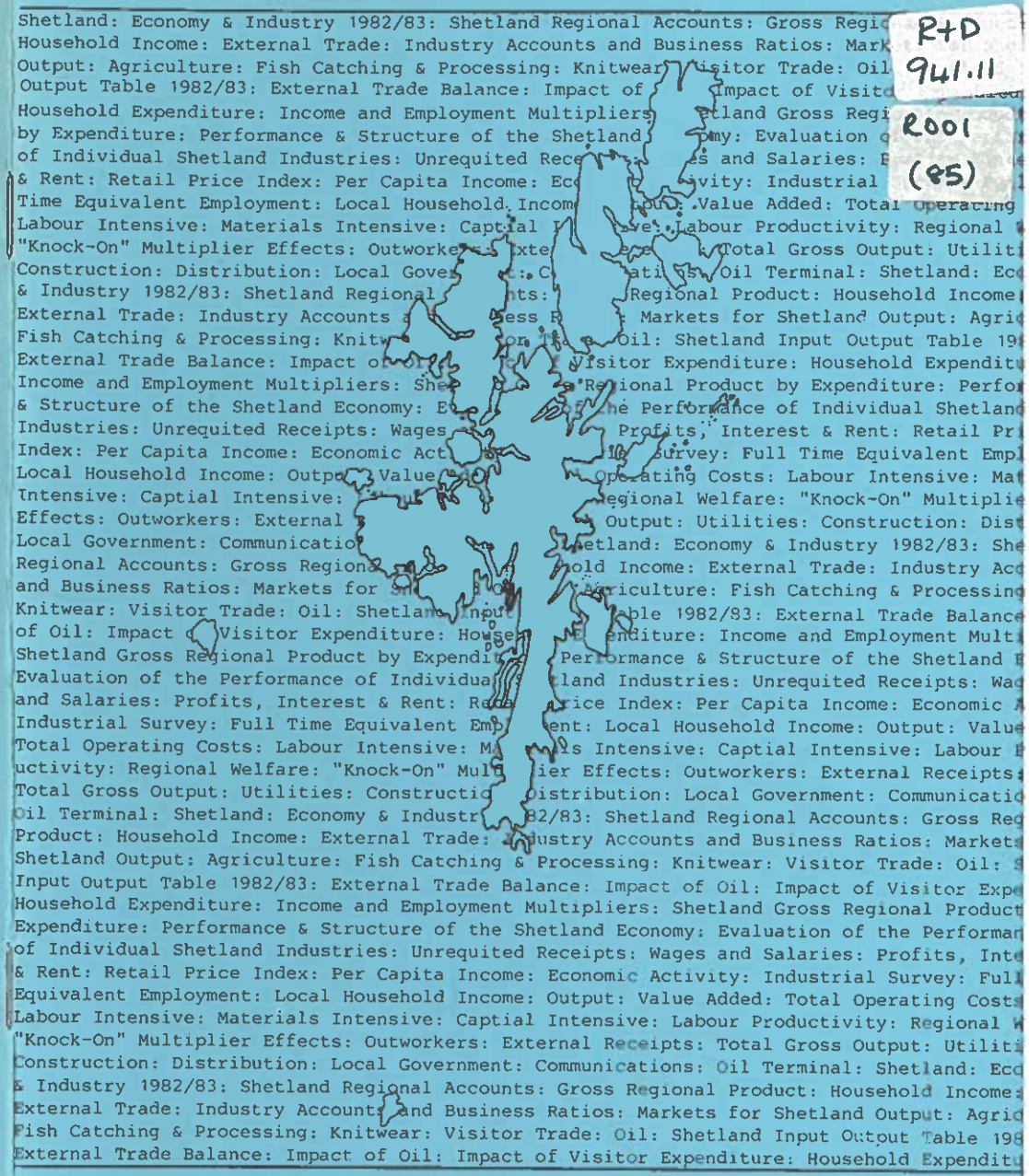
SHETLAND: ECONOMY AND INDUSTRY 1982/83



I. H. McNicoll

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ACKNOWLEDGEMENTS

This report is derived from a study funded jointly by the Shetland Islands Council, the Highland and Islands Development Board and the Industry Department for Scotland. The financial support of these bodies is gratefully acknowledged, as is the help of their project representatives: Andrew Blackadder, Bob Henderson and Steve Westbrook. A number of researchers were involved in various parts of the study and I am grateful to them all; however, special thanks must go to Alan McGillivray (who was the field director of the project), Ann Munro, Stephen Boyle, John Blackhall and Lyle Moar. In many ways, our greatest gratitude must be to the many people in Shetland who spent much time and effort in providing us with economic data because the study would have been impossible without their help.

The views expressed in this report are the author's own and do not necessarily represent those of any of the sponsoring agencies.

I H McNicoll
Director of Research
Fraser of Allander Institute
University of Strathclyde

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Introduction

This report provides a summary of the main findings of an industrial survey of the Shetland Islands for the year 1982/83. Unfortunately, for a regional authority area such as Shetland the amount of published economic information available is sparse and incomplete; indeed data on many important statistics are not collected at all. Thus to obtain an accurate picture of a region's economic structure and performance may require the undertaking of the type of specially-designed survey of local firms and organisations which was done in Shetland during 1983. The disadvantages of such surveys are that they are costly and time-consuming for all concerned, but the advantage is that they can provide a wealth of information on the local economy not obtainable by any other means.

The Shetland survey covered almost one hundred local organisations and this, combined with other published and unpublished information, allowed a complete picture of the Shetland economy in financial year 1982/83 to be built up. The study contributed to three main areas of local knowledge: (a) measurement of the performance and structure of the Shetland economy as a whole; (b) evaluation of the performance of individual Shetland industries, and (c) estimation of the contribution of various industries and groups to Shetland's overall economic prosperity.

In order to allow the examination of the Shetland economy to proceed in a coherent fashion, the economic data which had been collected was initially organised as a structured set of tabular accounts, known as an **Input-Output** table. This table, which provides considerable detail of the various transactions of Shetland industries, is described in Appendix A.

CHAPTER 1 SHETLAND REGIONAL ACCOUNTS 1982/83

1.1 Introduction

This chapter presents some of the main economic statistics relating to Shetland in 1982/83. Such statistics generally measure aspects of the overall performance of the local economy without distinguishing the importance of individual sectors. It is, however, possible to examine the contribution of specific sectors to total economic activity, as will be shown subsequently.

Regional accounts, such as those discussed in this chapter, provide a 'snapshot' of the structure and performance of the Shetland economy for a single year (in this case 1982/83). Various economic indicators derived from the accounts can be compared with the equivalents for other areas (for example, other UK regions, or other small island communities in the EEC, etc) to give an indication of Shetland's relative prosperity. Furthermore, the 1982/93 accounts can be compared with equivalent Shetland accounts for previous years to allow changes in the performance of the local economy to be monitored and evaluated.

1.2 Gross regional product

In the present study, Gross Regional Product (GRP) is a measure of prosperity arising in Shetland in 1982/83, both from economic activity in the islands and from transfers from other areas. GRP can be measured either in terms of regional incomes or in terms of regional expenditures. GRP is a useful summary yardstick of economic performance, but, like all single-figure statistics, must be interpreted with care if misleading conclusions are not to be drawn.

The derivation of Shetland's 1982/83 GRP in expenditure terms is shown in Table 1.1. As can be seen, GRP, as defined for Shetland, is estimated to have been some £239 million.

The table shows that the largest expenditure components of Shetland's GRP in 1982/83 were household expenditures (32% of total) and the positive balance on external trade (31% of total). As is discussed in Section 1.3, this positive trade balance was largely due to a substantial surplus on oil industry account. A comparison of the 1982/83 GRP accounts with those for the two other years for which figures are available (1971 and 1976/77) reveals some interesting changes in composition: in both earlier years household expenditure was relatively more

Table 1.1 Shetland's gross regional product by expenditure 1982/83

Item	Value (£000)	%
Household expenditure	77,178	32.2
Net general government expenditure	43,161	18.0
Investment (fixed and stocks)	24,674	10.3
Net external trade (exports-imports)	73,366	30.7
Tourism	2,775	1.2
Unrequited receipts	18,094	7.6
Gross regional product	239,248	100.0

important (around 50% of GRP) than in 1982/83. Government expenditure was also relatively more important, accounting for 33% of expenditure GRP in 1971 and 35% in 1976. The changing contribution of external trade was even more dramatic, since in both 1971 and 1976 Shetland had an external trade deficit which had a significant **negative** effect on Shetland's GRP.

