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COSTS AND EARNINGS OF FISHING FLEETS IN FOUR EC COUNTRIES

Calculated on an uniform basis for the development of sectoral fleetmodels

June 1993

Agricultural Economics Research Institute (LEI-DLO)
Department Fishery

ABSTRACT

COSTS AND EARNINGS OF FISHING FLEETS IN FOUR EC COUNTRIES; CALCULATED ON AN UNIFORM BASIS FOR THE DEVELOPMENT OF SECTORAL FLEETMODELS
Davidse, W.P. and other
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This report contains a harmonised presentation and calculation of costs and earnings of fishing vessels in the Netherlands, Denmark, France and the United Kingdom. This harmonisation will facilitate the development of sectoral fleetmodels.

Current costs and earnings investigations in the four countries show big differences in calculation of the 'bottom line figure'. Uniformity in collecting and calculating costs and earnings is important in view of the construction of economic fleet models. This uniformity was one of the main aims of the study.

An important part of this harmonisation excercise has been the development of a common depreciation and interest calculation system. This has resulted in a yearly depreciation on the basis of the replacement value of the vessels and a real interest rate, based upon the bookvalue.

The return of fishing vessels in the four countries in 1990 were analysed on the basis of a sample of 675 vessels out of a total of 2600 vessels. This analysis was carried out by using economic indicators such as added value, rate of return on investment (ROI) and a solvency indicator. The ROI proved to be low in most cases. Only few vessel groups realised a sufficient ROI level on average, when the interest rate is taken as a reference. However, family enterprises are able to survive when the ROI is rather low and this applies also for fishery enterprises.

As a background to this profitability measurement the report also presents main characteristics of the Tax system and Fishery management regulations in the four countries. Finally the influence of these measures on the (harmonised) returns of fishing vessels is shown.

Fishery/Fleet/Structure/Fishery economics/The Netherlands/Denmark/France/United Kingdom

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FOREWORD

This publication is the final result of a cooperation between four fishery economics research institutes: Danish Institute of Fisheries Economics Research (DIFER) - Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER), Service d'economie maritime - Sea Fish Industry Authority (SFIA) and the Fisheries Department of the Dutch Agricultural Economics Research Institute (LEI-DLO).

The study has been coordinated by LEI-DLO.

The EC has partly (50%) financed the study in the framework of the FAR research programme.

The main aim of the study has been the extension and harmonization of existing costs and earnings studies in Denmark, France, the Netherlands and the United Kingdom. This could be a step towards the development of an accountancy data network, which already exists in agriculture (FADN or RICA in French).

Fishing enterprises in the four countries mentioned above are subject to the same Common Fisheries Policy (CFP) of the EC. Uniform calculation and presentation of costs and earnings of fishery vessels will facilitate the measurement of the effects of this CFP on the returns of the vessels in different countries. Moreover, this uniformity is important for the development of sectoral fleetmodels.

This publication also contains a qualitative description of the influence of the CFP on the returns of the vessels in 1989 and 1990.

The Director,

L.C. Zachariasse

The Hague, June 1993

than subsidies. Specific finance systems for fishing vessels also occur in France and the United Kingdom.

The renumeration of the crew is rather similar in the four countries, because a share system applies to almost all the (family owned) vessels. Social Insurance Contributions vary widely between the four countries. Low rates are in force in Denmark due to the financing of Social Insurance by the Tax system. Relatively high contributions have to be paid in France where the owner of a vessel pays a 25% premium on the basis of a normative salary.

Regulations to limit or reduce fishing effort have been implemented in each of the four countries. In Denmark a system of herring and mackerel licenses is in force and the construction of new vessels needs approval from the 'Commission for capacity', if a net increase in capacity is involved. In France, fishing capacity for the relevant species in the North Sea is controlled by the 'Permits de Mise en Exploitation' (PME's). In case of a new vessel an applicant for a PME has to withdraw an equivalent power when the withdrawn vessel or engine belongs to him for at least two years. In the Netherlands a system of Horse power licenses was introduced in 1984 and in the United Kingdom Pressure Stock licenses (PSL's) were issued in 1983.

The regulations and measures mentioned before affected investments and costs and earnings of the fishing fleets in a different way. In Denmark tax regulations, i.e. the depreciation and interest policies, were major factors which stimulated investments in the fishing fleet. In France investment subsidies and favourable financing conditions have stimulated investments during the 1980s to an important extent. In the Netherlands the fiscal depreciation system and also the subsidies resulting from the 'Law of Investment Subsidies' have tended to encourage investments, especially in the period 1980-1988. In the United Kingdom the fiscal depreciation system, which was relatively unconstrained, also played a substantial part in encouraging investments in new vessels throughout the 1980s.

In each of the four countries which participated in this study costs and earnings studies are going on. In Denmark and the United Kingdom the studies have been initiated by the Government and/or Fisheries Organizations. In France and the Netherlands research institutes (IFREMER and LEI-DLO) played a more important role in starting those studies.

In Denmark, the Netherlands and the United Kingdom the results of these studies, average costs and earnings per vessel, have been published annually or frequently. The figure on the bottom-line, net profit/loss per vessel, which results from these studies is quite different in the four countries. In Denmark it is the amount after deduction of interest but not of depreciation, in France financial expenditures (interest paid and repay-

ment of loans) is deducted, apart from the other costs, in the Netherlands depreciation and interest both are imputed and in the United Kingdom net profit is the amount before charging interest costs.

In order to make the average figures per vessel in the four countries comparable harmonisation had to be reached mainly regarding the following items:

(a) General presentation of the figures, lay-out of tables
(b) Criterium of classification of the vessels
(c) Breakdown of costs
(d) Net profit/loss
(e) Other economic indicators, which enable evaluation of the economical position of the North Sea fleets.

Harmonisation in this way also facilitates the development of sectoral fleetmodels, which will be a tool for evaluating the effects of the Common Fishery Policy.

Development of a common method for calculation and presentation of costs and earnings of fishing vessels in the four countries referred to the data of 1990, and 1989 as a year of reference.

Table 1 below shows the number of participating vessels and the total number of the relevant fleets in de four countries.

Table 1 Number of vessels in the sample (1990)

	DK	FR	NL	UK
Sample	322	126	131	98
Total number relevant fleet	674	876	557	528

These number of sample vessels allowed a distribution of vessels into 44 different size groups. The Danish sample vessels refer to the fleets of Lemvig (Thyborøn), Skagen and Hjørring. The French sample contained the vessels up to 25 m from the ports Boulogne, Douarnenez, Lorient and Le Guilvinec. For the Netherlands returns of cutters (mainly beam trawlers) have been studied and the sample fleet of the United Kingdom comprised Scottish trawlers and (purse) seiners and English based beam trawlers. The sample vessels were classified upon the national criterium (GRT, length or horse power), whereas the size range of both the other parameters have been shown. Main break down of costs for all sample vessels is shown in the following (common) figure.

The common calculation method mainly referred to harmonisation of depreciation and interest costs. Depreciation costs have been based upon replacement cost of the vessel i.e. current building cost for a vessel of similar size. Uniform annual depreciation regarding the hull has been 4% of replacement

Earnings
Running Costs
Labour Share, Wages
Social Insurance
Vessel Costs
Total Costs/Expenses
Gross Cash FLow
Depreciation
Interest
Net Profit/Loss

Figure 1 Summary of uniform table for presentation of average costs and earnings per fishing vessel (amounts in ECU)

cost during 25 years and after that period 2% annually. The engine has been depreciated at 10% or 6.7% annually, in case of heavy or ligth use respectively. An imputed interest has been agreed at the level of the real interest rate for each country, taken from the book value of the vessel.

To show more aspects of the economic performance of fishing vessels in the four countries a set of economic indicators has been chosen. Some were derived from the Farm Accountancy Data Network of the EC (FADN or RICA in French) i.e income of the owner and 'financial stress'.

In 1990 average returns per vessel differed widely in the four countries. In Denmark of the fifteen vessel groups studied eight (mainly smaller vessels) show a net profit, whereas for seven size groups a net loss has been calculated. In particular for the bigger trawlers in Lemvig (Thyborøn), Skagen and Hjørring this net loss was substantially.

French artisanal vessels had rather favourable returns in 1990 (eight of eleven size groups net profit). The Lorient vessels show the lowest returns.

The Dutch cutter fleet shows seven, out of ten, profitable vessel groups. Negative returns were mainly of smaller vessels, due to declining catches in shrimp fisheries.

For the sample vessels in the United Kingdom applying of the common calculation method resulted in positive returns in 1990 of three, out of eight, groups. Profitable were the Scottish based trawlers and the smaller seiners. Losses were rather limited for the other vessel groups and not so high as for the Danish trawlers.

Average amounts of loans per vessel indicate the financial position at 31st December 1990. Generally speaking, Danish vessels show the highest amount of loans; for the majority of these vessels the average insured value exceeded the amount of loans by 5%-40%. The average insured value of vessels in the other three countries was double or more of the amount of loans.

The relatively high amount of loans of Danish vessels is reflected in a high value for the indicator 'financial stress'. This means that, on average, interest payments exceeded the gross cash flow in 1990 for Danish vessel groups bigger than 50 GRT. Almost all other vessel groups indicate that there were no difficulties on average, in paying interest to the banks because interest payments were 35% of gross cash flow at maximum in 1990.

Comparing the economic performance of vessels of similar size in the three countries it turned out that big differences occur in this respect. This was mainly caused by differences in earnings per vessel in 1990. These differences were mitigated in some cases by high levels of costs. Combination of high earnings/high cost levels especially applies for British vessels.

Gross added value (total of profits/losses, interest, wages and depreciation) was stable in terms of percentage of earnings (50-60% mostly). In this respect French vessels were on the high and British ones on the low side (40-50%). Profitability related to invested capital (measured by insured value) was low in 1990 for most vessel groups. Only nine, out of forty, vessel groups observed show a rate of return on investment (ROI) exceeding or equal to the interest level (assuming 8-9% interest rate in 1990). This low ROI is not uncommon for family owned enterprises and also agricultural holdings usually show a low ROI.

Measures resulting from the Common Fisheries Policy affected fishing fleets in the four countries in a different way. The Danish fleet has been reduced since 1987, stimulated by the decommissioning scheme. Apart from this, economic factors caused fleet reductions in Denmark which applies especially for bigger trawlers from Hirtshals, used for reduction fishery. On the other hand, the number of small vessels (seiners) from the district of Lemvig declined, though quota for their target species (plaice) have been rather high. The age of the vessel and also the situation of old skippers were main influencing factors for this decline. In Skagen the fleet of vessels in the range of 100-250 GRT declined, influenced by relative low prices in the herring fishery. Although herring quota remained high, this could not compensate quota losses of relatively high priced cod. Development of the French artisanal fleets in the four ports studies has been mainly influenced by profitability levels. EC and national aid have had a limited influence in this respect. The Mellick plan, which aims to reduce the French fishing fleet, leads to younger fleets, apart from the economic situation. The

quota for the different species did not have a major influence on the costs and earnings of the French artisanal fleets.

EC and national fisheries policies have influenced developments in Dutch cutter fisheries substantially since 1988. Horse power licences have maximised total engine power of this fleet. Moreover,maximum horse power per vessel is 2 000 (1 470 kW); this means an important reduction, because recently build beamers were equipped with an engine of 3 000-3 800 Hp (2 200-2 800 kW). The decommissioning scheme caused a withdrawal from cutter fisheries of 60 000 kW since 1988. Individual Transferable Quota (ITQ's), in combination with limited number of days at sea (150 in general), meant an important constraint for the Dutch beam trawlers. Nevertheless, returns of these vessels were not low in 1990. The sharp rise in the Dutch TAC for sole in 1990 (9 656-18 000 tons) mainly caused these satisfactory returns in 1990. The big stock of sole enabled the Dutch beamers to fish this bigger quantity within a limited number of days.

The improvements in the financial out-turn in 1990 of the British fleet seem to provide evidence that the additional conservation measures, introduced in that year, did not have such a negative impact on the returns of the fleet as the industry had initially expected. The sharp reductions in the TAC's for the main North Sea demersal species, were more than offset by large increases in quayside prices. This improvement in the financial out-turn of the British fleet, should probably be regarded as inherently unstable, resting as it did on increases in quayside prices.

1. OBJECTIVE

The objectives of this study were:

- to develop a common method for calculation and presentation of costs and earnings of fishing vessels in Denmark, France, the Netherlands and the United Kingdom;
- to apply this method on costs and earnings of fishing vessels in 1990;
- to describe and analyse the influence of tax regulations and EC measures on costs and earnings of fishing vessels in the four countries.

2. INTRODUCTION

In Denmark, France, the Netherlands and the United Kingdom costs and earnings studies are going on in a more or less extensive way.

In Denmark Organizations of the fishermen collect and process costs and earnings of fishing vessels to provide information about the economic state of the fleets. In France the 'Centre de Gestion de la Pêche Artisanale' (CGPA), an accounting and management centre, manages the accounts of about one half of the 12-25m vessels. IFREMER has carried out costs and earnings studies in cooperation with CGPA and also in Cooperation with the Organization of the 'Pêche Industriële'.

Costs and earnings of Dutch vessels have been studied since 1946 by the Dutch Agricultural Economics Research Institute (LEI-DLO) and in the United Kingdom Sea Fish Industry Authority (SFIA) performs an annual costs and earnings investigation.

Important differences occur between these four types of costs and earnings studies, in particular with respect to calculation of depreciation of the vessels and interest calculations.

The fleets of these four countries, mentioned above, are subject to the same measures resulting from the Common Fisheries Policy (CFP), such as Total Allowable Catches (TAC's), technical measures with respect to mesh size, closed areas etc.

Analysis of the economic effects of these measures on fishing enterprises might contribute to a better fisheries management. This requires uniformity in methods of economic analysis for different countries, which is one of the main objectives of this study. Uniformity in this respect also facilitates the development of sectoral fleetmodels.

So far, economic analysis of the effects of CFP measures have been undertaken in a limited way. Studies have been carried out with respect to the economic impact of fisheries management in the North Sea, focused on the species cod, haddock, sole and plaice (Jørgensen, Rodgers, Smit, 1989 and 1992). In these studies the economic approach was mainly limited to price effects of different management scenario's.

This study reveals the cost structure of fishing enterprises in Denmark, France, the Netherlands and the United Kingdom, calculated and presented uniformly. Consequently net profits and incomes from fishing vessels in those four countries are comparable. In analyzing these profits and incomes attention is paid to the influence of fishery management measures upon the returns.

Chapter 8 provides average costs and earnings of 44 vessels groups in the four countries. These data are analyzed in chapter 9, by using a set of economic indicators. Some of these indicators were derived from the Farm Accountancy Data Network (FADN or RICA in French), so that comparison with returns in Agriculture is possible, to some extent.

Applying of an uniform methodology means that differences arise compared with national costs and earnings studies. In annexes 7-10 these differences are shown. Moreover specifications of national costs and earnings studies are included in a separate report.

3. MATERIALS AND METHODS

Costs and earnings data of fishing vessels in the four countries were obtained by cooperation with Organizations of fishery enterprises (Denmark) or their accounting and management Centre (France). By collecting data directly from the accounts of the enterprises, undertaken by employers of the concerning institute (the Netherlands) and by sending out questionnaires to skipper-owners (the United Kingdom). The samples of the four countries as a whole total 677 vessels, representing some 2 600 vessels.

The sample vessels were grouped into 44 categories, according to size (mainly) and fishing gear.

Criteria for classifications differ in the four countries. In Denmark vessels are classified by GRT, in France and the United Kingdom by length (meters or feet) and in the Netherlands horsepower of the vessel is the criterium for classification. By showing the range of each of those three technical parameters for each size group, vessels of comparable size can be identified in the common tables of chapter 8. Moreover all amounts are expressed in ECU's.

An uniform method of depreciation and interest calculation has been developed (chapter 7) so that average net profits are very well comparable.

Costs and earnings data were analyzed by applying economic indicators, usual in business economics i.e. added value, rate of return on investment or derived from the Agricultural Farm Accountancy Data Network (FADN) i.e. income of the owner and 'financial stress' of the enterprise. Chapter 7 describes the methodology more extensively.

4. PROCEDURE

The workprogramme, which was part of the project proposal, has been a major guideline in carrying out the study. During the first meeting of the participants in Dublin, April 1991, a provisional outline for the final report has been agreed. This outline, including description of different chapters, provided a clear target for final results of the study.

The coordinator has proposed guidelines for each chapter, in order to get some uniformity in description of relevant subjects. A proposal for uniform calculation (depreciation and interest) and presentation of costs and earnings was also formulated by the coordinator.

The participants have organised meetings in the period April 1991 - October 1992 in Dublin, the Hague (September 1991), Paris (January 1992), Edinburgh (May 1992) and Copenhagen (September 1992). Points of discussion during these meetings were: Guidelines and proposals of the coordinator draft texts of different chapters and the general progress of the study.

Each participating institute has prepared the national contribution of the relevant chapter. The coordinator has integrated the different national texts into the progress reports and the final report. Three progress reports were submitted to the Commission, each of them contained a separate part (chapter) of the outline described above.

5. EFFECTS OF TAX REGULATIONS AND EC MEASURES ON PROFITS AND INCOMES OF FISHERY ENTERPRISES

5.1 Effects of tax regulations and EC measures on profits and incomes of fishery enterprises in Denmark

5.1.1 Tax Regulations

For fiscal purposes profits are defined as gross earnings less allowable costs. Gross earnings attrackt VAT at 22.25%. The allowable costs consist of:

1) *Operating costs*, which refer to costs of obtaining, assuring and maintaining the income, i.e. landing costs, ice, fuel, salary, maintenance of the gear + vessel + engine + winch, administration costs, insurance and costs for equipment.
2) *Depreciation*, which is standardized as balance sheet depreciation to a maximum of 25% in the first year and 30% in the following years of the capital book value, which moreover is regulated with the price index on a yearly basis. In case of delivery of a new vessel it is possible to depreciate in advance from the moment of contracting, the total limit of depreciation in advance being 30% and a maximum of 15% in one year.
3) *Transference for investments*, where it is possible to depreciate in advance until six years before the moment of acquisition. The maximum depreciation in advance per year is 25% of the years' profit, which has to be stored on a closed bank account. In case of acquisition the book value of the asset, which forms the basis for depreciation, is reduced with the amount of in advance depreciation. If this amount is not used for investment within the period of six years it is taxed within a certain period.

The taxation of *capital gains* (the sales value exceeds the book value) depends on whether the operation is going on or not. In the first case the difference is reflected in the book value of the new vessel and in the latter case the difference is taxed with 50% (Law of Special Income).

There are three common ways of organizing the ownership of the vessels: 1) sole ownership with a single owner; 2) shipping partnership with maximum 10 share members; 3) private Limited Liability Company with shares.

Looking at figure 5.1 the fishermen organized as 'sole ownership' and 'shipping partnership' are able to choose individually between two tax systems: a) personal taxation or b) firm taxation, comparable with private limited taxation. About 92% of the total fleet is organized in these two kinds of ownership.

In the case of 'personal taxation' the relevant figures on costs and earnings etc. form part of the individuals personal accounts and are taxed accordingly. The calculation of the person's tax is outlined in annex 3, where also an explanation of definitions is added.

For persons using the firm or private limited taxation there is a complete split between the person's and the vessel's account, where the latter is covering the operation profit (outlined above) and is taxed according to the principles in figure 5.1.

	Sole ownership/ Shipping partnership		Private limited Company
	Personal taxation	Firm taxation	
Taxation of personal income a)	68%	50% b)	40% b)
Taxation of capital income	56%	50% b)	40% b)
Tax value of interest deduction	50% (56%)	Full interest deduction	Full interest deduction
Capital requirement	-	-	300,000 DKK
Liability category	Personally liable	Personally liable	No personal liability
Carry forward	No	Yes	Yes

Figure 5.1 Tax regulations in Denmark in 1990
a) Defined as the income which is not capital income; b) Reduced to 38% in 1991.

For the purposes of minimizing overall exposure to tax, the alternatives to 'personal taxation' have certain advantages. For example, under these options income can be retained from one year to another in order to even out fluctuations in taxable profits (carry income forward). This means that it is sometimes possible to reduce average levels of tax payment (in avoiding exposure to the high marginal rate of 68% in a good year).

A second advantage of the firm and private Limited Companies is that the interest expenses are fully deductible. This would be equal to a tax value of 68% for the individual whereas the tax value of interest deduction is maximum 56% for the personal tax.

Under all three tax systems it is possible to deduct negative incomes ('carry negative income forward').

For the fishermen with ownership either as a firm or private Limited Company the income transferred from the company to the person is taxed in the person's accounts. In this respect there are two forms of transference: a) salary from the companies' account or b) profit from the operation of the vessel (the bottom line of the vessel's accounts).

Year	Change
1980	- taxation of private Limited Companies 40%
1982	- yearly indexation of balance for depreciation (capital obtained after 1.1.1982)
1983	- yearly indexation of balance for depreciation on cost for improvement (vessels obtained before 1.1.1982
1986	- taxation of private Limited Companies 50% temporary increase in depreciation in advance (1986-1990)
1987	- taxation of sole ownerships which stated a taxation of the firm of 50%; and implied the possibility of 'carrying income forward'
1989	- taxation of capital gains by cessation is reduced from 68% to 50% for sole ownerships
1990	- taxation of private Limited Companies 40% the Law for Transference for Investment is suspended for private Limited Companies
1991	- depreciation in the first year is 30% of the book value - taxation of private Limited Companies 38% - taxation of the firm in the sole ownerships 38% - taxation of dividend from private Limited Companies is reduced to 57% of dividend less than 30,000 DKK.

Figure 5.2 Chronological changes in the Danish Depreciation Law and the Law of Taxation of Private Limited Companies and Sole Ownership. 1980-1991

Transference of salary to the person is always taxed as personal income in the person's account (see the example in annex 3).

Under the firm's taxation, profit is divided between personal income and 'calculated capital income', where the latter is transferred directly to the persons account and taxed as capital income. The remaining part of the profit is taxed as personal income and there are two possibilities in this respect: a) pay firm tax (50% in 1990) and save the income on a account for 'saved profit' or b) directly transfer the income into the personal account for personal taxation (until 68% on the margin).

In the table below changes in the taxation system in the past 10 years are summarized. Probably the depreciation and the interest policies are the major factors of explaining the vessels investments in Denmark.

5.1.2 Subsidies

Investments in the fishing fleet are subsidized from two sources: from EC following the EC structure policy and from an additional national structure law.

The incentives included in the EC structural policy which directly affect the fishing fleet are related to:

a) the renewal and modernisation of the fleet;
b) exploratory fishing trips and short term joint-ventures;
c) temporary laying ups and permanent withdrawal (decommissioning).

The subsidies to the national fleet from the EC are given as a percentage refunding of the national subsidies to the fishery.

In december 1990 the council regulation No 3944/90 was accepted instead of No 4028/86, with such points as:

- The minimum national contribution for restructuring, renewal and modernization was reduced from 10% to 5%;
- EC refunding for withdrawals was increased from 50% to 70%;
- the premiums 1) for final cessation increased on average by some 100% for the vessels with an age between 10 and 20 years and about 50% for the vessels over 20 years.

In addition to the EC structure policy Denmark has implemented a withdrawal subsidy of up to 80% of the vessel's insured value. The grants for decommissioning are yearly negotiated by the political parties; the subsidies in the period 1987-1991 which resulted from these negotiations are shown in the following table.

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1) Premium for vessels of which the length between perpendiculars exceeds 9 metres and 12 metres for trawlers.

Table 5.1 Subsidies paid in Denmark for decommissioning

Subsidy items	1987	1988	1989	1990	1991
Subsidy in mill. DKK	27.9	147.9	75.7	66	81.2
Number of vessels *)	47	161	89	68	39
GRT	1 500	7 800	3 800	4 100	3 300
Hp	9 500	40 500	23 000	22 300	17 900

*) All these applications have been approved in the years listed, but the actual withdrawal may have taken place in the subsequent year for some of the vessels.
Source: Danish Ministry of Fisheries.

Since 1987 the Danish fleet has been reduced by some 367 vessels, and capacity has now reached the target for 31.12 1991 i.e. 119 400 GRT, which is seen in the following table.

Table 5.2 Development of the Danish fleet capacity, GRT

Capacity	1-1-1985	1-1-1987	1-1-1990	1-1-1991	1-1-1991
GRT	123 680	136 488	123 915	119 189	119 400

Source: Danish Ministry of Fisheries.

5.1.3 Financing of fishing vessels

In addition to the private banks the fishermen have access to two regulated institutions for finance for investments :1) The Danish Ship Finance Ltd; 2) The Royal Danish Fishery bank.

1) Danish Ship Finance Ltd.
This bank offers assistance for up to 80% of the financial costs of vessel building/modernisation. There are two sort of loans: loans on market conditions, and loans with interest subsidy, which covers OECD loans or combination loans of OECD and Danish indexed loans.

Loans on market conditions cover:
a) Purchase/sales financing;
b) ship owners contracting foreign shipyards;
c) improvements of vessels of 100-1000 GRT.

Loans on market conditions are arranged as bond loan, where the debtor has to realize the value of the bonds on the market, and may hence be exposed to capital gains/losses. The interest rate is determinated as operating minimum rate. The current nom-

inal rate is about 9.8%. The period of repayment is a matter of negotiation.

Loans with interest subsidy cover:
a) Building of fishing vessels over 100 GRT;
b) improvements of vessels over 1000 GRT.

The interest subsidy loans are arranged as bond loans, where the Danish National Bank buys the bonds to par value, which eliminates any capital loss for the debtor. There are two common loan arrangements: 1) OECD loans, 2) combination loans, and the debtor has a free choice between the two.

The OECD loan has an interest rate of 8% p.a, and the repayment time is 8 1/2 year.

The combination loans contain partly an OECD loan and partly an indexed loan, where the last covers:
- Building of vessels with loans of 14 years repayment time of which 4 years is exempt of repayment;
- improvements of vessels with loans of 5-8 1/2 years repayment time.

For the indexed loans it is possible to choose between an interest rate of 2.5% p.a and in addition a maximum indexing 1) of 3.0% p.a or an interest of 4.0% p.a and an indexing of maximum 1.5% p.a.

The mix of OECD and index loan covering the term 'combination loan' is shown in table 5.5

Table 5.3 Combination loans

Contract before the end of	For delivery before the end of	Lending per cent of contract	
		index loan	OECD loan
1989	1991	60	20
1990	1992	45	35
1991	1993	45	35
1992	1994	30	50
Jan. 1, 1993	-	-	80

Source: Danish Ship Finance Ltd.

2) The Royal Danish Fishery Bank

To acquire a loan from the Royal Fishery Bank, it is required that the fisherman is registered by the Ministry of

1) The indexing is regulated from the ship index factor on Copenhagens security market.

Fisheries, and that he is able to document an equity capital of 15%, disposable in cash or other assets.

The loan covers:

a) Building, rebuilding and acquisition of vessels;
b) purchase and installation of engine in vessels;
c) financing of costs in relation to increasing the production or productivity;
d) liquidation of short term debt (as: trade debt, overdraft on cash credit etc.) for fishermen, which is able to document a special need;
e) refinancing of long term debt and repayment of foreign debt by day of expiry;
f) refinance of expired unpaid payment of instalments and interest on fishery bank debt and payment of trade debt, overdraft on cash credit for vessels, where the loan demand is raised as a consequence of decreasing fisheries for reduction and quota stop. (The law in force to the end of 1988.)

Table 5.4 Lending rules for new building or improvements of vessels

	Lending per cent	Loan period in years
New purchases:		
Purchase price 200,000-10,000,000 DKK	70 a)	20
Purchase price > 10,000,000 DKK	65	20
Improvement of older fishing vessels:		
Age < 10 years	60 b)	20
- 11-20 years	60	15
- 21-30 years	50	10
- > 30 years	40	10
Engine (installation):	60	10
Other purchases than engines:		
Age < 10 years	60 b)	10
- 11-20 years	60	10
- 21-30 years	50	10
- > 30 years	40	10

a) Lending per cent of the vessel's cash price; b) lending per cent of the rebuilding expenses.
Source: The Royal Danish Fishery Bank.

Furthermore there are specific lending rules for refinance schemes. Loans for short-term debt can be received to a maximum of 40% of the vessel's value. The level of loans for refinancing varies from maximum 60% to 40% of the vessel's value. This percentage is lower for older vessels. In all these cases the loan period is ten years.

As the loans are financed by issuing bonds, the bond price is determinating the interest, which actually is 9.8%.

Summing up, the most economic option for financing depends on actual rates of inflation. If these are high loans provided by the Royal Fisheries Bank become relatively expensive to support compared with loans from Danish Ship Finance. This may introduce distortions into the choice of vessel size: for example if inflation is high and hence loans from DSF relatively attractive then there is a distortion in favour of building vessels over 100 BRT; as opposed to smaller vessels, which would have to be financed by RFB.

5.1.4 Landing costs, remuneration of the crew and social insurance

Landing costs are typically calculated on the basis of the gross fisheries earnings in a range of 10% to 13%. The fixed costs are about 6% for items like: box rent, salesmen's commission, auction hall taxes and harbour dues, and the variable cost for labour salary is varying in a range from 4% to 7% depending on the work.

The crew salary is calculated as a share of the 'net fisheries', which covers gross fisheries - landing costs. There are two different systems for calculating the crew's share:
1) 'Subsequent', where crew's salary is calculated as a certain share of (gross fisheries - landing costs); 2) 'in advance', where the crew gets a share of the amount which results from expression (gross fisheries - landing costs - fuel costs - ice costs).

The difference between the systems is the payment of the ice and fuel costs: 'subsequent' by the vessel or 'in advance' before the crew gets their share.

In a report from COWI Consult it is stated that there is not any common way of calculating the crew's share but it is expected that vessels under 60 GRT use the 'subsequent system' and the greater vessels use the 'in advance system'. An overview of the approximated average crew's share is shown in table 5.5. This indicates that the % share assigned to the crew is in inverse relation to vessel size, due to the higher proportional costs of fuel and ice.

Table 5.5 Crew's share as percentage of 'net fisheries' in Denmark

Vessel size	Crew share
- under 100 GRT	50%
- from 100 to 150 GRT	45%
- from 150 to 300 GRT	40%
- from 300 to 400 GRT	37%
- over 400 GRT	32%

Source: Cowi Consult, 1988, Report no. 4.

In general there is not any limitation on working hours or minimum number of the crew 1).
The skipper has to pay the following social costs:

a) labour Market Supplementary Pension Fund, where the employer has to pay 0.80 DKK per worked hour, and the employer gets a compensation from the Government on 1,166 DKK per full time employee per year;
b) sick leave compensation, which is an insurance system, where the employer has to pay 0.7% of the total wages per year;
c) Labour Market Donation, which is a charge of 2.5% of the vessel's net revenue, calculated by deducting raw materials from gross sales. This donation was suspended from the 1st January 1992 and instead of this the VAT is increased from 22.25% to 25%.

5.1.5 Fisheries management regulations

There are two levels in the Fisheries Management Regulations: 1) the overall EC resource and conservation policy and in addition, 2) the national regulation policy, which tends to be more restrictive than the EC policy.

This applies for example in the case of minimum landing sizes, where the Danish regulation is more stringent than the EC's in the case of cod and haddock. It also applies in relation to by-catches (EC specifies 10% maximum for protected species) where the Danish regulation specifies lower allowed maximum quantities per trip for reduction for haddock and cod and nil for whiting.

In figure 5.3 is shown how the general TAC of the EC is supplemented with five Danish restrictions. The most used restrictions are quarterly quotas, where the TAC is distributed over the year in order to prevent a run on the single species. The dis-

1) The crew rules for vessels over 500 GRT are stated by Søfartsstyrelsen.(Department for Sea Travel).

tribution of quotas with respect to vessel length secures to some extent the profitability of the big vessels.

The licences in the herring and mackerel fisheries are not transferable, but are distributed from the 'Committee of Regulation' in order to fulfil allocational and political goals. They also function on the same time as an effective restriction (entry barrier) in the fisheries. Licences are valid for up to one month, and for the mackerel vessel length determines the quota level, which is halved if the vessel have both a mackerel and herring licence.

The herring licence is more complicated, there are two sorts:

1) 'pure herring licence', where it is allowed to catch herring + 20% fish for reduction (sorted: blue whiting, horse mackerel) + 50 tons mackerel per month;
2) 'combined herring licence': Which is a half quota of the 'pure licence', but it is allowed to catch 50 tons mackerel + fish for reduction except for the species: (sprat, sandeel and other species in the Norwegian zone in the North Sea).

	License	Quarterly semi-annual quota	Quota per month/week dependent on vessel length	Quota per trip not dependent on vessel length	Easter stop
Cod		X	X		X
Haddock		X		X	X
Whiting					
Hake					
Dark Saithe					X
Plaice					
Sole			X	X a)	
Mackerel	X b)	X	X		
Herring	X		X c)		
Sprat		X	X d)		

Figure 5.3 The Danish regulation of the fisheries in the North Sea, 1991

a) Functioning only in the period from 1 Jan. - 28 Feb. 1991 where a maximum of 100 kilo per trip is allowed.
b) It is allowed to fish 50 kg per month without license.
c) Quota per month is only a restriction in the ICES regions: VIa, VIb and IIa; but not in the regions IVc, VII d.
d) For sprat the quota are set per trip, dependent on the vessel length.

A Danish regulation to fulfil the EC goal of reduction in capacity is managed by the 'Committee for capacity'.

In general the individual fisherman is permitted to:

a) replace the old vessel by a new one, which has the same dimensions, GRT and type as the old one;
b) to install a new engine, which has a power of maximum 10% more than the old engine.

In case of increasing the fleet capacity permission is required from the 'Commission for Capacity.

5.1.6 Other circumstances influencing earnings and investments

Broadly speaking the two main influences driving investment in fishing vessels in Denmark are probably fiscal policies relating to vessel depreciation and to interest payments; the former because the fishermen are in effect subsidised via the Depreciation Law of 1957, which permits depreciation allowances to be brought forward in advance of 'actual' depreciation. Also the 1982 Depreciation Law was very important in this respect. The general goal of this law was to increase investments in the future, whereby the capital basis for depreciation of capital obtained after 1.1 1982 was increased technically by multiplying the capital balance with an index of inflation. Capital obtained before 1982 was not index-linked. In 1983 the law was extended to include also improvement costs on capital obtained before 1982. Investments where also stimulated by the temporarily increase of depreciation from 30% to 50% in the years 1986-1990. This stimulus was a result of the shipyard crisis in 1986.

The full deduction of interest in the income, which was in force until 1985, in connection with a high inflation rate, meant that the real after tax interest rate in periods in the sixties and seventies has been negative, whereas in the eighties the real after tax interest rate have been positive.

Looking separately on the regulation of the fisheries, the resulting effect on the investments is negative, firstly because of reduced catch opportunities, and secondly caused by the increased uncertainty about the regulations in the future.

The withdrawal element in the EC structure policy is widely used in Denmark. This provides an additional source of income for the fishermen.

5.2 Effects of tax regulations and EC measures on profits and incomes of fishery enterprises in France

5.2.1 Tax Regulations

The fishing sector has four tax categories, i.e.: income taxes, taxes on professional capital gains or losses, an equipment fee and parafiscal taxes.

