or gallery in England: (b) where recipients of certain public sector pension schemes such as for NHS (England) employees or for teachers in England, decide to retire to Scotland.

3.5 Given the “who benefits from the service” definition of identifiable expenditure in PESA, it appears quite reasonable that elements of English provision in cases like the above should be attributed to Scotland. However, there is a resulting asymmetry of treatment between Scotland and England. Scotland, from its devolved budget, funds national

museums and galleries and runs public sector pension schemes for teachers and NHS employees. Some of the beneficiaries of these Scottish services will be resident in England, but all Scottish expenditure on these services is attributable to Scotland in PESA. This asymmetry represents another distortion to the comparison of identifiable expenditure between Scotland and England. The effect will not be particularly large, given, for example, that expenditure by DCMS on Museums and Galleries attributable to Scotland amounts to just over £5million, and by DfES on teachers' pensions attributable to Scotland amounts to £19.8m. Nevertheless, it would be desirable if the anomaly were corrected in PESA.

3.6 The third category distinguished in para 3.2 is where the attribution of devolved expenditure to Scotland by a Whitehall department appears questionable. To give two examples:

a. The Department of Works and Pensions attributes £59.6 million of European expenditure to Scotland in 2003-04, comprising £7m payments under European Social Fund (ESF), £50.2m Payments in Advance under ESF, and £2.4m under ERDF. However, both ESF and ERDF are devolved to Scotland and the Scottish Executive PESA figures contain £47m for ESF and £98m for ERDF. The DWP attribution to Scotland appears highly questionable.

b. Again, under DWP, £4.2m is attributable to Scotland for administration of the Rent service - a purely English service. This too appears highly questionable.

We pointed out these questions to the Treasury: following the submission of the original text of this paper, they have come back to us confirming that the attribution of these payments to Scotland was incorrect.

3.7 Finally, it is worth concluding this section by noting another more intangible benefit of detailed scrutiny at sub-programme level: namely, an enhanced appreciation of the very concept of "identifiable expenditure". There is perhaps a tendency to think about identifiable expenditure in terms of the large programmes such as health and education. It is salutary to be reminded that tucked away in the figures are also elements like usage by Scottish residents of national galleries and museums in England, or the pensions paid to certain public sector pensioners who have relocated to Scotland.

#### **Section 4: Reserved functions (Cells C and D)**

4.1 The decision as to whether reserved expenditure should be regarded as identifiable or non-identifiable appears to be governed in most cases by the two principles which were outlined in para 1.4 above. However, for some categories of reserved expenditure, the decision is by no means clear cut. The specific example which probably best illustrates the problem is the grant payments made by the DTI to the United Kingdom Atomic Energy Authority,

(UKAEA): these payments are regarded in PESA as identifiable. In 2003/04, DTI provided £260.5m to the UKAEA for decommissioning, of which £111.8m (42.9%) was identifiable to Scotland: and £58.4m in grant-in-aid, of which £25m (42.8%) was identifiable to Scotland.

4.2 Presumably the UKAEA payments are regarded as identifiable in PESA because of the principle that grants to undertakings are identifiable. However, the service being provided by the UKAEA is a collective service for the UK as a whole: it is clearly in the interest of, and the responsibility of, the UK as a whole to see that its nuclear programme is safely tidied up. Scotland indeed benefits from the resulting multiplier effects, given that a substantial amount of the resulting expenditure is actually incurred here: but the fundamental principle in PESA is meant to be attribution on the basis of who benefits from the service, not who benefits from any multiplier effects of the cost of providing the service. On this basis, we argue that UKAEA expenditure should be treated as a collective service and hence regarded as non-identifiable in PESA.

4.3 The UKAEA represents only one, (if, admittedly, a fairly clear cut), example where there could be legitimate debate about the allocation of reserved services between identified and non-identified in PESA. In fact, there is a whole spectrum of transfer payments and grants, ranging from pure provision of services at one end, to provision of what is clearly a collective service at the other, with, in the middle, a considerable grey area which could be argued either way. Consider, for example, grants made by the research councils to fund scientific research. These are reserved, are identifiable in PESA, and are allocated by location of recipient research establishment. Clearly, they also serve a collective UK purpose- to develop the science base of the UK as a whole. But also, clearly, the receipt of a research council grant confers a tangible benefit on the recipient university- conferring prestige, and improving future prospects. The recipient universities are much more than mere agents spending the grant funding. On this basis, the decision to identify research council grants in PESA seems, on balance, entirely reasonable.