It was said earlier that GRP was a measure of income arising in a local community and therefore it is also possible to examine the composition of Shetland's GRP in terms of the income earned in various industries and sectors. 'Income' here means not only wages and salaries but also profits, interest and rent. The contribution, in income terms, of various industries to Shetland's 1982/83 GRP is shown in Table 1.2 below.

Table 1.2 Sectoral composition of Shetland income GRP 1982/83

Sector	Value (£000m)	% of total income GRP
Sullom Voe oil terminal	93,301	39.0
Transport and ports	22,420	9.4
Construction	15,657	6.5
Distribution	13,360	5.6
Fish catching and processing	12,576	5.3
Agriculture	1,224	0.5
Knitwear	2,042	0.8
Oil supply bases	6,780	2.8
All other sectors	71,888	30.1
Total	239,248	100.0

The table shows clearly that a very high proportion of Shetland's 1982/83 GRP was earned in the oil industry, especially the oil terminal. In total, 6.6% of GRP was earned in the 'traditional' industries (agriculture, fishing and knitwear) which may seem a

surprisingly small figure, but these industries play an important role in **creating** income in other sectors such as distribution and transport. Only when this is taken into account is the true role of the traditional industries in Shetland's economic life revealed.

To compare Shetland's GRP in 1982/83 with that of 1976/77, the effects of inflation between the two years must be taken into account. The Shetland retail price index can be used to make reasonable adjustments for inflation, and, when this is done, Shetland's GRP for 1982/83 in 1976/77 prices is estimated to be £113.9 million, compared with actual 1976/77 GRP of £41.1 million. This means that Shetland's GRP grew at an average inflation-adjusted (or 'real') rate of 18.5% per year between 1976/77 and 1982/83. Over the same period, UK GDP grew at an average rate of 0.9% per annum and Scottish GDP actually declined. The main reason for Shetland's extremely high growth rate is that the Sullom Voe terminal, with its very large operating income, became operational during the period in question.

Shetland's GRP per head of total population (including temporary construction workers) was £9,396 in 1982/83, compared with a corresponding UK figure of £4,254. Scottish GDP per head in 1982 was £3,764.

The above few paragraphs suggest that the Shetland economy grew very rapidly over the five years to 1982/83 and by the latter year had become relatively much more prosperous than the UK as a whole. This is obviously true in terms of the income earned in Shetland; however, a large GRP figure need not mean that the resident Shetland population is itself prosperous. Indeed, if a large proportion of income earned in Shetland was remitted outwith the islands, it is perfectly possible that Shetlanders themselves could remain fairly poor while all the benefits accrued elsewhere in the UK or abroad. In fact, although exact details are unknown, it is certain that some proportion of the GRP income earned in most Shetland industries (and a large proportion in the case of the oil industry) is remitted outside the islands. In such circumstances, an alternative measure of the prosperity of the Shetland population itself must be found. One such possibility is discussed in section 1.3 immediately below.

1.3 Household income

The economic survey provided an estimate of the total income received by resident Shetland households. This income includes wages and salaries, self-employment income, distributed profits,

government transfers such as pensions etc. Though still not perfect, in the situation which prevailed in 1982/83 household income provides a better indicator of the prosperity of Shetlanders themselves than does GRP.

As defined, total income paid to Shetland residents in 1982/83 was £102.0 million. This translates into an income figure per head of resident population of £4,376 compared with a UK figure of £4,223 and a Scottish figure of £4,042. However, retail prices are somewhat higher in Shetland than in the UK as a whole, and so the real spending power of the average Shetland resident was probably about the same as his UK counterpart in 1982/83. Certainly the average Shetlander was not substantially better off, as would be suggested by a comparison of GRP per head figures. He was, however, probably a little better off than the average Scot.

The income paid by various sectors to Shetland households in 1982/83 is shown in Table 1.3 below.

Table 1.3 Sectoral composition of Shetland household income 1982/83

Sector	% of total income
Central Government	12.9
Sullom Voe oil terminal	11.4
Health and education	9.4
Fish catching/processing	9.1
Construction	9.0
Distribution	8.1
Oil supply base	3.8
Agriculture	2.1
Knitwear	1.8
All other sectors	32.4
Total	100.0

Central government made the highest single sector payments to Shetland households, mainly in the form of benefits, etc. The oil industry was also significant paying 15.2% of residents' income. The traditional industries were relatively more important than in GRP terms : in total, 13.0% of Shetland household income was paid by these industries.

Allowing for inflation, per capita income in Shetland grew at some 4.2% per annum between 1976/77 and 1982/83. This growth rate, while still healthy, is much lower than the growth rate in

gross regional product reported earlier. Clearly, much of the increase in income earned in Shetland did not find its way into the pockets of Shetland residents.

1.4 External trade

Like all small economies, Shetland is very 'open' with respect to external trade. This means that it depends a great deal on non-local markets both to sell its own products and to buy in goods and services. In 1982/83, Shetland exported goods and services to the value of £182.8 million (£155.5 million of this was oil industry export receipts) and imported £111.3 million of products. Thus Shetland had an overall surplus on the balance of trade in goods and services of £71.6 million in 1982/83. Of course, not all sections of the Shetland economy had a trade surplus, as shown in Table 1.4.

Table 1.4 External trade balance of Shetland sectors 1982/83

Sector	Net external trade (£000)
Oil terminal	+ 114,277
Fish catching/processing	+ 15,066
Oil supply bases	+ 10,581
Knitwear	+ 1,424
Agriculture	+ 1,266
Transport	- 5,816
Construction	- 8,999
Households	- 34,743
All other sectors	- 21,502
Total	+ 71,554

The table shows that the oil industry had a very large external trade surplus. This is because, by convention, all the operating receipts of Shetland's oil installations are defined to be exports to the Continental Shelf region. It should be noted, also by convention, that Shetland's oil industry does **not** include flows of crude oil. It can also be seen that all the traditional industries had an external trade surplus. Industries such as construction or transport had large deficits because many of their material and equipment requirements were not available locally and had to be imported. The very large deficit attributable to households reflects the lack of consumer good-producing capacity in Shetland.

The Shetland economy as a whole is heavily involved in external trading. However not every industry in Shetland is highly

dependent on external markets, and of those that are, some are more reliant on exports than imports and vice-versa. This is demonstrated in Table 1.5.

Table 1.5 Industry external dependency 1982/83

Industry	Exports/gross output (%)	Imports/gross output (%)
Oil terminal	100.0	19.6
Oil supply bases	100.0	22.4
Fish processing	99.0	6.3
Knitwear	75.8	44.7
Agriculture	61.0	22.4
Fish catching	45.5	15.4
Construction	0.0	30.2
Transport	19.8	43.3
Marine engineering	0.0	43.3

Notes: (1) Exports do not include tourist expenditures
(2) Industries not included in the table are not highly dependent on either exports or imports.

The oil industry, and all the traditional industries, were heavily dependent on external markets in which to sell their products. Of these sectors, only knitwear was also highly involved in importing, primarily because at the time of the study it had to purchase most of its principal raw material (wool yarn) from outwith Shetland. The other industries in the table primarily served local Shetland markets but relied substantially on imports for their material and equipment requirements.

1.5 The source of economic activity in Shetland

In an economy such as Shetland there are essentially two distinct types of activity. The first type of activity involves sales or receipts which do not depend on the present state of the local economy. Exports are a good example of this, since the level of export sales depends primarily on the health of the economies which buy the exports, not on the health of the economy which sells them. The second type of activity, in contrast, involves sales or receipts which **do** depend on the current state of the local economy. Retail sales are an example of this type of activity, since the level of retail sales depends primarily on the current levels of income of local households.

For the sake of brevity, call the first type of activity

'external' and the second 'internal'. The distinction between these two types is important for, following one line of economic reasoning, it can be demonstrated that the **whole** of output, income, etc. in a region is ultimately determined by the levels of external activity. In short, external activities are the 'driving force' behind the observed level of regional performance.