Income taxes, calculated on taxed income, are managed by the tax authorities (Centre des Impôts - Tax Center). The independent professional fisherman is taxed on the Industrial and Commercial Profit on his business and on his income (wage). Industrial and commercial profits are regulated by three tax systems: (i) the lump-sum tax system for ships with a revenue of less than FRF 0.5 million, (ii) the simplified real tax system for revenues from FRF 0.5 to 3 million and (iii) the real (normal) tax system for revenues in excess of FRF 3 million. The accounting and tax obligations of these three methods of taxation are different. Compared with the normal real tax system, the simplified real system offers fewer declaration formalities and simpler accounting documents for the tax authorities (abridged balance sheet, simplified income statement and notes, etc.).

In annex 3 a calculation of the tax amount applicable to vessel owners is shown in an example. The amounts of depreciation for fishing vessels are in practice mostly calculated according to the fiscal life-time. Two methods may be used: straight-line and digressive depreciation. The rates of depreciation are negotiated by agreement with Tax Receipts up to a certain point.

Table 5.6 gives a summary of the mean income tax rates for different income levels (the figures are not exact because the formula has been simplified).

Table 5.6 Income tax rates in France for couple with two children (1990)

Income level in FRF between	and	Mean tax rate in % of income
0	56 303	0
56 303	58 833	0.22
58 833	69 738	1.68
69 738	110 226	6.35
110 226	141 676	9.21
141 676	177 855	12.22
177 855	215 240	15.10
215 240	248 317	17.56
248 317	407 525	25.70
510 450>		>31.0

For couples without children the mean tax rate is substantially higher. In this case income tax becomes applicable (mean rate 0.22%) from an income level of FRF 38,000. The mean tax rate of 15.1% applies for an income level of FRF 130,000 in stead of 195,000 for a married couple with two children.

It has to be considered that pensions for retirement are not paid from tax receipts, as is the case e.g. in Denmark. The pension system is managed in France by independent superannuation funds. In paragraph 5.2.4 the contributions for these funds are presented.

The full rate of *Corporation tax* is 37%. Distributed dividends are taxed with a tariff of 8.62%.

Tax rebates relating to industrial and commercial profits are available to members of the Centre de Gestion de la Pêche Artisanale. Ships subject to income tax and placed under the real tax system and members of the Centre de Gestion for the entire financial year are offered two different rebate rates (20 and 10%), subject to a maximum rebate. The rate application system is shown in table 5.7. The maximum amount of rebate varied from FRF 87,400 in 1987 up to FRF 103,300 in 1990.

Table 5.7 Maximum profits related to tax rebate (FRF)

Rebate %	Maximum profit amount in year			
	1987	1988	1989	1990
20	320,000	400,000	413,000	426,000
10	554,000	569,000	588,000	607,000

(Source: CGPA, Centre de Gestion de la Pêche Artisanale).

Taxes on professional capital gains or losses are applied on the sale or loss of a ship or suspension of business. This is an exceptional loss or gain which is entered in the books when a fixed asset is taken from the books. Tax payers whose revenue does not exceed FRF 1 million (1991) are exempted from these taxes.

5.2.2 Subsidies

Fishing aids are governed by the circular of January 14, 1983, modified by the circular of October 2, 1989, and applied since November 23, 1989, according to interpretation memo Nr 4435 of the Ministry of the Sea. This circular deals with subsidies and loans for building new vessels/modifying existing ones. It applies to independent professional fishing boats to over sixteen meters long for the Channel, the North Sea and the Atlantic; and over eighteen meters long for ships registered in the Mediterranean. The fisher must own the ship (at least the majority of shares) and must be on board. The subsidy basis consists of the total cost of the order contract. The basis is limited to the average cost of a ship of 24 meters subsidized the year before.

Subsidies break down into two premiums: the basic premium and the complementary premium. The first may reach 15% of the investment cost and consists of two parts, a conditional part fixed at 10% for ships in sensitive areas (cf EC Regulation 4028/86) and 5% for other ships and a non-conditional part of 15% for the difference. The complementary premium (7%) is paid as soon as the conditions for paying the conditional premium have been met. A ship can obtain at most 22% of national subsidies plus regional aid. The conditional premium is used to offset the non-commitment of the EC in certain cases. From December 31, 1990, because of the failure of the French fishing fleet to meet the objectives of the Pluriannual Orientation Program of France (POP), any aid in the form of a subsidy or interest bond can be considered incompatible with the Common Market in the meaning of Article 93, paragraph 2 of the Treaty of Rome. This is intended to do away with the financial interventions of regions or other territorial authorities for constructing new ships during the POP application period.

The 1988 implementation (September 22) of an Operating Permit for newly constructed ships, new ship's engines and new ship's outfits has made access to resources more expensive. Speculations have grown up around the market of second-hand ships because of the limited availability of Kw permits. At the same time, aids in converting and modernizing ships have remained linked to POP objectives. The premium system is equivalent to the proposed shipbuilding system and based on the conversion cost, limited to 50% of the value of an equivalent new vessel.

Since April 18, 1991, a circular specifies the procedures for allocating State subsidies when fishing vessels are finally scrapped. These aids apply to ships with more than ten years of service.

Almost 1 000 ships became eligible for these premiums on March 1, 1992, representing a reduction of the total power of almost 10%.

5.2.3 Finance of fishing vessels

The aforesaid circular (of January 14, 1983, modified October 2, 1989) specifies the special financing methods applied to the French fishing sector. Special loans may be granted for the construction of ships, the purchase of a second-hand vessel or conversion. The interest rate on this loan is 5%, applicable according to the following criteria:

- Ship of 12 meters or more, 92% on first outfitting and 66% in all other cases (the maximum redemption time is 12 years);
- ship of less than 12 meters, 50% on first outfitting and 20% in all other cases (redemption time of 9 years);

- substantial conversion of ships of less than 15 years old, 75% on first outfitting and 50% in all other cases (redemption time of 7 years);
- acquisition of second-hand ships of less than 15 years old, 12 meters or more, 75% on first outfitting and 20% in all other cases (redemption time of 10 years);
- acquisition of second-hand ships less than 12 meters long, 30% in all cases (redemption time of 9 years).

The breakdown of aid between the EC and the State in the recent years before the Mellick Plan promises a larger share from the EC but also the implementation of stricter POPs for diminished fishing capacities. In 1985, the State allocated 33.4% of total fishing aid (EC 66.4%) while the 1987 breakdown included national aid of 41.2%.

5.2.4 Landing costs, renumeration of the crew and social insurance

Landing costs have two main components: the equipment fee or auction tax and parafiscal taxes which are collected by the organization managing the auction, the Local or Central Committee.

The equipment fee or auction tax differs in France for each port. These taxes are collected and inspected by Customs or an authorized agency. In most cases, they are collected by the managers of port and auction infrastructures (Chambers of Commerce). These taxes are ad valorem, as they are proportional to revenue. In case of sales other than auctions, the buyer must pay these equipment taxes to the customs collection authority. In certain ports, this first series of taxes may include payments for seamen's mutual aid funds, for training and for the auctioneers, e.g. the equipment tax applied in November 1991 in Guilvinec (2.67%), Loctudy (4.24%), Concarneau (2.85%) and Etaples (3.00%) These figures do not correspond to a homogeneous set of taxes for these four ports. The services proposed in consideration of these taxes are therefore different and tend to distort comparison. Mutual aid funds and training tax are not applied in all four ports. These taxes are intended for the ports of unloading. The Producer Organizations (1.5% PO in Guilvinec), the FROMs (0.30% plus FRF 0.02/kg FROM in Guilvinec) and the cooperates also collect ad valorem taxes based on a fixed cost per kilo unloaded.

Parafiscal taxes are collected by the organization managing the auction or the Local Committee or the Central Committee, which in turn pay the professional beneficiaries of the ship's home port. These taxes may be ad valorem (based on revenue or fixed wages). The beneficiaries include the Local Committee (CLPM, from 0.02 to 0.50%) and the Comité Central des Pêches (CCPM, Central Committee of the Fisheries, 0.306). This CCPM per-

centage breaks down as follows: 0.03% for the CCPM, 0.121% for the Fonds d'Intervention et d'Organisation des Marchés (FIOM) and 0.155% for the Service Social des Pêches Maritimes.

For renumeration of the crew earnings are broken down between outfitters and labour on the basis of net earnings minus common expenses. The crew-outfitter breakdown occurs according to previously fixed percentages. This percentage differs from 45% to 55% for outfitting, depending on the vessel. The remuneration of crew members is calculated according to a specific breakdown key. The share system is often applied as follows: 1 1/2 share for the owner, 1 1/4th share for the engineer, 1 share for the seamen and 1/2 share for trainees. This calculation is based on the crew remuneration share (45 to 55% of net sales). Social security contributions are deducted from this amount.

The Etablissement National des Invalides de la Marine (ENIM) manages the social security system of seamen through the Caisse de Retraite des Marins (CRM) and the Caisse Générale de Prévoyance (CGP). Social security contributions are calculated on the basis of the lump-sum salary of the category in which the seaman is classified. This category depends on the diplomas, navigation hours, type of vessel and the positions held on board. The contribution rate is fixed by decree; a percentage is paid by the owner and a percentage is paid by the seaman. The 'crew list is used as a basis for calculating these contributions. The owner is responsible for paying all contributions due to ENIM. Accordingly, he must apply withholdings to the pay slips. The rates in force on January 1, 1989, for fishing fleets ranging from 12 to 25 meters and specialized in coastal or ocean fishing break down as follows:

- The owner, on board, pays 18.30% of his lump-sum salary like all seamen on board (11.9% for the CRM and 6.4% for the CGP);
- the outfitter pays the other contributions, i.e. 18.55% for his contributions (13.00 + 5.55) and 25% for the seamen (14.0 + 11.0).

These rates are applied to the daily lump-sum salaries multiplied by the number of fishing days. Accordingly, the contributions are not calculated on the real results but on the lump-sum salaries applied to all according to a seaman or owner identification grid.

These contributions cover the risks of illness and disablement but not the unemployment risk.

Table 5.8 shows the amounts of lump sum per fishing day per category and the level of social insurance contributions.

Table 5.8 Lump sum salaries, social security and pension contributions in France in FRF per fishing day

Seamen category	Lump sum	Social security contributions		Pension contributions	
		seamen 11.9%	out-fitter 13%	seamen 6.4%	out-fitter 5.55%
1	154.02	18.35	20.03	9.84	8.51
2	191.50	22.82	24.91	12.28	10.61
3	229.05	27.29	29.80	14.66	12.70
7	296.32	35.24	38.52	18.98	16.47
15	512.11	60.93	66.58	32.80	28.40
20	798.66	95.05	103.85	51.09	44.32

5.2.5 Fisheries Management Regulations

Apart from the EC technical regulations, the French fisheries regulation is based on financial incentives (loans and subsidies) at national level, and licensing schemes at local level. Since Spain and Portugal joined the European Community, each member-state has to insert Multi Annual Guidance Programmes (MAGP) within its fisheries policy. The evolution of fleet capacity in Europe led the European Commission (EC), in 1988, to oblige the member-states to return to the level of 1983. Member-states being free to choose the appropriate means for this purpose, France implemented a permit system, called 'Permis de Mise en Exploitation' (PME). An investor has to withdraw more Kilowatts (Hp) from the existing fleet than is required for any new vessel. The PME system preserves the existing local regulations.

Implementation of 'PME'

It may be important to recall that the PME is the first fleet regulation scheme implemented in France at the national level. The fleet considered in MAGP includes all the fishing vessels, apart from: vessels operating only in lagoons and estuaries, transoceanic tuna purseiners, oysterculture and aquaculture vessels, vessels fishing exclusively bivalves, coral, sea urchin and sponges.

A vessel is considered an 'active vessel' if it has fished one or more days over the past two years. The fleet is divided in length categories: < 12m; 12-16m; 16-25m; 25-38m; >38m. The gen-

eral feature of the system is that the applicant for PME has to withdraw :

- an equivalent power when the withdrawn vessel or engine belongs to the applicant for at least two years;
- in other cases the withdrawn power must be equal to 1.3 times the power entered with the PME. The resulting 0.3 is used to reach the objectives of MAGP and, for a part, to help the applicants who need a few kW to achieve their investment project. For this purpose, a public kW funds is constituted and shared among the regions, who can use it in order to facilitate the entry of young investors;
- tuna purseiners and vessels operating exclusively in lagoons and estuaries, as well as unmotorised canoes obtain full-right PME;
- the investors who engaged investments before the date of the decision obtain full-right PME: these PME are familiarly called 'started shots';

The kW issued from withdrawn vessels in a defined length category must be utilized for a PME in the same length category. The exception is for the categories 16-25 and 25-38m, among which the kW are transferable. Aggregation of kW is allowed within the same length category. Furthermore, several PME may be aggregated within the same length category. The PME is boat and person specific and is therefore not transferable. The impact of PME has been evaluated after one year of implementation:

- the system proved its ability to stabilize total Kilowatts within the French fishing fleet at a set level, not of reducing it;
- the necessity to withdraw Kilowatts (when at the same time PME is not transferable), boosted the value of second-hand vessels, by capitalizing the expected future value of the corresponding Kilowatts. The average value of kW reached 2,700 French Francs early 1990, and decreased to FRF 1,700 at the end of 1990, before the implementation of the 'Plan Mellick';
- the usual effects described in the literature (Rettig, 1990) are exhibited by the PME. The constraint of length classes, linked with the possibility of accumulating Kilowatts within one class results in new Kilowatts-saving vessels, and widening the vessels near to the upper limit of each class. 'PME vessels' (catamarans) appeared in advertising one year after the introduction of the permits, and this implied a shift in gears, from trawling to gill and drift netting.

The French PME system is, of course, not sufficient to design a fisheries policy. Its main advantages are its ability to stabilize the Kilowatts in the fleet and its compatibility with locally adapted licensing schemes. In the longer term, it doesn't avoid over investment, through technical innovations and new vessels designs. To prevent over investment may also be obtained

at local level, in close relation with the peculiarities of local fisheries.

Quotas

The allocation of EC-set national quotas is a two-step process based on historical records. First, to determine the share of each of the five regions identified along the Atlantic and North Sea shores, a bargaining process takes place at the national level between state and industry representatives. And second, quotas allocated to each region are shared between fishermen belonging to Producer Organizations (PO) and others. Statistics related to the use of fish quotas are collected at the national level and controlled at the PO level. This allows for the targeting of fisheries closure, once the relevant quota has been exhausted.

Not being individualized, quotas are not transferable. Moreover, there is no direct relationship between EC-set quotas and local or national licensing schemes.

Producers Organizations are involved in fisheries management through quota allocation and the stabilization of ex-vessel prices. This they achieve through the setting of withdrawal prices within limits defined by Common Market Policies. Providing they use their own resources and still respect these limits, POs are now allowed to extend their support from species not previously agreed upon at EC level to other species of local interest. However, POs are excluded from any direct participation in licensing schemes or grants and subsidies allocation.

5.3 Effects of tax regulations and EC measures on profits and incomes of fishery enterprises in the Netherlands

5.3.1 Tax Regulations

For the majority of the vessels in the Dutch cutter fisheries (76%) *Income Tax* has to be paid. *Corporation Tax* applies for the vessels (24% of total) which are owned by a Limited Company ('B.V.'). Income Tax in the Netherlands varies from 13% to 60% after deduction of a part of the income which is free from taxes (the allowances in table 5.12). The 13% tariff applies to a taxable income up to NLG 42,000. In fact a rate of 35.1% has to be paid about this amount, but 22.1% is a premium for pensioning and disablement. The Corporation Tax is 40% of the fiscal profit of the enterprise, not exceeding NLG 250,000 and 35% above this amount.

Table 5.9 shows that in 1990 the Income Tax rate was lowered because the lower (13%) tariff applied for a much higher level of taxable income.

Table 5.9 Corporation tax rates (%) in the Netherlands (Ltd. companies only

Profit levels	1984	1986	1989	1990
Up to NLG 250,000	42	42	40	40
> 250,000	42	42	35	35

Table 5.10 Income tax allowances in NLG and income tax scales in the Netherlands

Allowances and income tax rates	1984	1986	1989	1990
Income tax allowances				
For married persons	13,200	14,682	14,830	9,136
For single persons	7,662	7,341	7,415	4,568
Income tax Rates on charged Taxable income				
13% *) up to				42,123
14/16% up to	9,430	9,574	9,684	
24/26% next	7,031	7,373	7,446	
32% next	13,983	14,673	14,509	
41/42% next	12,299	12,886	13,022	
50/52% next	19,444	20,389	20,590	42,122
60/62% next	24,959	26,171	26,428	>84,245
Maximum 72%	>218,075	>228,355	>230,314	

*) Increased with 22.1% premium for pensioning and disablement (1990).

When calculating the profit for tax purposes the amount of depreciation is an important item for fishing vessels. Depreciation in this respect has to be based upon the historical building or purchase price of the vessels. Different depreciation methods (straight-line, declining balance) are allowed, providing that consistency is practised. Periods of depreciation mostly practised in the Netherlands are 20 years for the hull, 10 years for the engine and 5 or 10 years for equipment. Investments in individual fishing rights, (ITQ's, licenses) undertaken in recent years, are becoming relatively important. These investments may

lead to relatively high amounts for depreciation, because purchased fishing rights are depreciated in 5 or 10 years.

When calculating the profit of a fishing vessel for tax purposes four important deductions are allowed:

1) A yearly addition to a fund for survey of the vessel;
2) a deduction for retirement (payments for life annuity, additions to a special fund for retirement);
3) special deductions for entrepreneurs (max. NLG 5 915);
4) a deduction based upon the capital of the owner in the enterprise (1% of this capital).

Most of these deductions are personal so that they do not apply to the Corporation Tax, except the additions to the survey fund and the deduction for the capital of the owner in the enterprise (equity).

It is allowed to compensate a loss in a certain year with profits in the three previous years ('carry-back').

A provision of special importance for fishing vessels relates to *capital gains*. It often occurred in the Dutch cutter fisheries that the selling price of the (not very old) cutter far exceeded the book value of the vessel. In such cases this realized gain is not directly taxed but can be reserved for replacement of the vessel. The price of this new vessel is then lowered by this selling gain, so that the depreciation amount in subsequent years is also lowered. Thus the taxation of this capital gain is shifted to future years.

It is also necessary to note the position in the case where an enterprise is liquidated. In such cases the real value of the assets may exceed the value on the fiscal balance sheet and this causes a final taxation of 45% of the liquidation gain.

The *Value Added* Tax (VAT) does not apply to auction sales of fish. Fish which is directly sold to wholesalers is taxed with 6%; the costs of the enterprise ashore and as far as they refer to the territorial zone are taxed with 18.5%.

Main effects of these Tax Regulations on the fishery economy were and still are:

a) Stimulus for investments in new ships, in time of rising building costs. Fishermen wanted to diminish their tax payments by calculating higher depreciation costs which needed investment in a more expensive new vessel;
b) resistance to liquidate the enterprise and to apply for the decommissioning scheme due to the tax rate of 45% for liquidation gains.

5.3.2 Subsidies

During the years 1978-1986 fishery enterprises could obtain a basic investment premium of 12.5 or 15% of the investment amount. This subsidy resulted from the Investment Subsidies Act, which was in force for the whole economy during that period. A

supplementary to a maximum of 6% above the basic subsidy was paid to more or less small investments.

Investment subsidies according to EC Regulation 4028/86 could be received till 1986 for new vessels and modernization of (operational) vessels and till 1990 only for the latter. The Dutch Government paid 5 or 10% in addition to the EC subsidy percentages.

Since 1988 licensed fishing vessels can apply for a decommissioning grant in case of scrapping the vessel, using it outside fisheries or selling the vessel to a non-EC country. For vessels less than 59 m a premium of ECU 1,800 per GRT can be received, whereas ECU 650 per GRT is paid for vessels of 59 m and over. The premium of ECU 1,800 is partly (ECU 300) funded by the Fishery Sector by a levy based on Hp of the vessels. In June 1991 this contribution of the Fishery Sector was ended because the goal of the decommissioning scheme, from the viewpoint of the sector, was reached: an overall reduction of 90 000 Hp (66 150 kW).

The Hp licence of the vessels which are accepted for decommissioning has to be returned; the owners of these vessels can sell their individual flatfish quota to other vessel owners. The decommissioning scheme also provides for payments to crew members (except share fishermen) who lose their job in case of decommissioning.

The effects of these subsidies in the Dutch cutter fisheries were, or are:

a) Investments in new cutters were highly stimulated by the investment premium mentioned above. This subsidy, added by the fiscal stimulus to raise the deprecation of the vessel, explains the investment boom in the cutter fisheries in the period 1979-1989 to an important extent;
b) EC Regulation 4028/86 stimulated the construction of so-called 'Euro-cutters' with an engine of 300 Hp. In the period 1979-1986 55 of these cutters were added to the fleet of which an important number had been subsidized according to Regulation 4028/86. Moreover the modernization component of this Regulation stimulated the investments in catch processing equipment on board;
c) the decommissioning scheme has already lead to a substantial decrease (90 000 Hp to mid 1991) of the fishing capacity of the Dutch cutterfleet.

The number of cutters decreased from 603 at end of 1988 till 533 at the end of 1990. This decrease is also a result of the regulations described in section 5.3.5.

5.3.3 Financing of fishing vessels

There are no specific Regulations or conditions for financing of fishing vessels in the Netherlands. Generally speaking the

terms and conditions of credit are the same as for other branches of industry, especially those for small and medium size enterprises. For fishing enterprises this implies financing via mortgage loans, to an important extent combined with a current account credit, at normal interest rates (about 9.5% mid 1991) and a term of 10 years mostly.

Commercial Banks and the Co-operative Bank are the main suppliers of credits for the Dutch cutters.

In the past 20 years good relations with these banks were important for the finance of new or second-handed vessels or new engines for the cutters. An important part of the owners' contribution to the finance of a new vessel could be obtained by selling the 'old' vessel at a high price. Financial problems, if they occurred, were mostly found with the buyers of high priced second-handed vessels. On average, the Dutch cutters are financed with 40-50% own capital, which is a rather high percentage, given the young age of most vessels.

5.3.4 Landing costs, renumeration of the crew and social insurance

The total of landing costs for fishing vessels (excl. harbour dues) is about 7% of gross earnings. Auction fee (3%) and costs of unloading (globally 3%) are the main costs in this respect. Fees of less than 1% have to be paid to the Fisheries Commodity Board (0.2%) the P.O.'s and Fisheries Organizations. Harbour Dues differ widely but don't cause a heavy burden generally speaking. Some port authorities don't impose a levy when the fish is sold at the local auction.

In the Dutch cutter fisheries a share system applies, roughly speaking, for 85% of the vessels.

The labour share is calculated with a certain percentage (approximately 40%-45%, inclusive skipper-owner) of the gross earnings, after deduction of cost amounts such as fuel, auction costs, costs of navigational equipment, harbour dues, food. Each crew member receives a certain percentage of this amount of net earnings. This percentage varies from some 14% on small vessels to 7% on bigger ones. It will be clear that these fishermen don't have an income when the cutter remains in the harbour; they have no unemployment insurance.

A premium is paid for the Social Fund for Share Fishermen (NLG 2,900-3,500 a year) and this covers income losses in case of illness and disablement. Other fishermen (some 15%) have a Collective Labour Agreement, as a result of negotiations between the vessel-owners and the trade-unions. The income of these fishermen also depends on the level of gross earnings, but they are assured of a minimum wage in case of very low earnings. Furthermore the wages on these vessels are more differentiated according to functions on board. The fishermen to which a Collective Labour Agreement applies are fully insured against risks of illness, unem-

ployment, disablement, according to the official Dutch Social Security System. This means a total premium of 35% and another 14.3% general pension premium of the gross wage.

The Labour Share System had and still has an important influence on the development of the Dutch cutter fisheries. It kept the number of crew on board rather low, lead to high incomes for the fishermen in many cases, stimulated the effort of the crew and also caused pressure from the crew to invest in a new cutter which promised a higher income.

5.3.5 Fisheries management regulations

Apart from the EC technical regulations (mesh sizes, boxes, etc.) The Netherlands has introduced the following policies to adjust the fishing capacity to the available quota. Approximately 100 million guilders has been made available for this purpose.

General licensing system

At the end of 1984 all vessels which were fishing on stocks regulated by TAC's were given a licence specifying the maximum power of their main engine. Vessel operators who could prove that they had ordered a new vessel prior to the introduction of the system and that they were already financially committed, were also given a licence. Since then no new licenses have been issued so that the fleet cannot further expand.

The licenses are transferable and if necessary can be subdivided into smaller parts to be transferred separately or cumulated to a larger whole. An unused licence loses its validity after 2 years.

Individual transferable quota for flat fish

About 10% of the national quota for plaice and sole is kept in the 'National quota reserve'. The other 90% is divided proportionally among ITQ holders. The original proportions were determined in 1977 on the basis of historical performance and specific norms. The annual ITQ's are proportionally adjusted to the changes in TAC's.

All ITQ transactions must be registered by the Ministry of Agriculture and Fisheries. However, in the past trading was sometimes confused especially by the end of year. Therefore individual holders are not allowed to buy or lease additional quota if they have already caught more than 90% of their ITQ.

Individual non-transferable quota on cod and whiting

Of the national quota for cod and whiting 20% is allocated as by-catch to the beam trawl fleet fishing for flat fish. The remaining 80% is divided equally among the so called 'document holders'. Two types of documents have been distinguished: a sea-

sonal one (usually valid during the first 3 months of the year) and an annual one.

In all cases a maximum weekly catch for cod and whiting is determined. When the average catch remains below the maximum, so that by the end of the year the quota would not be fully utilized, these quantities may be increased.

No new entrants are allowed into this fishery. When certain vessels leave the fleet (e.g. through the buy-out scheme), their fishing rights are divided equally among the remaining fishery enterprises.

Maximum power of main engine

Newly constructed cutters may install a main engine of at most 2 000 Hp (1 470 kW).

Maximum number of sea days for cutters

In 1991 most cutters may spend a maximum of 150 days at sea. For vessels with a full licence for cod and whiting the maximum is 172 days. To count the days, an exact system has been determined in terms of times of leaving the port and returning to it. There is also a specific sub-division into the four quarters. This is a serious constraint for the larger cutters (above 1 500 Hp) which used to sail before over 200 days per year. According to law all vessel owners must be in the position to fully utilize their fishing rights, specifically the ITQ's. Therefore those owners who posses relatively large ITQ's may be exempted from the general maximum. In those cases an individual maximum number of days is established.

Maximum width of beams in the beam trawl fishery

The maximum beam width has been set at 2*12m, independent of the size of the vessel. This rule is technologically consistent with the 2 000 Hp rule. Previously beams of up to 17m has been used. In the meantime this regulation has been accepted by the EC as a whole.

Obligatory and systematic control of landings

For all fishing ports specific times have been set when the vessels are allowed to unload their catch. The catch declaration according to the logbook is checked during unloading by employees of the 'General Inspection Service', a division within the Department of Agriculture and Fisheries.

This information is further cross-checked with data obtained through the administration of the fish auctions and of the individual fish traders, who are obliged to keep track of the origin (vessel number) of their fish.

All information is fed into a computerized system. Vessels which come to exhaust their ITQ's are ordered to stop fishing. In case they fail to do so judicial action is undertaken against them, resulting in fines.

The extremely intensive control system, mentioned before has lead to a discussion about alternatives for the ITQ-system. The Ministry and the Fishing Industry are considering a system of translating ITQ's into days at sea, individualized for each cutter. Counting days at sea might be a less labour intensive control system than counting each box of fish landed.

The past years show the following effects of all these regulations on the fishery economy:

a) The Hp licence system lead to an end of the expansion of the Dutch cutter fisheries in 1988; from that year the decommissioning scheme caused a decrease in the fishing capacity in terms of horsepower with 5% till the end of 1990;

b) the limitations of the number of days at sea meant an important reduction of the fishing effort. This reduction is estimated by the Ministry of Agriculture and Fisheries to have amounted (together with the reduced beam-trawl length) to some 13%. This caused in fact a reduction of nominal fishing power of the fleet (exclusive of shrimp fisheries) from 508 000 Hp to 442 000 Hp (373 400-324 900 kW);

c) the regulations described above were one of the causes of the decrease in gross earnings and net profits (losses) in 1987 and 1988. Especially the large cutters (1 500 Hp and more) which had a relative low productivity due to the low number of days at sea and the beam-trawl reduction. Net results for these cutters would have been much better without all these regulations. Also taken into account the bigger sole catches which would have occurred in a situation of unlimited fishery. Costs and earnings of smaller vessels were also affected and a special problem for this category were the fewer fishing possibilities for multipurpose vessels.

5.3.6 Other circumstances influencing the costs and earnings and investments of the fishing enterprises

The Dutch cutter fleet is exploited by family owned enterprises. A main characteristic of these enterprises is their ability to survive in adverse economic circumstances. In these situations the owners accept low renumerations for their labour and invested capital in favour of the continuity of their enterprises. On the other hand family ownership also explains the expansion of the enterprises. A number of vessel owners with several sons invested in new cutters to give each son the position of skipper-owner; in several Dutch fishery communities, like Urk,

there is a strong competition between vessel owners to exploit a big cutter or to maintain their position among the best skippers. The 24% of vessels owned by a Limited Company, stated earlier, are in fact family owned vessels. This judicial construction is mainly due to tax reasons and reasons of succession in ownership. In the Dutch cutter fisheries a concentration tendency can be distinguished resulting in a group of enterprises, exploiting more than one ship (15% of total), which has 55% of the fleet's Hp capacity in operation. On the other side nearly half (47%) of the number of cutters consisted of relatively small vessels with an engine of 300 Hp or less.

The Dutch fishery enterprises are not integrated with marketing activities. They are specialized in fishing, in many cases one type of fishing: beam trawling.

The enterprises are in many cases organized in co-operations to get advantages in jointly buying of oil, fishing gears, materials etc.

Finally it can be stated that Dutch fishery enterprises are not very united. They are represented by two Fishery Organizations; a uniform policy is very hard to realize, not only in negotiations with the Government, but also in efforts to get price advantages by spreading the landings throughout the year.

5.4 Effects of tax regulations and EC measures on profits and incomes of fishery enterprises in the United Kingdom

5.4.1 Tax Regulations

All corporate, partnership and individually owned enterprises in the United Kingdom are subject to tax. Limited liability companies are liable to Corporation tax on retained profits at the rates shown below (5.11) while the distribution of dividends by companies and the allocation of the profit of other enterprises, be it among partners or to the sole owner are, after allowance, subject to Income tax (5.12). Any capital gains made on the disposalof assets e.g. on the sale of a fishing vessel, is treated as additional income in the case of companies but in other cases becomes subject to Capital Gains tax (figure 5.4).

Table 5.11 Corporation tax rates (%) in the United Kingdom (Ltd. companies only)

	1984/ 85	1985/ 86	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91
Full Rate	45	40	35	35	35	35	35
Small companies	30	30	29	27	25	25	25

Table 5.12 Income tax allowances in GBP and income tax scales in the United Kingdom

Allowances and income tax rates	1984/ 85	1985/ 86	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91
Income tax allowances							
for married persons	3,155	3,455	3,655	3,795	4,095	4,375	4,725
for single persons	2,005	2,205	2,335	2,425	2,605	2,785	3,005
Income tax rates on charged taxable income							
25% up to	-	-	-	-	19,300	20,700	20,700
27% up to	-	-	-	17,900	-	-	-
29% up to	-	-	17,200	-	-	-	-
30% up to	15,400	16,200	-	-	-	-	-
40% next	2,800	3,000	3,000	2,500	>19,300	>20,700	>20,700
	(Rose progressively to max. 60%)						

	1984/ 85	1985/ 86	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91
Annual exemption amount	5,600	5,900	6,300	5,500	5,000	5,000	5,000
Rate on excess (%)	30	30	30	30	(Income Tax Rates)		

Figure 5.4 Calculation of capital gains tax in the United Kingdom (not Ltd. Companies) (GBP)

These three taxes are the principal revenue raisers employed by HM Government to generate revenue from the catching sector. As it is classed as a food producer, costs associated with commercial fishing are excluded from *Value Added Tax*, the other major Government revenue earner.

Comparatively few vessels, possibly not more than 100 of the 8 000 vessels in the United Kingdom fleet, are wholly owned by companies subject to Corporation tax at the higher rate, currently those with an annual profit in excess of £ 250,000. The remainder of the vessels are skipper or family owned sometimes with a share held by the vessel's shore agent, of this latter

group approximately 10% are estimated to have chosen company status and limited liability.

Since the election of the Conservative Government in 1979 rates of direct taxation in the United Kingdom, as may be seen in the tables, have been progressively reduced. Against this background the influence of taxation on profitability and investment in the catching sector as in other industries, has become progressively less negative. Given the fluctuating profitability of this sector and the ability to carry forward losses as a charge against future profits together with free depreciation to the mid-1980s and a 4 year straight line allowance since, enterprises have usually been able to avoid exposure to taxes. Throughout the 1980s this relatively free depreciation has played a substantial part in encouraging investment in new vessels.

5.4.2 Subsidies

Throughout the 1980s and before, United Kingdom Government aid has been available for the construction and improvement of fishing vessels. During the period 1981 to 1990 four 'Fishing Vessels (Acquisition and Improvement) (Grants) Schemes' were operated by the Sea Fish Industry Authority (SFIA) on behalf of Government. Grants were available to all suitable applicants other than for the purchase of second hand vessels or for the construction of purse seiners and these latter vessels would be considered for aid under the terms of the current Scheme. In addition there is the opportunity to apply for EC FEOGA grants.

Prior to the 1986 Scheme grants were made available in all United Kingdom regions for investment in both new vessels and improvements to existing vessels at the rate of 25% of total cost.

The 1986 Scheme raised the basic rate of grant to 30% for vessels up to 33m bp and lowered it to 10% for larger vessels, all projects being subject to a maximum grant of £ 250,000. Therefore, an owner who received a maximum grant for a new vessel would never qualify for a further grant for the same vessel. This limit also applied to an accumulation of projects carried out on a single vessel that remained in the same ownership. For vessels based in Northern Ireland, north and west Scotland including Orkney and Shetland the rate for vessels up to 33m was restricted to 20%, but this was increased to 30% if an owner was unsuccessful in obtaining a FEOGA grant. The reason for this 'clawback' was that the FEOGA grants paid in these regions were higher than elsewhere.

The current 1990 Scheme favours grants for projects specifically relating to safety improvements required by the Department of Transport (DoT). For this purpose all vessels 9m to 33m bp qualify for a 30% grant. The normal rate of grant for investment in new vessels, engines, non safety improvements and for safety improvement in vessels over 33m is 10%, but these grants are sub-

ject to the receipt by the owner of EC assistance. In practice, due to difficulties in meeting the requirements of the United Kingdom MAGP, in recent years the payment of grant for the construction of new vessels has been restricted to replacements of vessels lost through accident.

Additional assistance for the purchase of vessels in the northern regions of Britain has sometimes been available, notably from local Councils in the Shetland Islands and Orkney Islands and from the Highlands and Islands Development Board, now Highlands and Islands Enterprise.

