

SUMMARYWorld and United Kingdom

For most of the industrialised countries of the world, the first half of 1977 has been a period of relatively slow growth, and very slow adjustment towards the objectives of price stability and full employment. In the United States, however, a stronger recovery is evident: GNP is expected to grow by 5% in 1977, and by perhaps a similar amount in 1978.

In the United Kingdom, North Sea Oil exports will transform the balance of payments by the end of the year. While this will permit the government, if it chooses, to expand aggregate demand more rapidly, it is unlikely to have any immediate effect on non-oil output and unemployment. Both are expected to rise slowly at least until the first quarter of 1978. The rate of price increase is likely to fall during the second half of 1977.

Scotland

While the Scottish economy has continued to perform, in the last twelve months, less badly than the UK economy as a whole, the expected rise in output during the second half of 1977 is unlikely to be sufficient to reverse the recent falls in employment, which have been concentrated amongst males and in the services sector. Consequently, it seems likely that the seasonally adjusted unemployment level will rise to around 175,000 in December, implying an actual figure for that month of about 180,000, (including school leavers).

The longer-term outlook for unemployment in Scotland is equally gloomy. If present official policies remain unchanged, it seems improbable that the economy will be able to absorb the growth in the labour supply between now and 1981, i.e. we do not expect the unemployment level to fall below 100,000 before that date.

NOTESUMMARY INPUT-OUTPUT TABLES FOR SCOTLAND

Regional policy in the UK has been hampered in the past by the absence of two things; on the one hand a statistical base which could be used to monitor economic performance and on the other a theoretical framework for analysing regional problems.

The first of these deficiencies has been partially remedied, at least in Scotland, by the annual preparation of such things as industry outputs and employment, and an index of industrial production, but the recent completion of a set of input-output tables for 1973 by the Scottish Input-Output Project* has advanced the process considerably.

These tables are very detailed but a condensed version of one is reproduced in this issue. This table records all flows of goods and services in the economy, both between producers and from producers to final consumers. To do this, productive activity is divided into 22 industry groups or sectors and these are listed on the left-hand side of the table. The same 22 sectors are also listed in the columns of the table in the same order.

Since all productive activity in Scotland, whether in agriculture, mining, manufacturing, finance or services, falls within one of these 22 sectors, their purchases provide a complete record of all industry inputs. These purchases - sometimes called inter-industry transactions - are shown in the columns for the 22 sectors. Reading down the 12th column, for example, we see that in 1973 the textiles, clothing and footwear sector bought £46.17 million worth of agricultural commodities, £0.01 million of forestry and fishing products, and so on down to £2.13 million of other services. These "intermediate" purchases, of course, include imports from the rest of UK (RUK) and rest of the world (ROW), as well as purchases from Scottish producers.

In addition to these purchases from the 22 sectors (£341.07 million in the case of column 12), each industry must purchase the services of factors of production and pay indirect taxes to the Government. The remaining entries in the columns of the table record these "primary" inputs. The textiles, clothing & footwear industry,

* This project embraces three institutions: the Fraser of Allander Institute, the Scottish Council Research Institute, and the IBM United Kingdom Scientific Centre.

for example, paid £1.02 million in indirect taxes net of subsidies, £131.90 million in wages and salaries and £71.81 million in "Other Value Added", which corresponds closely to the definition of a company's trading profits before providing for depreciation and stock appreciation.

These 'primary inputs' in the case of Column 12 came to £204.72 million and when added to the 'intermediate' inputs give total inputs of £545.80 million. The total inputs are by definition equal to the output of the industry, since any part of the output not paid out to others is recorded in other value added.

The rows of the table record the distribution of commodities and services, whether domestically produced or imported. The first 22 sectors record the sales to the 22 industries, while the remaining entries record the deliveries to 'final demand', i.e. final consumers of finished products. These final consumers include households and government (Columns 23 and 24 respectively), but there are also columns for investment and stock change; the entries in these columns show the different types of commodities which have been purchased to replace or extend the existing capital stock of the economy.