Table 1.6 Total Shetland output and income generated by external activities 1982/83

External activity	Total generated of: Industrial output (£000)		Household income (£000)	
Oil operating receipts	202,634	(54.0)	29,217	(28.6)
Central government	41,514	(11.1)	28,177	(27.6)
Unrequited receipts(2)	40,180	(10.1)	11,721	(11.5)
Fixed investment	35,512	(9.5)	11,610	(11.4)
Exports rest of UK (excl oil receipts and Scotland)	17,993	(4.8)	6,301	(6.2)
Exports Scotland	17,036	(4.5)	7,478	(7.3)
Exports rest of world	15,460	(4.1)	5,309	(5.2)
Visitor trade	3,576	(1.0)	1,506	(1.5)
Inventory investment	1,508	(0.4)	687	(0.7)
Totals	375,413	(100.0)	102,006	(100.0)

Note: (1) Figures in brackets refer to percentages of total.
(2) eg: dividends paid to Shetlanders from companies in other areas

Applying this argument to the Shetland economy in 1982/83, the total levels of local sectoral output and local household income generated by various external activities are shown in Table 1.6 above. As can be seen, oil receipts were responsible for over half of Shetland's total 1982/83 industrial output of £375.4 million. £155.5 million was generated in the oil industry itself, and £47.1 million in non-oil Shetland sectors. Non-oil exports created £50.5 of output in Shetland, all in non-oil industries. In terms of household income paid to Shetland residents, oil receipts were still very important, but no longer dominant. Central government was an important source of household income, partly because many of its payments are made directly to households. Non-oil exporting, mostly undertaken by the traditional industries, accounted for 18.7% of all incomes received by Shetland households during the year.

It is also possible to use the same reasoning as above to identify the income of Shetland households generated by each **industry** in 1982/83. The results are shown in Table 1.7 below.

The Sullom Voe terminal was the largest single generator of income, but was closely followed by local government. The fishing industry was a much larger source of income than either of the other traditional industries of agriculture and knitwear. The table also makes clear the importance of oil **and** traditional industries to the local economy : together these sectors were responsible for 46% of all incomes received by Shetland households in 1982/83.

Table 1.7 Shetland household income generated by industry 1982/83

Industry	Income generated (£000)
Sullom Voe terminal	22,891.5
Local Government	18,397.8
Fish catching/processing	12,778.4
Construction	11,453.3
Oil supply bases	6,326.0
Health	4,331.2
Agriculture	2,691.6
Knitwear	2,274.8
All other industries	4,390.4
Total of above	85,535.0
Other income sources	16,471.0
Total	102,006.0

CHAPTER 2 SHETLAND INDUSTRY ACCOUNTS AND BUSINESS RATIOS 1982/83

2.1 Introduction

This chapter looks at some of the economic aspects of the various Shetland industries separately identified in the economic survey. Industries differ in size, whether measured in terms of turnover, employment or any other characteristic. They also differ in terms of technology used; for example, some industries make heavy use of capital equipment while others rely predominantly on labour. Further differences among industries are revealed in terms of dependence on local versus non-local markets, in terms of value per unit of output, in terms of profitability, etc. Some aspects of these variations in industry structure and performance in Shetland during 1982/83 were touched on in the previous chapter, and more will be examined here; however, it must be said that the industrial survey did not provide sufficient information to allow every aspect of each Shetland industry's activities to be analysed in complete detail.

2.2 The size of Shetland industries

There is no unique measure of the 'size' of an industry; for example an industry may have a large turnover but employ a relatively small number of people; or again an industry with a small number of highly paid workers may pay more total household income than another sector with a larger number of low-paid workers.

Obviously, different measures of size will be useful for different purposes and Table 2.1 shows the largest six Shetland industries in terms of output, local household income and full-time equivalent (FTE) employment[1]. It should be noted that Table 2.1 refers to the **sizes** of industries themselves, while Table 1.7 referred to the **impact** of different industries on the local economy.

Though their ranking changes somewhat, four sectors (oil terminal distribution, construction and other services) appear in the top six on any size measure. It can also be seen that no primary or manufacturing industry appears on any listing. This

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[1] FTE employment is a measure of employment which attempts to convert part and spare-time employment to a full-time basis. For example if an establishment worked a five-day week, and had two employees who each worked two and a half days, then taken together these would be counted as one FTE employee.

phenomenon is also observed in Scotland and the UK where 'tertiary' sectors have grown in size relative to primary and manufacturing industries. However, it should be remembered that, as shown in Chapter 1, the traditional industries in Shetland generated much of the activity in most of the industries included in Table 2.1.

Table 2.1 The largest Shetland industries in 1982/83 ranking by:

Output	Local household income	FTE employment
1. Oil terminal	Oil terminal	Transport(2)
2. Construction	Construction	Educ. & health (3)
3. Transport	Distribution	Distribution
4. Local Government	Local Government(1)	Construction
5. Distribution	Education	Oil terminal
6. Other services	Other services	Other services

Notes: (1) Excluding education
(2) Includes ports and communications
(3) Includes other professional services

2.3 Markets for Shetland industry outputs 1982/83

As discussed in the previous chapter, some Shetland industries sell their goods and services primarily outside Shetland while some depend largely on domestic markets. Additionally, some industries sell most of their product in a small number of markets while others sell over a much wider range. Table 2.2 shows the main market for each Shetland industry in 1982/83 and also indicates the relative importance of these markets as a percentage of total receipts.

Of 22 sectors listed in Table 2.2, no less than 15 obtained over 40% of their total revenue from a single source. For 5 sectors one or other export market was the largest source of revenue, while for 8 of the remainder the largest market was Shetland resident households. In short, most Shetland sectors were fairly heavily dependent on a single market, generally either an export market or local household consumers.

Table 2.2 Main markets for Shetland sectors 1982/83

Sector	Largest source of receipts	
Agriculture	Exports to Scotland	(61%)
Fish catching	Local fish processing	(52.8%)
Fish processing	Exports to rest of UK	(46.9%)
Marine engineering	Local fish catching	(74.8%)
Knitwear	Exports to rest of world	(35.0%)
Other manufacturing	Local households	(17.8%)
Oil terminal	Exports to rest of UK	(100%)
Oil supply bases	Exports to rest of UK	(100%)
Quarries	Local construction	(55.4%)
Construction	Fixed investment	(79.1%)
Transport	Local households	(26.9%)
Ports	Oil terminal	(78.8%)
Communications	Local households	(22.7%)
Utilities	Local households	(34.3%)
Hotels and catering	Tourism	(34.4%)
Distribution	Local households	(78.9%)
Business services	Local households	(44.0%)
Other professional services	Local households	(39.4%)
Education	Local Government	(100%)
Health	Central Government	(100%)
Local Government	Central Government	(55.5%)
Other services	Local households	(52.0%)

Notes: (1) Figures in brackets are receipts from largest source as a percentage of total receipts.

(2) Exports to rest of UK exclude exports to Scotland, but include exports to the UK Continental Shelf.

2.4 Business ratios for Shetland industries

(a) Output-based ratios

This part of the section examines a number of ratios based on each industry's output. The definition of 'output' varies from industry to industry, but essentially will always be derived from one or other of the following three principles: (i) for industries producing physical goods (eg knitwear), output is definied in terms of the value of production. (ii) for industries producing a service for the market (eg distribution), output is defined in terms of the receipts obtained from selling the service. (iii) for industries whose goods or services are not sold on the market (eg education), output is defined to be equal to the total value of expenditure made by the industry. In other words, since every economic activity produces **something**, the basic idea is to try to put a money value on this production.

Table 2.3 on page 15 produces a number of business ratios for each Shetland industry in 1982/83 which can be used for the evaluation of structure and performance. To aid interpretation of Table 2.3, the following explanations of the terms used in it are given

(i) **Total Operating Costs.** These comprise the day-to-day costs in running businesses in the industry. They include raw material costs, energy costs, labour costs, etc. Rates are also included. Interest charges, rent payments and business taxes are **not** included.

(ii) **Labour Costs** These include all incomes paid to persons working in the industry whether they be employees, self-employed or owner/managers. Also included are employers' contributions to National Insurance, company pension schemes etc.

(iii) **Local Expenditures** These are operating expenditures on Shetland goods and services (including labour services purchased from Shetland households).

(iv) **Value Added** This is defined to be the difference between receipts and **non-labour** operating costs. It is thus a measure of the total income earned by the industry as a result of its activities. The main components of value added are labour income, interest, rent and gross profit.

Given these definitions, the ratios in Table 2.3 can be examined in turn.