Before being approved by the SFIA applications for grant assistance for new vessels are scrutinised, the criteria being that such vessels should be capable of breaking even or better on both operating and capital accounts during its first year of operation and also that the applicant(s) is introducing a minimum of 15% from his or their own resources. Many applicants for grant already own a vessel which when sold ensures that the 15% rule is rarely a deterrent to investment. During a control period, currently 10 years for new buildings, 3 years for DoT safety requirements and 5 years for other grants, any change in the ownership of a grant aided vessel must have the prior approval of SFIA and if it is sold outside the United Kingdom a proportion of the grant will be required to be repaid.

Grant assistance offered by the SFIA may be for the construction of new vessels abroad. However, while payment of such assistance for vessels being built in United Kingdom yards will be made at recognized stages in the vessels construction, that for vessels being built abroad is withheld until the vessel has been completed and registered as a British fishing vessel.

In addition to the capital aid in the form of grant described above, the United Kingdom Government has supported the catching sector with operational subsidies during periods of temporary hardship. The last occasion when such a subsidy was given was in the financial year 1981/2 when £ 25,000,000 aid was given under a Fishing Vessel Temporary Support Scheme in response to a decline in quayside fish values and high fuel prices.

5.4.3 Financing of fishing vessels

Government funded loans administered by the SFIA were available under the terms of 1970s Sea Fish Industry Acts and the Fisheries Act of 1981. The loan periods ranged between 5 and 15 years for new vessels and 5 to 10 years for re-engining. Rates of interest depended upon the duration of the loan and were fixed at the Treasury interest rate applicable at the time the loan was paid. Although the facility for loans is still in force the scheme was suspended in 1986 at the request of Government. This ended what was a prime function of the SFIA and the former White Fish Authority, of providing an alternative source of loans to

fishermen to those available through normal commercial channels, claimed in the past to be frequently set at premium rates for fishing enterprises.

Under the Industry Act of 1972 loans for the construction of new vessels over 100 GRT have been available at below both commercial and Treasury rates, indeed rarely in the last decade has the interest payable on personal savings been lower than those available under the Act. This Act was intended to encourage building of all types of ships in United Kingdom yards by offering favourable terms. Acting as agents and advisors to the Department of Trade and Industry, the Ship Mortgage Finance Company Plc (SMFC) guarantees loans made by the banks and compensates them for providing the loans below current rates.

The SMFC offer loans of 80% of the cost of construction and outfitting. Any grants, given during the building or after the vessel is built from any source, are deducted from the 80% offer ensuring that the applicant will always have a stake of not less than 20% in the vessel. As with loans provided by the SFIA an offer includes conditions relating to mortgage and insurance provisions that aim to provide security for the loan. The duration of a loan in excess of £ 1,000,000 is normally 8.5 years, slightly less for lesser amounts, but the interest rate has been fixed at 7.5% per annum. This compares with the usual bank borrowing rate offer, to vessels below 100 GRT, of 3% above base rate, a formulae that throughout the 1980s has never given a rate below 10% and in 1990 ranged between 17 and 18%.

5.4.4 Remuneration of the crew and social insurance

5.4.4.1 Social insurance

Share fishermen and other non-contract workers associated with British fishing vessels, other than as owners, are in terms of contributions and benefits associated with United Kingdom social security regulations; a category of self employed workers treated separately and preferentially from others. Ordinary employment of the fishermen is accepted to have ended when they are stood down from the crew of a vessel and, unlike other self-employed workers, they may then be entitled to unemployment benefit. To qualify for this entitlement share fishermen are required to pay an optional 'higher' rate, see table 5.13 below, of social insurance contribution. These contributions on some vessels are being paid by the vessel owner on behalf of his crew and charged as a running expense of the vessel.

With few exceptions all share fishermen and skipper owners were paying the higher share fishermen's rate of social insurance contribution, see table 5.13. In addition a levy was paid at the rate of 6.3% on annual earnings between ECU 8,600 and ECU 29,600 although a half of this levy is then taken as an allowance against Income Tax.

All fishermen, provided they have been paying National Insurance contributions for a qualifying period at any of the rates, are entitled at the age of 65 years to receive the retirement pension. In addition to this they may elect to make provision for a private superannuation income. Income tax exempt payments to such superannuation schemes are allowed up to a maximum of 15% of earnings, to qualify the payer for a pension on retirement of not exceeding two thirds of final earnings.

Table 5.13 National Insurance contributions in the United Kingdom in GBP per week

Fishermen category	1985/ 86	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91
Share fishermen						
Optional Higher rate	6.30	6.55	6.55	6.55	5.80	6.15
Opted out basic rate	3.50	3.75	3.85	4.05	4.25	4.55
Ordinary contracted employees charge 9% of (b)-(a)						
Lower Earnings Limit (a)	35.50	38.00	39.00	41.00	43.00	46.00
Upper Earnings Limit (b)	265.00	285.00	295.00	305.00	325.00	350.00

This unique arrangement for share fishermen to receive unemployment benefit is taken up by the great majority of those entitled. The present rate for single men is £ 41 per week and for married man £ 67 per week, it becomes payable after 3 days unemployment and is paid for a period of up to a year. Definitive data on the benefits paid by Government to fishermen as a consequence of paying the higher rate of contribution appears not to be available. However, research by the SFIA in the early 1980s indicated that payments to fishermen were four times the amount of the additional contributions and discussions with the industry suggest that this may be an underestimate.

The NI contributions mentioned in table 5.13 qualify the payer also for sickness, invalidity and basic retirement pension and several other benefits.

5.4.4.2 Crew remuneration

Earnings of crews in all sectors of the United Kingdom fleet are either wholly or largely related to the earnings of the vessel.
Throughout Scotland the crew's share, calculated on a trip by trip basis, is normally about half of the total gross earnings of the vessel after the deduction of running expenses or the fishing expenses as they are referred to in the industry. Usually each crew member takes an equal part of the total crew's share as calculated above, although the Skipper and Mate may be paid an additional part share. The other half of the net earnings of the voyage is credited to the Owners Account.

These arrangements for crew's to be remunerated on the basis of a share in the residual surplus implies in principal that the overall expected return on marginal new capital investment has to be relatively high for it to be seen as attractive to vessel owners. To compensate for this there has been a trend in recent years for costs originally accepted as being a charge against the Owner's account, such as gear expense and hire and repair to technical equipment, to be accepted by some crews as running expenses so reducing their share to the benefit of owners. A similar settlement system to that in Scotland is used at most other ports in the United Kingdom, but the larger vessels, usually company owned and based on the east coast, settle on the gross earnings of each voyage. When gross settlement is used a rate of poundage, expressed as an amount payable for each £ 100 of total grossings, is fixed for each employed rating in the crew.

5.4.5 *Fisheries management regulations*

Since 1983 anyone wishing to fish commercially for most species of demersal and pelagic fish must use a vessel holding a *'pressure stock' licence (PSL)* (vessels below 10m. are currently excluded). Such licences were introduced to help control the expansion of fishing effort in relation to all stocks deemed to be in need of conservation; is in danger of potential over exploitation. The effective market value of PSLs depends on economic prospects as perceived at any given time but recent transactions relating to larger vessels (around 20m.) suggest a current figure of up to 30 000 or more.

Under the PSL regime national quotas allocated under the EC's TACs were originally managed by the Fisheries Departments themselves. More recently however, much of the immediate management role has been delegated to the POs, which are allocated *'sectoral quotas'* based on the historic performance of vessels in their membership (tranches of the overall quotas under the TACs are retained by the Government for allocation to vessels not participating in the sectoral quotas allocated to POs).

On occasion there has been a degree of friction between a PO and Government, eg. on the size of its sectoral quota compared with that available to the non-PO sector vessels and there have been occasional instances of overfishing for which, if serious, the offending PO has been penalized but generally the administrative system appears to work well.

Having taken a decision on how much of the annual quota of each species to reserve for vessels not sharing in any PO sectoral quota, Government then allocate the remainder to each PO based upon the level of catch of vessels within their membership in recent years.

In a review of the operation of sectoral quotas in 1989 it emerged that only one comparatively small PO was allocating a quota to each of it members on a simple 'so much per year' basis. In this particular case the situation was reviewed by the PO towards the end of the year any quota not likely to be taken was distributed elsewhere within the PO.

Other Pos were found to be managing their sectoral quotas by a monthly or two monthly allocation of each species to vessels within particular length groups. Most of these POs were found to be allocating on the basis of vessel length; others used number of men in the crew and yet another allocated the same monthly catch allowance to its members regardless of the size of their vessels.

Whichever management method they adopted their was a requirement for accurate and up to date statistics to be maintained of off-takes by each PO with sectoral quotas. Firstly, to agree monthly catch levels with the Government which maintains separate landing statistics and secondly for use by each PO's management committee when fixing the following periods' vessel catch allowances. The PO management committees, with their experience of the seasonality of the fisheries, vary the monthly or two monthly vessel allowances by reference to that part of their annual sectoral quota that had already taken and fishing opportunities that remain available later in the year. The continued use of sectoral quotas reflects the appreciation by the catchers that it improves the profitability of this system of quota exploitation.

EC technical and scientific measures combined with a regime based on TACs' national quotas and minimum landings sizes of individual fish, have not been very successful in terms of the broader aims of stock conservation. Consequently the Government have introduced a variety of unilateral restrictions on Uk fishing operations, aimed at improved conservation. These include no-go areas for the conservation of breeding stocks and special restrictions on mesh shapes and sizes.

5.4.6 Other circumstances influencing earnings and investments

Throughout most of the 1980s the United Kingdom fishing industry enjoyed highly favourable conditions vis a vis new investment based on the availability of generous capital grants from various sources, special conditions relating to depreciation and in the case of larger vessels cheap interest rates.

It has been suggested that much of the capital aid was transferred to the vessel builders via inflated prices for new vessels.

Be that as it may, there can be little doubt that the main effect of capital assistance was to ease normal financial constraints on new investment both directly and also via the effect on commercial banks attitude of risk. As a consequence the fishermen's current perception of fishing opportunity and likely profits plays the major part in motivating investment. The high levels of TACs set for many species during the early and mid 1980s raised confidence in the industry but proved unsustainable. However, they are seen to have encouraged what is seen in retrospect to be excess investment in the industry. The pattern of new vessels entering the Scottish Fleet in 1980 to 1990 is shown below:

Table 5.14 New vessels in the Scottish fleet

Length of vessels	1981	'82	'83	'84	'85	'86	'87	'88	'89	'90
30ft - <80ft	21	14	11	15	22	20	19	22	11	10
80ft and over	1	0	0	1	0	1	6	1	4	3

Government aid of up to 100% of the cost of improvements to non-profit making fishing harbours has provided improved landing facilities to fishermen and, in Scotland in particular, such developments have enabled vessels to save considerable steaming time by landing their catches at ports closer to the fishing areas.

The part Government-funded Seafish Industry Development Programme (SIDP), undertaken by the SFIA between 1984 and 1989, was concerned with the promotion of fish. Directed towards improving consumer attitudes and perceptions of both domestic caught and imported fish the SIDP, by advertising, marketing services and quality promotion, has been successful in increasing demand and in raising the value of fish. Earnings and profits have benefited from improved demand as they have from the Fish Withdrawal scheme and the Common tariff.

A Government funded decommissioning scheme introduced in 1984 compensated owners for scrapping what was the rump of the old distant water fleet but, at the time of writing, September 1991, no similar scheme is currently available to United Kingdom owners.

5.5 Comparison of the Regulations affecting costs and earnings of the fishing fleets in the four countries

5.5.1 Tax Regulations

The incomes of the fishermen in the four countries are subject to different *Income Tax Regulations*. These regulations seems to be most detailed in Denmark, where the fishermen are able to choose between rather complicated systems. On the other hand the French fishermen have the opportunity to choose between a lump-sum and a simplified tax system.

Generally speaking, the calculations of costs and earnings for tax purposes do not reveal big differences between the four countries, except in the case of Denmark, where there are special provisions relating to depreciation allowances. In particular the adjustment of the depreciation level to the price index in this system is unique. A special deduction in the Danish Income Tax is the provision for investments which gives the opportunity to depreciate in advance up to six years before the moment of acquisition of the vessel.

In the United Kingdom the calculation of depreciation is relatively unconstrained so that the fiscal profit can be lowered to an important extent; also in France no detailed regulations for depreciation occur and the system of depreciation may be the result of negotiations with the Tax Receipt. In the Netherlands depreciations have to be in accordance with generally accepted accounting principles (adjustment to inflation is not allowed).

The calculated fiscal profit in the four countries may be lowered through different regulations:

a) deminishing profits with losses from recent years or, as an offset against future profits, carry forward past losses. This is allowed in Denmark, the Netherlands and the United Kingdom;
b) special deductions for entrepreneurs for future retirement, for investments, (France and the Netherlands) and a deduction to protect the capital of the owner (partially) against inflation (the Netherlands);
c) allowances, i.e. the part of the income which is not subject to the Income Tax. This allowance (for married people) amounted to ECU 6,700, 6,500 and 3,900 in 1990 in Denmark, the United Kingdom and the Netherlands respectively;
d) deductions more in the personal sphere like interest on private loans, gifts for charities etc.

Income Tax Rates differ widely between the four countries. Denmark seems to have the highest Income Tax Rate (51.8% or 50% general Income Tax in 1990), but there are some special allowances (transference for investments, adjustment for inflation) which may lower the tax payments in practice.

It has to be recalled that comparisons based on relative rates of income tax in isolation are incomplete. In Denmark for instance pensions are paid from tax receipts which is not the case in France and the United Kingdom. Therefore in annex 2 calculations are made of the income tax amount and also social security contributions at the same income level (in ECU) for each country.

In table 5.15 the results of these calculations for the four countries are shown, starting from the same fiscal profit expressed in ECU's. It is assumed that this fiscal profit stands for an owner of a 20 m vessel (40-45 GRT). The calculations in table 5.15 refer to a married skipper/owner, and the profit (for the year 1990) is the only income of the family. It must be emphasized that, though the same fiscal profit is applied for the four countries, the calculation of this profit in itself may be different. An important difference may be the calculation of the depreciation for tax purposes (annex 2).

Table 5.15 Balance to the owner (in ECU) after income tax and social insurance contributions at three levels of fiscal profit in the four countries (1990)

Countries	Fiscal profit in ECU:		
	10,000	25,000	40,000
Balance to the owner: a)			
Denmark b)	8,772	16,002	21,643
France	.	19,923	28,895
The Netherlands	8,665	19,005	27,511
United Kingdom	9,030	19,453	30,376

a) Based on calculations in annex 2; b) The amount could be higher when a higher part of the profit is saved in the firm which is taxed at a lower rate.

Of course the differences in 'balance to the owner' in table 5.15 are not quite absolute due to varying allowances and rebates.

Moreover it has to be considered which benefits the tax payer gets back from the Government for his tax payment. In this respect important differences will occur between the four countries. The total burden of taxes and social insurance contributions is also shown in table 5.16. These figures result from a study of the Dutch Ministry of Agriculture and Fisheries from 1985 of the Tax burden for farmers in the EC.

Table 5.16 Burden of taxes and social premiums in four EC countries, expressed in percentages of National Income (1985)

Countries	Taxes		Social insurance	Total
	indirect	direct		
Denmark	18.6	28.8	1.9	49.2
France	16.0	9.7	19.9	45.6
The Netherlands	12.2	13.0	19.7	45.0
United Kingdom	15.8	15.6	6.7	38.1

Source: Dutch Ministry of Agriculture and Fisheries; figures presented in Magazine 'Groente en Fruit':, March 1988.

The figures in table 5.16 show somewhat the same differences as table 5.15 for the four countries. It proves also from table 5.16 that it is important to include social premiums to get an impression of the total burden of collective payments. It should be emphasized however that for (share) fishermen these social premiums are of less importance, because they are mostly considered to be self-employed people.

The *Corporation Tax* is of minor importance for fishery enterprises. The Netherlands show the highest percentage of enterprises which have chosen company status (25%) but in fact all these firms in the cutter fisheries are family owned. The Corporation tax varies from 25% (small enterprises) and 35% (larger enterprises) of the profit in the United Kingdom up to 40% in the Netherlands and Denmark (1990).

Important for owners of fishing vessels may be the *Capital Gains Tax*. In some countries payment of this tax can be postponed when the enterprise is continued, by subtracting the capital gain from the bookvalue of the new vessel (Denmark and the Netherlands). In the United Kingdom normal Income Tax has to be paid for capital gains (by family owned enterprises), whereas in France most of these firms will be exempted due to the limit for these gains.

It is important to emphasize that in last years substantial reductions in Income Tax Rates occurred in Denmark (1991), the Netherlands (1990) and the United Kingdom (1988/89).

The *VAT* has a high tariff for auction sales in Denmark (22.25%). In the other countries auction sales of fish are not subject to VAT.

5.5.2 Subsidies and financing of fishing vessels

Subsidies to fishing vessels where of importance in the 1980s in the four countries. In most cases national subsidies where granted in combination with the EC investment subsidy from Regulation 4028/86.

In France an extensive subsidy system was in force until December 31, 1990. The maximum subsidy for investment amounted to 22% plus regional aid, apart from the EC subsidy. In the Netherlands the fishery sector benefitted from a General Investment subsidy with a basic premium of mostly 15% during the period 1978-1986. Special investment subsidies for fishing vessels, in combination with the EC subsidy, where of less importance. These subsidies stimulated the inshore fleet (mostly 300 Hp) in the early 1980s.

The level of investment subsidies in the United Kingdom, in force throughout the 1980s, was somewhat comparable with the French subsidy system. Prior to a revised scheme introduced in 1986, United Kingdom vessels were eligible for a basic grant of 25% of allowable construction costs. The revised scheme raised the level of grants to 30%, but restricted eligibility to vessels under 33m and specified a maximum grant of GBP 250,000. Due to difficulties in meeting the requirements of the United Kingdom MAGP in recent years the payment of grant for the construction of new vessels has been restricted to replacement of vessels lost through accident.

Withdrawal subsidies where in force in 1990 in Denmark and the Netherlands and in France in 1991. The level of this subsidy is somewhat comparable for Denmark and the Netherlands.

In Denmark the facilities for financing fishing vessels seem to have been more important for the construction of new vessels than subsidies. In this country the finance system of the Danish Fishery Bank is of major importance for the Danish fleet. Lower interest rates and longer redemption periods for loans can be obtained via this Bank, compared with loans from Commercial Banks.

Specific finance systems for fishing vessels also occur in France and the United Kingdom. In France the loans have a low interest rate of 5%, a maximum redemption time of 12 years for new vessels of 12 meters or more and a maximum loan percentage of 92. In the United Kingdom the loans are administered by SFIA and the Ship Mortgage Finance Company Plc (SMFC). For the loans provided by SFIA the loan period is 15 years maximum, whereas the interest rate is fixed at the Treasury interest rate. Although this facility for loans is still in force the scheme was suspended in 1986 at the request of Government. The SMFC guaranties loans made by the banks and provides an interest compensation as far as the commercial loan exceeds 7.5%.

In the Netherlands no finance scheme for fishing vessels is or was in force. Vessel owners have to obtain a loan from a Commercial Bank in case of financing an investment at a normal

interest rate (8.5-9.5% in 1990 and 1991). This did not cause important constraints in financing new vessels in the last twenty years. The loan period is mostly 8.5-10 years.

5.5.3 Remuneration of the crew and social insurance

The renumeration of the crew is rather similar in the four countries because for almost all the (family owned) vessels a share system applies. Generally speaking about half of the total gross earnings of the vessel, after deduction of running or fishing expenses, is the crew's share. This share may diminish for the bigger ships.

Only in the United Kingdom it is possible for share fishermen to be insured for unemployment on the condition that they pay an optional higher rate for the National Insurance contribution.

The Social Insurance contributions seem to be relatively low in Denmark (0.7% of the total wages + DKK 0.80 per worked hour, which is partly compensated) and high in France, where the outfitter pays a 25% contribution on the basis of a lump sum salary. This relation between Social Insurance contributions between the two countries is similar to the figures in table 5.16, the percentages of Social Insurance.

In the Netherlands the contributions for self-employed people are paid as fixed amounts; these payments are made to a Social Fund created by the fishermen themselves. In the United Kingdom National Insurance contribution has to be paid. Bearing in mind the risks which are covered in this case (sickness, invalidity, basic retirement pension) the yearly contribution seems to be rather low compared with the French and Dutch situation.

5.5.4 Fisheries management regulations

Regulations to limit or reduce the fishing effort have been implemented in each of the four countries. In Denmark a system of herring and mackerel licenses is in force and the construction of new vessels, as far as the capacity will be increased, needs the permission of the 'Commission for Capacity'.

The French fishing capacity for the relevant species in the North Sea, is controlled by the 'Permits de Mise en Exploitation' (PME's). In cases where the vessel to be withdrawn has belonged to an applicant for a PME for two years or more it can be replaced by a vessel of equivalent power without penalty. In other cases the withdrawn power must be equal to 1.3 times the power entered with the PME.

In the Netherlands a system of Hp licenses was introduced in 1984. Each vessel of the Distant Water and Cutter fisheries fishing on species for which a TAC applies should have such a licence. These licenses are transferable so that the vessel owner is able to increase his horsepower by buying additional Hp's. In

case of decommissioning the Hp licence has to be returned to Government.

In the United Kingdom Pressure Stock Licenses (PSL's) were issued in 1983. These PSL's are now used as a tool in restricting the expansion of catching capacity involved in the pressure stock sector. To stop a progressive increase in fleet capacity the GRT of a replacement vessel is limited to 90% of that or those vessels which it replaced.

Fishing activities are further restricted by a wide range of technical measures, in the first place from EC side (minimum mesh size, fish length). In some cases these regulations are overruled by national measures like the higher minimum size for cod and haddock in Denmark.

The management of quota is performed by Government in Denmark and the Netherlands. In the first case the quota are set for a certain time (per month/week, quarterly), for some species (cod) dependant on vessel length, for other species (haddock, sole) not dependant on vessel length. In the Dutch situation an Individual Transferable Quota System is in force for flatfish since 1984 and for cod and whiting a maximum number of boxes per week may be landed.

The French and United Kingdom quota are (for the greater part) managed by the POs. In the French case as a result of a bargaining process between state and industry representatives to divide national EC set quotas between five regions. In the United Kingdom the greater part of the allocation from the EC is being issued as sectoral quotas to individual POs. In this case POs allocated shares in the overall quota for specified fisheries are responsible to Government for their management.

5.5.5 Influence of National and EC Regulations on investments, costs and earnings

In *Denmark* fiscal policies relating in particular to depreciation allowances and interest payments were major factors which stimulated investments in the fishing fleet. Nevertheless investments in new fishing vessels where relatively low in the 1980s, as is shown in table 5.17. Obviously favourable finance systems

Table 5.17 Modernization of fishing fleets in four EC countries; percentage of vessels built 9 or less years before date shown

Denmark, 31 Dec. 1988	9
France, artisanal fleet, 1989	36
The Netherlands, 31 Dec. 1989	38
United Kingdom, 31 Dec. 1988	20

Source: Salz, 1991

of the Royal Danish Fishery Bank and those for commercial loans could not stimulate renewal of the fleet to an important extend. Probably this is explained by the low level of profitability of the Danish fleet in the 1980s. In the second half of this decade this was caused by reduced catch opportunities resulting from the different fisheries management regulations. Uncertainty about these regulations in future also leads to a low level of investments.

In *France* the investment subsidies and favourable financing conditions have stimulated investments in new vessels during the 1980s to an important extend. This resulted in a relatively modern artisanal fleet. The system of 'Permis de Mise en Exploitation' (PME's) leads to a stabilization of the fishing capacity in terms or kW's since 1988. The withdrawal regulation will result in a fleet reduction with 10% (of total power) till March 1992.

The French subsidy and finance system for fishing vessels also had a positive effect on the profitability of the artisanal fleet, by lowering the costs of capital. Furthermore subsidies received where not taxed when the vessel was a member of a 'Centre de Gestion'.

In *the Netherlands* the fiscal depreciation system and also the subsidies resulting from the 'Law of Investment Subsidies' (1978-1986) led to a high level of investments, especially in the period 1980-1988. Fiscal depreciation in a sense that the tax amount could be lowered by investing in a new vessel with much higher depreciation costs.

The Hp licence system introduced in the Netherlands in 1984 was effective, because the total horsepower of the cutterfleet diminished, after some delay, with some 10% since 1988. This reduction in capacity was also caused by the withdrawal subsidies in the period 1988-1991.

The effort (maximum number of days at sea) and output reductions (individual flatfish quota) affected the profitability of the cutters in a negative way. For instance big beamtrawlers (Hp 1 500-2 000) had in 1990 an operation of 159 days at sea on average whereas this effort amounted to an average of 214 days in the period 1983-1985, before these effort limitations. This shows an adjusted effort (-25%) for an excess investment.

In the *United Kingdom* the fiscal depreciation system, which was relatively free, also played a substantial part in encouraging investments in new vessels throughout the 1980s. Favourable conditions for new vessels furthermore resulted from capital grants and, for larger vessels, cheap interest rates. However, in the late 1980s catch limitations resulting from TAC's for demersal species caused a fall in landings partially compensated by higher prices. In fact, seen in retrospect, part of the investments in the 1980s, can be considered as excess investment.

6. DESCRIPTION OF CURRENT COSTS AND EARNINGS STUDIES

6.1 Costs and earnings studies in Denmark

6.1.1 Development of costs and earnings studies

In a historic view the first costs and earnings studies in Denmark started in 1955 as a direct result of the work of a fisheries commission group appointed by the Danish Ministry of Fisheries in the beginning of the fifties. That work implied that the Minister of Fisheries undertook costs and earnings studies for the whole of Denmark.

In the period 1969-'88 the association 'Dansk Fiskeriforening' (DFF), which represents the Eastern ports, has carried on with costs and earnings studies nearly every year for their members. Moreover Bornholm established its own studies from 1986-'88.

The members in the West coast fisheries association 'Danmarks Havfiskeriforening' (DHF) did not agree on a general costs and earnings study in the early seventies, because the majority found that it was not worth the effort. In 1977 the fishery association in Hanstholm, who is a member of the DHF, as the first commenced its own study, and later the associations of the Skagen and the Thyborøn fishermen commenced studies as well. This happened as result of the change in the EC fishery policy in 1977 and the general crisis in the Danish fisheries in the mid seventies. In 1981 the Ministry of Fisheries started subsidizing consultants employed by the associations, and that is one of the reasons why DHF started its own study in 1983. This work stopped again in 1985 as the consultant left the association. In 1984 Hanstholm decided not to continue its own studies, but other ports like Thyborøn, Skagen and Hirtshals are continuing their studies.

As shown in figure 6.1, the local and national fisheries associations are the primary demanders of costs and earnings studies in Denmark, and their motives can be summarized as:

1) the demand for a management tool of information, which is usable in the national debate on fisheries topics;
2) to show members of the association the viability in the various parts of the fleet, and to give some guidelines for reducing the problems;
3) to give the individual fisherman a possibility to compare his performance to the other fishermen in the same category.

Study area	Year	Institution
Skagen	1979-1990	Skagen Fiskeriforening
Hanstholm	1977-1984	Hanstholm Fiskeriforening
Bornholm	1986-1988	Bornholms & Christiansøs Fiskeriforening
Hirtshals	1988-1990	Hirtshals Fiskeriforening
Thyborøn	1974-1978	Thyborøn
	1987-1990	Fiskeriforeningen
Eastern ports	1977-1983	Dansk Fiskeriforening
	1987-1988	
	1976-1977	Sparekasse foreningen
	1980-1983	
Western ports	1982-1985	Danmarks Havfiskeriforening

*Figure 6.1 Cost-earnings studies in Denmark *)*
*) All studies were published except the DHF studies and the Hirtshals studies before 1988.

6.1.2 Headlines of current studies

After negotiations between the two fishermen's associations and the Ministry of Fisheries it was decided in 1991 to commence a cost-earning study covering the whole Danish fleet, but on a sample basis. The goal was to retrieve from the Ministry's vessel files about 10% of the total number of vessels in a stratified way according to the variety of fishing methods, fishing areas and vessel types.

The owners of the selected vessels have been approached and asked to fill in and return a questionnaire. In spring 1992 the response was not overwhelming and procedures were taken to improve the sample. Currently, no results from the survey have been published.

6.1.3 Costs and earnings studies more in detail

As an example of a Danish study figures in the following tables are focussed on the accounts from Thyborøn 1989-'90. It should be mentioned that the sample in 1990 contains 137 vessels or 90% of the fleet in the port, which is a very high percentage compared to other studies. The trawlers more than 120 GRT are partly involved in fisheries for industrial purposes.

Table 6.1 shows the vessels involved and their distribution on GRT or gear.

Table 6.1 The fleet of Thyborøn distributed on categories

Categories (GRT)	Number of vessels in the sample	
	1990	1989
a) Trawler 0-50	7	6
b) Trawler 50-120	18	20
c) Trawler 120-200	15	13
d) Trawler > 200	13	13
e) Danish seine 0-30	14	16
f) Danish seine > 30	61	60
g) gill net	9	7
Total	137	135

Source: Statistik over regnskaber for fiskeriflåden i Thyborøn 1990. Thyborøn Havns Fiskeriforening.

Table 6.2 Example of Danish costs and earnings study. Profit account, average of all categories (Thyborøn fleet) (x 1000 DKK)

	1990	1989
*Gross fisheries reduction *)*	1,064	1,662
Gross fisheries consumption	1,585	1,197
Total gross fisheries	2,649	2,859
Landings costs	*308*	*300*
Net fisheries	*2,341*	*2,559*
Fuel and lube oil	324	296
Total wages crew and skipper	907	1,034
Social expenses	42	42
Other crew expenses	7	7
Administration	51	44
Vessel insurance	118	112
Other advance expenses	66	59
Purchase and repair of equipment	212	231
Total maintenance	311	246
Other costs	24	35
- other income	+ *19*	+ *22*
Result before interest and depreciation	*298*	*375*
Interest	+ 11	+ 17
Interest payment - loans and cash credit	- 418	- 385
Interest payment - creditors	-	- *39*
For instalment/consolidation /depreciation	- 144	- 26

*) Fish-meal of fish-oil.

Table 6.3 Example of Danish balance sheet, balance, average of all categories (Thyborøn fleet) (x 1000 DKK)

	1990	1989
Assets:		
Vessel (insurance amount) *)	4,878	4,776
Account, vessel insurance	71	85
Liquid assets	40	33
other assets	*107*	*157*
Total assets	*5,096*	*5,051*
Liabilities:		
Supplier debt	352	387
VAT debt + tax deducted from income at source	354	382
Debt, Fiskeribanken	122	79
Debt, bank	16	12
Periodic interests	73	57
Cash credit	720	559
Bank loan	962	746
Loan, Fiskeribanken	*1,534*	*1,717*
Total borrowed capital	4,133	3,939
Own capital	*963*	*1,112*
Total liabilities	*5,096*	*5.051*
*) Booked tax value	2,948	2,615
Tax value of net investments	244	568

'The booked tax value' forms the basis for the tax depreciations of the vessel. The term 'tax value of net investments' forms the basis of an additional value for tax depreciation.

6.2 Costs and earnings studies in France

6.2.1 Development of costs and earnings studies

Two different types of studies have been developed since mid'seventies. The first category concerns the costs studies involved by the bio-economic analyses. The fisheries management requires technical (mesh size increase) or structural (fleet

reduction) measures to avoid overfishing. In this context, the costs analyses represent a preliminary step before the examination of the added value or the return modifications. Some of these studies were used to build bio-economic models.

The other studies are directly related to cost and earning analysis. They focus on wages and return; they examine the consequences of the cost structure on income.

Four ways of investigation were explored:

- the productivity gains or losses are performed to evaluate the consequences of technical measures on the trawlers activity in the Channel;
- the costs are computed and introduced in a special allocation model for the Celtic Sea;
- the incomes and the expenses are processed in dynamic models for the scallop fishery in St Brieuc and for the shrimp fishery in French Guyana;
- the costs and the gross earnings are estimated to give an overview of the average and of the scattering of income in Martinique.

For all these purposes, the data were collected either with a questionnaire either after a demand to the ship-owners. In some cases, the sample size was too small to obtain a good representativity (scallop fishery in St Brieuc). In each study, the main items of the running costs (fuel,ice...) and of the vessel costs were computed.

6.2.2 Headlines of current studies

Since 1986, the economic department of IFREMER has obtained a representative sample of accounts of artisanal ships. Several research investigations have been developed and now some results are used in routine and give a survey of the economic situation of this fleet.

The first purpose was to use economic and financial ratios (added value, solvency and financial autonomy) to evaluate the economic situation of the different fleets. The choice of a geographic area (South Brittanny) and the use of multiple correspondence analysis permits a cross analysis of fisheries features and return criteria.

The recent developments of the IFREMER researches concern the dynamic link between the fishermen behaviour (catches, gears, fishing area) and their return.

Another investigation turns on investment and on its financial consequences (loans refund). The objective of these studies is to analyze the evolution of technology in the fishing activity

and the costs evolution (the trawlers price increases between 5% and 9% higher than inflation between 1979 and 1987).

The data set is a sample which represents three fourth of the new artisanal ships between 1971 and 1987 (this data set could be easily updated).

6.2.3 Costs and earnings studies more in detail

The costs data are collected by the CGPA (Centre de Gestion de la Pêche Artisanale) who manages the accounts of artisanal ships. Between 1985 and 1989, the number of members of this organization growed from 500 to 1 000 which represents one half of the 12-25 meters ships. However, the weakness of data is important for the coastal fleet (less than 12 meters length).

The following table (table 6.4) shows economic and financial ratios of the small scale fleet (SSF) (from the CGPA data set), the food processing industry (FPI) and the commodities industry (CI).

Table 6.4 Example of results of French costs and earnings study. Economic and financial ratios between 1985 and 1987

	Added Value	Financial Autonomy	Solvability	
FPI	0.26	1.42	0.12	
SSF	0.60	0.30	0.78	1985
CI	0.38	1.45	0.14	
FPI	0.28	1.55	0.14	
SSF	0.66	0.27	0.84	1986
CI	0.39	1.55	0.18	
FPI	0.26	1.61	0.14	
SSF	0.66	0.30	0.89	1987
CI	0.38	1.53	0.16	

The comparisons of the artisanal fishery and other industries are not easy. For example, the income sharing system in the fishing activity doesn't permit a direct comparison between the added value ratios. However, we could study the relative evolution for each sector.