4.4 The substantive point we take away from this discussion is that some of the decisions as to whether reserved expenditure should be identified or not are genuinely difficult, and raise complications which go beyond the principles laid down in the current PESA guidance. There is potential ambiguity, particularly in relation to transfer payments and grants, between the "who benefits" and "location" principles for allocating expenditure to countries/regions. We recommend that the Treasury should improve the guidance it publishes in this area.

4.5 We now turn to another problem which arises with respect to reserved expenditure: this occurs where a Whitehall department has mixed responsibilities, covering provision of reserved services for the whole of the UK, while at the same time providing other services for England only.

The first example like this which we consider is activity by the Department of Culture, Media and Sport, (DCMS), in the field of tourism.

4.6 The DCMS is responsible, through VisitBritain, for promoting tourism overseas for Britain as a whole: it also has responsibility for promoting tourism locally within England, (the English Tourism Council (ETC) was subsumed into VisitBritain), and as part of this provides some of the funding for the English Regional Tourist Boards through grants. Surprisingly, despite this mix of British and specifically English responsibilities, all these DCMS functions are classed as reserved in the TFS.

From the detailed PESA database, it can be seen that of the total of £61.5 million expenditure in 2003/04, only £5.549 million is actually identified, a sum which is attributed to the English regions, and consists of the grants paid by VisitBritain to the English RTBs. This raises two important issues.

a) A significant part of DCMS activities on tourism relates to England, (namely, distribution of grant to RTBs in England, and the functions of the ETC subsumed in VisitBritain), with no parallel activities being undertaken by DCMS in Scotland. The classification of the DCMS expenditure on tourism in the TFS as reserved therefore looks wrong. This should be re-visited. Otherwise the effect is that Scotland is excluded from any Barnett consequences of the DCMS comparable activity of promoting tourism locally in England.

b) Whether or not the reserved/devolved status of DCMS tourism activity is revised, the identifiable/non-identifiable split of DCMS tourism expenditure is clearly wrong. The only expenditure which is identifiable to England is the £5.5m grant distribution to the RTBs. But for the remaining DCMS expenditure, there is evidence to suggest that a substantial component is expenditure purely or primarily for England. (For example in 2002/03, DCMS paid grants of £16.2m to the ETC and Greater London Authority - with no corresponding Scottish grant payments. Also relevant is the evidence quoted in Cuthbert and Cuthbert, (2002), to the effect that certain other key DCMS activities are slanted primarily towards England.) The identifiable/non-identifiable status of DCMS expenditure on tourism requires to be re-examined, taking into account a proper assessment of who actually benefits, and of the effort put in with respect to the different parts of Britain.

4.7 Exactly similar issues arise in our second example, with respect to support for export promotion and inward investment: these are reserved functions handled by UK Trade and Investment, and the PESA database records respectively £34.9m for DTI admin.: £21m for inward investment: and £75m for trade development.

The first of these categories is identifiable in PESA with £2.89m (8.3%) attributed to Scotland, which is close to Scotland's population share. However, according to the UK Trade and International finance department (see Cuthbert and Cuthbert, 2002), in 2002/03, £15.4m of expenditure under this head related purely to England, with no comparable spend for Scotland. So the wholly reserved classification of this category in TFS, and the identifiable to Scotland figure in PESA, both look suspect.

The other two categories, of inward investment and trade development, are not identifiable in PESA. However, in 2002/03, £12.9m of the inward investment spend was for grants to the English Regional Development Agencies, (RDAs), with no corresponding Scottish spend. So again, the wholly reserved classification of this category in PESA looks wrong, and at least the £12.9m should have been identified in PESA to England.

4.8 There is a general lesson to be learned from these two examples. If care had been taken to ensure that the PESA and TFS classifications were consistent, and if the reserved/devolved, and identifiable/non-identifiable status of each resulting cell of expenditure had been published, then it would have been obvious, (even at the stage of compiling the data), that the way in which the money was actually being spent was inconsistent with the TFS classification of all these functions as reserved. If so, not merely would better data have resulted, but it is probable that a better service for all parts of the UK would have resulted as well. Alternatively, if the Department continued to exercise some purely local English functions, then the relevant expenditure should be reclassified as devolved in the TFS.

## Section 5 Further benefits of access to enhanced PESA data

5.1 This section considers two further potential benefits from the ability to access enhanced and detailed PESA information. First, is the opportunity to look below the main expenditure headings to see what is actually happening at micro level. Second, at a more aggregate level, there is the potential to fill an important gap in our understanding of the effects of devolution itself.

5.2 To illustrate the first advantage we consider two particular areas: employment, and enterprise.

5.3 PESA (Table 8.11) implies that expenditure per head on employment policies in 2003-04 was £148 per head in Scotland relative to £55 in the UK. This difference appears to suggest a much greater focus in Scotland on improving employment opportunities. The detail of employment expenditure for Scotland taken from the PESA database is shown below.