Firstly, looking at the operating cost/output ratios, it can be seen that for most Shetland industries operating costs accounted for between 75% and 100% of revenues, which means that only 0-25% of revenues were left to meet any interest and rent charges and try to make a profit. The level of interest and rent payments made by each sector is unknown, but there is a strong suggestion that the actual profitability of most Shetland industries was fairly low. For the oil terminal, ports and utilities, operating costs were a much lower proportion of revenue; however, as these sectors have high building, equipment and land requirements, they may have higher-than-average interest and rent payments. Finally, agriculture had operating costs some 28% higher than the market value of produce; in other words this sector would have made a substantial loss but for subsidy payments.

Turning now to labour cost/output ratios, it can be seen that these differ markedly among sectors. Industries which have much higher than average labour cost/output ratios can be described as **labour intensive.** These include most of the service sectors as well as agriculture, fish catching, marine engineering and knitwear. On the other hand, industries which are clearly non-labour intensive include the oil terminal, ports and utilities. The low local government figure is attributable to the fact that much of the SIC's labour costs appear in other sectors such as education.

The local expenditure/output ratios give an idea of how closely each sector is 'linked' with the rest of the Shetland economy in terms of its purchasing requirements. The table shows that for most service sectors, a high proportion of the revenue earned in 1982/83 was re-spent within Shetland during the same year. The same was also true of agriculture, fish catching, fish processing and quarrying. Industries which re-spent a relatively small proportion of 1982/83 receipts in Shetland during the same year included the oil terminal, transport, ports and utilities. Interestingly, for Shetland as a whole, only 47% of sectoral revenues were re-spent locally. This low percentage is typical of a small economy, where a high proportion of receipts is spent on imports or is remitted abroad as interest, profit, taxes, etc.

The value added/output ratios indicate the proportion of revenue which accrues to the industry as income after paying for 'bought-in' goods and services. From value added, labour, interest, rent and business tax charges are met and the remainder is net profit. Industries which earned relatively high income per unit of output included: agriculture, fish catching, ports, communications and distributive trades. The lowest value added/output ratios were in local government, other manufacturing and fish processing. However, the low local government ratio is largely because of definitions used in preparing the accounts.

If we look at the different business ratios for each industry (ie along the **rows** of Table 2.3) we can see that they divide roughly into four types as follows:

Type I These are industries in which the operating cost/output ratios, the labour cost/output ratios and the value added/output ratios are all relatively high. In such industries, labour costs account for a large proportion of revenues. Since labour costs are included in operating costs, the latter also tend to be a high proportion of revenue. Most of the value added in these industries tends to be paid out to labour. For brevity, these industries can be described as **labour-intensive.** In Shetland in 1982/83 the following industries were clearly in this group: agriculture, fish catching, business services, professional

services and health. On the margin of being included as Type I industries were: marine engineering, knitwear, communications and education.

Table 2.3 Output-based business ratios for Shetland 1982/83

	Ratio			
	Total operating costs	**Labour costs**	**Local expenditure**	**Value added**
Sector	**Output**	**Output**	**Output**	**Output**
Agriculture	1.28	0.65	1.05	0.77
Fish catching	0.88	0.58	0.72	0.70
Fish processing	0.85	0.22	0.78	0.38
Marine engineering	0.93	0.43	0.50	0.50
Knitwear	0.95	0.40	0.51	0.45
Other manufacturing	0.94	0.27	0.55	0.33
Oil terminal	0.43	0.08	0.23	0.66
Oil supply bases	0.79	0.28	0.56	0.50
Quarrying	0.86	0.35	0.67	0.47
Construction	0.78	0.31	0.48	0.53
Transport	0.80	0.23	0.36	0.44
Ports	0.25	0.14	0.24	0.89
Communications	0.78	0.63	0.74	0.85
Utilities	0.54	0.11	0.25	0.57
Hotels and catering	0.85	0.27	0.48	0.42
Distribution	0.70	0.48	0.68	0.78
Business services	0.98	0.66	0.85	0.68
Professional services	0.97	0.53	0.85	0.56
Education	0.99	0.47	0.70	0.48
Health	1.00	0.67	0.84	0.67
Local Government	0.98	0.19 (1)	0.90	0.21 (1)
Other services	0.77	0.35	0.48	0.58
Over all industries	0.77	0.24	0.47	0.47

Note: (1) This figure does not include income paid to local authority workers in construction, transport, education, etc.

Type II These industries have high operating cost/output ratios, but low labour cost/output and value added/output ratios. Such industries spend a significant proportion of total revenue buying in goods and services from other sectors, often for further processing. Relatively speaking, these industries do not utilise large amounts of labour or capital. Again for the sake of brevity, such sectors can be called **materials-intensive.** 1982/83 Shetland industries in this group are: fish processing,

other manufacturing and local government. The inclusion of local government is primarily definitional : as treated in the economic survey local government does indeed 'buy in' goods and services from sectors such as construction and education. On the margin of being included as Type II industries were hotels/catering and knitwear. Since the latter was also almost included as a Type I industry, it is clearly partly materials-intensive **and** labour-intensive, without being predominantly either.

Type III These industries have low operating cost/output ratios, low labour cost/output ratios, but high value added/output ratios. These industries do not rely to a great extent on purchases of goods and services from other sectors nor do they have relatively high labour requirements. Hence a significant percentage of revenue earned accrues to these sectors as non-labour income. However, they may have to make relatively high interest and rent payments from this income for the use of buildings, equipment and land. Type III industries can be termed **capital-intensive.** In 1982/83 members of this group in Shetland were the oil terminal, ports and utilities.

Type IV This group comprises all other sectors in Shetland which are not allocated to types I-III above. These industries are not especially dependent on one or other of materials, capital or labour, but typically have a fairly 'average' mix of all three. In 1982/93, Type IV industries in Shetland were oil supply bases, quarrying, construction, transport and other services. Strictly speaking, knitwear could also be included in this group, but for reasons discussed above we prefer to define it as a TypeI/II industry.

(b) Employment-based ratios

A number of ratios based on industry employments for Shetland in 1982/83 are given in Table 2.4. 'FTE' means a full-time equivalent job, a concept which attempts to allow for the fact that some workers in a number of Shetland industries are on a part-time, or spare-time, basis. It must be admitted that converting part- and spare-time employment to a full-time equivalent basis is a tricky business and so the ratios in Table 2.4 can only be regarded as approximate.

Both output/FTE and Value Added/FTE have been used as measures of **labour productivity.** For technical reasons which need not be discussed here, both ratios have some drawbacks in measuring labour productivity, though value added/FTE would generally be regarded as more satisfactory. It is important to note, however, that if an industry has apparently high labour productivity, this

does **not** mean that in some way workers in this industry work 'better' or 'harder' than others; for example, an industry which uses a lot of capital equipment will always tend to have higher output (or value added) per head than one which doesn't, irrespective of the 'quality' of the labour force in each.

Table 2.4 Employment-based ratios for Shetland industries 1982/3

Industry		Ratio: Output/[1] FTE(£000)	Labour costs/[2] FTE (£000)	Value added/[2] FTE (£000)
Agriculture	(I)[3]	11.95	7.74	9.22
Fish catching	(I)	19.98	11.50	13.94
Fish processing	(II)	24.63	5.47	9.24
Marine engineering	(I)	18.23	7.80	9.04
Knitwear	(I/II)	22.29	8.91	9.94
Other manufacturing	(II)	42.23	11.40	13.99
Oil terminal	(III)	151.75	13.87	99.57
Oil supply bases	(IV)	35.32	10.21	17.94
Quarries	(IV)	50.75	17.22	22.81
Construction	(IV)	30.63	9.48	16.10
Transport/ports/ communications	(I/III/IV)	34.57	8.53	21.49
Utilities	(III)	64.97	7.40	37.07
Hotels and catering	(II)	15.66	4.26	6.57
Distribution	(I)	17.15	8.31	13.52
Business services	(I)	24.68	16.30	16.70
Other professional, education and Health	(I)	18.38	9.61	9.83
Local government	(II)	29.76	5.60	6.23
Other services	(IV)	24.66	8.64	14.31
Over all Shetland industries		38.07	8.98	17.89

Notes: (1) Full-time equivalent employment includes temporary non-resident workers
(2) Full-time equivalent employment refers only to Shetland residents
(3) Roman numeral in brackets refers to the Type to which the industry was allocated in the discussion of Table 2.3 above.

This is, in fact, demonstrated in Table 2.4, which shows that all the Type I labour-intensive industries had lower output per FTE than **any** of the Type III capital-intensive sectors.