The recent researches use the desegregated costs data (table 6.5) to study the links between costs and fishing pattern. These data are average data for homogenous ships: they are built by the

Table 6.5 Example of French costs and earnings study. Average costs and earnings per vessel. Year 1989. Fleet characteristics: 55 meters trawlers operating in the North Sea (x 1000 FRF)

	Sample size		
	14 (total)	6	8
Sales	13,420	13,949	13,023
Withd. sales	380	428	343
Gross earnings	13,800	14,378	13,367
Fuel	1,626	1,615	1,635
Ice	146	153	141
Lube oil	79	77	81
Gears	1,099	1,218	1,011
Other supplies	244	241	247
Other costs	284	300	273
Harbour net. costs	63	62	63
Quay expenses	11	11	11
Tow costs	27	29	25
Auction Hall taxes	94	89	98
Landing tools	89	92	86
Boxes rent	108	103	113
Repairs	807	684	900
Insurance	460	484	442
Prof. Organ. subscrip.	173	175	171
Taxes/seizure	223	256	198
Ship tax	73	74	72
Harbour tax	237	224	246
Prof. Org. tax	42	40	44
Other taxes	52	49	54
Crew wages	5,570	5,665	5,499
Landing wages	1,291	1,253	1,319
Financial exp.	125	127	123
Overhead	829	826	831
Net result	35	518	-326

Fishermen Organizations. The accounts are available for the 'industrial' trawlers (55 meters fresh fish trawlers) and a part of the artisanal fleet. The definition of running costs and vessel costs from the accounts raises some difficulties : for example, some harbour facilities have a price and some others are related to a local tax.

6.3 Costs and earnings studies in the Netherlands

6.3.1 Development of costs and earnings studies

In the Netherlands systematic studies about costs and earnings of fishing vessels where started in 1948. These studies where carried out by the Department of Fisheries of the Agricultural Economics Research Institute (LEI-DLO). They where connected with costs and earnings studies in the field of Agriculture and Horticulture, which were started by the LEI-DLO in 1940. The problems in the Dutch Sea fisheries in 1947 and the difficulties of financing the vessels were the main reasons to start with those costs and earnings studies.

After some years several branches of Fisheries and Aquaculture were included in the studies: Cutter fisheries (that time otter trawl and Danish seine net), Shrimp fisheries, Mussel- and Oyster cultures, Lake IJssel fisheries and Near, Middle and Distant water fisheries with drifters and trawlers. More and more these studies resulted in yearly public reports destined for the Government and the Fisheries Organizations. These reports contained detailed figures of costs and earnings per branch of fishery resulting in net results per vessel, after calculation of depreciation and interest.

The figures were obtained from voluntarily participation by vessel owners; employees of the LEI-DLO visited the vessel owners and their accountants and collected the figures themselves, directly from the accounts of the vessel owners.

In the period 1950-1970 the number of participating fishermen steadily increased and a new yearly report was introduced. This publication, 'Fisheries in Figures', contained provisional figures about the previous year of the most important fisheries in the Netherlands. From 1972 aggregated costs and earnings figures for the whole fishing sectors where included in these reports; in this year the research subject 'financing of fishing vessels' was added to the costs and earnings studies. The level of indebtedness for different vessel categories could be reported as well as the volume of pay-off and interest amounts related to the yearly cash-flows.

In the past ten years information from the costs and earnings studies was more and more used for answering questions posed by the Dutch Government and the Fisheries Organizations. Information was needed about the consequences of the TAC's, of the high

oil prices etc. for the profitability of the fishing vessels. Costs and earnings figures of individual enterprises were also used for the education of the fishermen by means of an enterprise report for the participating vessel owners and a book 'Economics for fisheries-enterprises' for the Dutch Fishery-schools.

Since 1975 the costs and earnings studies had to be reduced on the other hand, due to budget cuts. Branches of fishery (Distant water in 1989, Lake IJssel in the 1960s) had to be abandoned and the results of the studies were more and more concentrated in 'Fisheries in Figures'.

The Department of Fisheries of the LEI-DLO remained the only organization in the Netherlands producing costs and earnings figures for the Fishery sector as a whole.

6.3.2 Headlines of current studies

Nowadays the following studies carried out by the LEI-DLO, are going on:

- economic results of the cutter fisheries (shrimp fisheries included);
- economic results of the mussel culture
- financial position of fishing enterprises.

The first study is based on the costs and earnings figures of some 175 vessels, ranging in size from some 80 to 4 000 Hp, of a total fleet of 575 vessels. The sample is divided into twelve Hp-groups for the regions North and South. These groups represent the beam-trawl fishery, (pair)-trawling on cod, whiting and herring and shrimp fisheries.

Detailed average costs and earnings figures for different size groups showed in separate reports whereas each fisherman receives a report in which the figures for his vessel are compared with the average figures for vessels of the same size-group; thus he is able to observe the weak and strong points of his own enterprise. The main figures of this study are included in the yearly publication 'Fisheries in Figures'. Table 6.6 shows some aggregated figures for the Dutch cutter fisheries.

Table 6.6 Aggregated economic results of the Dutch cutter fisheries (x 1 million NLG)

	1986	1987	1988	1989
Gross earnings	762	744	649	655
Total costs, ex. labour	480	498	468	488
Gross result	282	246	181	167
of which: labour share	254	248	218	208
net profit	28	-2	-37	-41

The economic results of the mussel culture are based on a sample of 25 enterprises out of a total of 75. The information from the study is published in separate reports and the main figures for the mussel culture are also included in 'Fisheries in Figures'.

The third study, the financial position of fishing enterprises, is based on a sample of some 125 enterprises, mainly the same sample as for the first mentioned study.

The figures for this financial research are derived from the fiscal reports (balance sheets) of the participating enterprises. The study results in average balance sheets for different size groups completed with a number of financial ratios and a cash flow analysis which is published in 'Fisheries in Figures' (Figure 6.2).

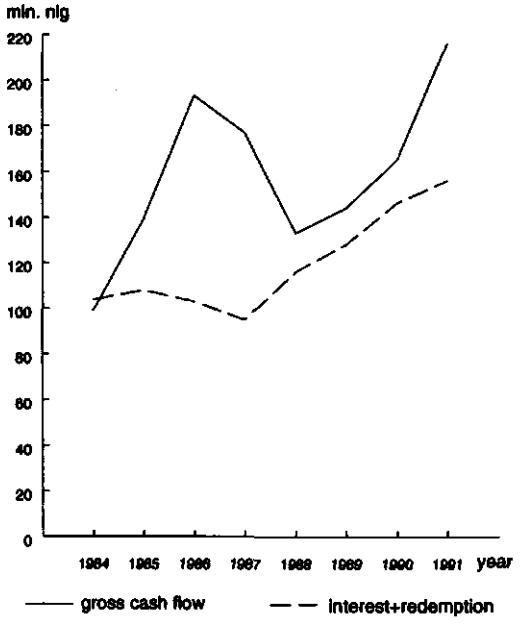

Figure 6.2 Aggregate gross cash-flow and redemption of loans plus interest for Dutch cutter fisheries

The costs and earnings figures and also the data of the balance sheets will be stored in a database, together with the same figures of agricultural and horticultural enterprises. There is a clear tendency at this moment to use the costs and earnings figures for more different purposes and this is facilitated by building computer models. In the past years costs and earnings figures and data about indebtedness have been used for studies about the level of fleet reduction that could be expected on the

basis of individual flatfish quota, the effects of a shortened (till 12 meter) beamtrawl on the profitability level and consequences of translating individual flatfish quota into an individualized number of days at sea per vessel.

6.3.3 Costs and earnings studies more in detail

The basis of the LEI-DLO costs and earnings studies still is de collection of data by the employees of the Fisheries Department. This method of data collection causes the high participation in the studies of 27% of the Dutch cutter fleet. However, restrictive management measures for this fleet have weakened the willingness of the vessel owners to open their accounts for the LEI-DLO representatives. In this respect it is important to emphasize that participation in the studies may be in the interest of the vessel owners. Because they receive a report of their enterprise in which comparisons are made with average figures of similar enterprises and also because the representatives of the fishermen are able to support their arguments towards the Government with reliable figures, if necessary.

Table 6.7 shows the level of participation for the Dutch cutter fleet.

Table 6.7 Number of cutters in the Dutch sample (1989)

Size group (Hp)	(kW)	Whole fleet	Sample size	Sample as % of fleet
0- 260	0- 191	149	28	19
261- 300	192- 220	107	31	29
301-1100	221- 810	85	23	27
1101-2000	811-1472	150	41	27
>-2000	>1472	82	31	38
Total		573	154	27

Most vessels in the sample have participated for meany years. In general they have been chosen at random but good relationships between LEI-DLO employees and the fishermen also have influenced the composition of the sample. Enterprises which withdraw from the sample are replaced by others as much as possible. In reality the number of participating fishermen is higher (about 175), because table 6.7 only shows the vessels which were operating throughout the year. Figures of more vessels have to be collected because a certain number cannot be used due to a low number of days at sea (vessels sold, long inactivity due to repairs etc).

Table 6.8 Example of Dutch costs and earnings study. Average costs and earnings per vessel in the cutter fisheries in NLG. Size group: 261-300 Hp; region South. Number of ships: 18. Average GRT: 66 - Engine power: 298 Hp. Age of the hull: 9 years - Age of the engine: 5 years

	Total	Shrimp fishery	Beam trawl	Otter trawl
Days at Sea	142	66	49	27
Average Crew	3.7	3.6	3.9	3.5
Total earnings	811,738	417,881	282,755	111,102
Fuel, liters	236,431	98,425	99,013	38,993
Costs:				
Fuel	73,545	32,465	29,578	11,502
Lube oil	4,302	1,828	1,729	745
Navigational and fish search eqpt.	19,337	7,547	8,260	3,530
Hull repairs	28,879	13,720	10,515	4,644
Engine repairs	20,383	9,227	7,804	3,352
Deck requirements	3,934	1,591	1,622	721
Vessel insurance	30,964	12,609	12,680	5,675
Fishing gear	33,646	11,970	13,939	7,737
Shrimp processing	5,876	5,876	-	-
Ice and boxes	17,819	7,132	8,199	2,488
Salt and barrels	1,666	1,662	3	-
Food	6,891	2,003	3,293	1,595
Travel crew	9,265	4,367	3,080	1,818
Social insurance	12,187	5,265	4,806	2,115
Administration	25,012	9,555	11,478	3,979
Withdrawal funds	987	124	781	83
Auction commission	23,599	12,194	8,212	3,194
Levies Fish Commodities Board	2,754	1,918	602	234
Unloading, sorting	22,008	9,827	8,748	3,433
Fish transport	366	283	75	8
Other costs	622	346	144	132
Total costs	344,042	151,510	135,548	56,985
Labour share *)	263,365	133,659	94,087	35,620
Gross result	204,330	132,713	53,120	18,497
Depreciation	107,421	45,537	42,410	19,473
Interest calculated	80,233	35,294	30,938	14,001
Net result	*16,676*	*51,881*	*-20,227*	*-14,977*

*) Inclusive skipper-owner, not paid but calculated.

As stated earlier vessel owners who provide their costs and earnings figures to the LEI-DLO receive a report of their enterprise; table 6.8 shows the main information in this report. The structure of the information is the same for the individual and average figures. In this table figures per day at sea, which are also calculated, are omitted.

Costs of depreciation in this statement are based upon the replacement value of the ships. The hull and the engine are depreciated separately in 20 and 10 years respectively, according to a digressive calculation method.

Costs of interest are calculated for the whole amount of money invested in the ship, which is represented by the bookvalue of the ship.

6.4 Costs and earnings studies in the United Kingdom

6.4.1 Development of costs and earnings studies

Earliest known annual investigations into a United Kingdom fleet's profitability were undertaken in the 1930s by the Department of Economic Investigation (DEI) an association of owners of the distant water section of the British fleet. Owners of vessels 140ft and over registered length based in England and Wales, signatories of the 'Distant Water Development Scheme', used this information in their planning of distant water fishing.

The DEI investigation, after being taken over by the British Trawlers' Federation Ltd. and expanded to include all vessels 80ft and over, was the basis for calculating the level of subsidy paid under the government's 'The White Fish Subsidy (Deep Sea Vessels) United Kingdom Scheme 1969'. This was the only occasion the Ministry of Agriculture and Fisheries were involved with measuring vessel profitability. The investigations ended in the early 1980s as a consequence of a decline in the deep sea fleet following the introduction of the 200 mile fishing limits.

The Scottish Office's Department of Agriculture and Fisheries Scotland (DAFS) began conducting investigations of Scottish based vessels in the 1950s. During the early 1950s a subsidy, based on the weight of fish landed, was being paid to inshore vessels and the investigation was used to determine the degree of dependence of the fleet on the subsidy.

In 1951 the White Fish Authority's (WFA) Scottish Office introduced a similar survey to that of the DAFS, of Scottish based vessels below 70ft in length. In 1958 the WFA discontinued its Scottish investigation in favour of a single approach to owners by the DAFS, with the WFA processing the data. This arrangement continues to this day, between the now Scottish

Office Agriculture and Fisheries Department (SOAFD) and the Sea Fish Industry Authority (SFIA).

On formation in 1951 the WFA was concerned with all aspects of the British fishing industry but was particularly designed to distribute government financed grants and loans to vessels below 70ft. A costs and earnings investigation of inshore vessels in England and Wales was begun by the WFA in 1951, this was extended in 1961 to cover the whole fleet when the larger vessels became entitled to grants. With the exception of approximately 10 years, to the early 1980s, this investigation has been carried out each year.

The DAFS published detailed results of the Scottish investigations in each of the five years from 1978 to 1983 and the WFA, in its annual reports 1951 to 1967, published a summary of the Scottish and of their English and Welsh investigations. Since 1967 a joint report of tables summarizing results from both investigations, classified by vessel length groups, has been prepared annually. No attempt is made to differentiate the results by fishing area in the report but information related to vessel capacities or principal fishing methods is prepared when required.

The information derived from both investigations has been used in presentations to parliamentary committees; industry modelling; consultancy work; economic and econometric studies and in various other work performed by the collecting agencies and others.

6.4.2 Headlines of current studies

The investigations by SOAFD in Scotland and SFIA in England and Wales are the only surveys currently being undertaken. The basis of selection of both samples is 'all we can get'. The SOAFD send questionnaires to all Scottish based vessel owners and the SFIA base the distribution of questionnaires in England and Wales on a 3 year undertaking to supply operating information, given by a vessel owner who receives grant aid. In each case there is no requirement by law for an owner to disclose the financial results of his fishing and the SFIA consider it politically unacceptable to prosecute owners failing to fulfil their grant obligation.

The Scottish questionnaires are distributed and collected by Scottish Office fisheries inspectors based at major ports and the SFIA despatch their questionnaires and send reminders by post.

Table 6.9 shows the success rate in terms of usable completed returns.

As is shown in the above table the response to the survey, in terms of completed returns, is far from good. This is particularly so in the English and Welsh investigation and whilst the

Table 6.9 Number of costs and earnings questionnaires despatched and completed in Scotland and England

Year	Questionnaires despatched		Questionnaires completed		%	
	Scot-land	England & Wales (a)	Scot-land	England & Wales	Scot-land	England & Wales
1983	1 200	574	350	126	29	22
1984	1 200	530	270	185	23	35
1985	1 200	577	220	205	18	36
1986	1 200	533	180	198	15	37
1987	1 200	500	150	96	13	19
1988 (b)	1 200	1500	190	40	16	3
1989	1 200	280	240	50	20	18

(a) Some years includes Northern Ireland; (b) Questionnaires sent to all vessels >8m. in England and Wales.

Scottish produces substantially more returns there is little cooperation from the owners of vessels under 10m. Owners display a reluctance to assist with the surveys unless there are tangible benefits accruing as a result and are very reluctant to have their accounts investigated year after year. This is particularly so with skipper/owners who own well over 90% of the fleet. Some early references indicate a greater response from owners was obtained when subsidies were being paid, others that the number of notes, on how to complete the questionnaire, influenced response. As a consequence of the low of response, particularly among the smaller vessels, each investigation produces some groups that reflect the performance of additional vessels and any trends which might otherwise have been discernable are submerged.

Currently, the results of the investigation are made available to all with justifiable requests made by any sector of the industry. On occasion owners returning usable questionnaires to the SFIA are sent information relevant to their vessel's size class when requested and fishing vessel owners associations usually ask for copies of the report. Data collected, as it relates to an individual vessel or management grouping, are treated as confidential and are not released to any other person, body or government department.

6.4.3 Costs and earnings studies more in detail

The decision on the length classifications to use in the annual report is a reflection of the numbers of returns usually received for particular lengths of vessel. The pattern is currently 5ft or 10ft classifications for vessels 40ft to 79.9ft

with a single classification each for vessels below 40ft and 80ft and over. The following table shows 1989 length classifications with numbers of vessels included.

The accompanying tables show the 1989 results, as published in the annual report, for the length classification 50ft to 54.9ft of Scottish based vessels. Comparative figures for 1988 are given in the tables which are examples of those published for each length class of vessels in Scotland and in England and Wales. The routine annual report of both Scottish vessels and those in England and Wales is identical in terms of vessel classes and information shown and are based upon questionnaires asking for very similar data.

Table 6.10 Number of vessels in the sample by length class in the United Kingdom

Length class (registered)		Number of vessels in sample	
feet	meters	Scotland	England & Wales *)
Up to 39.9	(below 12.2)	15	13
40 - 49.9	(12.2 - 15.2)	10	18
50 - 54.9	(15.2 - 16.7)	41	24
55 - 59.9	(16.8 - 18.3)	16	14
60 - 64.9	(18.3 - 19.8)	19	5
65 - 69.9	(19.8 - 21.3)	43	5
70 - 79.9	(21.3 - 24.4)	63	7
80 and over	(Over 24.4)	31	2

*) Additional vessels obtained through NFFO offices.

In the first of the two published tables the mean costs are calculated per vessel and per day at sea, in absolute terms and as percentages of total earnings, of total expenses and of total running costs. In the second table the average costs and earnings per vessel are contrasted with those calculated for the previous year. The tables are headed by the calendar year and owners are asked to provide information for their vessels operations in the calendar year but data given for a few months before or after the year end are included.

At inception both surveys are thought to have been seen principally as measures of the economic state of the fleet and of its dependence upon the government subsidy given in the 1950s. Estimates of the change in profitability is still a major purpose that attracts most attention on completion of each investigation. However, net profit, cash flow and the mean earnings of the crew are easily calculated from the tables.

Whilst earnings of vessels are available from government official statistics, the trends in overall costs and therefore profitability, are not available elsewhere. When government is approached by representatives of the industry, requesting financial or other aid, using arguments based on fluctuations in the value of landings or in the retail price index, the investigations are available as a check on the state of the fleet.

The detail collected of the expense items, seen on the tables, is doubly useful in that it frequently helps highlight errors to the owner or his agent when completing the questionnaire and to the SFIA staff when checking and processing returns. It is also valuable in that it allows easy reference in estimating the likely effect of changes in individual expense items as occurred to fuel prices during the Gulf crisis.

Although not part of the published annual report, a breakdown of the data into variables other than length are carried out when required for modelling or other work. The availability of the data has been an essential input in consultancy work undertaken by the SFIA, for EC and the United Kingdom government. By reference to individual vessel returns the SFIA decide on the viability of applications made to them for grant aid for the building of new vessels.

A major limitation of the results of both investigations, that has to be borne in mind whenever they are used, is its bias. The consequence of the unstructured collection of vessels in the sample. Certain vessel classifications provide a more than adequate representative sample but the majority are under sampled.

In Scotland most of the correctly completed questionnaires are returned by agents who handle the vessels' affairs on land. Some agents continue to supply excellent information for vessels year after year. Completed in this way the sample obtained is not representative of the whole of the Scottish industry and therefore not the ideal tool to derive its profitability. The active participation of the Scottish Office fisheries inspectors, through personal contact with the agents, is invaluable in obtaining industry co-operation.

In the SFIA investigation of English and Welsh vessels, the sample is more biased than that in Scotland and the number of vessels in the sample is substantially lower. The usable completed questionnaires are predominantly of vessels which have recently obtained grant and whose owners employ an accountant. Owners who do employ accountants often supply the SFIA with annual reports of their activities but frequently these amalgamate the operation of several aspects of the owner's business with his vessel's fishing operations not distinguishable.

Table 6.11 Example of costs and earnings of Scottish vessels

Length group: 50-54.9ft (15.2-16.7m) Redg length Scotland 1989

Total Insurance Value	£ 9,407,334	Return on Capital	6%
Average Insurance Value	£ 229,447	Average Crew/vessel	4.5
Average Days at Sea/Vessel	173.3	Number of Vessels	41

	Total	Average per vessel	Average per day at sea per vessel		% of Expenses	Running Costs
Total earnings	5,628,057	137,270	792			
Running Costs				*Earnings*	*Expenses*	*Running Costs*
Fuel & Lube Oil	626,083	15,270	88	11.1	12.4	37.8
Salesmen's Commiss.	266,706	6,505	38	4.7	5.3	16.1
Harbour Dues	146,072	3,563	21	2.6	2.9	8.8
Boxes	48,435	1,181	7	0.9	1.0	2.9
Ice	80,680	1,968	11	1.4	1.6	4.9
Food	189,189	4,614	27	3.4	3.7	11.4
Travel	54,972	1,341	8	1.0	1.1	3.3
Other Running Costs	244,947	5,974	34	4.4	4.9	14.8
Tot. running costs	1,657,084	40,417	233	29.4	32.8	100.0
Labour share	1,754,438	42,791	247	31.2	34.8	
Vessel & gear share	2,216,535	54,062	312	39.4		
Vessel costs						% of vessel costs
Gear Expenses	314,202	7,663	44	5.6	6.2	19.2
Vessel Repairs(net)	598,129	14,589	84	10.6	11.8	36.6
Vessel Insurance	334,976	8,170	47	6.0	6.6	20.5
Equipt Hire & Maint	183,287	4,470	26	3.3	3.6	11.2
Other Vessel Costs	205,657	5,016	29	3.7	4.1	12.6
Total vessel costs	1,636,251	39,909	230	29.1	32.4	100.0
Total expenses	5,047,773	123,116	711	89.7	100.0	
Net profit/loss	580,284	14,153	82	10.3		
Estimated Deprecn	940,733	22,945	132	16.7		
Net profit/loss after Deprecn	-360,449	-8,791	-51	-6.4		

Table 6.12 Example of costs and earnings of Scottish vessels; two years compared

Length group: 50-54.9ft. (15.2-16.7m) Redg Length Scotland 1988/89

	1989	1988		1989	1988
Total Insurance Value	£9,407,334	£7,452,722	Return on Capital	6%	7%
Avge Insurance Value	£ 229,447	£ 232,897	Avge Crew/Vessel	4.5	4.8
Avge Days at Sea/vessel	173.3	165.5	No of Vessels	41	32

	Average per Vessel		
	1989	*1988*	*% Change*
Total earnings	137,270	148,427	-7.5
Running Costs			
Fuel & Lube oil	15,270	14,796	3.2
Salesmen's Commissn	6,505	6,757	-3.7
Harbour Dues	3,563	4,397	-19.0
Boxes	1,181	1,310	-9.8
Ice	1,968	2,594	-24.1
Food	4,614	4,897	-5.8
Travel	1,341	1,310	2.3
Other Running Costs	5,974	5,491	8.8
Total running costs	40,417	41,552	-2.7
Labour share	42,791	49,504	-13.6
Vessel & gear share	54,062	57,371	-5.8
Vessel Costs			
Gear Expenses	7,663	9,160	-16.3
Vessel Repairs (net)	14,589	15,230	-4.2
Vessel Insurance	8,170	8,295	-1.5
Equipt Hire & Maint	4,470	4,407	1.4
Other Vessel Costs	5,016	3,904	28.5
Total vessel costs	99,909	40,996	-2.7
Total expenses	123,116	132,052	-6.8
Net profit/loss	14,153	16,374	-13.6
Estimated Deprecn	22,945	23,290	-1.5
Net profit/loss after Deprecn	-8,791	-6,916	27.1

6.5 Some conclusions from current costs and earnings studies

In each of the four countries participating in this study costs and earnings studies are going on. In Denmark and the United Kingdom the studies have been initiated by the Government and/or Fisheries Organizations. In France and the Netherlands research institutes (IFREMER and LEI-DLO) played a more important role in starting those studies. Figure 6.3 gives the main characteristics of the costs and earnings studies in the four countries.

	Denmark	France	the Netherlands	United Kingdom
Studies started in	1955	1975	1948	1930s
Initiated by	Government	Res. Institute/ Fishery Cooperation	Res. Institute	Fishery Org. Scottish Office
Yearly results published	mostly	no	yes	yes
Figures collected by	Fishery Organization	Fishery Cooperation	Res. Institute	Res. Institute Scottish Office
Vessels classified by	GRT/gear	Length	Hp	Length
Costs split up fix/var.	yes	yes	yes	yes
net profit/loss				
after interest	x			
after financial exp.		x		
after interest and depr.			x	
after depreciation				x

Figure 6.3 Main characteristics of costs and earnings studies in four EC countries

In order to make the average figures per vessel comparable harmonization has to be reached mainly at the following items:
a) general presentation of the figures, lay-out of tables;
b) criterium of classification of the vessels;

c) breakdown of costs. Main cost amounts like fuel, repairs, wages are rather good well comparable. Differences occur mostly on smaller amounts and this is more a question of how far the specification of costs should go. Except costs of depreciation and interest which are major cost items of which differences occur;
d) net profit/loss. Figure 6.3 shows that differences in this respect mainly depend on the way depreciation and interest are calculated;
e) other economic indicators, which might give insight in the economical position of the North Sea fleets.

7. COMMON METHOD FOR CALCULATION AND PRESENTATION OF COSTS AND EARNINGS FIGURES

7,1 Collection of costs and earnings data

The Danish study for 1990 is based on local cost earnings studies, which are undertaken by the Fishery Associations in the ports of: Thyborøn, Hirtshals and Skagen. A number of 448 questionnaires was distributed of which 322 were answered. This represents 27% of the about 1 200 vessels operating from Jutland's West coast.

Geographically the fishermen in Thyborøn are registered as belonging to the district of Lemvig. For this particular district the questionnaires were distributed only to the 152 members of the Thyborøn Fishery Association. Of these questionnaires 137 were answered, representing 90% of the Thyborøn fishermen. In total the Lemvig district counts for a total of 321 vessels which, in addition to the Thyborøn vessels, comprises 169 vessels from the ports of Thorsminde, Struer and Lemvig. Relating the sample of 137 answered questionnaires to the whole district of Lemvig the representation is 43%. Table 7.1 shows the representation in the different vessel groups.

There were 181 vessels operating in the district of Skagen, all from the same port. The local Fishery Association has distributed questionnaires to all 135 vessels bigger than 15 GRT, of which 99 answered. The sample represents 54% of the vessels in the district. By ignoring the vessels smaller than 15 GRT there is a representation of 73%.

In the district of Hjørring 172 vessels were registered in 1990, all operating from Hirtshals. The study covers the 161 vessels of the Hirtshals Fishery Association, not including 11 purse seiners which have their own Association and P.O. In the district the 86 answered questionnaires represent 50% of the total fleet.

The outcomes of these studies of the Danish Fishery Organizations, average costs and earnings figures for different GRT groups, are included in a separate report, containing national costs and earnings specifications.

The French sample for the artisanal fleet consists of vessels belonging to the 'Centre de Gestion de la Pêche Artisanale' (accounting and management Centre). This CGPA became very important in the period 1985-1989, when the number of members of this organization grow from 500 to 1 000, which represents one half of the 12-25 meter ships.

For this study vessels fishing from Boulogne, Douarnenez, Lorient and le Guilvinec are involved. The sample totals 126 vessels (year 1990). For each port these vessels are classified into three groups, on the basis of the length of the vessels.

The Dutch costs and earnings data for 1990 were collected by the Fisheries Department of the Dutch Agricultural Economics Research Institute (LEI-DLO). The sample consists of 145 vessels of which 131 could be used for inclusion in the average costs and earnings figures. The remaining vessels were not operating throughout the year due to re-engining, selling of the vessel etc.

The costs and earnings data were collected by employees of LEI-DLO during visits to the fishermen or their bookkeepers. All costs and earnings data were extracted from the accounts of the participating fishing enterprises.

The data of the individual vessels in the sample were processed according to the LEI-DLO methodology, resulting in the table in annex 9. Main characteristic of this method is the calculation of net profit/loss on an economical basis. Consequently depreciation and interest amounts deviate importantly from these items calculated for tax purposes.

The 1990 survey of costs and earnings of *the Scottish and the English and Welsh fleets* differed little from that that has been undertaken annually since the nineteen fifties. However, several questions relating to the capital aspects of vessels were introduced and following an initial disappointing response, additional efforts were made to seek the co-operation of owners. It must be recalled that an obvious weakness of these investigations, both the Scottish, undertaken by the Scottish Offices Agriculture and Fisheries Department and the English & Welsh by Sea Fish Industry Authority (SFIA), remains the lack of legislation requiring owners to participate.

Each survey requested owners to complete a questionnaire detailing the operating and other costs related to their vessel(s) and the income derived from it in 1990 or a convenient financial year. As a voluntary survey the response depended primarily upon the goodwill of owners and also upon the persistence of the collectors. In neither survey was there an attempt to select a structured sample of vessels for investigation. In Scotland questionnaires were distributed to owners, or to their agents, by officers of the Scottish Office Sea Fisheries Inspectorate based at districts around the coast. As in all recent years the 1990 English and Welsh questionnaires were distributed by post. In the latter case questionnaires were directed principally towards owners who had undertaken to provide information at the time they were awarded grants for their vessels; an undertaken which has never been enforced.

7.2 Sample of different fleets

Table 7.1 shows the sample for the *Danish vessels* operating from Thyborøn (district Lemvig), Skagen and Hirtshals (district Hjørring).

In this table the number of returned questionnaires is related to the number from the file of the Ministry of Fisheries.

Table 7.1 Danish sample in 1990, containing the districts of Lemvig, Skagen and Hjørring

Categories (GRT)	Total number a)	Number in sample	Represented
Lemvig b):			
Trawler 0-50	40	7	
Trawler 50-120	23	18	
Trawler 120-200	23	15	
Trawler > 200	15	13	
Danish Seine 0-30	14	14	
Danish Seine > 30	96	61	
Gill Net	110	9	
Total	321	137	43%
Skagen c):			
Vessels < 15	36	-	
Vessels 15-19,9	58	38	
Vessels 20-49,9	21	16	
Vessels 50-99,9	21	15	
Vessels > 100	45	30	
Total	181	99	54%
Hjørring d):			
Danish Seine and Gill Net	72	33	
Trawlers < 50	48	29	
Trawlers 50-120	17	14	
Trawlers > 120	24	10	
Purse seiners	11	-	
Total	172	86	49%

a) The total number is based upon files of the district of Lemvig, Skagen and Hjørring from the Danish Ministry of Fisheries (31.12 in the current year). Excl. vessels less than 5 GRT); b) Based upon members of the Thyborøn Fishery Association; c) Based upon members of the Skagen Fishery Association (but not including vessels less than 15 GRT); d) Based upon members of the Hirtshals Fishery Association.

The total fleet of Jutland's West coast is displayed in table 7.2; no samples could be obtained from the districts of Esbjerg, Ringkøbing and Thisted, covering the important ports Esbjerg, Hvide Sande and Hanstholm.

The total number of vessels answering the questionnaires in 1990 (322) represents a total earnings figure of DKK 199 million

with respect to landings for reduction and DKK 505 million with respect to landings for consumption. This makes about 35% and 15% of the total Danish earnings for both fisheries respectively.

Table 7.2 Sample compared with total fleet operating from the Danish West Coast (1990)

Districts	Total number a)	Represented in sample b)
Esbjerg	188	-
Ringkøbing	190	-
Lemvig	321	137
Thisted	151	-
Hjørring	172	86
Skagen	181	99
Total	1203	322 (=26%)

a) Danish Ministry of Fisheries; b) Fishery Associations' cost-earnings studies.

The sample of the *French inshore and mid-water fleet* is shown in table 7.3.

Table 7.3 Sample of French fleet by Port

Port and size group	Total number	Number in sample	Represented %
Boulogne			
< 12 m	154	5	3.25
12-16 m	37	10	27.03
16-25 m	79	15	18.99
Lorient			
< 12 m	98	1	1.02
12-16 m	57	24	42.11
16-25 m	60	14	23.33
Douarnenez			
< 12 m	53	20	37.74
12-16 m	7	3	42.86
16-25 m	23	8	34.78
Le Guilvinec			
12-16 m	151	12	7.95
16-25 m	157	14	8.92

Table 7.4 shows the significance of the four ports with sample vessels related to the whole of French landings and landings value.

For Boulogne and Lorient only artisanal vessels are included in the sample. In Boulogne these vessels count for about 28% of landings and 27% of the total landings value in the port. In Lorient artisanal fisheries dominate the port landings figures, showing contributions of 70% and 75% of landings and value respectively.

Table 7.4 Contribution of Boulogne and home ports in Bretagne to national landings and value

Home port	% of national total value	% of national total quantity
Boulogne	17.60	13.50
Lorient	13.90	9.20
Douarnenez	4.70	2.70
Le Guilvinec	6.70	2.40

For the *Dutch fleet* costs and earnings data have been collected for the cutter fleet of which table 7.5 shows the sample.

Table 7.5 Sample of Dutch cutter fleet in 1990

Size group (kW)	Total number *)	Number in sample region		Total
		North	South	
up to 74	8	-	-	-
75- 110	28	5		5
111- 147	54	8	-	8
148- 191	53	12	3	15
192- 221	111	11	15	26
222- 294	4	-	-	-
295- 441	30	10	-	10
442- 588	24	4	-	4
589- 809	16	2	-	2
810- 956	33	6	4	10
957-1104	40	8	4	12
1105-1472	72	12	2	14
>1472	80	18	7	25
Total	553	96	35	131

*) Cutters in operation during 1990. Average of number per 1 January and 31 December (573 and 533).

The two main regions and the different size groups are rather well represented by the sample. So the sample can be seen as a good panel for the Dutch cutter fishery; the vessel groups covered by the sample contribute to 87.5% of the total earnings of this fishery (NLG 689 million in 1990). On the whole Dutch fisheries earned NLG 949 million in this year, of which the cutter fleet contributed to 73%.

Table 7.6 gives the sample number of the *British fleet*. This sample represents a total of 462 Scottish and 61 English vessels (beam trawlers).

The 462 vessels sampled in Scotland accounted for almost two thirds of the 1990 value of landings and represented approximately a half of the total number of vessels with registered length of 40 feet or more in the Scottish fleet. Vessels of this size not sampled were:

Scottish seiners	10
Single demersal trawls	38
Demersal pair trawls	100
Pelagic trawls	16
Shellfish vessels	321 (includes 245 Nephrop trawls)

Only beam trawlers over 80 ft were sampled in English and Welsh fleet. The total fleet of vessels 40 feet or over numbered 757 of two thirds of which were trawlers, beamers and Danish seiners.

7.3 Structure and fishing activities of the fleets included in the sample

7.3.1 The Danish fleet

The landings for human consumption and reduction from Danish fishermen in the ports: Thyborøn, Hirtshals and Skagen are outlined in table 7.7. In general it proves that fishing for reduction (fish-meal, fish-oil) is of great importance to these ports, because this fishery contributed to 45% of the total landings value in Thyborøn and 26% and 25% in Hirtshals and Skagen respectively. Fish for reduction is primarily landed by the big trawlers over 100 GRT, and the, by far most important species, is sandeel. This fish is caught in the Southern part of the North Sea during Spring and Summer (Ices area IV-b) and in the North-Eastern part (Norwegian zone) in the autumn. Norway pout is caught in the Northern part (Ices area IV-a).