Spending Agency	£m
Scottish Executive:	
Scottish Enterprise	461.4
ESF	47.3
Careers Service	0.2
DWP	394.9
Other	9.1
Total	912.9

5.4 When we examined this breakdown, the following errors in the data became apparent.

a. The figure for Scottish Enterprise (SE) represents all of SE expenditure including spend on enterprise as well as employment.

b. The figures exclude Highlands and Islands Enterprise (HIE) spend on employment, which is included under enterprise.

Correcting these errors would mean replacing the figure of £461.4m in the above table by £176m, (which is the SE and HIE combined spend on skills and employment). Note that these errors, which are readily detectable once the detailed data is available, are virtually undetectable from the published aggregate figures alone. The effect is to reduce the spend on employment in Scotland to £628m, or £102 per head.

We informed the Treasury of the misallocation of SE and HIE expenditure in PESA: their response was that they would include both Scottish Enterprise and HIE under Enterprise as from PESA 2006. Since, as we have seen, these bodies have responsibility for both employment and enterprise functions, this is not a satisfactory response.

5.5 In addition, the detailed information in the PESA database also tells us much that is interesting about the nature of expenditure on employment. No less than £190m of the £394.9 million DWP spend on employment is DWP administration. In fact, it appears from the DWP Annual Report, (2005), that almost all the administration costs for those of working age have wrongly been attributed to the employment function, so the £190m figure should be significantly reduced. (This mistake occurs for all parts of the UK so it does not affect country/region comparisons.) In addition, note that £98.3m of the DWP spend is on restructuring: that is, internal DWP spend on improving their service. While this is validly included under employment, the implication of the large administration and restructuring component is that the amount spent on frontline employment policies in Scotland is quite small and probably only £55 per head. This is just over a third of the headline PESA figure of £148 per head.

5.6 Our second example is the PESA data on Enterprise and Economic Development. Identifiable expenditure on this function in Scotland is £550m, comprising Scottish Executive £307m, UK Departments (mainly DTI) £154m, and Local Authorities £89m, (Table 8.17 of PESA 2005). The PESA database, however, reveals the following features:

a. the composition of the Scottish Executive figure is as follows

HIE	£95.5m
ERDF	£98m
RSA	£40.3m
Promotion of Tourism	£36.2m
Central and misc.	£19.5m
Electricity	£12.3m
Other	£ 5.2m
Total	£307m

This table mistakenly includes all HIE expenditure but omits all that of Scottish Enterprise: this is the other side of the error we noted in para 5.4 above. To correct this, the figure of £307m should increase by £284.5m.

b. Under DTI are items like £69.4m for ring fenced coal health liabilities, and £34.8m for the Post Office. While no doubt correctly attributable to Enterprise and Economic Development in a technical sense, these nevertheless do not spring obviously to mind as mainstream constituents of this function. The same can also be said of Electricity and Central and Misc. in the Scottish Executive table above. Overall, the message is that without examining the detail, there is no indication in the PESA aggregate figures either as to the serious error in the overall total figure for Enterprise and Economic Development, or of the actual nature of significant elements of the expenditure being undertaken. Without this detail, wrong conclusions could easily be made as to the effectiveness and value for money of spend on employment and enterprise policies.

5.7 Our findings in the previous two examples are relevant to the study carried out by Wood, (2005), for the Scottish Parliament Finance Committee. Wood's study concluded that there was a lack of evidence that spending on public services had been influenced by economic development priorities. This conclusion was based on examination of Scottish Executive budget figures: the Wood study used the published PESA aggregate figures for spend on enterprise and employment in Scotland by Whitehall departments. Had it been able to examine the detail in the PESA database underlying the figures on Whitehall spend in Scotland on

enterprise and employment, it would have been able to draw even stronger conclusions.

5.8 Our final example in this section deals with an aggregate-level advantage of enhancing the basic PESA data set. One of the most interesting features of devolution should be to observe how patterns of expenditure in the different countries diverge, reflecting differing and changing priorities in the constituent countries of the UK. It is a remarkable gap in current data sources that there is no published analysis that adequately illustrates this. The published PESA data for the Scottish Executive and Welsh Assembly do indeed show (with some very minor exceptions) how spending on devolved services is split by function in these two countries. The problem is that, for England, the PESA database contains only information on whether expenditure is identifiable or not: it does not show devolved/ reserved status. So all that can be produced from PESA are analyses of identifiable expenditure for England: which is quite different from an analysis of expenditure on services which are devolved.