The ratios for Type II and Type IV industries typically lay between those of Types I and III. Capital-intensive industries also had relatively high value added/FTE, but interestingly, on average, the labour-intensive Type I industries had a higher value added/FTE ratio than the materials-intensive Type II sectors. What these two columns in fact reveal is that the various sectors in the Shetland economy used very different production processes and this led to wide variations in the measured labour productivity ratios. For Shetland as a whole, each FTE worker in 1982/83 produced, on average, £38,070 of industrial output and £17,890 of value added income.

The remaining column of Table 2.4 shows labour costs per resident FTE worker. On the assumption that the employers' component of labour cost is roughly the same from sector to sector, the column can also be used as a guide to the ranking of industries in terms of **income** actually paid per resident FTE worker. Not unexpectedly, the oil industry and business services had relatively high labour costs per FTE worker; more surprising is the very high figure for quarrying. With the exception of fish catching, the traditional industries generally had lower than average labour cost ratios.

If the labour cost ratios in Table 2.4 are compared with the detailed employment statistics for each Shetland industry, two features emerge : firstly, there was a tendency for industries with high proportions of part-or spare-time workers (eg agriculture, knitwear, distribution, hotels/catering, other services) to have lower than average labour cost ratios. Secondly, there was also a tendency for industries with high proportions of female workers (eg fish processing, knitwear, distribution, other services, local government) to have lower-than-average labour cost ratios.

These tendencies were not universally true; for example, professional services/education/health had high percentages of both part-time and female workers, but still had an above average labour cost ratio. However, it is undoubtedly the case that the highest labour cost (and probably also labour income) ratios were in industries with predominantly male, full-time workers.

CHAPTER 3 DETAILED ANALYSES OF SELECTED SHETLAND INDUSTRIES

Introduction

The previous chapter described certain characteristics for all the Shetland industries which were separately identified in the economic survey. Additionally, however, a number of industries were selected for more in-depth analyses. These industries were: agriculture, fish catching/processing, knitwear, the oil industry and the visitor trade. All of these industries were not only important in their own right, but also brought 'outside' money into Shetland, which made them significant creators of activity throughout the local economy (see pgs 10-11). Of course, these are not the only 'important' industries in Shetland (indeed, **all** industries have a role to play in maintaining regional welfare).

The characteristics of each selected industry, and its contribution to the Shetland economy, are considered in turn.

3.1 Agriculture

The agricultural potential of Shetland is inevitably limited by the relatively adverse climatic and soil conditions encountered in the islands. For example, at the time of the study, some 94% of Shetland's 143,000 hectares was unimproved grassland of limited scope for agricultural development.

The main crops grown in Shetland other than grass are oats, potatoes, barley and various others. The bulk of all Shetland crops goes for animal feed, but the total area under crops is very small (only 848 acres in 1982).

Given the predominance of rough grazing, it is not surprising that, in terms of numbers, sheep are by far the most important livestock reared. In 1982, there were 254,000 thousand sheep in Shetland, or 10.9 sheep per head of human population. In contrast, in Scotland as a whole there were only 1.5 sheep per head of human population.

The only other livestock of real economic significance were cattle (both beef and dairy), of which there were some 4800 head in Shetland in 1982. Local milk production in 1982 was over 506,000 gallons and was sufficient to meet local requirements in all but late autumn and winter months.

The majority of farms in Shetland are small and are generally held on crofting tenure. Typically the farms do not provide full-time employment and the occupier relies on other occupations for a large part of income (there are, however, a small number of bigger, effectively full-time farms). As near as can be estimated, in 1982 Shetland agriculture provided jobs for 216 full and part-time employees whilst full- and part-time occupiers numbered 460. There were also nearly 700 persons involved in crofting as a spare-time activity.

Because of its fragmented nature, it is very difficult to estimate the revenues and costs of Shetland agriculture. However, with help from various agricultural organisations, a 'balance sheet' for Shetland agriculture in calendar year 1982 was obtained as shown in Table 3.1.

Table 3.1 Revenue and costs for Shetland agriculture 1982

Revenue	**(£000)**	**Costs**	
Cattle	980.9	Animal feed	581.9
Sheep	1,881.2	Other livestock	271.9
Wool	200.0	Crop expenses	399.7
Other livestock	36.5	Casual labour	17.5
(a) Total livestock	3,098.6	(a) Total variable cost	1,271.0
Milk	668.6	Labour	2,134.4
Eggs	95.9	Machinery costs	519.8
(b) Total produce	764.5	(b) Total fixed cost	3,328.2
Potatoes	435.0		
Other crops	181.3		
(c) Total crops	616.3		
Total market receipts (a+b+c)	4,479.4		
(d) Subsidies	1,354.0		
Total receipts (a+b+c+d)	5,833.4	Total costs (a+b)	4,599.2

The table shows that livestock and livestock produce were by far the main sources of market revenue. Farm labour was the main cost item, followed by livestock expenses. It can also be seen

that market receipts were insufficient to cover total costs, and so Shetland agriculture depended for its viability on subsidies, which accounted for 23% of total revenues.

In financial year 1982/83, agriculture brought £2.4 million of external market receipts (mostly from exports) into Shetland. Additionally, it attracted some £1.3 million of external subsidies. The re-spending of these receipts, through 'knock-on' multiplier effects, stimulated activity throughout the Shetland economy.

The impact of agriculture's external revenue on Shetland's output, income and employment is summarised in Table 3.2 below.

Table 3.2 The impact of agriculture on the Shetland economy 1982/83

	Agriculture generated:		
Sector	**Output (£000)**	**Household income (£000)**	**Employment (FTE's)**
Agriculture	2,613.9	1,693.8	218.7
Manufacturing	87.0	25.3	3.2
Transport, ports, communications	585.6	176.1	17.0
Construction	156.6	48.6	5.1
Distribution	515.1	249.3	30.0
All other services	971.1	403.6	42.4
All Other industries(1)	107.9	17.7	1.7
Totals	5,037.2	2,614.4	318.1

Notes: (1) Includes: fish catching, oil terminal and supply bases, quarrying, utilities.

The major impacts were in agriculture itself, with most of the remainder being in local services, especially in transport-related and distributive trades. Agriculture's stimulus to local manufacturing was relatively small. Overall, agriculture generated about 2.6% of Shetland household income, and 3.2% of total Shetland FTE jobs, in 1982/83.

3.2 Fish catching and processing

Though generally under separate ownership and certainly different in terms of production methods, these two Shetland industries are

so closely interrelated that they can sensibly be treated together for many purposes of economic analysis. In 1982, the Shetland fishing fleet comprised of 126 vessels, employing 560 FTE fishermen. The fishermen were predominantly male, full-time and self-employed. The total value of fish caught by the Shetland fleet in financial year 1982/83 was £11.2 million, or £19,982 per FTE fisherman. This latter figure compared favourably with the equivalent Scottish ratio of £18,778 per FTE fisherman. Shetland boats have always had the option of landing their catch in Shetland or of taking it to other ports in the UK (or even elsewhere in Europe). Since the attractiveness of this 'tripping' option depends on whether higher prices in non-Shetland markets are more than sufficient to offset the higher costs frequently incurred in reaching them, the proportion of total catch landed outwith Shetland tends to vary from year to year depending on prevailing economic conditions.

In 1982/83 'tripping' was clearly a viable proposition, since some 46% of the Shetland catch was landed in non-Shetland ports (some of this was actually caught on fishing grounds nearer to non-Shetland ports). In contrast, in 1976/77, 94% of the Shetland fleet's catch by value was landed in Shetland. In 1982/83, the most important species landed in Shetland were haddock, whiting and sand-eels. Almost all of the local catch went to local processors.

In 1982/83, some 58% of the value of fish caught was paid as income to fishermen. This was mostly self-employment income rather than wages paid to hired employees. Boat running costs accounted for about 25% of turnover.

In June 1983, fish processing in Shetland employed some 450 persons full-time and an additional 82 part-time. 48% of these workers were female. In the financial year 1982/83, the total value of Shetland fish-processing production was £12.7 million. Less than 1% of this was consumed by local households, with the remainder being exported primarily to the UK mainland and North America.

The cost structure of the fish processing industry was dominated by two elements: raw materials (mostly fish and fish offal), which accounted for 47% of 1982/83 turnover, and labour costs which accounted for 25% of 1982/83 turnover. The profitability of the industry is therefore very vulnerable to any changes in wage rates or fish prices.

The local fish processing industry is almost entirely dependent for fish on local landings of the Shetland fleet since the volume of fish landed in Shetland by non-Shetland boats is typically

very small.