Table 7.6 The United Kingdom fleet represented in the sample

	Total number in registered length groups (feet)			Number in sample
Beam trawlers (Eng. & Wales) at 1.1.90	**80-109.9**	**110-139.9**		
East Coast	16	7		
South East	3	0		
South West	19	1		
Total in sample area	38	8		
Other - England & Wales	14	1		
Total	52	9		19
Purse seiners (Scotland) at 31.12.90	**80-109.9**	**110ft & over**		
Mainland	8	26		
Orkney & Shetland	0	10		
Total	8	36		14 *)
Scottish seiners (Scotland) at 31.12.90	**50-59.9**	**60-69.9**	**70-79.9**	
Pittenweem	1	2	10	
Peterhead		7	25	
Fraserburgh		15	24	
Macduff & Buckie	3	18	14	
Lossiemouth	1	11	35	
Other Districts	15	14	12	
Total	20	67	120	32
Single demersal trawlers (Scotland) at 31.12.90	**50-59.9**	**60-69.9**	**70-79.9**	
Peterhead	6	4	8	
Fraserburgh	21	18	9	
Macduff	7	17	4	
Buckie	12	22	7	
Shetland	2	7	12	
Other Districts	19	17	19	
Total	67	85	59	33
Total British vessels represented		**523**	**sampled**	**98**

*) Purse seiners sampled in 1989 only.

Table 7.7 Landings in Danish ports in tonnes and '000 DKK as covered by costs and earnings study (1989)

	Cod	Flat fish	Pelagic	Other consump-tion	Reduction (fish meal /oil	Total
Thyborøn						
tonnes	10 242	8 568	129	671	265 473	285 083
'000 DKK	117,974	89,037	83	15,485	182,897	405,476
Hirthals						
tonnes	5 772	3 824	66 256	1 765	120 830	198 447
'000 DKK	64,362	51,965	146,511	66,955	86,746	329,793
Skagen						
tonnes	5 043	1 170	46 674	4 859	132 655	190 401
'000 DKK	49,992	21,473	80,753	123,375	95,515	371,108
Major West coast ports *)						
tonnes	42 963	28 818	140 274	17 441	1 336 105	1 565 601
'000 DKK	535,167	361,560	276,352	316,802	892,030	2,381,911

*) Includes the ports: Thyborøn, Hirtshals, Skagen, Esbjerg, Hvide Sande and Hanstholm.
Source: Ministry of Fisheries

In particular, for Thyborøn the landings of cod and flatfish (plaice, turbot and sole) are important with a share of 60% of the total landings value in the port. The flatfish is predominantly caught along the West coast of Jutland by the Danish seiners and Gill netters, and the cod is caught along the Danish, German and Dutch coasts.

Hirtshals and Skagen are the primary ports for pelagic fish (mackerel and herring) with a share of the total landed weight in all major West coast ports of 47% and 33% respectively. The pelagic species are caught in the Ices area III-a by trawlers and the purse seiners (operating from Hirtshals but not included in the this study).

The group of other species for consumption is also important in Skagen with a contribution of 28%. Shrimps caught in Skagerak and lobster caught in Kattegat are dominant in that group.
In the port of Hirtshals the trawlers and purse seiners (not included in the cost and earnings study) land large quantities of the pelagic species, herring and mackerel. In 1989 these species contributed to 44% of the landings value in the port.

In annex 3 data about technical parameters of the represented groups are included. These parameters (vessel length, age, number of crew etc) are not included in the usual Danish Costs and Earnings studies.

7.3.2 The French fleet

The length differentiates the distant water fishing vessels (over 25 meters) and the artisanal fishing ships. Classification as 'artisanal' assumes that the owner or a member of the family is on board.

There are sub-divisions within the artisanal class according to the length of the time at sea:

- small scale fishing with vessels of less than 12 m long and with voyages of less than 24 hours;
- coastal fishing vessels of between 12 and 16 m long and with trips of between 24 and 96 hours;
- fishing vessels of between 16 and 25 m long and with trips of longer than 96 hours.

The statistics for the fishing effort in the North Sea demonstrate the preponderance of the vessels from Boulogne, representing 68% of the fishing effort in this area in 1989 and 64% in 1990.

From the point of view of the artisanal fisheries the North Sea fishing grounds are not the most important ones. Annex 5 shows that 39% of the total value of catches from the artisanal vessels is taken from the North Sea. On the other hand the Channel contributes to some 60% in the value of those catches.

The trend in terms of the number of boats has been downwards ever since the mid-seventies. The decline on the large scale traditional herring fishing was compensated by the development of freezer trawlers in the 1970's. The semi-industrial category (25-38m) has completely disappeared whilst the number of artisanal trammel netters was growing up to 1987 (maximum of 173 in 1987) (Allard, 1991). The EC decisions to reduce the fishing fleet then led to the setting up of measures to restrict entry (PME in 1988) and promote retirement (Mellick Plan).

Table 7.9 shows the effort by fishing technique of the artisanal vessels in Boulogne.

Table 7.9 Share of the artisanal fleet of Boulogne in fishing effort

Technique	Species	% total effort in boat months
Bottom trawl	gadoids	26.9
Trammel net	flat fish	21.4
Gill net	gadoids	18.9

Source: Lannoy, 1991 IFREMER Boulogne sur Mer.

The crew sizes of the artisanal vessels use to vary enormously as is the case for the technical characteristics: generally there are 5 to 7 crew members for the deep-sea vessels going to the North Sea.

The evolution in catches over the medium-term shows a clear drop in landings at Boulogne. The catches in 1989 reached a level of half those of the 1960's; the record volume landing of 146 000 tons was in 1966. However, as this decline in volume was accompanied by the substitution of higher value species such as sole and cod, the fall in the value of production was partly offset by the increase in the average price per kilo.

Of the species landed in Boulogne saith, haddock and red fish are caught exclusively by the industrial vessels. Mackerel, herring and cod are caught both by industrial and artisanal vessels, whilst sole and cuttlefish (trammel, drag netting or trawl lining), and small quantities of bass, turbot and scallops (and sprat and sardines despite their low market value) are specifically caught by artisanal vessels.

Apart from Boulogne three ports in Bretagne have been considered to study the fishing fleets costs and earnings: Douarnenez, Lorient and Le Guilvinec. These four ports represent 42.9% of French total landings value and 27.8% of total volume. The variety of fishing strategies distinguishes the fleets of these ports. Except Mediterranean fishing, this sample of ports describes well the French fishing fleet.

Douarnenez shows a large range of activities. Three tuna fishing ships are commissioned at Douarnenez and based in Seychelles. Moreover, there are some 5 to 10 gillnetters specialized in fishing for albacore. This activity is not taken into account in this survey. The fishing strategies from inshore small scale units can be explained by the high appreciation of some species. In 1987, shrimp and scampi reached 20% of the landings value. Beyond this nearly all activities are undertaken from Douarnenez: longlines, beam trawls, nets, dredge for scallops and pots.

The significant costs of fuel have modified the fishing strategies of fleets commissioned at Lorient. In 1987, more than 50% of catches came from the VIA ICES area (West Scotland). In 1991, the distant water fleet fished in the nearer VIIa, VIIf and VII g ICES areas (Irish Sea, South East from Ireland). Some 90% of catches of the distant water fleet was taken from these areas. The principal species in Lorient are saithe and cod with more than 20 000 tons landed. The principal activity is the deep-sea trawl nets (90% of production globally). In 1988, potters, netters and longliners commissioned at Lorient were about 60 in number. In addition to them about 50 multi-purpose vessels were operating from Lorient.

Scampi, monk fish and hake are the main species landed at Le Guilvinec (30% of catches). Due to these species the mean auction price is higher than the national mean, but these catches have decreased slowly since 1980. The port of Le Guilvinec is characterized by its inshore fleet, even taking into account that 4/5 of catches are landed by the distant water ships. There are more than 200 small fishing boats. But there is no information available to study them and, in general, their catches are not auctioned.

7.3.3 The Dutch fleet

At the end of 1990 the Dutch cutter fleet consisted of 533 vessels totalling some 550 000 Horsepower (404 250 kW). The decommissioning scheme, in force since 1988, and severe Government regulations for effort limitation and control of landings, caused a substantial decrease of cutters. At the end of 1988 the cutter fleet numbered more vessels: 603, equipped with a total of 600 000 Hp (441 000 kW). This means a reduction of 12% of the number of vessels and 7.5% of total Horsepower in two years. Compared with the situation in 1984, the start of the Common Fisheries Policy, the number of vessels was in 1990 substantially lower (625-533). On the contrary, the Horsepower total of this reduced fleet exceeded the total Horsepower in 1984 with 5%.

The cutter fleet can be distinguished into three main parts:

- at the end of 1990 136 vessels with shrimp fisheries as a sole or main activity, Horsepower up to 260. Their fishing grounds are in the Wadden Sea and in the coastal zone;
- the category of vessels operating for an important part in several fisheries (shrimp -, cod -, whiting fisheries, beam trawling). This is the case for 177 vessels (at the end of 1990) in the category 261-1 100 Hp;
- the 220 vessels with Horsepower exceeding 1 100, with beam trawling as main or mostly sole activity. Flatfish, i.e. sole, plaice and turbot are the main species landed. These vessels leave the port for voyages of mostly 4-6 days and their fishing grounds are in the North Sea, mainly in areas IV a-c.

For the cutter fleet as a whole beam trawling is the most important activity, counting for 85% of the total effort, measured as Horsepower times days at sea. This means an increase compared with the situation in the first half of the eighties when beam trawling made some 60-65% of the total effort of the cutterfleet. An important development has been the reduction of the mid-size trawler fleet fishing on cod and whiting. This was caused by adverse economic results for these vessels mainly due to diminishing quota for cod and whiting. For the cutter fleet as a whole the total landings value was in 1990 at the same level compared with 1984. This means a decrease of the real landings value for the reduced number of cutters with 7% in this period.

Urk is the most important home port for the cutters with a total of 132 vessels in 1990, followed by Wieringen (61 smaller vessels), Goeree (42, mainly beam trawlers) and Den Helder (39, mainly beam trawlers).

Table 7.10 shows the total value of catches of the cutters and the contribution of each fishing technique to this total value. Beam trawling takes the dominating part in the total landings value of the cutter fisheries. Since 1989 this part increased from 76% to 84% of this total value.

Table 7.10 Value of catches in the Dutch cutter fisheries by fishing technique (million NLG)

	1984	1986	1988	1990
Beam trawl	530	593	505	577
Otter trawl	31	37	25	12
Pair trawling, cod/whiting	70	57	55	26
Pair trawling, herring	19	28	13	14
Shrimp fisheries	37	40	44	53
Other	5	6	7	7
Total	693	762	649	689

Source: W. Smit et al. Visserij in Cijfers 1990.

7.3.4 The British fleet

In January 1990 the United Kingdom fleet was comprised of 8 300 active fishing vessels, the majority, 5 400 were in England and Wales. Scotland had 2 400 and the remainder were based in Northern Ireland. Using the GRT of those vessels 40 ft or over, Scotland had 53%, England and Wales 35% and northern Ireland 11% of the fleet.

Traditionally vessels are grouped by size and fishing method; those over 140ft (42.7m) are termed distant water vessels, 80 ft to <140ft (24.4m to <42.7m) are near and middle water vessels and below 80 ft (<24.4m) are inshore vessels. The strength of the fleet is concentrated within the over 40ft inshore vessels which accounted for 55% of total GRT in 1990 and it was from this group that two of the sampled vessels groups described in table 7.2.4 were taken.

Scottish seiners, trawlers and pair trawlers, the great majority of which operate from ports in the Grampian Region in North East Scotland, fish principally the North Sea in area IVA. The west coast of Scotland area VIA is also important to vessels of both fishing methods and to the trawlers in particular which obtained a third of both the volume and the value of their total

landings there. Haddock, cod and whiting are important species to both fishing methods with monkfish and saithe also taken in quantity by the trawlers. The duration of fishing trips in area IVA averaged 3 or 4 days for the trawlers and about a day longer for seiners. Landings by these vessels were concentrated in 1990 at the two major ports in the Grampian region, Peterhead and Aberdeen, where almost 60% of Scottish edible demersal landings were made.

After cod and haddock the next most important species, in terms of earnings to Scottish fishermen, are nephrops or Norway lobsters. Nephrops are important to demersal trawlers and accounted for 5% of their total earnings in 1990 but nephrop trawlers accounted for 84% of total landings of the species in Scotland. The major areas fished by these vessels were the Minches in area VIA and the Murray Firth region of area IV a. The average trip length of the vessels, most being inshore vessels 30ft to <60ft (9.1m to 18.3m), is little more than a day and the value of their catches, often landed in the form of tails only, was 86% for nephrops with cod and monkfish important secondary catches.

Purse seiners and pelagic trawlers, fishing predominantly the West Coast area VIA and the northern sea area IVA, contributed significantly to the volume of landings by United Kingdom vessels in Scotland with 57% of all wet species (demersal & pelagic) and all but 0.3% of pelagic landings. In terms of value their contribution to the total of landings in Scotland was only 10.5%. Two thirds of Scottish pelagic catch was marketed by klondyking ie sold to foreign, mainly eastern european, factory vessels. The pelagic trawl and purser fleet consisted of only 60 mostly near and middle water vessels in 1990.

In terms of their number the 1,050 shellfish creelers contributed 4% of the total vessels in the Scottish fleet in 1990. These creelers are wholly small inshore vessels below 40ft (<12.2m) which are based all round the Scottish coast with particular concentrations on the west coast with the north east and Firth of Forth regions also important. Crabs comprised 80% of their catch in 1990 but of equal importance in terms of value were their landings of lobsters.

Detailed information is unavailable on the activities of vessels by fishing method in England & Wales. In recent years and in terms of the value of wet species landed by British vessels in English and Welsh ports, the Irish Sea and the south and west of Ireland in area VIIA have been of the greatest importance. The North sea area IV remains important to English vessels but while the real value of landings from area VII was maintained during the 1980s, that from the area IV was halved. To some extent the increased landings by English vessels into continental ports will have influenced the level of North Sea landings by United Kingdom vessels into east coast ports. In total the real value of de wet

fish landings in England and Wales declined during the last decade by 39% while that of shellfish rose by 26%.

Among major ports in England and Wales those in the south west, fishing area VII, notably Newlyn and Brixham have more than doubled the real value of their landings during the 1980s. In doing so they improved from eight and ninth to first and third their position in the 1990 earnings league of English and Welsh ports. Increased capacity and a decline in pelagic fishing combined to double landings of the comparably more valuable demersal and shellfish species have raised the status of these ports. In contrast east coast ports recorded real declines in the value of their landings over the same period, ranging among the major ports from 27% to 75% although Lowestoft was ranked second in the earnings league in 1990.

7.4 Common method of calculation and presentation of costs and earnings figures

7.4.1 Methodology of calculating net results

Chapter 8 contains average costs and earnings figures for fishing vessels in the four countries, presented in uniform tables. Figure 7.1 (next page) shows the lay-out of these tables. All amounts are presented in ECU's so that the level of costs and earnings can be compared very well. This common presentation has been the result of a standardisation exercise, an important part of this study. Annex 6 shows the four different national tables for presentation of costs and earnings figures. The 'common' and 'national' presentation forms show rather big differences, as can be seen.

Some items in these uniform tables are explained below.

Labour share, wages

Costs of all labour is included. For the skipper-owner an imputed amount is calculated in cases (mostly) a salary is not paid to him.

Depreciation of the vessels

The situation with respect to depreciation methods practised in the four countries is quite different.

In Denmark and France depreciation amounts for fishing vessels are not primarily related to economic realities, but reflect allowances as specified under the fiscal regime. Chapter 5 describes these calculation methods (sections 5.1.1-5.4.1, Tax Regulations).

The *Danish* costs and earnings studies, carried out by the Fisheries Associations, did not contain depreciation amounts. The

Size group GRT Meters kW	1	2	3	4
Days at sea				
Earnings				
Reduction				
Consumption				
Total earnings				
Running costs				
Fuel and lube oil				
Harbour dues				
Boxes ice				
Food				
Other costs of crew				
Costs of selling fish				
Other running costs				
Total running costs				
Labour share, wages social insurance				
Vessel costs				
Gear expenses				
Vessel repairs				
Equipt.hire and maint.				
Vessel insurance				
Other vessel costs				
General expenses				
Special earnings				
Total vessel costs				
Total costs/expenses				
Gross cash flow				
Depreciation				
Interest				
Net profit or loss(-)				

Figure 7.1 Uniform table for presentation of average costs and earnings of fishing vessels in Denmark, France, the Netherlands and the United Kingdom (ECU)

(average) figure on the bottom-line of the profit and loss statement shows the amount before depreciation. In *France* costs and earnings data are being collected by the 'Centre de Gestion de la Pêche Artisanale' (CGPA). The depreciation amounts calculated for fiscal purposes are based upon rather short periods: In most cases ten years for the hull and seven years for the engine.

In *the Netherlands* depreciation amounts for fishing vessels are being calculated separately for economic purposes by the LEI-DLO. Basis for this depreciation is the replacement value of the vessel. The yearly depreciation amount results from a period of 20 and 10 years for the hull and the engine respectively and a digressive calculation system. In the *United Kingdom* national depreciation allowances, intended to reflect economic realities (rather than fiscal criteria), are estimated by SFIA. As a part of the yearly Costs and Earnings Investigation vessels are being depreciated in ten years on the basis of the insured value.

Common depreciation system

Depreciation allowances are often a major component of a fishing vessels' financial accounts. Different systems may lead to big differences in net results per vessels. Therefore uniformity in this respect is very important to get comparable returns per vessel in the four countries. Part of this study has been the development of an uniform system of depreciation. The basis of this system is the replacement value of the vessel; this value is equal to the current building costs of a similar new vessel. These current building costs have been estimated for each country on the basis of normative amounts.

Table 7.2 Contains a comparison of the replacement values for two types of vessels of the same size.

Table 7.11 Replacement cost of fishing vessels in four EC countries in ECU (1990)

	DK	FR	NL	UK
Vessel:				
55 GRT - 325 kW	681,000	565,600	804,700	1,269,900
130 GRT - 600 kW	1,552,750	.	1,264,300	2,492,700

The hull of the vessel is depreciated in 25 years, 4% per year (straight-line) on the basis of the replacement cost and after this period 2% of the replacement value is depreciated as an estimate for improvements on these older vessels.

Engines with heavy use are depreciated in ten years, 10% per year and 4% after this period. In cases of more light use the

depreciation period is 15 years, 6.7% per year and 2.5% after this period; all percentages based upon the replacement cost.

When the amount of the engine alone was not known a breakdown between hull and engine of 2:1 was assumed.

Interest

In reality interest costs per vessel will differ widely due to differences in the level of loans. To eliminate these differences an imputed interest has been calculated for all vessels. This imputed interest reflects the opportunity costs of the capital invested in the vessel and is hence independent of the way the vessel is financed. This makes it possible to assess relative performance on the basis of fishing activity as such.

Basis for the calculation of the imputed interest is the (nominal) book value of the vessel, which is derived from the previous mentioned replacement value and the depreciation system described above.

The real interest rate has been calculated for each country. This rate is the difference between the rate for Government Bonds in the four countries and the inflation rate. This resulted in an imputed interest (the real interest rate) for each country shown in table 7.12.

Table 7.12 Calculation of the imputed interest rate; year 1990

Countries	Rate for government bonds	Inflation rate	Real interest rate
Denmark	9.33	2.3	7.03
France	9.50	3.2	6.30
The Netherlands	9.01	2.5	6.51
United Kingdom	10.88	9.3	1.58

National methods

Annex 7-10 show the four national methods of calculating depreciation and interest. The method adjusted for the Danish situation results in lower net profits, in most cases. This is mainly caused by the higher bookvalue of the vessel (derived from the insured value); as a consequence the imputed interest is much higher compared with the 'common method'.

The French method also results to lower net profits, which is caused by higher depreciation cost. The Dutch and British methods show minor differences mostly, apart from the beamtrawlers. The big Dutch beamers show substantially lower net profits, according to the national method; the national (LEI-DLO) digressive depreciation system leads to much higher depreciation

cost for these rather new vessels. For the British situation the national (SFIA) depreciation method (10% of the insured value) results in higher depreciation cost for the two beamtrawler groups, compared with the 'common method'.

7.4.2 Economic indicators

In the original costs and earnings studies for the years 1989 and 1990 in the four countries different economic indicators were used, as is shown in the figure below.

Denmark	France	The Netherlands	United Kingdom
gross earnings before depreciation	gross cash-flow net profit	gross profit net profit	operating profit profit after depriciation

Figure 7.2 Differences in amounts on the bottom-line in the four countries

It is important to use the same indicators for the four countries so that the economic performance of the different fleets can be compared.

Much experience with the use of economic indicators is build up in Agriculture, namely with the practice of the Farm Accountancy Data Network (FADN) of the EC, in French known as RICA (Reseau d'Information Comptable Agricole).

The current array of measures in this respect are:

- farm Net Value Added (FNVA) per holding and per Annual Work Unit (AWU);
  this income indicator contains the output less intermediate consumption less inputs purchased from outside the business less depreciation. This indicator represents the reward to all the fixed factors in production (all land, all capital and all labour and entrepreneurial input irrespective of ownership;
- family Farm Income (FFI) per holding and per unit of unpaid (family) labour (Family Work Unit or FWU);
  this is a residual amount after deducting the rewards to land, capital and (hired) labour;
- cash-flow per holding;
  the FADN version of cash-flow deducts capital spending and takes changes in loans into account. It is described as measuring' the capacity of a farm to save up money and finance itself'.

In a study commissioned by the EC (DGVI-A3) (Hill, 1991) economic indicators with three different topics are distinguished:

1) indicators of personal income;
2) indicators of efficiency and productivity;
3) indicators of profitability, business performance, financial status and viability. In his report Hill recommends a number of other indicators.

For this FAR study some indicators are selected from FADN and some others are usual indicators in business economics. In chapter 9 these economic indicators have been used to analyse the average costs and earnings figures of the different (44) vessel groups. The following indicators seem to provide adequate information about the economic performance of fishing vessels:

- net Value Added per vessel (VNVA). Calculated as total earnings minus inputs purchased from outside the business minus depreciation. So this VNVA is the total of labour-, interest- and profit income;
- gross Value Added per vessel (VGVA). Net Value Added increased with the amount of depreciation per vessel; the VNVA and VGVA are expressed as an amount in ECU's and also as a percentage of gross earnings per vessel. Furthermore both indicators are expressed per crew member which is valuable for reasons of comparison;
- income to the skipper-owner. Defined as VNVA minus paid interest and paid labour to the crew. This income is somewhat comparable with the Family Farm Income (FFI) mentioned before. The income (share) per crew member will be also shown in the tables with the economic indicators in the final report;
- gross Cash-Flow per vessel. Calculated as VNVA plus depreciation minus (paid+imputed) wages. This indicator shows the amount available for interest payments and repayments of loans;
- net Profit per vessel. Defined as Gross Cash-Flow minus depreciation and imputed interest. This balance is the reward for entrepreneurship;
- return on Investment (ROI). The amount of net profit gives more information when it is expressed as a percentage of the invested capital. Therefore the interest is added to the Net Profit to get the whole renumeration of the invested capital. The invested capital is represented by the insured value of the vessel (the same amount as the basis for the calculation of the imputed interest);
- financial status and viability of the fishing enterprises is indicated by the ratio: paid interest as a percentage of the Gross Cash-Flow;
- solvency indicator. Defined as the amount of borrowing as a percentage of the Insured or Book Value of the vessel.

The first two indicators measure the incomes in the Fishing sector. Profitability is measured by Net Profit and the ROI. The Gross cash-flow, the interest/cash-flow ratio and the solvency indicator reflect the financial status and viability of the enterprises.

It should be emphasized finally that economic indicators are nothing more than indicators. They allow the presentation of a diagnosis of the economic state of fishing enterprises. Combining the information of the different indicators is important to get a more reliable diagnosis.

8. COSTS AND EARNINGS OF FISHING VESSELS OF FOUR EC COUNTRIES CALCULATED ON A COMMON BASIS

8.1 Costs and earnings of fishing vessels in Denmark

Tables 8.1 - 8.4 contain average costs and earnings figures for the year 1990 of Danish fishing vessels, mainly operating in the North Sea. Home ports/districts of these vessels are Lemvig, Skagen and Hjørring.

The figures in these tables are calculated in accordance with the common methodology described in chapter 7.

In annex 7 the Danish method is shown; because of higher interest amounts net profits based upon this method were lower in most cases.

Considering the common method mainly the smaller vessels operated on a pure profitable basis in 1990 on average. In these cases depreciation and imputed interest costs were covered, generally speaking.

This applies for the gill netters and seiners in Lemvig and Hjørring, the trawlers less than 50 GRT in Hjørring and also the trawlers between 50 and 120 GRT in Hjørring and Skagen.

All vessel groups operated in 1990 on a semi-profitable basis, defining this as covering of interest but ignoring the depreciation costs. Although for the trawler groups 120-200 GRT and more than 200 GRT in Lemvig there was hardly a positive balance after deduction of the imputed interest costs.

The earnings increased compared with 1989 (tables 8.5-8.7) for the consumption vessels of Danish seiners and gill netters in Lemvig and Hjørring and the trawlers 20-49 GRT in Skagen. This was caused by increased prices: cod price increased from a mean of 9.84 DKK/KG to 12.35, plaice from 9.40 DKK/KG to 10.13 and herring from 1.63 DKK/KG to 1.80. For reason of comparison these prices are also shown in ECU's in the table below.

Table 8.1 Danish (average) prices in ECU per kg for some species

Species	1989	1990	% change
Cod	1.26	1.58	+25.4
Plaice	1.20	1.29	+7.5
Herring	0.21	0.23	+9.5

Source: Danish Ministry of Fisheries.

In general the operating costs ignoring depreciation and interest increased also for the vessel groups mentioned above. This increase was not as much as the earnings, and therefore the gross cash flow increased also.

The earnings of big trawlers decreased from 1989 to 1990, because the mean price of fish for reduction dropped from 0.67 DKK/KG to 0.54 DKK in 1990. But as the costs in general decreased also for the big trawlers, there was only a minor difference in the gross cash flow between 1989 and 1990. This is the case for the trawlers in general except the trawlers > 120 GRT in Lemvig. The gross cash flow decreased with 27,875 ECU and 86,125 ECU respectively for trawlers groups of 120-200 GRT and > 200 GRT, because the operating costs decreased less than the earnings.

Tables 8.8-8.10 show the average amount of loans per vessel related to the value of the vessel. The majority of the vessel groups show an insured value of the vessel exceeding the amount of loans by 5%-40%.

Table 8.2 Average costs and earnings per vessel in Denmark in 1990, district of Lemvig (ECU)

		Danish seine		Trawler
Size group	Gill net	< 30 GRT	> 30 GRT	0-50 GRT
GRT *)	18-43	28-29	33-43	37-43
Metres *)	14-18	15	16-18	17-18
kW *)	95-172	82-128	127-172	257-326
Days at sea	.	.	.	.
Earnings				
Reduction	0	0	0	0
Consumption	203,125	161,625	211,625	185,250
Total earnings	203,125	161,625	211,625	185,250
Running costs				
Fuel and lube oil	7,125	5,125	8,500	18,375
Harbour dues a)	4,977	3,960	5,185	4,539
Boxes ice b)	*	*	*	*
Food b)	*	*	*	*
Other costs of crew	625	500	625	250
Costs of selling fish	15,023	17,665	20,565	15,961
Other running costs	3,750	1,250	3,125	5,625
Total running costs	31,500	28,500	38,000	44,750
Labour share, wages	83,500	65,750	87,500	72,625
Social insurance	2,875	2,875	4,125	3,375
Vessel costs				
Gear expenses	19,125	5,500	8,625	13,750
Vessel repairs	23,125	17,625	23,375	16,625
Equipt.hire and maint c)	*	*	*	*
Vessel insurance	5,000	4,375	8,000	8,375
Other vessel costs	3,375	1,375	1,250	1,875
General expenses	5,875	4,000	4,375	5,375
Special earnings d)	625	1,250	2,375	2,000
Total vessel costs	55,875	31,625	43,250	44,000
Total costs/expenses	173,750	128,750	172,875	164,750
Gross cash flow	29,375	32,875	38,750	20,500
Depreciation e)	12,554	9,165	13,076	29,564
Interest e)	1,686	2,634	4,401	5,616
Net profit or loss(-)	15,135	21,076	31,273	-14,680

*) Defined as 25% and 75% fractiles, see annex 4; .: Figure is not available; a) Calculated as 2.45% of total earnings; b) Included in Other Running Costs; c) Included in Vessel Repairs; d) Special earnings: Capital gains, a.o.; e) Common method, described in section 7.4.1 and annex 7.

Table 8.3 Average costs and earnings per vessel in Denmark in 1990, district of Lemvig (ECU)

	Trawler	Trawler	Trawler
Size group	50-120 GRT	120-200 GRT	> 200 GRT
GRT *)	56-88	150-178	238-353
Metres *)	20-25	30-34	38-43
kW *)	254-373	447-626	738-1096
Days at sea	.	.	.
Earnings			
Reduction	80,750	228,750	621,750
Consumption	204,000	217,625	203,750
Total earnings	284,625	446,375	825,500
Running costs			
Fuel and lube oil	31,750	71,625	140,875
Harbour dues a)	6,973	10,936	20,225
Boxes ice b)	*	*	*
Food b)	*	*	*
Other costs of crew	1,000	1,250	1,500
Costs of selling fish	22,902	42,189	78,650
Other running costs	6,875	9,125	27,875
Total running costs	69,500	135,125	269,125
Labour share, wages	108,750	132,750	243,125
Social insurance	4,750	7,750	11,250
Vessel costs			
Gear expenses	17,750	43,625	76,750
Vessel repairs	34,250	53,250	103,500
Equipt.hire and maint. c)	*	*	*
Vessel insurance	12,000	24,500	40,625
Other vessel costs	3,375	3,125	7,000
General expenses	5,750	7,500	11,625
Special earnings d)	3,000	3,625	4,000
Total vessel costs	70,125	128,375	235,500
Total costs/expenses	253,125	404,000	759,000
Gross cash flow	31,500	42,375	66,500
Depreciation e)	40,896	85,379	148,750
Interest e)	12,497	41,492	62,142
Net profit or loss(-)	-21,893	-84,496	-144,212

*) Defined as 25% and 75% fractiles, see annex 4; .: Figure is not available; a) Calculated as 2.45% of total earnings; b) Included in Other Running Costs; c) Included in Vessel Repairs; d) Special earnings: Capital gains, a.o.; e) Common method, described in section 7.4.1 and annex 7.

Table 8.4 Average costs and earnings per vessel in Denmark in 1990, district of Skagen (ECU)

Size group	Trawler 15-19.9 GRT	Trawler 20-49.9 GRT	Trawler 50-99.9 GRT	Trawler > 100 GRT
GRT *)	12	30-40	57-82	149-171
Metres *)	13-14	15-18	20-24	31-35
kW *)	115-196	211-274	313-410	503-682
Days at sea	.	.	.	.
Earnings				
Reduction	11,750	26,000	15,750	95,500
Consumption	116,125	155,500	234,875	369,625
Total earnings	127,875	181,500	250,625	465,125
Runnings costs				
Fuel and lube oil	14,125	21,875	39,125	80,000
Harbour dues a)	3,133	4,447	6,140	11,396
Boxes ice b)	*	*	*	*
Food c)	*	*	*	*
Other costs of crew c)	*	*	*	*
Costs of selling fish	2,992	5,678	8,235	25,604
Other running costs	*	*	*	*
Total running costs	20,250	32,000	53,500	117,000
Labour share, wages	52,625	73,125	93,625	148,125
Social insurance	1,625	2,250	3,375	6,500
Vessels costs				
Gear expenses	6,125	10,750	16,250	30,375
Vessel repairs	10,875	17,875	26,125	50,250
Equipt.hire and maint.	2,875	4,875	5,875	12,875
Vessel insurance	6,500	10,000	14,500	26,250
Other vessel costs	2,500	3,500	5,000	9,625
General expenses	2,250	2,375	2,750	3,500
Special earnings d)	2,125	4,500	6,750	13,125
Total vessel costs	29,000	44,875	63,750	119,750
Total costs/expenses	103,500	152,250	214,250	391,375
Gross cash flow	24,375	29,250	36,375	73,750
Depreciation e)	10,088	17,398	27,279	93,732
Interest e)	2,544	4,217	6,065	20,744
Net profit or loss(-)	11,743	7,635	3,031	-40,736

*) Defined as 25% and 75% fractiles, see annex 4; .: Figure is not available;
a) Calculated as 2.45% of total earnings; b) Included in Other Running Costs;
c) Included in General Expenses; d) Special earnings: Capital gains, a.o.;
e) Common method, described in section 7.4.1 and annex 7.

Table 8.5 Average costs and earnings per vessel in Denmark in 1990, district of Hjørring (ECU)

	Gill net	Trawler	Trawler	Trawler
Size group	Danish seine	< 50 GRT	50-120 GRT	>120 GRT
GRT *)	19-45	19-38	55-98	149-188
Metres *)	13-18	14-17	20-26	34-35
kW *)	104-201	138-272	298-386	585-802
Days at sea	.	.	.	.
Earnings				
Reduction	0	11,579	61,625	176,361
Consumption	136,485	87,591	293,934	316,585
Total earnings	136,485	99,170	355,559	492,946
Running costs				
Fuel and lube oil	6,634	12,442	57,275	94,456
Harbour dues a)	3,344	2,430	8,711	12,077
Boxes ice b)	*	*	*	*
Food c)	*	*	*	*
Other costs of crew c)	*	*	*	*
Costs of selling fish	12,861	5,822	30,029	43,687
Other running costs	*	*	*	*
Total running costs	22,839	20,693	96,016	150,220
Labour share, wages	49,120	34,891	118,163	144,177
Social insurance c)	*	*	*	*
Vessels Costs				
Gear expenses	6,966	4,940	20,352	33,517
Vessel repairs	11,285	7,168	30,025	34,153
Equipt.hire and maint.	2,062	1,802	6,075	9,036
Vessel insurance	5,469	5,398	13,480	24,809
Other vessel costs	2,038	958	4,691	10,399
General expenses	8,396	6,655	16,882	25,024
Special earnings d)	863	988	8,002	9,428
Total vessel costs	35,354	25,932	83,503	127,509
Total costs/expenses	107,314	81,516	297,681	421,906
Gross cash flow	29,171	17,654	57,878	71,906
Depreciation e)	15,214	14,310	44,576	107,052
Interest e)	2,395	5,169	10,558	38,266
Net profit or loss(-)	11,562	-1,825	2,744	-74,278

*) Defined as 25% and 75% fractiles, see annex 4; .: Figure is not available;
a) Calculated as 2.45% of total earnings; b) Included in fuel and lube oil;
c) Included in General expenses; d) Special earnings: Capital gains, oil bonus;
e) Common method, described in section 7.4.1 and annex 7.