This gap could easily be filled if, as we recommend, the Treasury aligned the sub-programme classifications used in PESA and TFS: and recorded in each annual PESA database both the identifiability and reserved/devolved status of each cell of expenditure.

5.9 In practice, the procedure would be slightly more complicated than this, since:

- a. There might be a need for a small increase in the number of expenditure cells, since some PESA cells would need to be split if they currently contain a mix of devolved and reserved responsibilities.
- b. There are some differences in the mix of services devolved to Scotland, Wales and Northern Ireland: so a slightly more complicated coding structure would be required to describe devolution status, rather than a simple binary distinction between devolved and reserved. These, however, are relatively minor complications compared to the potential benefits from the proposed change. Together they could result in a more accurate TFS, improved data quality in PESA, and analyses showing a proper comparison of the patterns of spend on devolved services in Scotland, (or Wales, or Northern Ireland), in comparison with the same services in England.

## 6. Implications for GERS

6.1 The Government Expenditure and Revenue in Scotland (GERS), (Scottish Executive, 2004), has been produced annually by the Scottish Executive (previously the Scottish Office) since 1992. GERS is intended “to enhance public understanding of fiscal issues in Scotland”, and gives an estimate of the balance between government revenues and expenditures in Scotland. Note that for the purposes of GERS, Scotland is defined to exclude the North Sea, so

North Sea revenues are excluded. On the expenditure side, the intention is to capture all of the general expenditures of government attributable to Scotland: this is a much broader concept than PESA identifiable expenditure. We published in 1998 a critique of technical and philosophical aspects of GERS, (Cuthbert and Cuthbert, 1998): much of that paper is still relevant.

6.2 On the expenditure side, GERS is fundamentally based on PESA. To the PESA estimate of identifiable expenditure for Scotland is added a share of non-identifiable UK expenditure and also a share of any government expenditure which has been identified in PESA to “outside UK”. Non-identifiable and outside-UK expenditure are apportioned to Scotland using factors like Scotland’s population share of the total UK population.

6.3 Our findings in the earlier sections of this paper have immediate implications for GERS. Some of these findings mean that there are clear or likely errors in GERS: for example,

- a. In section 2, we identified at least £4.4 billion of expenditure in England which was non-identifiable within England but was classed in PESA as generally non-identifiable within the UK. The attribution in the GERS methodology of Scotland’s population share (8.5%) of non-identifiable expenditure to Scotland would mean that at least £370 million of English expenditure would be wrongly attributed to Scotland.
- b. In section 3, we identified over £63m on ESF and the Rent Agency whose attribution to Scotland in PESA is incorrect.
- c. In section 4, we questioned the attribution to Scotland of £136.8m of UKAEA expenditure.
- d. In section 3, we identified an asymmetry in the way certain services were identified between Scotland and England, which results in identifiable expenditure in Scotland being somewhat overstated relative to England. The net effect of these items alone is that the GERS methodology, if applied to the 2003-04 data, would overstate general government expenditure in Scotland by over £500m.

Note that the last published GERS relates to 2002-03, while we have the detailed PESA data only for 2003-04. However, it is clear from comparison of the published PESA figures for 2002-03 and 2003-04 that the same mistakes were made in PESA in these two years. So the published GERS figures for 2002-03 are in error because of the above points by about the same order of magnitude.

6.4 We argued in section 4, there needs to be a more general exercise conducted in PESA, examining in much greater detail the identifiable / non-identifiable status of expenditure on reserved functions. Further, we have not

been able to completely reconcile the inconsistent sub-programme classifications used in PESA and the TFS: hence we are not confident that we have identified all of the significant errors in PESA.

The implication, therefore, is that our work in this paper has established that there are significant errors and question marks in PESA which impact on GERS: that the effect of the errors identified so far on GERS is that Scottish expenditure is overstated by around £500m. There is, however, further work to be done, and PESA will not provide an adequate platform upon which to build a GERS exercise until the reforms which we are advocating for PESA have been undertaken.

The fact that past GERS exercises have been conducted without detecting the kind of problems with the underlying PESA data which have been identified here, points to a failure in the Scottish Executive to adequately check the source data.

6.5 In addition, we recommend that the Scottish Executive should publish much more detailed information as part of any future GERS exercise. Specifically, for each non-identifiable or outwith-UK cell of expenditure, the Scottish Executive should publish reserved/devolved status, exactly what factors they have used in apportioning the expenditure to Scotland in GERS, and how much expenditure has been apportioned as a result. This detail would greatly add to general understanding of exactly what is being attributed to Scotland by GERS.