As far as Scotland is concerned, goods sold outside Scotland are finished goods whether or not they go on for further processing. The last column for final demand is therefore for foreign demand or exports and this covers expenditure in Scotland by tourists as well as exports to RUK and ROW. When the demands for each of the commodity groups by final consumers and the 22 sectors are added together, we arrive at total demand and the amount by which this demand exceeds domestic production represents imports; these imports, both from RUK and ROW, are therefore shown as a negative entry in the penultimate column of the table.

In input-output analysis, the most powerful results are revealed when the tables are used within the context of a mathematical model of the economy. Only when this stage has been passed will the economists on the input-output project feel confident about proposing changes in policy which could lead to a more efficient allocation of resources. Nevertheless, even the condensed input-output table presented affords many insights, because it is the first complete record for one year of all transactions in new goods and services in Scotland.

The study found, for example, that in 1973 Scottish Gross Domestic Product (GDP) at £5,632 million was some 2% higher than previously estimated by the Scottish Office. The manufacturing contribution

to this total (33%) was only fractionally above the comparable figure for the UK, but significant differences were found in agriculture, construction and commerce which are relatively more important in Scotland than in the UK, while the opposite was found in transport and communications, finance and other services.

The study also offers an opportunity to compare for the first time the contributions of different sectors to manufacturing value added in Scotland and the UK. For example, we see in Table 1 that Scotland is relatively better represented in food, drink and tobacco, electrical engineering and shipbuilding, while the reverse is true in metal manufacture, vehicles and paper, printing and publishing. To explain this relative specialisation, or division of labour as it is sometimes called, will be a primary concern of forthcoming studies.

Table 1 Relative Sectoral Contributions to Manufacturing GDP % - 1973

	Scotland	UK
Food, Drink & Tobacco	19.9	11.8
Oil Refining & Chemicals	7.3	8.8
Metal Manufacture	10.7	12.8
General Engineering	13.5	14.5
Electrical Engineering	11.0	8.9
Shipbuilding	4.9	2.1
Vehicles	7.3	10.3
Textiles, Clothing & Footwear	10.4	9.8
Building Materials	3.2	4.1
Timber & Furniture	3.4	3.5
Paper, Printing & Publishing	6.5	9.2
Other Manufacturing	2.7	4.3

Hitherto, the Scottish balance of trade in goods and non-factor * services has always been estimated as a residual, which therefore

* Payments for factor services measure the rewards to labour and capital. When these flows occur across boundaries they enter into the balance of payments, but not the balance of trade.

reflects any errors in the estimates from which it is drawn. The input-output study for the first time enables a direct estimate to be made and the principal results are given in Table 2. Thus, we find that while the overall balance of trade deficit was some £250 million, (4.5% of GDP), this can be decomposed into a surplus with the rest of the world (ROW) and a relatively larger deficit with the rest of the UK (RUK)*

Table 2 Balance of Trade in Goods and Non-factor Services
Scotland 1973

	Exports	Imports	Balance	Exports	Imports	Balance	Total Balance
Goods	2276.96	2647.64	-370.68	1224.82	1146.99	+ 78.33	-292.35
Services	132.86	202.69	- 69.83	36.1	41.18	- 5.08	- 74.91
Tourism & Travel	122.19	52.00	+ 70.19	70.51	26.00	+ 44.51	+114.70
Total	2532.01	2902.33	-370.32	1331.43	1213.67	+117.76	-252.56

The overall trade deficit of £252 million can be attributed to trade in non-food manufactured goods, since the deficit on trade in primary goods (£295 million) was almost exactly matched by the surplus on trade in food, drink and tobacco (£289 million). The large deficit in agricultural goods (£128 million) has caused some surprise, but is largely explained by imports of raw materials for industry, such as jute and cotton. If we exclude these, the deficit falls to £43 million, but it must also be remembered that a large part of agriculture's output (e.g. live cattle) is sold to food processors, who may later export the finished product. The large deficit for mining and quarrying is mainly due to imports of crude oil.