Table 8.6 Average returns per vessel in Denmark in 1989 and 1990, district of Lemvig (ECU)

Earnings, cash flow and profits per vessel group	1989	1990	% change in 1990
Trawler 0-50 GRT			
Total earnings	185,500	185,250	-0.1
Gross cash flow	-4,625	20,500	+543
Net profit	-38,585	-14,680	+61.9
Trawler 50-120 GRT			
Total earnings	330,875	284,625	-14.0
Gross cash flow	39,125	31,500	-19.5
Net profit	-10,605	-21,893	-107
Trawler 120-200 GRT			
Total earnings	501,375	446,375	-11.0
Gross cash flow	70,250	42,375	-39.7
Net profit	-42,533	-84,496	-98.7
Trawler > 200 GRT			
Total earnings	954,125	825,500	-13.5
Gross cash flow	152,625	66,500	-56.4
Net profit	-26,047	-144,212	-454
Danish seine < 30 GRT			
Total earnings	159,625	161,625	1.3
Gross cash flow	21,500	32,875	52.9
Net profit	4,013	21,076	425
Danish seine > 30 GRT			
Total earnings	200,750	211,625	5.4
Gross cash flow	28,875	38,750	34.2
Net profit	3,669	21,273	480
Gill net			
Total earnings	169,125	203,125	20.1
Gross cash flow	19,750	29,375	48.7
Net profit	-2,835	15,135	634

Note: The net profit is calculated according to the common method of depreciation and interest imputation.

Table 8.7 Average returns per vessel in Denmark in 1989 and 1990, district of Skagen (ECU)

Earnings, cash flow and profits per vessel group	1989	1990	% change in 1990
Trawler 15-19.9 GRT			
Total earnings	127,875	127,875	0
Gross cash flow	24,875	24,875	-2.0
Net profit	8,372	11,743	+40.3
Trawler 20-49.9 GRT			
Total earnings	172,250	181,500	+5.4
Gross cash flow	21,375	29,250	+36.8
Net profit	-7,750	7,635	+199
Trawler 50-99.9 GRT			
Total earnings	266,125	250,625	-5.8
Gross cash flow	44,375	36,375	-18.0
Net profit	-1,554	3,031	295
Trawler > 100 GRT			
Total earnings	474,875	465,125	-2.1
Gross cash flow	68,750	73,750	7.3
Net profit	-40,557	-40,726	-0.4

Note: The net profit is calculated according to the common method of depreciation and interest imputation.

Table 8.8 Average returns per vessel in Denmark in 1989 and 1990, district of Hjørring

Earnings, cash flow and profits per vessel group	1989	1990	% change in 1990
Gill net			
Total earnings	111,291	136,485	+22.6
Gross cash flow	20,848	29,171	+39.9
Net profit	-7,054	11,562	+264
Trawler < 50 GRT			
Total earnings	115,403	99,170	-14.1
Gross cash flow	19,588	17,654	-9.9
Net profit	-4,990	-1,825	+63.4
Trawler 50-120 GRT			
Total earnings	367,636	355,559	-3.3
Gross cash flow	54,077	57,878	+7.0
Net profit	1,670	2,744	+64.3
Trawler > 120 GRT			
Total earnings	543,505	492,946	-9.3
Gross cash flow	76,090	71,040	-6.6
Net profit	-57,296	-74,278	-29.6

Note: The net profit is calculated according to the common method of depreciation and interest imputation.

Table 8.9 Average amount of loans per vessel in Denmark at 31 December 1990, district of Lemvig (ECU)

	Danish seine		Danish seine	Trawler
	Gill net	< 30 GRT	> 30 GRT	0-50 GRT
Loans outstanding	201,375	105,500	201,375	260,750
Book value *)	23,988	37,467	62,601	79,884
Insured value	176,250	150,875	275,375	276,500

	Trawler	Trawler	Trawler
	50-120 GRT	120-200 GRT	> 200 GRT
Loans outstanding	330,250	889,750	1,628,000
Book value *)	177,768	590,212	883,950
Insured value	421,125	990,375	1,977,500

*) Based on replacement value; method described in 7.4.1.

Table 8.10 Average amount of loans per vessel in Denmark at December 1990, district of Skagen

	Trawler	Trawler	Trawler	Trawler
	15-19.9 GRT	20-49.9 GRT	50-99.9 GRT	> 100 GRT
Loans outstanding	160,875	254,625	396,000	1,015,625
Book value *)	36,190	59,990	86,279	295,074
Insured value	181,625	274,625	459,500	1,129,875

*) Based on replacement value; method described in 7.4.1.

Table 8.11 Average amount of loans per vessel in Denmark at 31 December 1990, district of Hjørring (ECU)

	Gill net	Trawler	Trawler	Trawler
	Danish seine	< 50 GRT	50-120 GRT	> 120 GRT
Loans outstanding	167,535	129,354	456,417	763,018
Book value *)	34,069	34,069	150,182	544,318
Insured value	166,162	165,605	575,201	1,101,175

*) Based on replacement value; method described in 7.4.1.

8.2 Costs and earnings of fishing vessels in France

The costs and earnings breakdown (tables 8.11-8.14) shows an important difference between ports. In these tables deprecation and interest amounts result from the common method. Annex 8 shows the differences between this method and the 'French' method, applied by the 'Centre de gestion de la Pêche Artisanale' (CGPA). The latter method results in lower net profits/higher losses in most cases. This is explained by higher amounts of depreciation/interest by applying the 'French' method.

Differences of fuel costs are in line with the repartition of the fishing areas and the fishing strategies. The cost of fuel make the main part of the running costs, apart from the costs of selling fish. In this way, the average share of fuel is about 5 % of total earnings for vessels less than 12 meters long. For vessels more than 16 meters long this share is 10-14%. In general, the significant costs of fuel and the deterioration of stocks have modified the geographical origin in catches breakdown.

Total earnings at Lorient and Le Guilvinec were higher than those of Boulogne and Douarnenez. In fact, the mean landings value per crew member is more important for Lorient and Le Guilvinec. Consequently, the gross cash flow of the vessels commissioned at these ports would also be higher. But the costs of fuel and expenses penalize the fleet of Lorient, which is more remote from fishing areas than the other ports. The average gross cash flow reached an equal level at Lorient, Boulogne and Douarnenez. Since the vessels commissioned at Lorient are younger (their mean age is about 10 years old) their returns are burdened by interest payments and depreciation cost.

On average, the figures on the bottom-line decreased from 1989 to 1990 (table 8.15-8.17). Nevertheless, some size groups showed a growth of total earnings, but net profit of every category decreased. In 1989, only mean net profit of vessels between 16 and 25 meters long, commissioned at Lorient, was negative. In 1990, except at Douarnenez, net profit of each size group was negative (calculated according to the 'French' method in both years). But the gross cash flow minus paid interest remained positive.

Table 8.18 shows the average amount of loans per vessel. In this table the amount of fix assets represents the value of the vessel plus value of other assets on the balance sheet of CGPA. In this respect the loans are well covered by this value of fix assets in all cases. The amount of loans varies from 31% to 60% of the balance value of fix assets. The share of loans was higher in Boulogne and Lorient than in Douarnenez and Le Guilvinec, in most cases.

Beyond this current liabilities (not in tables) were not too important, except for the small fishing vessels at Boulogne and Lorient. In these cases, the current liabilities reached about 20 % of total liabilities.

Table 8.12 Average costs and earnings per vessel in France in 1990, Boulogne Sur Mer (ECU)

Metres	< 12	12-16	16-25
kW	110-250	190-350	400-625
GRT	< 10	10-30	30-100
Days at sea	.	.	.
Total earnings	87,450	187,338	332,091
Running Costs			
Fuel and lube oil	6,592	17,187	45,479
Harbour Dues	2,623	5,619	9,963
Boxes Ice a)	1,487	3,185	5,646
Food	*	*	*
Other costs of crew	*	*	*
Costs of selling fish	10,057	20,607	38,190
Other Running Costs	0	18,523	0
Total running costs	20,759	65,121	99,278
Labour share, wages	42,980	48,948	97,158
Social insurance b)	0	23,814	37,595
Vessel Costs			
Gear Expenses a)	4,372	9,367	15,660
Vessel Repairs a)	6,423	14,987	25,622
Equipt. Hire and Maint.	*	*	*
Vessel Insurance a)	2,361	5,058	8,966
Other Vessel Costs	*	*	*
General Expenses	*	*	*
Total vessel costs	13,157	29,412	50,248
Total costs/expenses	76,895	167,295	284,279
Gross cash flow	10,554	20,043	47,812
Depreciation c)	9,417	15,030	26,323
Interest c)	2,003	1,855	14,074
Net profit or loss (-)	-866	3 158	7 415

a) Other data not separately available but estimated with results in 1985; b) Group < 12 m included in Labour Share; c) Common method, described in section 7.4.1 and annex 8; *) Data not available but included in Other Running Costs ; .: Figure is not available.

Table 8.13 Average costs and earnings per vessel in France in 1990, Douarnenez (ECU)

Metres	< 12	12-16	16-25
kW	110-250	190-350	370-850
GRT	< 10	10-30	30-100
Days at sea	211	207	227
Total earnings	76,008	155,449	366,301
Running costs			
Fuel and lube oil	3,320	6,173	36,466
Harbour dues	2,280	4,663	10,989
Boxes ice a)	338	2,643	6,227
Food	*	*	*
Other costs of crew	*	*	*
Costs of selling fish	8,361	17,099	40,293
Other running costs	0	0	0
Total running costs	14,299	30,579	93,975
Labour share, wages	21,816	80,114	174,400
Social insurance b)	0	0	0
Vessel costs			
Gear expenses a)	1,391	7,772	18,315
Vessel repairs a)	3,082	7,385	29,123
Equipt. hire and maint.	*	*	*
Vessel insurance a)	1,254	4,197	9,890
Other vessel costs	*	*	*
General expenses	*	*	*
Total vessel costs	5,726	19,355	57,328
Total costs/expenses	41,841	130,047	325,703
Gross cash flow	34,166	25,402	40,598
Depreciation c)	9,417	14,516	26,323
Interest c)	4,833	898	11,024
Net profit or loss (-)	19,916	9,988	3,251

a) Data not separately available but estimated with results in 1985; b) Included in Labour Share; c) Common method, described in section 7.4.1 and annex 8; *) Data not available but included in Other Running Costs; .: Figure is not available.

Table 8.14 Average costs and earnings per vessel in France in 1990, Lorient (ECU)

Metres	< 12	12-16	16-25
kW	200-320	320-550	450-750
GRT	< 10	10-30	30-100
Days at sea	230	190	180
Total earnings	125,861	279,510	412,587
Running costs			
Fuel and lube oil	5,117	29,259	45,782
Harbour dues	3,776	8,385	12,378
Boxes ice a)	2,569	4,752	7,014
Food	*	*	*
Other costs of crew	*	*	*
Costs of selling fish	13,845	30,746	45,385
Other running costs	377	0	5,491
Total running costs	25,684	73,143	116,049
Labour share, wages	70,071	143,833	189,767
Social insurance b)	0	0	0
Vessel costs			
Gear expenses a)	6,293	13,976	20,629
Vessel repairs a)	10,069	13,905	33,007
Equipt. hire and maint.	*	*	*
Vessel insurance a)	3,398	7,547	11,140
Other vessel costs	*	*	*
General Expenses	*	*	*
Total vessel costs	19,760	35,427	64,776
Total costs/expenses	115,516	252,403	370,593
Gross cash flow	10,345	27,108	41,994
Depreciation c)	12,169	18,842	34,190
Interest c)	4,082	6,378	19,112
Net profit or loss (-)	-5,906	1,888	-11,308

a) Data not separately available but estimated with results in 1985; b) Included in Labour Share; c) Common method, described in section 7.4.1 and annex 8; *) Data not available but included in Other Running Costs; .: Figure is not available.

Table 8.15 Average costs and earnings per vessels in France in 1990, Le Guilvinec (ECU)

Metres	12-16	16-25
kW	315-500	500-700
GRT	10-30	30-100
Days at sea	191	222
Total earnings	214,468	451,312
Running costs		
Fuel and lube oil	23,339	47,220
Harbour dues	4,103	5,090
Boxes ice a)	3,646	7,672
Food	*	*
Other costs of crew	*	*
Costs of selling fish	15,045	18,662
Other running costs	0	20,155
Total running costs	46,133	98,800
Labour share, wages	106,732	214,340
Social insurance b)	0	0
Vessel costs		
Gear expenses a)	10,723	22,566
Vessel repairs a)	15,047	36,105
Equipt. hire and maint.	*	*
Vessel insurance a)	5,791	12,185
Other vessel costs	*	*
General expenses	*	*
Total vessel costs	31,561	70,856
Total costs/expenses	184,426	383,995
Gross cash flow	30,042	67,316
Depreciation c)	25,600	34,190
Interest c)	1,356	14,955
Net profit or loss (-)	3,086	18,171

a) Data not separately available but estimated with results in 1985; b) Included in Labour Share; c) Common method, described in section 7.4.1 and annex 8; *) Data not available but included in Other Running Costs; .: Figure is not available.

Table 8.16 Average returns per vessel in France in 1989 and 1990. Vessels less than 12 metres long (ECU)

Returns by port	1989	1990	% change in 1990
Boulogne sur Mer			
Total earnings	97,093	87,450	-9.93
Gross cash flow	20,734	10,554	-49.10
Net profit *)	4,645	-6,866	-247.81
Douarnenez			
Total earnings	60,051	76,008	26.57
Gross cash flow	30,512	34,166	11.98
Net profit *)	27,079	23,030	-14.95
Lorient			
Total earnings		125,861	
Gross cash flow		10,345	
Net profit *)		-14,964	

*) Depreciation and interest based upon the 'French method' (annex 8).

Table 8.17 Average returns per vessel in France in 1989 and 1990. Vessels between 12 and 16 metres long (ECU)

Returns by port	1989	1990	% change in 1990
Boulogne sur Mer			
Total Earnings	142,114	187,338	31.82
Gross cash flow	21,835	20,719	-5.11
Net profit *)	12,101	-45,718	-477.80
Douarnenez			
Total earnings	152,565	155,449	1.89
Gross cash flow	29,660	25,402	-14.36
Net profit *)	23,914	15,094	-36.88
Lorient			
Total earnings	269,234	279,510	3.82
Gross cash flow	25,039	27,108	8.26
Net profit *)	1,110	-10,923	-1084.05
Le Guilvinec			
Total earnings	232,157	214,468	-7.62
Gross cash flow	31,721	30,042	-5.29
Net profit *)	26,684	-1,980	-107.42

*) Depreciation and interest based upon the 'French' Method (annex 8).

Table 8.18 Average returns per vessel in France in 1989 and 1990. Vessels between 16 and 25 metres long (ECU)

Returns by port	1989	1990	% change in 1990
Boulogne sur Mer			
Total earnings	410,202	332,091	-19.04
Gross cash flow	49,953	47,812	-4.29
Net profit *)	34,953	-8,181	-123.41
Douarnenez			
Total earnings	370,669	366,301	-1.18
Gross cash flow	53,270	40,598	-23.79
Net profit *)	16,044	-14,753	-191.95
Lorient			
Total earnings	445,414	412,587	-7.37
Gross cash flow	44,982	41,994	-6.64
Net profit *)	-21,118	-38,022	-80.05
Le Guilvinec			
Total earnings	442,738	451,312	1.94
Gross cash flow	67,160	67,316	0.23
Net profit *)	26,158	12,244	-53.19

*) Depreciation and interest based upon the 'French' method (annex 8).

Table 8.19 Average amount of loans per vessel in France at 31 december 1990 (ECU)

	Boulogne sur Mer		
	< 12 m	12-16 m	16-25 m
Loans Outstanding	64,288	224,771	184,381
Book value *)	31,795	29,437	223,405
Fix assets	157,593	374,393	346,997

	Douarnenez		
	< 12 m	12-16 m	16-25 m
Loans outstanding	24,973	40,589	184,700
Book value a)	76,715	14,247	174,978
Fix assets	79,246	126,591	475,624

	Lorient			Le Guilvinec	
	< 12 m	12-16 m	16-25 m	12-16 m	16-25 m
Loans outstanding	47,196	142,867	284,192	114,287	182,577
Book value *)	64,794	101,234	303,372	21,524	237,385
Fix assets	119,494	329,764	576,618	262,132	514,261

*) Based upon replacement value; method described in 7.4.1.

8.3 Costs and earnings of fishing vessels in the Netherlands

Tables 8.19-8.22 show the costs and earnings figures of Dutch cutters in 1990. Cutters with engine power up to 190 kW fish for shrimps only, the range of 190-440 kW vessels show a mix of fisheries (shrimp- roundfish- and flatfish fisheries). The bigger cutters use to fish mainly or only with the beamtrawl on flatfish (sole and plaice).

In 1990 most vessels operated on a profitable base, taking into account the 'common method' of calculating depreciation and interest (described in 7.4.1). Of the smaller cutters, those in the size group 151-190 kW (30-60 GRT) show a substantial loss, due to bad results in the shrimp fisheries. Also for the biggest cutters, more than 1 470 kW (260-380 GRT) in the southern ports, the net loss was substantially. Especially for this group earnings did not keep path with the increase in horsepower.

The relatively few number of days at sea (150-160 days for cutters with horsepower above 1 100 kW) was an important constraint for these bigger cutters. This limitation was the result

of the fisheries management regulations of the Dutch Government, described in chapter five.

The losses mentioned before mean that a part of the depreciation cost was not covered, but the remaining cash-flow was high enough in most cases for interest payments and repayments of loans.

In the cost structure costs of fuel dominate, namely for the beam trawlers with horsepower exceeding 800 kW. For these cutters cost of fuel make 18-20% of total costs, labour share included. The smaller cutters, up to 220 kW, show a part of 8-10% fuel cost of total costs. An advantage for the cutters in 1990 was that the price of fuel (NLG 0.34 or ECU 0.15 per litre) was rather low, compared with this level in recent years.

A decrease in the bottom line figure in 1990 occurred for the smaller cutters, up to 220 kW, compared with 1989 (table 8.22). This was mainly the result of diminished earnings.

For the bigger cutters returns improved importantly in 1990 as a result of higher earnings. Total earnings of the cutters with horsepower exceeding 800 kW increased with 17-20% in most cases. A very important circumstance for the bigger cutters was the major improvement of the stock of sole. This resulted in a sharp increase of the TAC for this species. The part of the Dutch fisheries in this TAC rose from 9 656 tons in 1989 to 18 000 tons in 1990. Though the average price of sole decreased in 1990, (table below) earnings of sole were at a higher level, due to this nearly doubled quantity.

Table 8.20 Dutch (average) prices in ECU per kg for some species

Species	1989	1990	% change
Sole	7.88	5.56	-29.5
Plaice	1.12	1.37	+22.3
Cod	1.73	2.09	+20.8
Shrimps	2.99	4.19	+40.1

The 'Dutch' method of profit calculation, carried out by the Agricultural Economics Research Institute (LEI-DLO), does not show big differences compared with the 'common' method; except for the biggest cutters, which show lower returns according to the LEI-DLO method. This is caused by the progressive depreciation system, resulting in high depreciation amounts for these relative new vessels.

Financing with debts is important for the Dutch cutters especially the bigger ones, as is shown in table 8.24. Commercial

banks provided these loans at normal market rates. Repayment period for these loans is ten years mostly; this relatively short period did not cause major financial problems for the cutter owners in the past.

Matched with the book value of the vessels the amount of loans is rather high: between 75 and 106% of this value in most cases. Compared with the insured value however the level of loans is moderate and does not exceed 48% of this insured value (companies owning more vessels show this percentage).

Table 8.21 Average costs and earnings per vessel in the Netherlands in 1990 (ECU)

Size group	Region North a)			South
kW	110-150	151-190	191-220	191-220
GRT	30-40	30-60	50-70	40-80
M	16-20	16-21	20-24	18-24
Days at sea	136	127	133	141
Total earnings	129,349	137,263	271,087	323,227
Running costs				
Fuel and lube oil	10,430	13,993	27,666	38,813
Harbour dues	73	308	704	117
Boxes ice	4,354	4,239	2,581	2,985
Food		1,132	1,311	2,888
Other costs of crew	2,013	2,537	3,610	3,838
Costs of selling fish	7,774	7,693	17,020	20,617
Other running costs	369	316	351	316
Total running costs	26,072	30,089	54,016	69,402
Labour share, wages	48,939	49,753	99,921	107,288
Social insurance	3,774	3,962	6,058	5,390
Vessel Costs				
Gear expenses	3,520	4,158	12,716	13,677
Vessel repairs	11,890	12,990	19,073	20,437
Equipt. hire and maint.	4,232	5,610	13,238	18,496
Vessel insurance	3,723	4,864	9,204	12,899
Other vessel costs	-	-	-	-
General expenses	3,863	4,010	8,176	9,584
Total vessel costs	27,301	31,940	63,111	75,210
Total costs/expenses	106,086	115,744	223,106	257,290
Gross cash flow	23,263	21,519	47,981	65,937
Depreciation b)	14,213	20,248	31,610	40,200
Interest b)	4,509	8,680	13,508	27,425
Net profit or loss(-)	4,541	-7,409	2,863	-1,688

a) Region North: home ports north of Scheveningen; b) Common method, described in section 7.4.1 and annex 9.

Table 8.22 Average costs and earnings per vessel in the Netherlands in 1990 (ECU)

Size group	Region North a)		South
kW	295-440	810-1100	810-1100
GRT	80-135	170-270	170-270
M	23-29	30-38	30-35
Days at sea	147	155	157
Total earnings	350,430	872,015	769,590
Running costs			
Fuel and lube oil	40,036	140,477	144,661
Harbour dues	404	3,051	65
Boxes ice	2 845	76	137
Food	4,230	6,631	6,358
Other costs of crew	5,076	7,057	7,215
Costs of selling fish	25,384	55,666	54,543
Other running costs	103	538	-
Total running costs	77,674	210,445	212,914
Labour share, wages	117,164	251,099	204,092
Social insurance	5,788	12,319	8,431
Vessel costs			
Gear expenses	19,724	35,259	39,196
Vessel repairs	27,992	52,126	57,105
Equipt. hire and maint.	12,391	18,459	22,236
Vessel insurance	14,407	28,925	32,161
Other vessel costs	-	-	-
General expenses	11,794	23,862	26,282
Total vessel costs	86,712	161,682	177,045
Total costs/expenses	287,338	635,545	602,482
Gross cash flow	63,092	236,470	167,108
Depreciation b)	39,029	100,648	106,060
Interest b)	10,385	31,942	37,246
Net profit or loss(-)	13,678	103,880	23,802

a) Region North: home ports north of Scheveningen; b) Common method, described in section 7.4.1 and annex 9.

Table 8.23 Average costs and earnings per vessel in the Netherlands in 1990 (ECU)

Size group	Region North a)		South
kW	1101-1470	>1470	>1470
GRT	270-330	290-430	260-380
M	35-41	36-42	35-41
Days at sea	159	160	159
Total earnings	1,054,533	1,275,254	1,158,665
Running costs			
Fuel and lube oil	187,876	220,992	243,985
Harbour dues	3,943	1,617	90
Boxes ice	98	495	
Food	7,337	7,622	7,949
Other costs of crew	7,329	5,577	6,222
Costs of selling fish	72,101	79,678	81,954
Other running costs	580	618	-
Total running costs	275,321	314,982	340,110
Labour share, wages	286,289	361,764	316,917
Social insurance	13,554	19,220	10,143
Vessel costs			
Gear expenses	47,574	71,606	69,422
Vessel repairs	53,186	52,455	59,503
Equipt. hire and maint.	26,757	35,475	38,940
Vessel insurance	33,860	37,780	40,316
Other vessel costs	-	-	-
General expenses	32,931	33,159	23,634
Total vessel costs	198,251	232,092	231,905
Total costs/expenses	773,415	928,058	899,075
Gross cash flow	281,118	347,196	259,590
Depreciation b)	138,739	214,348	204,723
Interest b)	62,216	121,399	90,045
Net profit or loss(-)	80,163	11,449	-35,178

a) Region North: home ports north of Scheveningen; b) Common method, described in section 7.4.1 and annex 9.

Table 8.24 Average returns per vessel in the Netherlands in 1989 and 1990 (ECU)

Returns by vessel group	1989	1990	% change in 1990
Cutters, region North			
110-150 kW			
Total earnings	123,027	129,349	+5.1
Gross cash flow	25,635	23,263	-9.3
Net profit	8,360	4,541	-45.7
151-190 kW			
Total earnings	152,125	137,263	-9.3
Gross cash flow	30,147	21,519	-28.6
Net profit	154	-7,409	->1.000
191-220 kW			
Total earnings	322,355	271,087	-15.9
Gross cash flow	68,681	47,981	-30.1
Net profit	25,268	2,863	-88.7
295-440 kW			
Total earnings	336,754	350,430	+4.1
Gross cash flow	63,695	63,092	-0.9
Net profit	11,280	13,678	+21.3
810-1100 kW			
Total earnings	731,215	872,015	+19.3
Gross cash flow	158,419	236,470	+49.3
Net profit	18,392	103,880	+464.8
1101-1470 kW			
Total earnings	898,142	1,054,533	+17.4
Gross cash flow	203,832	281,118	+37.9
Net profit	136	80,163	+>1.000
>1470 kW			
Total earnings	1,079,334	1,275,254	+18.2
Gross cash flow	243,613	347,196	+42.5
Net profit	-93,600	11,449	+112.2

Table 8.25 Average returns per vessel in the Netherlands in 1989 and 1990 (ECU)

Returns by vessel group	1989	1990	% change in 1990
Cutters, region South			
191-220 kW			
Total earnings	356,639	323,227	-9.4
Gross cash flow	91,672	65,937	-28.1
Net profit	24,506	-1,688	-106.9
810-1100 kW			
Total earnings	753,440	769,590	+2.1
Gross cash flow	156,875	167,108	+6.5
Net profit	621	23,802	+>1.000
>1470 kW			
Total earnings	996,382	1,158,665	+16.3
Gross cash flow	191,707	259,590	+35.4
Net profit	-103,637	-35,178	+66.1

Table 8.26 Average amount of loans per vessel in the Netherlands at 31 December 1990 (ECU)

Size group					
kW	110-190	191-220	221-810	> 810	Companies owning
GRT	30-60	40-80	80-170	170-430	more
M	16-21	18-24	23-30	30-42	vessels *)
Loans					
Outstanding	36,087	164,957	179,478	683,650	726,563
Book value	73,609	219,261	169,261	688,391	751,489
Insured value	215,616	545,848	820,270	1,748,886	1,528,320

*) Two vessels in most cases, with engine power exceeding 810 kW.

8.4 Costs and earnings of fishing vessels in the United Kingdom

Measured in terms of net profit after charge for interest and reserve for depreciation the 1990 performance of U.K. vessels, as indicated by the sample, was generally good. The exceptions being English beamers and some of the larger Scottish trawlers where the sample averages indicate net losses. Tables 8.23-8.26 shows average costs and earnings of British vessels, calculated in line with the 'common method'. A comparison between this method and the 'British' calculation, applied by Sea Fish Industry Authority (SFIA), is made in annex 10.

On the basis of the sample the industry's results in 1990 appear to have generally been an improvement relative to 1989, the exceptions being the large trawlers and the small beamers. In the case of the Scottish seiners for example the previous years losses were eliminated and replaced by a substantial profit; while in the case of the trawlers there was also a return to profit though on a more modest scale. In the case of the beamers the loss was substantially reduced. Each of the three fishing methods sampled improved their net profit before depreciation and each size classes also had a positive return in 1990 although several were less than in 1989.

At net profit and gross cash flow levels the improved performances obtained by the majority of vessel groups in 1990 was primarily achieved by increased average first hand (i.e. quayside) values of fish. The tables below show the year on year changes in the average first-hand sale values for the main species in Scotland which accounted for 86% of landings by Scottish seiners and 72% of trawlers. The values shown for England and Wales are of those species of similar importance to beamers.

Table 8.27 Average fish prices (per ton) in the United Kingdom (ECU)

	1989	1990	% change
Scotland			
Cod	1,522	1,725	+13.4
Haddock	1,279	1,692	+32.3
Saithe	601	640	+ 6.5
Whiting	851	998	+17.3
Total Demersal	1,277	1,538	+20.4
England & Wales			
Monkfish	2,941	3,164	+ 7.6
Plaice	1,225	1,367	+11.6
Turbot	9,368	9,640	+ 2.9
Total Demersal	1,731	1,930	+11.5

Note: Sterling exchange rate ECU 1.4886 in 1989 and ECU 1.4 in 1990.

The improved gross earnings of vessels were sufficient to offset the decline in average days at sea (both Scottish trawlers and Scottish seiners averaged 5% fewer days and English beamers one per cent fewer in 1990) and the reductions to potential landings that this implies. These adjustments of course reflect the

lower TACs for the major North Sea species, especially haddock and cod.

The total volume of landings of edible demersal fish by United Kingdom vessels in Scotland declined between 1989 and 1980 by 12.2% and those in England and Wales by 8.8%. Fewer days at sea combined with smaller catches together resulted in the average gross costs of the Scottish vessels sampled rising by only 5% and 6%, less than the increases in both gross earnings and United Kingdom inflation. With only a one percent decline in days and an average increase in gross earnings of 17.5% the increase in the costs of the English beamers was much higher than those of the Scottish vessels at over 12%.

The major items of cost in each sampled group was crew and working owner share. On Scottish trawlers crew share increased by 6%, on seiners by 8% and on beamers by 16%, approximately the same rate of average increase as those of the vessels gross earnings between the comparable years. For each fishing method the cost of fuel and lube oil was the highest operating cost and in the case of the Scottish vessels the rate of increase exceeded that of gross earnings. Average fuel costs per vessel was 8% up for trawlers, 14% for seiners and 15% for beamers. The disruption and uncertainties to supplies caused by the Kuwait/Iraq conflict caused oil prices to rise significantly in the second half of 1990.

Table 8.28 Average costs and earnings per vessel in the United Kingdom in 1990, Scottish based trawlers (ECU)

		1)	1)	1)
GRT	20-130	20-45	46-59	61-130
kW	70-700	70-340	170-365	330-700
Metres	14-24	14-19	16-22	18-24
Days at sea	184	162	195	199
Total earnings	381,312	232,579	379,074	545,601
Running costs				
Fuel and lube oil	43,651	23,857	42,676	66,129
Harbour dues	9,841	6,177	9,600	14,055
Boxes ice	8,585	4,894	9,076	12,163
Food	9,906	6,765	10,059	13,194
Other costs of crew	2,709	2,740	1,642	3,647
Costs of selling fish a)	15,956	10,770	16,439	21,174
Other running costs	10,207	6,314	5,848	18,418
Total running costs	100,855	61,517	95,340	148,779
Labour share, wages Social insurance	126,134	77,514	127,324	178,094
Vessel costs				
Gear expenses	23,803	12,137	23,807	36,526
Vessel repairs (net)	34,331	18,357	29,596	56,062
Equipt. hire and maint.	12,740	6,909	13,514	18,399
Vessel insurance	17,613	12,646	19,197	21,591
Other vessel costs	9,645	7,735	9,929	11,467
General expenses b)	*	*	*	*
Total vessel costs	98,132	57,784	96,043	144,045
Total costs/expenses	325,121	196,815	318,707	470,918
Gross cash flow	56,192	35,764	60,367	74,683
Depreciation c)	50,903	30,092	48,597	75,701
Interest c)	4,438	1,206	4,455	7,947
Net profit or loss (-)	851	4,466	7,315	-8,965

1) Breakdown of all vessels from first column; a) Includes management charges of Company owned vessels; b) Included in other vessel costs; c) Common method, described in section 7.4.1 and annex 10.

Table 8.29 Average costs and earnings per vessel in the United Kingdom in 1990, Scottish based seiners (ECU)

		1)	1)	1)
GRT	35-125	35-48.9	49-70	70-125
kW	170-560	170-320	185-485	170-560
Metres	17-25	17-22	17-24	21-25
Days at sea	196	180	180	226
Total earnings	448,637	293,286	420,973	605,921
Running costs				
Fuel and lube oil	40,438	23,229	37,694	57,509
Harbour dues	11,754	7,840	11,495	15,238
Boxes ice	10,553	6,852	10,097	14,080
Food	12,354	8,709	11,701	16,045
Other costs of crew	1,751	1,683	1,887	1,659
Costs of selling fish	19,295	11,455	17,709	27,439
Other running costs	15,485	6,937	10,650	27,754
Total running costs	111,630	66,704	101,233	159,723
Labour share, wages	159,328	105,234	149,695	214,095
Social insurance				
Vessel costs				
Gear expenses	22,413	16,230	19,771	30,351
Vessel repairs (net)	46,945	31,095	43,667	63,487
Equipt. hire and maint.	11,915	10,263	11,938	13,241
Vessel insurance	22,065	14,630	21,560	28,700
Other vessel costs	10,633	4,822	7,356	18,963
General expenses a)	*	*	*	*
Total vessel costs	113,971	77,041	104,292	154,742
Total costs/expenses	384,930	248,979	355,219	528,560
Gross cash flow	63,707	44,307	65,754	77,361
Depreciation b)	56,975	34,379	59,535	72,666
Interest b)	6,537	1,974	7,093	9,663
Net profit or loss(-)	195	7,954	-874	4,968

1) Breakdown of all vessels from first column; a) Included in Other Vessel Costs; b) Common method, described in section 7.4.1 and annex 10.

Table 8.30 Average costs and earnings per vessel in the United Kingdom in 1990, English based beam trawlers (ECU)

		1)	1)
GRT	100-380	100-225	240-380
kW	560-1 500	560-1 300	900-1 500
Metres	26-39	26-39	32-37
Days at sea	217	206	229
Total earnings	796,499	654,787	953,957
Running costs			
Fuel and lube oil	157,263	121,864	196,592
Harbour dues	6,098	6,146	6,047
Boxes ice landing costs	13,664	12,820	14,601
Food	1,399	1,000	1,844
Other costs of crew	547	462	644
Costs of selling fish a)	25,217	26,428	23,871
Other running costs	10,759	9,803	11,822
Total running costs	214,948	178,522	255,420
Labour share, wages	205,698	167,212	248,462
Social insurance			
Vessel costs			
Gear expenses	80,805	63,259	100,302
Vessel repairs (net)	161,204	154,540	168,609
Equipt. hire and maint.	12,347	9,825	15,147
Vessel insurance	28,174	25,322	31,342
Other vessel costs b)	*	*	*
General expenses b)	*	*	*
Total vessel costs	282,530	252,946	315,399
Total costs/expenses	703,175	598,681	819,281
Gross cash flow	93,324	56,106	134,676
Depreciation c)	89,159	65,562	115,376
Interest c)	8,412	3,670	13,682
Net profit or loss (-)	-4,247	-13,125	-5,618

1) Breakdown of all vessels from first column; a) Includes management charges of company owned vessels; b) Included in other running costs and costs of selling fish; c) Common method, described in section 7.4.1 and annex 10.