The importance of the fish catching and processing industries to one another in Shetland is clear: local processors form the largest single market for the catch of the Shetland fleet; conversely, the Shetland fleet is the largest single supplier of vital raw materials to local processors. Furthermore, as discussed below, the combined operations of these two industries locally confer additional benefits on the Shetland economy as a whole.

In 1982/83, fish catching and processing together (henceforth termed 'the fishing industry') brought £17.5 million of external funds into Shetland, almost wholly through exporting activities. This was far larger than the external receipts of the other traditional industries, and meant that the fishing industry was a major creator of activity throughout the Shetland economy.

The impact of fishing's external activities on Shetland is summarised in Table 3.3. As the table shows, apart from activity created in fishing itself, the industry had significant effects on most other Shetland sectors, especially local services, where it generated a total of 296 FTE jobs. Marine engineering was especially dependent on the fishing industry: for example, fishing generated some 72% of marine engineering's 1982/83 total output. Overall, fishing was responsible for 12.5% of Shetland household income and 14.7% of the island's FTE employment.

Table 3.3 The impact of fishing on the Shetland economy 1982/83

Sector	Fishing generated: output (£000)	Household income (£000)	employment (FTE's)
Fish catching/ processing	23,336.6	9,027.9	1,050.6
Marine engineering	1,359.2	581.7	74.6
Other manufacturing	633.2	179.1	16.3
Transport/ports/ communications	1,708.1	508.0	49.5
Distribution	1,912.0	925.4	111.5
Business services	612.4	404.8	24.8
All other services	2,518.8	889.9	109.9
All other industries*	1,179.4	252.3	29.8
Totals	33,259.7	12,769.1	1,467.0

Notes: *includes agriculture, the oil industry, quarries, construction and utilities.

The 'value added' to the catch of the Shetland fleet by local processing was very important in enhancing fishing's contribution to the Shetland economy. For example, each £1,000 of fish exported fresh created £804 of income for resident households. However, each £1,000 of fish landed in Shetland, processed locally and then exported created a total of £1,511 income for local households.

3.3 Knitwear

Knitwear is another of the traditional basic industries in Shetland and produces a wide range of garments, the most famous of which use traditional Fair Isle patterns. In 1982/83, around 400,000 garments were produced by 53 known separate businesses. Most of the knitwear firms in Shetland were small and heavily reliant on 'outworkers', who hand-knitted garments at home under contract. Additionally there were some home-producers not contracted to firms, but their output was a very small fraction of total production.

In mid-1983, there were 141 full-time, and 90 part-time, workers directly employed by knitwear firms; 78% of these were female. In addition, there were an estimated 2,000 persons involved in knitwear as outworkers.

The total value of Shetland's knitwear output in financial year 1982/83 was approximately £4.5 million; 11.0% of output was sold to Shetland residents and a further 3.9% was sold to visitors to Shetland. The rest of the output was exported, mainly to markets in the UK, the rest of the EEC and the United States.

Costs in the industry were predominantly associated with raw material and labour expenses. Raw material costs, which were primarily purchases of wool yarn, accounted for 30.1% of turnover in 1982/83. Because of the absence of any significant local yarn-spinning capacity in that year, most of the materials were purchased outside Shetland. Labour costs, including payments to outworkers, amounted to 35.6% of turnover.

In 1982/83, knitwear brought £4.0 million of external receipts into Shetland and the local re-spending of this revenue stimulated activity throughout Shetland. However, it should be noted that some 45% of knitwear receipts were **not** re-spent within Shetland, but rather were spent on imports and hence had no further 'knock-on' benefits locally. This high import expenditure inevitably had a dampening effect on knitwear's overall contribution to Shetland.

The impact of knitwear's external receipts on economic activity in Shetland in 1982/83 is shown in Table 3.4 below.

Table 3.4 The impact of knitwear on the Shetland economy 1982/83

Sector	Knitwear generated: output (£000)	Household income (£000)	employment (FTE's)
Knitwear	4,088.8	1,635.5	326.7**
Other manufacturing	84.5	22.8	2.5
Transport/ports/ communications	435.0	146.6	12.6
Utilities	143.9	16.4	2.2
Distribution	338.0	163.6	19.7
All other services	616.3	253.8	26.6
All other industries*	100.4	37.5	4.2
Totals	5,806.9	2,276.2	394.5

Notes: *includes agriculture, fish catching, oil, quarries, construction

**includes 1,800 outworkers converted at 10 outworkers = 1 FTE

It is clear from the table that most of the impact was concentrated in knitwear itself, with only limited knock-on effects in other sectors. The knock-on impacts were primarily in service industries. In 1982/83, knitwear created 2.2% of total resident household income and about 3.9% of Shetland's FTE jobs.

3.4 The visitor trade

For many years, visitors to Shetland were mostly tourists on holiday. However, during the 1970's as the Shetland oil industry grew, a higher proportion of visitors came to the islands for business rather than recreational purposes. From a broad economic point of view, **both** business and holiday visitors bring money into Shetland and hence create local income and employment.

In terms of the impact on the local economy, the important factor is the **expenditure** of visitors on Shetland goods and services. This in turn is influenced by a number of factors including the number of visitors, the length of stay, the type of

accommodation, etc. Using information provided by a large number of local organisations and from the industrial survey itself, it was possible to estimate 1982/83 visitor expenditure in Shetland. This was subdivided (a) by accommodation type and (b) by business/tourist visitor categories. The results are summarised in Table 3.5 below.

In total, visitors to Shetland spent some £3.5 million locally. In terms of accommodation category, the highest proportion of expenditure (73%) was made by visitors staying in hotels/guest houses. In terms of visitor type, the table shows that 70% of total expenditure was made by business visitors. In fact, no less than 67% of all visitor expenditure was made by business visitors staying in hotels or guest houses. Interestingly, further analysis revealed that 'pure' tourists accounted for 57% of the total visitor bed-nights in Shetland in 1982/83, but only for 30% of total visitor expenditure. Clearly the average holidaymaker spent far less per night's stay in Shetland than the average business visitor.

Table 3.5 Summary of visitor expenditure in Shetland 1982/83*

Accommodation type	Expenditure by: business visitors	tourists (£000)	total
Hotels/guest houses	2,345	220	2,565
Bed and breakfast	76	356	432
Self-catering	36	315	351
Caravans	3	121	124
Hostels	0	46	46
Totals	2,460	1,058	3,518

Notes: *the figures in this table are the averages of a range of estimates

Again, using a variety of sources, the total visitor expenditure was broken down into expenditure on Shetland goods and services and imports (e.g. when a visitor buys a Japanese radio in a Shetland shop, only the local retail margin is counted as expenditure on a Shetland service). On this definition, 1982/83 visitor expenditure on Shetland goods and services was £2.8 million. This is the sum which actually generated income and employment in Shetland. However some of the 'Shetland' products which visitors buy, such as a meal in a hotel or a drink in a lounge, have a high import content and this tends to dampen the impact of visitor expenditure on the local economy.

The impact of visitor expenditure on the Shetland economy is shown in Table 3.6 below.

Table 3.6 The impact of visitor expenditure on Shetland 1982/83

Sector	Visitor generated: output (£000)	household income (£000)	employment (FTE's)
Knitwear	185.6	74.2	14.8
All other manufacturing	100.3	26.9	3.2
Construction	134.7	41.8	4.4
Transport/ports/ communications	433.9	132.3	12.6
Distribution	434.0	210.0	25.3
Hotels and catering	1,540.7	419.1	98.4
All other services	613.1	235.4	25.3
All other industries(1)	133.2	39.7	4.6
Totals	3,575.5	1,506.2(2)	265.3(3)

Notes: (1) includes agriculture, fish catching, oil, quarries, utilities
(2) includes £326,800 paid directly to resident Shetland households
(3) includes an estimate of 76.7 FTE for private households servicing visitors, based on the assumption that labour costs per private household FTE were the same as labour costs/FTE in Shetland hotels and catering.

The table shows that the largest single visitor impact was on the Shetland hotels and catering sector. Indeed, 35% of the total output of this industry in 1982/83 was generated by visitor trade. Part of the reason that the dependence of this sector on visitors was lower than might be expected is that part of the output of hotels was treated as being sold to oil industry 'temporary residents' rather than 'business visitors'. It remains true, however, that components of this industry, especially restaurants and bars, were highly dependent on local (ie Shetlander) trade. Visitors also had a significant impact on other local services, especially transport and distributive trades. Though not obvious from Table 3.6, the industrial survey found that the Shetland craft industry was highly dependent on visitors.