Although the Scottish trade deficit is smaller than had previously been supposed, no political conclusions can be derived from this. The Fraser of Allander Institute has always been at pains to point out its limited welfare significance, especially as we know nothing about its method of financing. More interesting is the trading performance of individual sectors of the economy. We find, for example, that two sectors - electrical engineering and vehicles (including aerospace equipment) - export over 80% of

* This result is not shown on the summary table reproduced here, but will be shown on the larger tables to be published shortly.

their output, while three more - textiles/clothing/footwear, other manufacturing and shipbuilding - export over 70%. 60% of all goods produced are exported and two thirds of these go to RUK. The proportion of goods output going to ROW (21%) is much higher than for the UK as a whole (15%), and the sectors which export a significantly higher share are drink and tobacco, electrical engineering, shipbuilding and other manufacturing.

As the table shows, imports account for a large proportion of total supply in most sectors and a high level of exports in one sector is compatible with substantial imports of the same commodities. For example, there are 10 sectors where more than 40% of total supply comes from imports and these include all the "export intensive" sectors listed above, except shipbuilding. This two-way trade, called intra-industry trade by economists, is partly a function of the level of aggregation, but even on the larger tables it remains important and it offers a fruitful area for further research.

The smaller the size of a country, the more specialised we expect its exports to be. Thus, we find that two export sectors (drink and tobacco, and electrical engineering) accounted for 31% of exports to ROW, while the four leading sectors accounted for 53%. Exports to RUK, however, are less specialised with the two leading export sectors (food processing and textiles/clothing/footwear) accounting for 24% and the four principal sectors for 44% of total exports to RUK.

Since the war, net output per full-time equivalent employee, or productivity, has been an area of major concern. Our study shows that average productivity for the whole economy in 1973 was £3127, but this obscures enormous differences in performance at the sector level. If we take the average productivity as an index of 100, we find that productivity varies from 214 in drink and tobacco to 63 in textiles, clothing and footwear. The second lowest productivity is in shipbuilding (75), closely followed by mining and quarrying (77), which is dominated by coal-mining. Productivity in public utilities (203) is very high, and the next sector in the ranking is oil refining and chemicals (161).

The input-output table also enables us to calculate wages and salaries per employee and the average for the whole economy in 1973 was £1,861. In terms of economic theory, one might have expected sectoral productivities to be reflected in sectoral wage rates, but we find that the spread of rates is much less than for productivities. Taking the average wage as an index of 100, we find the highest rate in drink and tobacco (136), and the lowest in distribution (68), although the lowest position in the ranking is shared with textiles, clothing and footwear.

Although the highest and lowest in the rankings are the same for productivities and wage rates, there are marked reversals of rankings in between. Thus, agriculture is 5th in the productivity ranking and 19th in the wage rates rankings, while the positions for mining and quarrying are 20th and 8th respectively. These reversals and the low correlation coefficient between the two rankings* invite the suggestion that productivity in Scotland is determined by international or national competition, while wage rates are largely administered.

If we divide the economy into its four principal activities, as is done in Table 3, we can compare Scottish productivity at this level. We find that in Scotland the highest productivity is recorded in primary activities (above all, agriculture), while the lowest is in construction. Manufacturing, however, has an average productivity lower than the economy as a whole and lower than that of services. If Scotland, therefore, wishes to preserve or expand her manufacturing base, its productivity must be a matter of some concern.

Table 3 Scotland : Indices of Net Output per Head for 1973
(average = 100)

<u>All Activities</u>	100
Primary	107
Manufacturing	99
Construction	96
Services	101

Work is now proceeding on the Scottish input-output tables which will extend our knowledge of how the economy presently operates, as well as throwing light on difficult questions about which development strategy it should pursue. This article is designed to introduce readers of the Commentary to the new data source that will make this work possible.

The complete set of tables will be published in book form in September, and one table will be produced as a wall chart. Copies will be available from any of the three organisations concerned, or from leading booksellers.

* The Spearman rank correlation coefficient between the ranking of sectors by productivity and wage rates is +0.34. A coefficient of +1.0 would represent a perfect fit, while 0 would mean no relationship at all.