Table 8.31 Average costs and earnings per vessel in the United Kingdom in 1989, Scottish based purse seiners (ECU)

		1)	1)
GRT	100-1.600	100-250	320-1.600
kW	550-3 000	550-1 570	1 300-3 300
Metres	30-65	30-55	39-65
Days at sea	135	146	123
Total earnings	1,404,896	1,201,430	1,608,361
Running costs			
Fuel and lube oil	107,758	86,163	129,353
Harbour dues	43,046	35,503	50,589
Boxes ice	1,139	2,066	213
Food	19,594	17,696	21,492
Other costs of crew	2,936	3,690	2,179
Costs of selling fish	61,379	52,424	70,333
Other running costs	24,523	26,953	22,092
Total running costs	260,371	224,490	296,254
Labour share, wages Social insurance	412,795	339,550	486,038
Vessel costs			
Gear expenses	71,584	50,938	92,229
Vessel repairs (net)	89,798	73,964	105,633
Equipt. hire and maint.	9,031	13,759	4,305
Vessel insurance	73,218	65,623	80,815
Other vessel costs	14,529	18,191	10,865
General expenses a)	*	*	*
Total vessel costs	258,160	222,476	293,845
Total costs/expenses	931,326	786,515	1,076,137
Gross cash flow	473,570	414,915	532,224
Depreciation b)	317,795	252,047	383,542
Interest b)	52,599	33,122	72,077
Net profit or loss (-)	103,175	129,746	76,604

1) Breakdown of all vessels from first column; a) Included in other vessel costs; b) Common method described in section 7.4.1 and annex 10.

Table 8.32 Average returns per vessel in the United Kingdom in 1989 and 1990 (ECU)

Returns by vessel group		1989	1990	% change in 1990
Scottish trawlers				
20 -174	Total earnings	382,902	381,312	-0.4
	Gross cash flow	53,142	56,192	5.7
	Net profit	-564	851	+
20 - 45	Total earnings	231,677	232,579	0.4
	Gross cash flow	16,788	35,764	113.0
	Net profit	-15,930	4,466	+
46 - 59	Total earnings	356,187	379,074	6.4
	Gross cash flow	54,638	60,367	10.5
	Net profit	4,217	7,315	73.5
61 -174	Total earnings	639,455	545,601	-14.7
	Gross cash flow	103,492	74,683	-27.8
	Net profit	14,725	-8,966	-
Scottish seiners				
35 -125	Total earnings	441,010	448,637	1.7
	Gross cash flow	54,642	63,707	16.6
	Net profit	-11,223	20,441	+
35 - 49	Total earnings	368,924	293,286	-20.5
	Gross cash flow	60,215	44,307	-26.4
	Net profit	6,020	17,819	196.0
50 - 70	Total earnings	440,213	420,973	-4.4
	Gross cash flow	51,108	65,754	28.7
	Net profit	-16,806	20,642	+
70 -125	Total earnings	507,885	605,921	19.3
	Gross cash flow	53,069	77,361	45.8
	Net profit	-214,442	22,383	+
English beamers				
100-380	Total earnings	720,560	796,499	10.5
	Gross cash flow	55,724	93,323	67.5
	Net profit	-41,833	-4,247	+
100-225	Total earnings	695,615	654,787	-5.9
	Gross cash flow	62,563	56,105	-10.3
	Net profit	-10,382	-13,126	-
240-380	Total earnings	751,740	953,957	26.9
	Gross cash flow	47,175	134,674	185.5
	Net profit	-81,146	5,618	+

Table 8.33 Average amount of loans outstanding per vessel in the United Kingdom at 31st December 1990 (ECU)

	Scottish trawlers			
	20-174 *)	20-45	46-59	61-174
Loans outstanding	69,833	32,567	112,508	62,264
Book value	321,584	87,420	322,836	575,897
Insured value	489,241	270,634	456,725	757,281

*) All vessels of the next three groups.

Table 8.34 Average amount of loans outstanding per vessel in the United Kingdom at 31st December 1990 (ECU)

	Scottish seiners			
	35-125 *)	35-49	49-70	70-125
Loans outstanding	66,843	62,601	78,207	65,267
Book value	401,876	140,773	441,241	572,559
Insured value	557,152	264,491	498,729	860,335

*) All vessels of the next three groups.

Table 8.35 Average amount of loans outstanding per vessel in the United Kingdom at 31st December 1990 (ECU)

	English beamers		
	100-380 1)	100-225	240-380
Loans outstanding	*	*	*
Book value	609,572	265,910	991,421
Insured value	1,117,981	794,164	1,477,777

1) All vessels of the next two groups; * Not available.

9. ECONOMIC PERFORMANCE OF FISHING VESSELS

9.1 Economic performance of fishing vessels in Denmark

9.1.1 Economic performance in 1990

To compare the economic performance of fishing enterprises between the countries, a string of common economic indicators has been used for the countries. The indicators showing the situation for the Danish fleet in 1990 are outlined in table 9.1.

Table 9.1 Economic indicators of fishing vessels in Denmark (average figures per vessel in 1990)

Vessel group (GRT)	Total earnings a) (ECU)	Gross value added b) (ECU)	Net value added c) (ECU)	% GVA of total earnings (%)	GVA per crew member (ECU)
Lemvig					
Trawler 0-50	185,250	96,500	66,936	52.1	43,864
Trawler 50-120	284,625	145,000	104,104	50.9	39,189
Trawler 120-200	446,375	182,875	97,496	41.0	40,639
Trawler > 200	825,500	320,875	172,305	38.9	61,707
Danish Seine <30	161,625	101,500	92,335	62.8	32,742
Danish Seine >30	211,625	130,375	117,299	61.6	40,742
Gill net	203,125	115,750	103,196	57.0	42,870
Skagen					
Trawler 15-19.9	127,875	78,625	68,537	61.5	37,440
Trawler 20-49.9	181,500	104,625	87,227	57.6	36,078
Trawler 50-99.9	250,625	133,375	106,097	53.2	38,107
Trawler > 100	465,125	228,375	134,643	49.1	46,607
Hjørring					
Gill net and seiners	136,485	78,292	63,078	57.4	41,206
Trawler < 50	99,170	52,545	38,235	53.0	23,884
Trawler 50-120	355,559	176,400	131,824	49.6	46,421
Trawler > 120	492,946	215,216	108,164	43.7	43,922

a) Total earnings = earnings from human consumption + earnings from reduction fishery; b) Gross value added (GVA) = total earnings - total running costs - total vessel costs (= wages + interest payments ± profit/loss + depreciation); c) Net value added (NVA) = GVA - calculated depreciation (common method).

The first column shows total earnings distributed on districts and vessel categories; this demonstrates that total earnings increase with vessel size. The second column shows the gross value added: total earnings less all costs apart from all wages, interest payments and depreciation. Not surprisingly this value added increases with the vessel size. In the third column depreciation is subtracted as well and, although there is still a tendency to higher net value added with bigger vessel size, the variation has increased. From the column showing GVA relative to total earnings it is seen that the share of value added relative to total earnings is highest for small vessels which means that these vessels' use of raw materials is low.

The skipper's revenue contains the skipper's income and the net profit of the enterprise. By adding the skipper's income in table 9.1 and 'common' net profit outlined in the tables 8.1 - 8.4, the seiners and gill netters in Lemvig and trawlers < 100 GRT in Skagen were the most profitable groups. Where seiners > 30 GRT in Lemvig generated most revenue to the owner with an amount of 60,000 ECU in 1990. Owner's revenue was in the range from 35,000 to 42,000 ECU for the other groups mentioned. In general for all districts, trawlers > 100 GRT generated negative revenues to the owner. Owners of big trawlers (> 100 GRT) in Skagen had a revenue at -10,000 ECU compared to -87,000 ECU for owners of big trawlers (> 200 GRT) in Lemvig, which were worst off in 1990.

The cost structure of the single vessel groups is closely connected with the method of fishing; this is seen from the use of labour and capital in the fisheries. In Denmark the method of trawling demand relative little labour input compared to fishing methods of Danish seiners or gill netters. This is also seen in the accounts, where fuel cost related to earnings are 17-19% for the big trawlers and 9-10% for the small trawlers and only 3-5% for the seiners and gill netters. Moreover renumeration relative to earnings is 29-32% compared to 41-43% for the small trawlers and seiners.

On average the single crew member had a income of 31,000 ECU, which covers a range from 16,500 ECU for members of trawlers < 50 GRT in Hjørring and to 47,000 ECU for members of trawlers > 200 GRT in Lemvig. In general there was no connection between the income per crew member and the size of the vessel, neither was there any substantial difference of the member's income relative to district.

The return on investment (ROI) was negative for all trawlers in the district of Lemvig and for the biggest trawlers in the districts of Hjørring and Skagen. These returns, however, have to be interpreted in view of the method used for calculating of depreciation.

Table 9.2 Economic indicators of fishing vessels in Denmark (average figures per vessel in 1990)

Vessel group (GRT)	Income to skipper owner a) (ECU)	Share per crew member b) (ECU)	Return on investment c) (%)	Financial stress d) (%)	% loans of vessels's value e) (%)
Lemvig					
Trawler 0-50	11,398	41,602	-3.3	150.0	94.3
Trawler 50-120	15,943	28,024	-2.2	112.3	78.4
Trawler 120-200	-54,023	31,436	-4.3	237.2	89.8
Trawler > 200	-87,355	47,028	-4.2	255.1	82.3
Danish Seine <30	43,936	21,793	15.7	29.7	69.9
Danish Seine >30	62,368	27,514	9.3	55.2	73.1
Gill net	42,667	34,614	9.5	63.8	114.3
Skagen					
Trawler 15-19.9	36,243	27,045	7.9	70.3	88.6
Trawler 20-49.9	32,135	26,776	4.3	92.3	92.7
Trawler 50-99.9	31,781	27,300	2.0	118.9	86.2
Trawler > 100	-10,486	31,891	-1.8	136.1	89.9
Hjørring					
Gill net and seiners	23,268	41,571	8.4	65.6	100.8
Trawler < 50	13,319	16,456	2.0	79.3	78.1
Trawler 50-120	24,054	34,590	2.3	83.1	79.3
Trawler > 120	-44,482	29,328	-3.3	114.0	69.3

a) In Skagen and Hjørring districts, the actual skipper income plus or minus profit/loss. In Lemvig district, the skippers' (labour) income is imputed as: Total wages - crews' share; b) In Skagen and Hjørring the actual share per crew member is known. In Lemvig the crews' share is imputed (see appendix 11). Share per crew includes social insurance except for Hjørring; c) Return on investment (ROI) is defined as: [Net profit + (imputed) interest] as a percentage of actual insured value; d) Financial stress is defined as: % actual net paid interest of gross cash flow; e) % loan of the vessels' value is defined as: Outstanding loan/actual insured value.

The common method which has been used causes a low ROI, may be negative, when the vessel's age is low and the price of a new vessel is high. Although the selected method is the best one from a cross national point of view among a number of options, it has to be considered that the tax system mainly influences the behaviour of the fishermen. This tax system tends to favour investments in expensive vessels with a long life span. High depreciation rates for tax calculations tend to influence the price of a

vessel upwards in the long run and the calculated depreciation figures often do not reflect the fisherman's real opinion of how much his vessel has lost in value.

However, the low ROI for the trawlers in 1990 is also influenced to a large extent by the very poor results that year in the fishery for reduction. Gross earnings were low in 1990 related to previous years but the costs of fishing were not reduced. These two factors do believe that the low ROI for trawlers in 1990 is not indicative for the long term development of the Danish trawler fleet.

The good result and the high ROI for the Danish seine fleet and for gill netters is also influenced by the selected method. These vessels are, on average, old and the applied depreciation rate is therefore low. In addition to that the estimated investment (the insured value) is also low, so even rather small net profits will show a relative high ROI.

A final point is that if there are strong barriers for exit of capital from the industry, i.e. the alternative renumeration of capital is low and the employment alternatives for fishermen are poor, then the fishermen and the capital owners are willing or even forced to accept low rates of return.
This was the case in 1990 and it explains why fishing will continue even when rate of returns are negative.

From the column showing the financial stress it appears that for trawlers interest payments exceeded the gross cash flow (profit after all costs but before interest payments and depreciation). Other types of vessels show a relative low financial stress. The bigger vessels demonstrate larger stress in this respect than smaller ones. This is a consequence of vessel age and the strong incentives for borrowing in Denmark. The latter item is displayed from the last column in table 9.2.
In general, for all vessel groups outstanding loans relative to the value of the vessel was 70% or more, which indicates that the vessels have been financed extensively by borrowing. This is a result of the Danish tax system which makes it possible to deduct 68% of interest expenses in the tax calculation. This means that the after tax borrowing rate is lower than the after tax lending interest rate, despite the fact that the nominal lending rate is lower than the borrowing interest rate.

Table 9.3 describes the primary fishing sector in the three districts. When the revenue of the costs and earning studies are related to the total revenue of each districts, the representation of the costs and earnings study as follows: Lemvig: consumption 51% reduction 94%; Skagen: consumption 64% and reduction 66%; Hjørring: consumption 35% and reduction 46%.

In 1990 the total fleet of Lemvig district comprised 16 552 GRT or 14% of national GRT capacity. Lemvig has a large representation of vessels between 20 GRT and 50 GRT, and with a capacity of 5 003 GRT the district covers 28% of the national GRT in this GRT category.

Table 9.3 Aggregate Costs and Earnings of the Danish (vessels from Lemvig, Skagen and Hjørring in 1990 (x 1000 ECU)

	Region			All vessels a)
	Lemvig	Skagen	Hjørring	
Reduction	12,968	3,964	2,962	19,893
Consumption	27,882	21,513	14,325	63,720
Total earnings	40,847	25,476	17,287	83,611
Running costs	10,090	5,594	4,200	19,884
Labour share social ins. b)	15,317	9,361	5,729	30,407
Vessels costs	10,141	6,369	4,363	20,873
Total costs/expenses	35,548	21,324	14,292	71,164
Gross cash flow	5,299	4,152	2,995	12,447
Depreciation c)	5,194	3,883	2,612	11,689
Interest c)	2,015	877	759	3,652
Net profit	-1,910	-608	-376	-2,894

a) Total of 322 vessels; b) In the district of Hjørring social insurance included in vessel costs; c) Depreciation and interest are imputed by using the Common method.

In a national perspective the Lemvig fleet represents earnings of 16% and 20%, respectively, of total national consumption and reduction landings in 1990. Distributed on species the codfish: cod, haddock and hake contributed by 35% of the Lemvig fleet earnings, whereas the flat fish: plaice, turbot and lemon sole represented 27% of the earnings, and the fishery for reduction fisheries covered 20% of the earnings in 1990.

In 1990 a capacity of 14 830 GRT equal to 11% of the total Danish capacity belonged to the district of Hjørring, and distributed on GRT categories there is a large representation of vessels over 500 GRT with 5 103 GRT. This means that 40% of the GRT capacity of vessels > 500 GRT are located in the district of Hjørring (Hirtshals port). On national level the fleet covers 12% of the total Danish landings in value for consumption and 9% of the value for reduction. In the consumption fisheries the pelagic

species herring and mackerel are dominating with 43% of the earnings in the district. In a national perspective 93% of mackerel and 36% of herring are landed by the fleet of Hjørring primarily by the purse seiners. Secondly, species like cod, plaice and anglerfish cover 23% of the earnings, and fisheries for reduction represents 14% of the Hjørring fleet's revenue.

The capacity of Skagen fleet was 11 535 GRT in 1990, which was about 10% of the Danish fleet. The fleet between 100 and 250 GRT represented 6 709 GRT and covered 20% of the Danish fleet in this category. In national perspective the fleet contributed with landings for consumption and reduction of 10% and 9%, respectively, measured in value. Cod covered 29% of the revenue of the fleet. Moreover Norway lobster and deep-water prawn represented 26% of the fleet's earnings, and on aggregated level 94% of deep-water prawns in Denmark were landed by the Skagen fleet. Earnings of fisheries for reduction represented 15% of the revenue of the fleet.

9.1.2 Factors influencing costs - earnings and investments

In the following some of the factors are outlined which influence the fishermen's behavior. Firstly this includes a description of the landings in the three districts in the period from 1986 to 1991. Secondly some background is given in explaining the development of the fleet in each of the three districts.

Commencing with Lemvig there has been a constant growth of the total revenue in the period from 1986 to 1991, where the revenue has increased from 393 million DKK in 1986 to a level of 627 million DKK in 1991. Cod fisheries contribute mostly to the revenue in the district, where cod's share of revenue lies in the range from 40% in 1987 to 25% in 1991. The reduction fisheries (for production of fishmeal and -oil) showed in the period a share in the range of 20-30% of revenue. Moreover plaice plays a significant role in Lemvig, where it has increased from a share at 15% in 1986 to 20% to 1991. On the contrary haddock has decreased from a share at 8% in 1986 to about 3% in 1991. In explaining the development in total revenue of the district, it is important to note firstly that plaice and haddock are stable measured in the absolute figures in the period, whereas the increase in absolute revenue level is primarily explained by fluctuations in the cod and reduction fisheries. A way of illustrating the development in each separate year is to compare the total revenue of the current year with the total revenue of the previous year, and in this respect a significant change in 1987 and 1991 has taken place. The increase from 1986 to 1987 was about 111 million DKK of which the cod fisheries contributed with an increase of 86 million DKK. In 1991 total revenue increased by 79 million DKK compared to the 1990 revenue, and this is mainly explained by an increase in fisheries for reduction with 63 mil-

lion DKK from 1990 to 1991. Secondly, it is noted that the fishing for cod and reduction are developing in opposite ways, which means that in years with increasing cod fisheries there is a decrease in the reduction fisheries. This could indicate that part of the fleet changes between cod and reduction fisheries in separate years.

In the period 1986 to 1991 the total revenue in the district of Hjørring has developed from 362 million DKK in 1986 to a maximum of about 430 million DKK in 1988-89, whereafter there was a decrease in 1990 and 1991, to 363 million DKK in 1991. Herring fisheries are the most important ones in Hjørring with a share that varies between 24-33% of total revenue. The reduction fisheries decreased from a share of 27% in 1986 to about 13% in 1991. On the contrary, landings of mackerel increased constantly from a contribution of total revenue of 11% in 1986 to 18%. Moreover species such as cod, lobster and prawn are important with the cod fisheries contributing between 10-18%, lobster and prawn fisheries are in total between 7-8% of the revenue in the district. In the district of Hjørring there are indications that part of the fleet switches between fisheries for reduction and herring on the one hand and cod fisheries on the other hand. This switching is a significant explanation in the development, where there is noted a correlation between major changes in total revenue and reduction, herring and cod fisheries. In Hjørring there were major changes in total revenue in the years 1987, 1988 and 1990. In 1987 total revenue increased with 33 million DKK, which is explained by increasing revenue from prawn,lobster and cod fisheries, and on the other hand 1987 was a poor year for reduction and herring fisheries. In 1988 total revenue increased compared to 1987 with 36 million DKK, which was a result of increasing fisheries of reduction and herring but, on the contrary, the cod fisheries decreased compared to 1987. In 1990 the total revenue decreased with 52 million DKK compared to 1989 as a result of decreasing fisheries for reduction and herring by 43 and 41 million DKK respectively and the cod fisheries only increased slightly by 13 million DKK in this year.

In the years 1987-91 the total revenue of Skagen has been constant in the range of 315-320 million DKK in all years except in 1988 where there was a drop in revenue to 289 million DKK. Cod is the most important species with a contribution to total revenue which varies between 18% and 28%. Fisheries with very fluctuating contribution to revenue are the reduction and prawn fisheries, where reduction is varying in a range from 12% to 27% of the total revenue, and prawn is varying between 12% and 25%, but mostly with a contribution of about 15%. Moreover lobster and herring are important species in Skagen with constant contributions to total revenue at 13% for lobster and 10% for herring, respectively. In analyzing the development in the total revenue of Skagen there is a major fall in revenue in 1988, which is pri-

marily caused by a decrease in the revenue from prawn. Moreover it is noted that there is a switching behaviour by part of the fleet in the district, where Skagen is characterised by the fishermens' substitution between cod and reduction fisheries.

In analyzing the development of capacity we start to look at the total Danish capacity. Since 1985 the capacity measured in GRT of the whole Danish fleet increased until 1987 and in the period 1987-1990 a decline (13%) has been observed. At the end of 1990 GRT of the Danish fleet totalled 119 000 compared with 129 000 at the end of 1985.

In general the capacity of the biggest vessels went up while it has been declining for all other vessels groups.

This general picture is reflected in the development in the districts of Lemvig, Hjørring and Skagen for which vessel balances are available although the development in the three districts has been different.

It is not the intention to go into details about this development but only to point out a number of possible explanations which should be subject for further investigation.

The explanation could be divided into two categories:

- catch constraints
- economic constraints

Looking at the influence of catch regulations on the fleets in the three districts it should be pointed out that the catch composition is different, as has been outline above.

In accordance with the development of the total revenue there has been an increase in the capacity of Lemvig, which has in particular taken place within the group 100-249.9 GRT. Contrary to Hirtshals and Skagen the smaller vessel categories in the Lemvig district consist of Danish seiners which, although showing a good ROI, are old vessels. The target species for Danish seiners are plaice and cod, but at least the plaice quota has been relatively high and therefore has put no constraints on that type of fishery. Therefore the explanation for the cut back of the group should be sought in the old age of the vessels probably also in the age of the skipper which is a mixture of economic and demographic factors. The reduction of the quotas does not seem to have affected the development of the Lemvig fleet in that period.

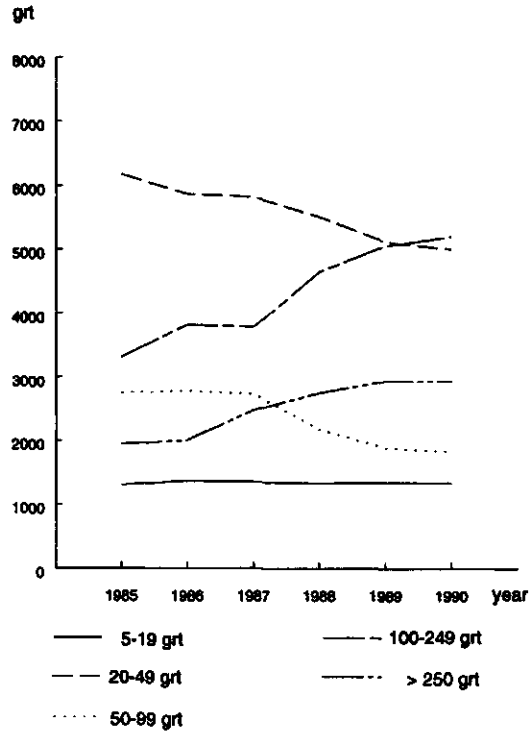

Figure 9.1 Development of GRT-capacity in the district of Lemvig

Contrary to the development in Thyborøn (Lemvig district) there occurred a decrease in the group 100-249.9 GRT in Hirtshals (district of Hjørring), see Figure 9.2.

The group consists of older trawlers used for reduction fishery. This fishery is not constrained by catch quotas, therefore it must be assumed that economic factors have affected this group. Fishing for reduction became less profitable for that size of vessel and two alternatives were possible namely herring fishery or cod fishery. Rather costly investments in chilling and carrying facilities were required if the vessels should enter into the herring fishery and with low herring prices that option was not attractive. The cod fishery and the quotas were cut back in the Baltic and in the North Sea making this option less attractive as well. Therefore the halving of this particular group of vessels in Hjørring has been caused by a mixture of economic and catch constraints which have some resemblance to the constraints of Skagen. It should be noted that all other vessels groups in Hirtshals have remained almost unchanged.

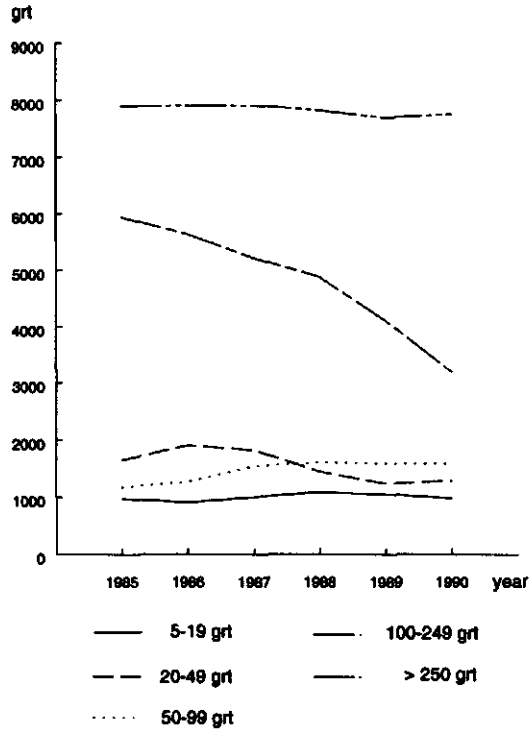

Figure 9.2 Development of GRT-capacity in the district of Hjørring

Regarding the development in the capacity of Skagen it is important that there has been an increase and subsequent decline in the Baltic sea. This explains the decline in the group 100-249.9 GRT, notably from 1987, see figure 9.3. The herring quota have been high since 1985 but a change from a high price cod fishery to a low price herring fishery does not seem to have been sufficient profitable to avoid a reduction of the fleet.

Of economic factors the decommissioning scheme has the importance in reducing the fleet. With the introduction of the multi annual guidance programme from 1987 the Government made it still more difficult to enter new vessels into the fleet because a permit was made obligatory, and permits were only granted to skippers who had sold the vessel and removed it from the Danish fleet. These skippers were allowed to acquire a new vessel but only of almost similar size as the old one or smaller. Skippers who were granted a decommissioning premium were not allowed to invest within five years from the year when the decommissioning premium was granted.

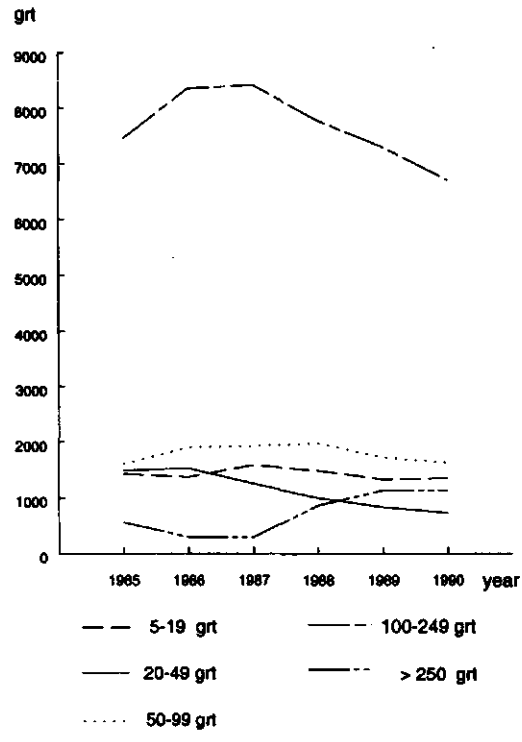

Figure 9.3 Development of GRT-capacity in the district of Skagen

The decommissioning scheme and the demand for permits put severe constraints on the development of the fleet. The reduction of the fleets of the different districts, however, was therefore to some extent influenced by the species composition of the particular district and the structure of the fleet.

9.2 Economic performance of fishing vessels in France

The economic indicators in table 9.5 show that the fleet commissioned at Boulogne was less profitable than the fleets in Bretagne in 1990. But, the characteristics of these fleets differ too much for easy comparison i.e. target species and fishing areas are not the same for a Boulogne vessel and a Breton one.

The labour of Boulogne fishermen was paid at a lower level, compared with the other vessel groups; except for the smaller ships at Douarnenez (where the skipper owner often fishes alone), showing 28% labour cost of earnings.

The average income of the skipper-owner and crew is not directly dependant on the vessels size. It is bound by the calculation of labour renumeration (i.e. section 5.2.4). In fact, the wages are related to each type of fishing gear, area, species caught, and these are related to vessels' size. The analysis of incomes implies to consider the fishing type and not the vessel size; for information we can show what the wage levels are. The mean share per crew member is not representative for the smaller ships. In this case, the income per crew is comparable to the wages of unskilled worker. Aboard bigger vessels, the mean wage of fishermen goes from the incomes of skilled worker (about 15,000-18,000 ECU/year) to those of engineer (about 37,000-40,000 ECU/year). The mean income of skipper-owners of biggest ships is equivalent to the mean wage of senior executives (more 50,000 ECU/year). Thus, these amounts are at a sufficient level but not so high if we refer them to the working conditions and working time (the working time aboard is often twice as long as normal, about 16 hours/day).

For each group of vessels, the return on investment (ROI) was negative in some cases (table 9.5) but the gross cash flow was still sufficient for interest payments. Nevertheless, the 12-16 m the vessels at Boulogne were on the switch value of the unbalance. The financial stress (interest payments related to gross cash flow) of these vessels reached 82% and the loans represented 57% of their book value. Moreover, the gross value added related to total earnings was lowest for this group: 52%. For other groups, the situation was better in general but does not stay so good; the vessels with a financial stress more than 50% were uncommon; except at Douarnenez, this ratio was in de range of 20-65%.

Gross value added related to total earnings was over 55% for all groups, except the Boulogne vessels mentioned above.

The investments for fishing activities are very costly. Above all, the aimed production capacity depends on profitability expectations. Some models, namely models speeding up-profit and developed by Malinvoud (1987) and Muet (1979), display the very important part of the profit in the investment decision process. Malinvoud shows that the profit rate has a greater effect on the national and EC's aids have a restricted influence on the deci- investment when the risk increases. The level of subsidies from sion of ship owners. So, the investment does not originate with aids but the grants explain highly the variance between vessels (Foucault, Gerinette & Lamaire, 1990). In the French case, we can observe from 1987 to 1991 that the lingering worsening of the economic situation of fisheries entails the reduction of investment in spite of aids after a boom from 1977 to 1987 (Junqueira Lopez & Lantz, 1991).

Table 9.4 Economic indicators of fishing vessels in France (average figures per vessel in 1990)

Vessel group (meter)	Total earnings (ECU)	Gross value added (GVA) (ECU)	Net value added (NVA) (ECU)	% GVA of total earnings (%)	GVA per crew member (ECU)
< 12					
Boulogne	87,450	53,534	41,291	61.22	26,767
Douarnenez	76,008	55,982	47,457	73.65	7,321
Lorient	125,861	80,417	61,026	63.89	62,931
12-16					
Boulogne	187,338	98,268	31,287	52.45	21,837
Douarnenez	155,449	105,516	98,478	67.88	35,172
Lorient	279,510	170,941	142,906	61.16	37,987
Le Guilvinec	214,468	136,774	113,014	63.77	45,591
16-25					
Boulogne	332,091	184,347	106,151	55.51	28,361
Douarnenez	366,301	214,998	171,629	58.69	43,000
Lorient	412,587	231,762	170,690	56.17	46,352
Le Guilvinec	451 312	281 656	241 187	62.41	56 331

Note: The meaning of the indicators is explaned in tables 9.1 and 9.2.

The implementation of the exploitation allowance permit (PME) and the Mellick plan (i.e. 5.2.5) lead to younger fleets, apart from the economic situation; also this situation influences the average value of Kw power. The reduction of fishing effort will have some mid-term repercussions on the stocks but the fleets must already overcome the difficulties. The two variables, capital and resource, obviously don't have a common pattern at an optimal level.

The economic returns show that social organization, environment having biological constraints, market structures and economic profitability are closely connected. The relationships between the men and the sea are different along the coast. Fishery is a particular economic activity highly depending on environmental conditions. Beyond this valorisation of catches depends on the landing port and auctions. So, the returns of the small scale and coastal fishing fleet from Douarnenez are better than those of bigger vessels. This observation is in the reverse order at Le Guilvinec and to some degree at Boulogne.

Table 9.5 Economic indicators of fishing vessels in France (average figures per vessel in 1990)

Vessel Group (meter)	Income to skipper owner (ECU)	Share per crew member (ECU)	Return on invest-ment (%)	Finan-cial stress (%)	% loans of vessels' value (%)
< 12					
Boulogne	32,235	10,745	2.17	49	38
Douarnenez	21,816		31.26	8	27
Lorient	52,553	17,518	-9.22	57	38
12-16					
Boulogne	24,254	16,169	-9.46	82	57
Douarnenez	40,057	20,028	13.65	13	29
Lorient	47,944	31,963	-1.29	37	40
Le Guilvinec	53,366	26,683	1.35	27	40
16-25					
Boulogne	31,096	20,731	0.94	36	46
Douarnenez	52,320	34,880	-1.42	29	37
Lorient	56,930	37,953	-4.40	45	47
Le Guilvinec	64,302	42,868	4.27	21	32

Note: The meaning of the indicators is explained in tables 9.1 and 9.2

9.3 Economic performance of fishing vessels in the Netherlands

The common tables in chapter 8 focus in particular on the year 1990. Returns in this year were rather low for the smaller cutters (up to 220 kW) compared with the preceding five years (Smit et al., 1992). This decline was mainly caused by decreased earnings in the shrimp fishery. On the other hand for biggest cutters (kW from 810) the year 1990 shows the best returns of the period 1985-1990. This is mainly explained by the sharp increase of the Dutch TAC for sole in 1990 (9 656-18 000 tons).

Table 9.6 shows the main economic indicators in 1990 of the Dutch cutters. The gross value added (GVA) related to vessel size, is in line with the amount of earnings. This is demonstrated by the rather stable percentage (some 55%) of the GVA from earnings, comparing smaller and bigger vessels. However, the cutters in the southern region show a relatively low gross value added. The GVA per crew member, related to vessel size, reflects the high capital inputs in the Dutch cutter fishery. For the biggest cutters the value of this indicator was three times as much as for the smaller ones. (ECU 105,000-34,000).

Table 9.7 shows however that the income pattern related to vessel size is not favourable for the biggest cutters. The income to the skipper-owner of the biggest cutters (>1 470 kW) was in 1990 less than this amount for the cutters in both vessel groups in the range of 810-1 470kW. This relation between biggest and bigger cutters with respect to income in 1990 was not unique. The same relationship, less income from the biggest cutters, was also observed for the years 1980 and 1981 (De Wilde, 1983).

On the whole, incomes in the cutter fisheries were (and are) rather high compared with other industries, i.e. agriculture. However, taking into account the numbers of working hours, this income level is not extremely high. An important development in this respect is the decrease of the number of days at sea, namely for the big cutters. This number decreased from some 200 or more in the early 1980s to 150-160 in 1990. Nevertheless, average income per crew member, aboard on the big cutters, was higher in 1990, compared with that period.

The average return on investment (ROI) of the different vessel groups is in line with the income pattern, described above; the biggest cutters and the cutters from the southern ports showing somewhat lower levels. Comparing this ROI with the interest rate for loans in 1990 (some 8.5%) the conclusion is that only the ROI of both vessel groups in the range of 810-1470

Table 9.6 Economic indicators of fishing vessels in the Netherlands (average figures per vessel in 1990)

Vessel group (kW)	Total earnings (ECU)	Gross value added (GVA) (ECU)	Net value added (NVA) (ECU)	% GVA of total earnings (%)	GVA per crew member (ECU)
Cutters, region North					
110- 150	129,349	75,976	61,763	58.7	36,179
151- 190	137,263	75,234	54,986	54.8	32,710
191- 220	271,087	153,960	122,350	56.8	42,767
295- 440	350,430	186,044	147,015	53.1	44,296
810-1100	872,015	499,888	399,240	57.3	80,627
1101-1470	1,054,533	580,961	442,222	55.1	89,379
> 1470	1,275,254	728,180	513,832	57.1	105,533
Cutters, region South					
191- 220	323,227	178,615	138,415	55.3	49,615
810-1100	769,590	379,631	273,571	49.3	67,791
> 1470	1,158,665	586,650	381,927	50.6	87,560

kW (9.5 and 7.6%) were an a sufficient level. In fact the return to equity was at a very low level or even negative for the other vessel groups.