To give one example, consider the Channel Tunnel Rail Link. This Department of Transport function is reserved, and is identifiable expenditure in PESA. In 2003-04, of the £223.6m expenditure within the UK, less than 0.5% is identifiable to Scotland, equivalent to just over £1m. However, a substantial amount of the expenditure on the channel tunnel rail link is classed in PESA as outwith-UK (£166m). Given the GERS methodology, 8.5% of this outwith-UK expenditure would be attributed to Scotland – amounting to £14.1m. Clearly, there is, to say the least, room for debate as to whether Scotland should be attributed with 8.5% of outside UK expenditure, but less than 0.5% of within UK expenditure on this function.

This is the type of issue which would immediately become apparent if the detailed data we are recommending was published each year with any future GERS.

## Section 7 Conclusions and Recommendations

7.1 In this article we have uncovered significant weaknesses in the country and regional analysis as currently conducted: (given that our study has not been comprehensive, there may well be others). We list below detailed recommendations which would remedy these weaknesses. The effect of implementing these recommendations would, however, go further than improving the utility and quality of the data in PESA, and the accuracy of the TFS. As we have seen, (from the tourism

and enterprise examples discussed in section 4), a degree of mismatch can occur between the description in TFS of what the devolved/reserved responsibilities of a department ought to be, and what the department actually does. In these circumstances, the actual quality of service delivery is likely to be compromised. Hence implementing the recommendations outlined below is likely to lead to an actual improvement in the quality of service itself.

7.2 Our detailed recommendations are:

- i. the Treasury should align the sub-programmes used in the PESA and TFS exercises, and the reserved/devolved status of each expenditure cell should be recorded in the PESA database.
- ii. The lack of a “non-identifiable within England” category of expenditure in PESA should be rectified.
- iii. The asymmetry for certain functions in the attribution of devolved identified expenditure as between England and the devolved administrations should be corrected.
- iv. Improved guidance should be issued on the attribution of identifiable expenditure in PESA.
- v. The Treasury should produce and publish detailed expenditure data at department/sub-programme level, showing for each item of expenditure whether the function is reserved or devolved, as in the Treasury Funding Statement: whether it is identifiable or non-identifiable in PESA terms, and, if identifiable, the country/regional split of the expenditure.
- vi. The Treasury should use the devolved/reserved code included in the enhanced PESA database to produce and publish analyses of expenditure on devolved services, split down by function, on a comparable basis for all countries of the UK.
- vii. As regards the Scottish Executive, it should pay greater attention to checking the quality of source data for any GERS type exercise: if it continues with the annual GERS exercise, it should publish for each non-identifiable sub-programme, (as published at (v)), the basis of apportionment to Scotland used in GERS.

## References

- Cuthbert, J.R., Cuthbert, M: “A critique of GERS: Government expenditure and revenue in Scotland”: Fraser of Allander Institute Quarterly Economic Commentary, vol 24, no.1 (1998).
- Cuthbert, M., Cuthbert, J.R: “The Treasury funding statements as a tool in monitoring the devolution settlement”: Fraser of Allander Institute Quarterly Economic Commentary, December, (2002).

Department of Works and Pensions: "Annual Report", (2005)

Scottish Executive: "Government Expenditure and Revenue in Scotland, 2002-2003", (2004).

Treasury: "Public Expenditure Statistical Analyses 2005", (2005).

Treasury: "Funding the Scottish Parliament, National Assembly for Wales, and Northern Ireland Assembly", (2004 and 2002)

Treasury Guidance: "Annex B - Guidance for Allocation of Spending to Regions for the Country and Regional Analysis Data Collection"

Wood, P: paper for Scottish Parliament Finance Committee, as evidence to cross-cutting expenditure review on economic development: available on Scottish Parliament website: (2005)

# SCOTTISH *Affairs*

Scottish Affairs is the definitive forum for comment and debate on Scottish politics, society and current affairs.

It is published in book form every quarter and is independent of political parties and pressure groups.

Each year, one of the issues focuses on a particular theme. These have included:

Scotland, Quebec and Catalonia

Gender and National Identity

Understanding Constitutional Change (a complete special issue)

The Northern Ireland Agreement

Social Inclusion

Annual Subscription (four issues):

£27.50 (individuals), £45 (institutions)

Published by and further information (including how to join our electronic mailing list) from:

Unit for the Study of Government in Scotland

University of Edinburgh

Chisholm House

High School yards

Edinburgh

EH1 1LZ

Tel: 0131 650 2456

Fax: 0131 650 6345

Email: [Ladams@ed.ac.uk](mailto:Ladams@ed.ac.uk)