Overall, visitor trade created 1.5% of total resident household income, and 2.5% of FTE employment, in Shetland in 1982/83. Finally, it can be noted that 1982/83 was a year in which occupancy rates, especially in hotels, were very low. For a year

in which occupancy rates are higher, the contribution of the visitor trade to the Shetland economy can be expected to be correspondingly greater.

3.5 Oil

The oil industry is one of the newest in Shetland, having only begun in the early 1970's when major oilfields were discovered in the northerly latitudes of the North Sea. During the decade since then, Shetland's oil industry has changed markedly in size and composition; however, apart from the earliest years it has always been large relative to the pre-existing local economy, and hence its impact on economic activity in Shetland has inevitably been substantial.

For the purposes of this study, Shetland's oil industry is taken to be the Sullom Voe oil terminal and local oil supply bases. There is a good argument for including a third element, oil-related air transport, but unfortunately insufficient data was collected in the industrial survey to allow this. However, oil air transport activity is included in the general transport sector.

The Sullom Voe oil terminal provides the landfall for both the Brent system and Ninian system pipelines. Together these two pipelines connect some of the largest oil (and gas) fields currently in production in the North sea.

The principal functions of the Sullom Voe terminal are preliminary processing, storage and trans-shipment of crude oil. It does not produce oil nor does it have refinery-type operations. Nevertheless, the volume of oil handled by the terminal is large, even by world standards, and its facilities are of a scale to match. For example, in 1982, crude oil throughput at Sullom Voe was 45.7 million tonnes, representing 54% of the total throughput of all UK terminals in that year. Crude oil storage capacity at the terminal is roughly equivalent to five days of oil requirements for the whole of Britain, and the terminal's power station can generate twice the amount of electricity of the station which supplies all other Shetland users.

Supply bases provide the facilities to allow offshore operators to service their rigs and platforms by boat. Servicing means not only the shipping of materials and equipment for drilling etc., but also the provision of food, clothing etc. for offshore personnel. Supply base facilities, therefore, typically include docks, warehouses, workshops and offices. There are cost-

advantages in servicing fields north of latitude 59° from Shetland, and hence a number of supply bases have been established locally to do so.

In June 1983, some 860 persons were employed in oil-related activities at Sullom Voe. This figure includes persons employed by a maintenance contractor and those employed in associated port and harbour functions. At the same time, some 380 persons were employed in Shetland supply bases, including workers for offshore operating companies which were making use of base facilities.

The 'output' of the Shetland oil industry was definied to be the operating receipts received for goods and services actually produced and provided by the Shetland operation. Hence the value of crude oil throughput is not included in Sullom Voe (in calendar year 1982, the value of crude through Sullom Voe was approximately £5.7 thousand million) output and similarly the value of goods trans-shipped offshore is not included in Shetland supply base output. It must be admitted, that, even with the help of all the organisations involved, it proved very difficult to measure the 'output' of the Shetland oil industry.

For 1982/83, the best estimates of operating receipts were: Sullom Voe, £142.4 million; oil supply bases, £13.4 million. This gives a total Shetland oil industry output for the year of £155.8 million, which dwarfed that of any other local sector. Total wages and salaries paid by the oil industry were £24.1 million, but only about 65% of this was paid to resident Shetland households.

In fact, only 25.8% of the operating receipts of the oil industry were re-spent on goods and services within Shetland, one of the lowest ratios of any Shetland sector. However, at £40.2 million, the oil industry's actual expenditure in Shetland was **larger** than that of any other industry and hence its impact on the local economy was correspondingly substantial.

This impact is summarised in Table 3.7 below.

In terms of output, the oil industry generated £202.6 million in Shetland in 1982/83. £46.8 million of this was created in non-oil local sectors, especially local services. In fact, oil generated over 21% of all non-oil Shetland output in 1982/83. Industries which were especially dependent on oil included: other manufacturing, ports, communications, hotels and catering, business services and miscellaneous services. Oil was responsible for over 30% of the 1982/83 output in each of these industries.

Table 3.7 The impact of oil on the Shetland economy 1982/83

Sector	Oil generated: output (£000)	household income (£000)	employment (FTE's)
Manufacturing	2,369.0	720.1	79.0
Oil industry	155,833.0	16,240.2	1,215.4
Construction	1,916.1	596.8	62.6
Transport/ports/ communications	19,264.3	3,976.0	558.7
Distribution	4,444.8	1,044.1	259.1
Local government	5,007.2	2,169.0	168.2
All other services	12,023.0	3,641.9	562.2
All other industries*	1,776.6	382.5	45.4
Totals	202,634.0	28,770.6	2,950.6

Notes: *includes agriculture, fish catching, quarries and utilities

The £28.8 million of Shetland household income created by oil represented 28.7% of all income received by local households in 1982/83. Put another way, during that year oil created approximately £1,250 of income for every man, woman and child resident in Shetland.

In 1982/83, oil created about 29.5% of all FTE employment in Shetland. Over half of these jobs were in non-oil sectors.

Finally, since oil is a 'new' basic industry in Shetland, it is interesting to compare its contribution to the local economy in 1982/83 with that of the 'traditional' basic sector (comprised of agriculture, fish catching/processing and knitwear). A summary comparison is given in Table 3.8.

The oil industry contributed more to the Shetland economy than the traditional sector on every measure, but especially in terms of output generated. In terms of income or employment the differences are much less marked. Of course, both these sectors are of great importance to Shetland as shown, for example, by the fact that together they were responsible for over 50% of all the FTE employment in Shetland in 1982/83.

Table 3.8 **A comparison of oil and traditional industry impacts 1982/83**

Generated by:	Impact on: Total Shetland output (£000)	Total Shetland output excl own (£000)	Shetland household income (£000)	employment (FTE)
Oil industry	202,634.0	46,801.0	28,770.6	2,950.6
Combined traditional industries	44,103.8	14,064.5	17,659.7	2,179.6

Conclusions

The report has presented some of the main findings of an analysis of the Shetland economy for the financial year 1982/83. The information provided by such a study can be compared with equivalent information for other areas, or with information for earlier years in Shetland, to evaluate how well the local economy is performing and progressing.

In terms of the real value of industrial activity, Shetland grew rapidly between 1976/77 and 1982/83. Local household income and **permanent** local employment also grew over the same period, though at somewhat slower rates. In short, the fears expressed during the mid-seventies that Shetland would experience a 'boom and bust' situation when oil construction declined proved unfounded. The growth in the Shetland economy meant that by 1982/83 many local performance indicators compared favourably with the equivalents for the UK as a whole: output/head and (to a much lesser extent) income/head were higher in Shetland than in the UK while the local unemployment rate was lower.

One of the main reasons that Shetland managed to avoid the traumatic experiences of other highland areas which had high short-term levels of oil construction activity (eg Kishorn) is that the negative impact of the decline in oil-related construction activity was partly offset by the growth in Sullom Voe terminal operations. For example, in 1976/77 oil construction created £3.7 million household income and 1,462 FTE jobs in Shetland; in 1982/83, Sullom Voe created £10.9 million household income (in 1976 prices) and 2,270 FTE jobs.

It would, however, be wrong to regard the oil industry as the only factor affecting Shetland's prosperity, for, unusually for a small rural area, Shetland has not only one, but a number, of

other activities which create local income and employment. These 'traditional' industries (agriculture, fish catching/processing, knitwear, visitors) pre-date oil and have continued throughout Shetland's oil era. The contemporary importance of these activities to Shetland is illustrated by noting that in total they generated £19.2 million of income for local households and over 2,400 FTE jobs. Most of the traditional industries are heavily dependent on a small number of external markets, which makes them potentially vulnerable to changing circumstances in these markets.

Hence, Shetland's overall prosperity still depends to a significant extent on the performance of the traditional sectors. The total real impact of the combined traditional industries in 1982/83 was much the same as it had been in 1976/77 and 1971. However while the contributions of visitors and (especially) fisheries had increased, that of agriculture had remained fairly static, and that of knitwear had declined.

In summary, the 1982/83 study provides a great deal of insight into the structure and performance of the Shetland economy. The information which can be gained from it does not **make** decisions for businessmen or government agencies but it can help in formulating and evaluating policies.

SELECT BIBLIOGRAPHY

Fraser of Allander Institute (1984) **The Shetland Industrial Survey 1982/83**, Vols 1-8, University of Strathclyde. These reports contain the full regional accounts and industry analyses which are summarised in the present volume.

Industry Department for Scotland (1984) **Scottish Input-Output Tables for 1979**, HMSO. Volums 1-3 of this study contain full details of the most recent input-output analysis of Scotland. Various business ratios, multipliers, etc can be compared with those for Shetland. Vol 4 describes the sources and methods used to construct the Scottish tables and these are similar to those employed in Shetland.

McNicoll I H (1976) **The Shetland Economy**, Fraser of Allander Research Monograph No 2. This monograph gives details of the first Shetland input-output study, for pre-oil 1971. In addition to presenting regional accounts, industry multipliers, etc it contains some discussion of input-output methodology.

McNicoll I H and Walker G (1979) **The Shetland Economy 1976-77**, Shetland Times Ltd, Lerwick. This booklet summarises some of the main results of the Shetland input-output study for 1976/77, which was a year of high (but not peak) oil construction activity.

Miernyk W H (1965) **Elements of Input-Output Analysis**, Random House, London. This text book describes in a clear, and reasonably non-technical, way basic input-output techniques and applications.

O'Connor R & Henry E W (1975) **Input-Output Analysis and Its Applications**, Griffin Statistical Monograph, No 36, London. Somewhat more difficult than Miernyk's.

APPENDIX A

The Shetland Input-Output Table 1982/83

The large volume of information concerning the Shetland economy which had been collected during the industrial survey was processed and compiled into a local **input-output** table for 1982/83. This table is shown as Appendix Table A1.

Essentially the table is a way of presenting the regional and industrial accounts in a coherent, consistent and detailed fashion. Each **row** of the table shows the amount sold by the industry named on the **left** to each of the sectors named on the **top**. For example, it can be seen that in 1982/83 Shetland agriculture sold £73,000 of output to hotels and catering in Shetland. It also sold £440,000 to Shetland households.. and so on. Thus, reading along the rows of the input-output table reveals from which markets the various Shetland industries obtained their revenues.

Each **column** of the table shows the amount purchased by the industry named on the **top** from each of the sectors named on the **left**. Thus, fish processing bought £5,919,000 of materials from local fish catching in 1982/83, and also purchased £2,821,000 of labour services from Shetland households, etc.

These sales and purchases among Shetland industries themselves are known as 'local interindustry transactions'. However, industries do not typically make **all** their sales and purchases to and from other Shetland industries, but also, for example, export and import. The input-output table also records these transactions.

The 1982/83 Shetland input-output table records the sales and expenditures of 23 separately identified industrial sectors. In theory at least, all the economic activity in Shetland which took place during that year is subsumed in one or other of these sectors.

INDEX TO ABBREVIATIONS USED IN APPENDIX TABLE A.1

O.Man	Other manufacturing
H & C	Hotels and catering
House	Shetland resident households
Build	Investment in buildings
Stocks	Net investment in stocks
X Scot	Exports to Scotland
X RUK	Exports to UK excluding Scotland
X ROW	Exports to the rest of the world excluding UK
C Govt	Central government
Imp	Imports
OVA	Other value added
UP	Unrequited payments

SHETLAND INPUT OUTPUT TABLE 1982/83

£ THOUSANDS

Receipts from / Payments to	Agric	Fish	Fish P	M.Eng	Knit	O.Man	Oil T	Oil S	Quar	Const	Trans	Ports	Comms	Util	H & C	Dist	Bus.S	Prof	Educ	Heal	L Gov	O.Ser	House	Total Inter-Mediate	Stocks	Build	X Scot	X Ruk	X Row	Tourism	C. Govt	Total Gross Output	
Agriculture	252	-	-	-	-	185	-	-	-	-	-	-	-	-	73	-	-	5	38	8	-	-	440	921	276	-	2026	-	-	-	-	3223	Agriculture
Fishing	-	-	5819	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	160	6000	-	-	2000	1112	-	-	-	11181	Fishing
Fish Products	-	-	-	-	-	115	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	175	305	-173	-	1246	5680	5641	-	-	12799	Fish Products
Marine Eng	-	1391	-	-	-	-	-	350	-	-	80	42	-	-	-	-	-	-	-	-	-	-	-	1863	-4	-	-	-	-	-	-	1859	Marine Eng
Knitting	-	-	-	-	3	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	487	506	299	-	1027	842	1892	178	27	4581	Knitting
Other Manuf	14	-	221	9	38	898	868	67	30	557	17	-	-	-	63	149	30	90	37	26	845	59	998	3233	37	-	-	82	-	269	25	3617	Other Manuf
Oil Terminal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	142192	-	-	-	142192	Oil Terminal
Oil Supply	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13359	-	-	-	13359	Oil Supply
Quarries	-	-	-	-	-	173	-	-	-	820	-	-	-	-	-	-	-	-	-	-	-	-	-	1003	167	-	-	315	-	-	12	1497	Quarries
Construction	93	-	21	9	18	83	189	291	146	27	44	497	33	151	233	574	58	187	1065	187	998	189	1277	6822	328	24000	-	-	-	-	-	38138	Construction
Transport	305	38	188	45	114	76	1538	229	228	1537	1238	128	83	33	21	628	72	181	829	226	3852	281	8634	19535	-	-	1473	938	828	183	85	23144	Transport
Ports	38	71	-	-	-	-	10387	1838	-	-	353	-	-	-	-	-	-	-	-	-	-	-	-	12679	-	-	483	-	-	-	-	13882	Ports
Communication	38	-	-	17	78	26	638	188	22	268	183	26	48	24	72	875	248	74	181	33	241	121	1845	4582	-	-	-	-	-	5	91	4538	Communication
Utilities	21	-	358	3	87	42	-	212	2	81	118	41	28	38	78	388	38	56	273	36	1721	163	2885	5736	-	-	-	-	-	-	11	5747	Utilities
Hotel & Cater	4	-	-	7	7	78	1178	31	-	-	353	-	3	-	-	-	81	21	-	-	-	-	1118	2884	-	-	-	-	-	1318	-	4118	Hotel & Cater
Distribution	172	77	47	18	21	88	188	22	2	875	154	-	4	32	94	7	38	182	188	128	488	331	12368	16188	168	-	-	-	-	178	127	18353	Distribution
Business Serv	188	42	181	17	38	35	-	113	27	138	312	348	-	83	78	454	178	25	-	-	-	148	2888	4588	-	-	-	-	-	1	32	4541	Business Serv
Other Prof	186	44	32	7	18	88	-	18	-	187	288	-	242	-	28	86	-	88	-	74	431	81	1181	2938	-	-	-	-	-	-	18	2888	Other Prof
Education	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13738	-	-	13738	-	-	-	-	-	-	-	13738	Education
Health	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4818	4818	Health
Local Govt	93	-	48	7	27	18	3418	458	15	288	88	28	28	218	158	258	88	18	288	32	-	188	2528	8264	-	-	-	-	-	-	18388	18568	Local Govt
Other Serv*	153	-	128	-	22	48	2788	-	-	-	22	183	28	87	38	188	35	88	472	48	2178	682	8788	15851	-	-	-	-	-	151	882	16884	Other Serv
Household	2152	8438	2821	736	1838	1518	11618	3858	388	8722	5738	1827	2883	686	1138	8213	3888	1581	8188	3121	8881	5318	248	88532	-	-	-	-	-	223	12141	181388	Household
Total	3431	8182	9363	877	2322	3884	22588	7858	872	14338	8871	3183	3488	1448	2132	11338	3851	2552	3636	3821	30851	8184	42145		586	24088	10157	164581	8181	2775	29514		Total
Imp	768	1721	732	888	2817	2178	27915	3888	388	8538	18638	81	187	1727	1621	271	617	378	3822	728	2827	4381	24743	111285									Imp
Exp	-928	1388	1348	128	212	345	81631	2872	163	8435	3838	8758	1811	2678	847	3147	73	78	172	-	778	3886	24828	148421									Exp
Go	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-18084	-	- 10										Go
Total Input	3223	11181	12788	1838	4581	3617	142192	13841	1415	29784	24685	12882	4388	3847	4488	14858	4541	3888	13738	4818	18566	16884	201996										Total Input

Published by: Shetland Islands Council, Research & Development Department 1985
93 St. Olaf Street, Lerwick, Shetland.

ISBN 0 904562 22 0

Printed by: Shetland Litho