The last two indicators in table 9.7 measure aspects of the financial position of the fishery enterprises. The interest payments related to the gross cash flow (financial stress) were not extremely high in 1990. The biggest cutters (>1 470 kW) show the highest value of this ratio (28-33%) and also of the solvency ratio (% loans of vessels' value, 50-59%). This is explained by the young age (5-6 years) of this cutters and, in relation to this, the high amount of loans provided for these investments of 7-9 million NLG for a newly build cutter of this size. Of the other vessel groups the group 191-220 kW shows relatively high values of the two financial ratios. A substantial part of these cutters has been built in the 1980s (so called 'Eurocutters' equipped with 300 Hp/220 kW) and also in these cases a relative small part of the debts has been paid back till 1990.

On the whole, enterprises in the Dutch cutter fisheries are not very heavy burdened by loans, taking into account the relative young age of the vessels (42% less than 10 years at the end of 1990). The generated cash flows use to be high enough to

Table 9.7 Economic indicators of fishing vessels in the Netherlands (average figures per vessel in 1990)

Vessel Group (kW)	Income to skipper owner (ECU)	Share per crew member (ECU)	Return on investment (%)	Financial stress (%)	% loans of vessels' value (%)
Cutters, region North					
110- 150	25,894	25,613	4.4	11.5	17.0
151- 190	16,018	23,635	0.5	17.4	18.7
191- 220	19,941	29,659	3.6	26.6	44.6
295- 440	20,715	28,517	3.3	17.1	18.7
810-1100	88,225	42,830	9.5	10.1	23.0
1101-1470	66,156	46,303	8.4	17.9	38.5
> 1470	50,027	55,453	7.0	28.3	59.2
Cutters, region South					
191- 220	22,314	31,432	4.0	12.8	25.9
810-1100	26,165	38,674	3.8	.	.
> 1470	11,539	48,485	2.7	32.9	50.0

Note: The meaning of the indicators is explained in tables 9.1 and 9.2.

enable interest payments and repayments of loans. As a result the amount of debts tends to decrease rather quickly so that the repayment terms of the banks (10 years mostly) could be met well, generally speaking.

Table 9.8 shows the costs and earnings in 1990 of the cutter fisheries as a whole. Depreciation and interest costs have been based upon the 'common method', which means lower amounts for both these costs items compared with the 'Dutch' method. Annex 9 explains these differences.

As pointed out above, the year 1990 was rather favourable for Dutch cutter fisheries. Adding net profit to the total amount of labour share an average income per crew member results of ECU 40,250 in 1990, skipper-owners included. This applied for some 2 500 crew members.

Table 9.8 Aggregate costs and earnings of Dutch cutter fisheries in 1990 (1000 ECU)

	Region		All vessels a)
	North	South	
Total earnings	218,921	80,302	299,223
Running costs	55,717	22,968	78,685
Labour share/social ins.	68,881	23,742	92,623
Vessel costs	40,149	16,053	56,202
Total costs/expenses	164,747	62,763	227,510
Gross cash flow	54,174	17,539	71,713
Depreciation b)	30,106	13,529	43,634
Interest b)	13,228	6,524	19,752
Net Profit	10,840	-2,514	8,327

a) Total of 553 vessels, on average operating in 1990; b) Based upon the 'Common method' described in CH. 7.4.1.

In 1991 the returns of the cutters showed a major improvement. Earnings increased by 9% to ECU 327 million, whereas the net profit of the industry as a whole totalled some 30 million ECU (Smit et al., 1992). This improvement of returns in 1991 was mainly caused by a sharp rise in the price of plaice in 1991 (ECU 1.36-1.81 per kg). Expressed in value of the Dutch TAC for plaice this meant an increase of 38 million ECU. Especially the net profits of the bigger beam trawlers (>810 kW) increased importantly.

These returns for the industry as a whole should be considered against the background of a declining fleet. The number of vessels diminished from 625 in 1989 to 533 in 1990 and 494 at the end of 1991. In particular the number of mid-size cutters (221-810 kW) declined dramatically in that period (149-41).

On the other hand total capacity of the cutter fleet, expressed in kW, rose from 386 000 in 1990 to 400 000 in 1990. In 1991 however, this capacity decreased by 8% to 369 000 kW.

EC and national fisheries policies have influenced developments in cutter fisheries substantially since 1988. In that year a systematic control of landings came into operation. Effects of measures resulting from EC and National Fisheries Management can be summed up as follows: (in chapter 5 measures affecting Dutch cutter fisheries are described more in detail).

- Horse power licenses have maximised total engine power of the fleet. Year 1988 showed the highest capacity level (about 600 000 Hp or 440 000 kW) and in subsequent years a decrease occurred to 369 000 kW, as stated above. These Hp licenses have limited investments in new vessels; in the period 1989-1991 total investment amount was halved or even reduced with 75% compared with the mean level (52 million ECU) in the period 1985-1988. This investment decline was inevitable because skipper-owners are able to invest in a new cutter only when an equivalent number of Hp has been withdrawn from fishery activity;
- the maximum Horse power regulation has limited the Horse power of the newly build beamers to 2 000 (1 470 kW). A major reduction, considering existing vessels equipped with an engine of 3 000-3 800 Hp (2 200-2 800 kW);
- the decommissioning scheme caused a withdrawal from the cutter fisheries of 60 000 kW (Ministry of Agriculture, Nature Management and Fisheries, 1992);
- limitation of the number of days at sea to 150 for the beamers has caused a substantial reduction in fishing effort. Figure 9.4 shows the combined effect of Hp and days at sea reduction (power/days product). In fact this reduction has been larger because engine productivity (catch/kW) of big beam trawlers is less than this productivity of smaller beamers (Smit et al., 1992);
- the Individual Transferable Quota system ((ITQ's) has been an important constraint to beam trawlers. These ITQ's, systematically controlled since 1988, reduce catches of sole and plaice. Another effect of ITQ's has been the concentration tendency due to purchase of ITQ's by bigger, more profitable companies (Harmsma, 1992). In 1990, transfer of sole and plaice quota amounted to some 100 million NLG (45 million ECU), which even exceeded total investment amount for new cutters in that year.

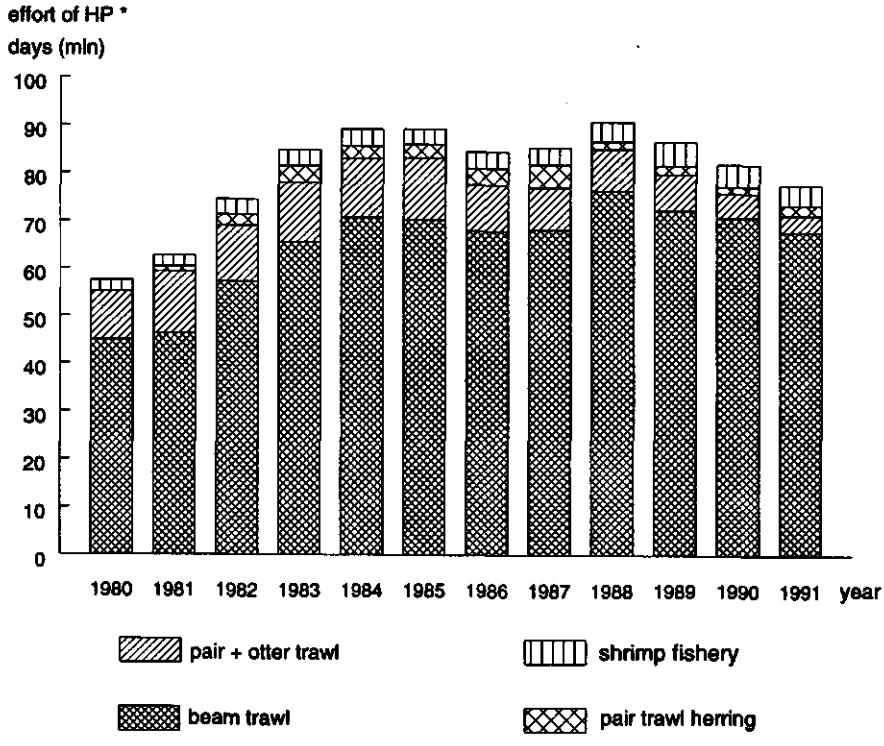

Figure 9.4 Fishing effort of Dutch cutters, related to fishing gear

Apart from these management measures fishing activities are limited by technical measures (mesh size, maximum beam length, closed areas) and a maximum (220 kW) engine power for cutters fishing within the 12 miles zone.

Finally, measures resulting from management policies have not been the only influencing factors for the Dutch cutter fishery. Nature may have a major impact, as a sharp increase (95%) of the sole stock in 1990 proved. Beyond this market forces may influence the returns of the cutters importantly. The strong demand for plaice in 1991 for example, resulted in a sharp price increase and hence in a much higher value of the TAC for plaice.

Table 9.9 Economic indicators of fishing vessels in the United Kingdom (average figures per vessel in 1990)

Vessel group (GRT)	Total earnings (ECU)	Gross value added (GVA) (ECU)	Net value added (NVA) (ECU)	% GVA of total earnings (%)	GVA per crew member (ECU)
Scottish trawlers					
20-130 *)	381,312	182,325	131,422	47.8	31,435
20-45	232,579	113,278	77,514	48.7	25,745
46-59	379,074	187,691	127,324	49.5	32,361
61-130	545,601	252,777	178,094	46.3	34,159
Scottish seiners					
35-125 *)	448,637	223,036	166,061	49.7	34,849
35-<49	293,286	149,541	115,162	51.0	28,215
49-<70	420,973	215,448	155,913	51.2	32,156
70-125	605,921	291,456	218,790	48.1	41,050
English beamers					
100-380 *)	796,499	299,021	209,863	37.5	49,837
100-225	654,787	223,319	157,757	34.1	37,220
240-380	953,957	383,138	279,751	40.2	63,856

*) All vessels of subsequent groups.

9.4 Economic performance of fishing vessels in the United Kingdom

As shown in table 9.10 skipper owner's average incomes after providing for both payment of interest and appropriations for depreciation were positive in 1990, although in the majority of the vessel groups the average crewman's share was the higher. None among the groups recorded overall results that indicated its future was threatened, although the returns on investment (ROI) were sufficiently low to deter additional investment. When calculated on insured values only two groups of vessels failed to record a positive ROI, allowing for the heterogeneous nature of fishing and insured values recognised as frequently high in relation to capital value, the performance of these two groups does not warrant cause for alarm.

The ROI of both the Scottish seiners and Scottish trawlers sampled was the same at just over 1%. Among the seiners the returns declined progressively as the GRT size of each vessel group increased and in the case of the trawlers again it was the largest of the three groups, with a 0.1% negative return, that was the least successful. The English beamers are calculated to

Table 9.10 Economic indicators of fishing vessels in the United Kingdom (average figures per vessel in 1990)

Vessel group (GRT)	Income to skipper owner (ECU)	Share per crew member (ECU)	Return on invest-ment (%)	Finan-cial stress (%)	% Loans of vessels' value (%)
Scottish trawlers					
20-130 *)	18,159	21,747	1.1	15.8	14.3
20-45	15,205	17,617	2.1	6.7	12.0
46-59	13,042	21,953	2.6	14.8	24.6
61-130	8,173	24,067	-0.1	21.3	8.2
Scottish seiners					
35-125 *)	18,554	24,895	1.2	20.5	12.0
35-< 49	25,835	19,856	3.8	8.9	23.7
49-< 70	14,375	22,342	1.2	21.6	15.7
70-125	15,523	30,154	0.5	25.0	7.6
English beamers					
100-380 *)	31,326	34,283	0.4	7.6	n.a.
100-225	15,458	27,869	-1.2	5.3	n.a.
240-380	60,951	41,410	1.3	8.7	n.a.

*) All vessels of subsequent groups.
Note: The meaning of the indicators is explained in tables 9.1 and 9.2.

have had an ROI of less than a half per cent but in their case it was the smaller of the two groups of vessels which had a negative result. Interest paid, as a percentage of average gross cash flow, 'financial stress' was highest among the seiners at 20.5% and lowest among the English beamers at 7.6%. A consistent pattern, shown by vessels in each of the three fishing methods sampled, was of financial stress increasing in line with increases in the size grouping of the vessels.

Against a background in which average weekly earnings of manual workers in United Kingdom manufacturing industries in 1990 were GBP 223.3 or ECU 16,346 per year, average shares per crewman, that ranged from ECU 17,617 to ECU 41,410, compared well. In addition to their earnings as crew members most fishermen are likely to have qualified for state unemployment benefit for certain periods during the year. Measured in terms of share per day at sea the crews on seiners averaged ECU 127, on trawlers ECU 118 and on beamers ECU 155. The relatively better earnings obtained on beamers may be slightly diminished by the

costs of food and travel that are frequently charged to the individual crewman rather than to the running cost of the vessel.

Estimates of the total United Kingdom North Sea demersal fleet costs and earnings are set out in tables 9.11 and 9.12 below. The tables are based on the assumption our sample average for each sector are fully representative of the relevant vessels. It should be noted that in common with the other tables for United Kingdom in the report the figures for 1990 reflect the change in the sterling/ECU exchange rate in that year, the general effect of this is to have depressed the results for 1990 (when expressed in ECU) as compared with 1989.

Table 9.11 Estimated aggregate costs & earnings of United Kingdom demersal fleet, fishing from Scotland and English East Coast ports, in 1000 ECU (1989)

	Seiners	Trawlers	Beamers	Total sampled vessel groups	Non-sampled vessels b)	Total a)
Total earnings	92,612	83,090	42,513	218,215	98,740	316,955
Running costs	23,557	22,182	11,601	57,340	25,946	83,286
Labour share	32,900	27,789	11,167	71,856	514	104,369
Vessel costs	24,681	21,587	16,457	62,725	28,382	91,108
Total costs	81,137	71,558	39,225	191,921	86,842	278,763
Gross cash flow	11,475	11,532	3,288	26,294	11 898	38,192
Depreciation	12,302	10,457	5,269	28,027	12,682	40,709
Interest	1,530	1,197	487	3,215	1455	4,669
Net Profit	-2,357	-122	-2,468	-4,947	-2,239	7,186

a) The total value of demersal landings by United Kingdom vessels in Scotland and on the English East Coast; b) Costs are estimated pro rata to the sampled vessels.

These estimates indicate that total fleet earnings increased by some 25 million ECU in 1990; and gross cash flow by about 9 million ECU. These improvements in the industry's financial outturn enabled it to fully cover estimated depreciation and also earn a national return on capital virtually equivalent to the imputed interest (as can be seen from table 9.12). In the previous year, 1989, net cash flow was barely sufficient to cover depreciation and return on capital was marginally negative.

Table 9.12 Estimated aggregate costs & earnings of United Kingdom demersal fleet, fishing from Scotland and English East Coast ports, in 1000 ECU (1990)

	Seiners	Trawlers	Beamers	Total sampled vessel groups	Non-sampled vessels b)	Total a)
Total earnings	92,868	80,457	48,586	221,911	119,618	341,529
Running costs	23,107	21,280	13,112	57,500	30,994	88,494
Labour share	32,981	26,614	12,548	72,143	38,888	111,030
Vessel costs	23,592	20,706	17,234	61,532	33,168	94,700
Total costs	79,681	68,601	42,894	191,175	103,050	294,225
Gross cash flow	13,187	11,857	5,693	30,737	16,568	47,305
Depreciation	11,794	10,741	5,439	27,974	15,079	43,053
Interest	1,353	936	513	2,802	1,510	4,313
Net Profit	40	180	-259	-39	-21	-59

a) and b) see table 9.11.

These improvements in the industry's financial out-turn in 1990 relative to 1989 seem to provide prima facie evidence that the additional conservation measures, introduced in that year, did not have such a negative impact on the financial viabilities of the fleet as the industry had initially expected. In particular the sharp reductions in the TACs for the main North Sea demersal species, see table 9.13, which were expected to have a highly depressing effect on overall industry earnings were in the event more than offset by large increases in quayside prices, in part reflecting increased scarcities at international levels; especially in the case of cod.

It seem probable that another part of the explanation for these relatively favourable results is that another extra conservation measure introduced in 1990, with the aim of restricting fishing effort by a large sector of the fleet (almost 400 of the larger vessels), turned out to have been impracticable to enforce and is believed to have been largely ignored.

However, management measures and supporting restricting may have had a more negative impact on financial out-turns in the case of smaller sub-sections of the fleet. Certain vessels for example, which were not members of P.Os. may have been adversely affected by restrictions relative to their access to North Sea haddock fishing, although figures are not available to fully confirm this.

Table 9.13 United Kingdom quotas North Sea and Norwegian Sea (sea area IV & IIA) live weight in tonnes

Species	Quota		%	Uptake		%
	1990	1989	Change	1990	1989	Change
Cod	45 857	55 800	-17.8	46 654	49 877	-6.5
Haddock	36 480	55 541	-34.3	36 485	56 137	-35.0
Saithe	12 136	14 910	-18.6	11 477	13 618	-15.7
Whiting	29 260	44 040	-33.6	29 799	28 405	4.9
Plaice	31 597	34 800	-9.2	25 799	26 479	-2.6
Sole	1 670	825	102.4	1 811	1 106	63.7

It may be noted that the improvement in the industry's financial out-turn in 1990 referred to above, resting as it did on increases in quayside prices, should probably be regarded as inherently unstable; and in any event represents a situation which is certainly sub-optimal on wider economic criteria. In brief, high product prices in 1990 enabled the industry to support excess capital which would in principle be more profitably deployed elsewhere in the economy. No doubt however, as and when prices fall (as has occurred in the current year, 1992) this excess capital will eventually be eliminated by normal competitive pressures.

9.5 Economic performance of fishing vessels in four EC countries compared

9.5.1 Aggregate costs and earnings

For Denmark the sample vessels represent the fleets of the districts of Lemvig, Skagen and Hjørring (total 674 vessels). Total earnings of the vessels from these three districts amounted to 140 million ECU in 1990. Running costs, vessel costs and wages exceeded these earnings so that for these fleets as a whole a net loss occurred. In France, artisanal vessels up to 25 m were sampled from the ports Boulogne, Douarnenez, Lorient and le Guilvinec (total of 876 vessels in these four ports). Total earnings of these vessels amounted to some 215 million ECU in 1990, as estimated from the sample vessels. Returns of these vessels were rather favourable. An estimate, based upon the sample vessels, results in a net profit of 3.9 million ECU of the fleets in the four ports as a whole.

Total earnings of the 550 Dutch cutters in 1990 were 365 million ECU and also for these fleet a net profit remained for this fishery as a whole (3.6 million ECU).

For the situation in the United Kingdom the costs and earnings of sample vessels allowed the calculation of aggregate figures for the United Kingdom demersal fleet. Total earnings of this fleet amounted to 340 million ECU in 1990 and total costs, based upon the common calculation method, were at the same level. This means that this fleet earned a return on capital equivalent to the imputed interest (real interest rate).

Table 9.14 shows earnings and net returns of fishing fleets as a whole in the four countries.

Table 9.14 Aggregate earnings and net returns of fishing fleets in 1990 in four EC countries (million ECU)

	Denmark a)	France b)	the Netherlands c)	United Kingdom d)
Total earnings of Sea Fisheries	429.8	944.5	364.3	609.0
Earnings of fleets, represented by the sample	83.6	216.4	299.2	341.5
Net profit/ loss of these fleets e)	-2.9	3.9	3.6	-0.06

a) Fleets of Lemvig, Skagen and Hjørring; b) Vessels up to 25 m in Boulogne, Douarnenez, Lorient and le Guilvinec; c) Cutter fisheries, i.e. fisheries on flat fish, round fish and shrimps; d) Demersal fleet, fishing from Scotland and English East Coast ports; e) Based upon the common method described in 7.4.1.
Source total earnings: EC Regional Economic Studies, 1992.

Development of returns in 1990 compared with 1989 was different in the four countries. The majority of the Danish vessels show an improvement in net returns in 1990 compared with 1989. Only for the biggest trawlers this bottom-line figure declined in 1990. For the French vessel groups studied (10) net return declined in all cases in 1990, following the decrease of total earnings in most cases. On the contrary for the Dutch cutters 1990 was a rather favourable year, showing a substantial increase in net return for the most cutters; only for the small ones this figure decreased, due to an adverse situation in shrimp fisheries. Also for the British demersal fleet 1990 was relatively favourable, because six of the eight groups from the study show an improvement of net return in that year.

In the relevant (national) section of this chapter returns of the fleets are described more in detail.

9.5.2 Economic indicators of fishing vessels compared

In the preceding four section (9.1-9.4) economic indicators of 44 vessel groups are shown. Below, the question will be answered: How performed vessels of similar size in the four countries economically? The 44 groups studied were divided into four main groups of vessels according to the parameters GRT and length.

Table 9.15 shows economic indicators of the smallest vessels in the four countries.

Table 9.15 Comparison of average economic indicators per vessel (1990), vessels mainly 20-50 GRT, 12-20 M.(1000 ECU)

Vessel group (GRT)	Code	Earnings	Gross value added	Share/ crew member	Financial stress *) %
Gill net 18-43, Lemvig	DK 1	203.1	115.8	34.6	63.8
Seiners 28-29, Lemvig	DK 2	161.6	101.5	21.8	29.7
Seiners 33-43, Lemvig	DK 3	211.6	130.4	27.5	55.2
Trawlers 37-43, Lemvig	DK 4	185.3	96.5	26.1	150.0
Trawlers 30-40, Skagen	DK 5	181.5	104.6	26.8	92.3
Gill net 19-45, Hjørring	DK 6	136.5	78.3	41.6	65.6
Trawlers 19-38, Hjørring	DK 7	99.2	52.5	16.5	79.3
Boulogne 12-16 M, 10-30	FR 1	187.4	98.3	16.2	82.0
Douarnenez 12-16 M, 10-30	FR 2	155.4	105.5	20.0	13.0
Lorient 12-16 M, 10-30	FR 3	279.5	170.9	32.0	37.0
le Guilvinec 12-16 M, 10-30	FR 4	214.5	136.8	26.7	27.0
Dutch shrimp vessels 30-40	NL 1	129.3	76.0	25.6	11.5
Dutch shrimp vessels 30-60	NL 2	137.3	75.2	23.6	17.4
Scottish trawlers 20-45	UK 1	232.6	113.3	17.6	6.7
Scottish seiners 35-49	UK 2	293.3	149.5	19.9	8.9

*) % Interest payments from Gross Cash Flow.
Note: Range of Danish vessels defined as 25% and 75% fractiles (annex 4).

Earnings were relatively high for some Danish, French and both United Kingdom vessel groups. Vessels from Hjørring and both the Dutch vessel groups show relatively low earnings. Average share per member shows a somewhat different pattern, because Scottish crew members earned less compared with their Dutch colleagues. It has to be considered that the number of crew of these Scottish vessels (4-5) exceeded this number at the Dutch ones substantially (2-3).

The burden of interest payments was relatively high for the Danish vessels and also for the Boulogne ones.
The final test for the economic performance, the rate of return on investment (ROI) is shown in figure 9.5.

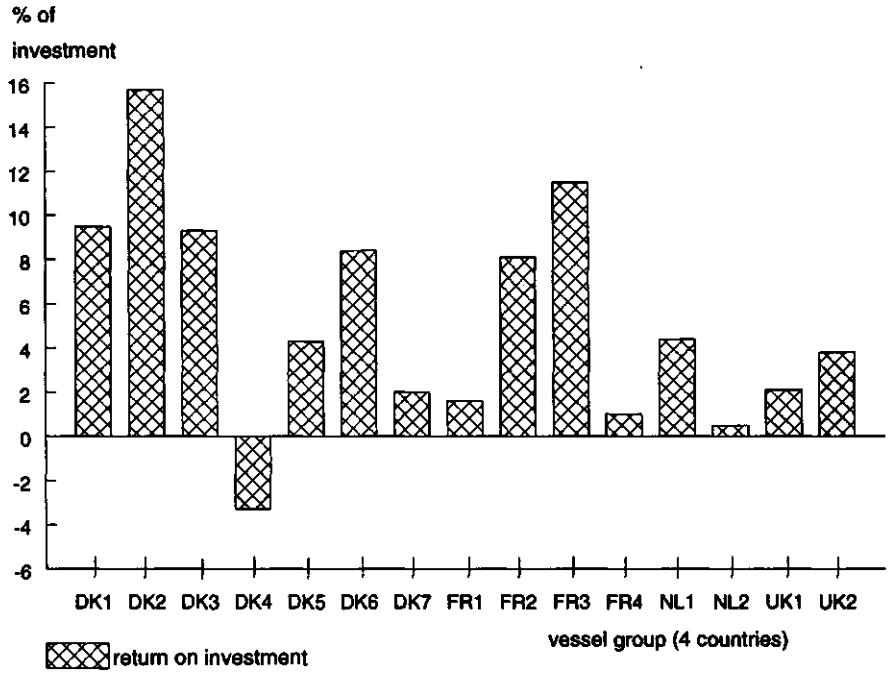

Figure 9.5 Return on investment of vessels, size class 20-50 GRT, (code of vessel group is explained in table 9.15)

The rate of return on investment of fishing enterprises has a somewhat different meaning, compared with this ratio for industrial companies. Because, generally speaking it is not the first aim of skipper-owner to maximise the profit of his enterprise. Reward for his labour and 'being a fisherman' is as much as important in most cases. Therefore fishing enterprises are able to survive in cases of a low ROI, compared with the interest rate. This situation occurred for most vessel groups, as figures 9.5 and 9.6 (below) show. In fact return to equity is (very) low in these cases.

Remarkably, both the United Kingdom vessel groups show a low ROI (2.1 and 3.8%), contrary to their earnings. Costs of fuel and vessel costs (repairs) were high for these vessels, compared with similar vessels in the other three countries.

Table 9.16 shows average economic indicators of vessels in the four countries, mainly in the range of 50-100 GRT. Again the Scottish vessels show a relatively high amount of earnings, whereas Danish trawlers and Dutch cutters earned relatively low.

Contrary to this earnings pattern share per crew member was on the low side for the Scottish trawlers and seiners.

Table 9.16 Comparison of average economic indicators per vessel, (1990) vessels mainly 50-100 GRT, 18-25 M. (1000 ECU)

Vessel group (GRT)	Code	Earnings	Gross value added	Share/ crew member	Financial Stress *) %
Trawlers 56-88, Lemvig	DK 8	284.6	145.0	28.0	112.3
Trawlers 57-82, Skagen	DK 9	250.6	133.4	27.3	118.9
Trawlers 55-98, Hjørring	DK10	355.6	176.4	34.6	83.1
Boulogne 16-25 M, 30-100	FR 5	332.1	184.3	20.7	36.0
Douarnenez 16-25 M, 30-100	FR 6	366.3	215.0	34.9	29.0
Lorient 16-25 M, 30-100	FR 7	412.6	231.8	38.0	45.0
le Guilvinec 16-25 M, 30-100	FR 8	451.3	281.7	42.9	21.0
Dutch cutters 50-70, north	NL 3	271.1	154.0	29.7	26.6
Dutch cutters 40-80, south	NL 4	323.2	178.6	31.4	12.8
Dutch cutters 80-135, north	NL 5	350.4	186.0	28.5	17.1
Scottish trawlers 46-59	UK 3	379.1	187.7	22.0	14.8
Scottish trawlers 61-130	UK 4	545.6	252.8	24.1	21.3
Scottish seiners 49-70	UK 5	421.0	215.4	22.3	21.6
Scottish seiners 70-125	UK 6	605.9	291.5	30.2	25.0

*) % Interest payments from Gross Cash Flow.
Note: Range of Danish vessels defined as 25% and 75% fractiles (annex 4).

Danish trawlers show difficulties in meeting the requirements of banks with respect to interest payments.

The level of return on investment does not correspond with the amount of earnings, because also in this group Scottish vessels (high earnings) show a ROI of 0-1%.

The ROI of the Dutch 50-100 GRT ('Eurokotters') was favourable, considering the relative low earnings.

The cost structure of these United Kingdom and Dutch comparable groups differed importantly. Fuel costs of the Scottish vessels amounted to 40,000-60,000 ECU whereas for the Dutch cutters the level of these expenses was 25,000-40,000 ECU. Total amount of labour share of the Scottish vessels was even 50-100% higher compared with the Dutch 50-100 GRT cutters.

In the category bigger vessels Dutch beamers show the highest earnings (table 9.17). Again Danish trawlers show a very high level of interest payments related to the average gross cash flow.

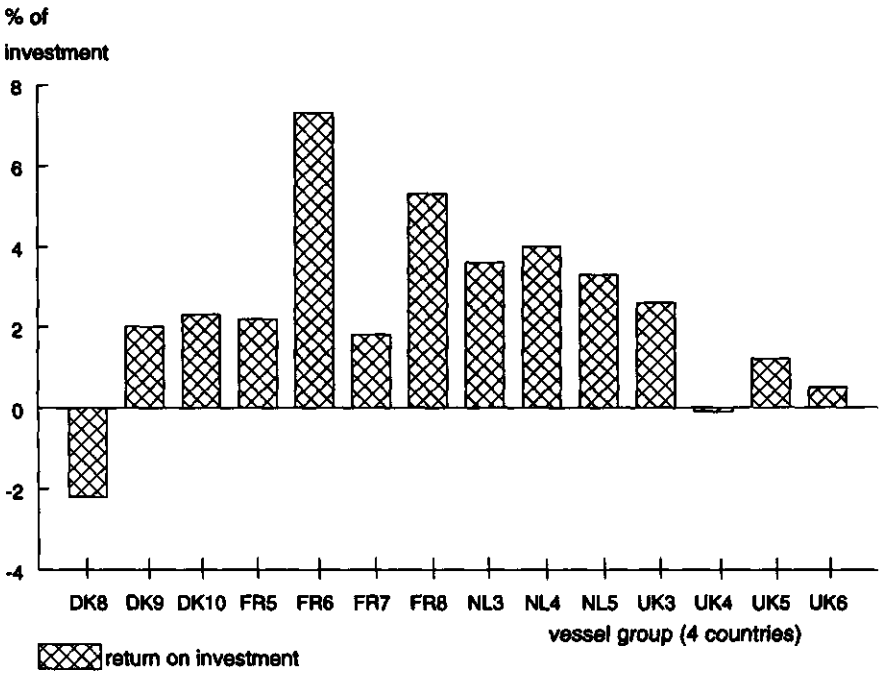

Figure 9.6 Return on investment of vessels, size class 50-100 GRT (code of vessel group is explained in table 9.16)

Table 9.17 Comparison of average economic indicators per vessel (1990), vessels mainly 150-250 GRT, 30-35 M. (1000 ECU)

Vessel group (GRT)	Code	Earnings	Gross value added	Share/ crew member	Financial stress *) %
Trawlers 150-178, Lemvig	DK 11	446.4	182.9	31.4	237.2
Trawlers 149-171, Skagen	DK 12	465.1	228.4	31.9	136.1
Trawlers 149-188, Hjørring	DK 13	492.9	215.2	29.3	114.0
Dutch beamers 170-270, north	NL 6	872.0	499.9	42.8	10.1
Dutch beamers 170-270, south	NL 7	769.6	379.6	38.7	n.a.
English beamers 100-225	UK 7	654.8	223.3	27.9	5.3

*) % Interest payments from Gross Cash Flow.
Note: Range of Danish vessels defined as 25% and 75% fractiles (annex 4).

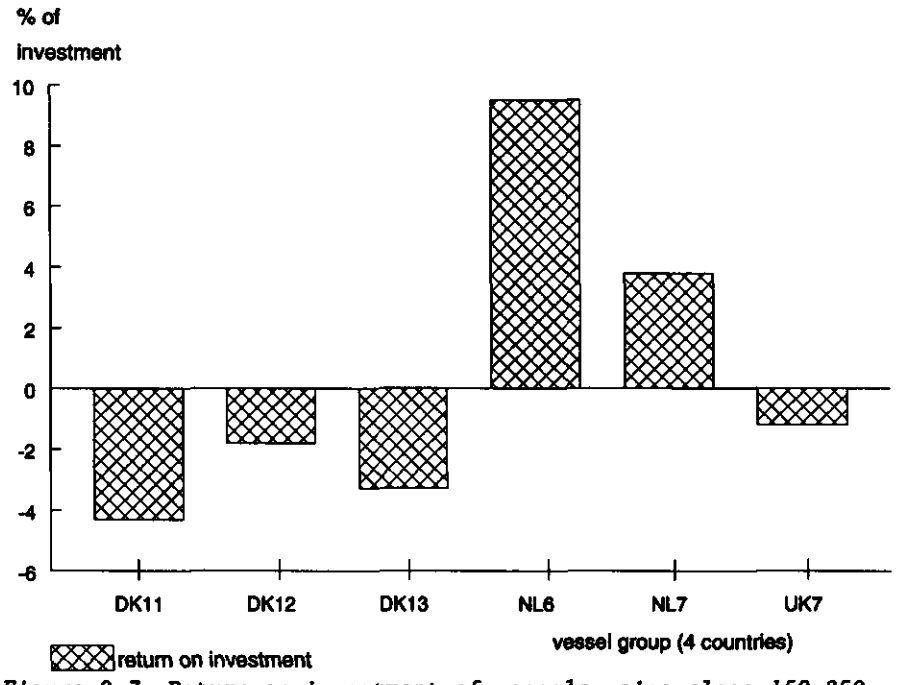

Figure 9.7 Return on investment of vessels, size class 150-250 GRT (code of vessel group is explained in table 9.17)

Rate of return on investment was highest for the Dutch beamers, as figure 9.7 demonstrates. Danish trawlers and the smallest United Kingdom beamers group show a negative ROI, which mean that net losses exceeded the (imputed) interest amount.

Table 9.18 Comparison of average economic indicators per vessel (1990), vessels mainly 250-400 GRT, 35-43 M. (1000 ECU)

Vessel group (GRT)	Code	Earnings	Gross value added	Share/ crew member	Financial stress *) %
Trawlers 238-353, Lemvig	DK 14	825.5	320.9	47.0	255.1
Dutch beamers 270-330, north	NL 8	1054.5	581.0	46.3	17.9
Dutch beamers 290-430, north	NL 9	1275.3	728.2	55.5	28.3
Dutch beamers 260-380, south	NL 10	1158.7	586.7	48.5	32.9
English beamers 240-380	UK 8	954.0	383.1	41.4	8.7

*) % Interest payments from Gross Cash Flow.
Note: Range of Danish vessels defined as 25% and 75% fractiles (annex 4).

The biggest Dutch beam trawlers earned relatively much as is shown in table 9.18. Cost of fuel were also very high for these vessels (200,000-240,000 ECU), compared with the Danish trawlers from Lemvig (140,000 ECU), whereas the biggest British beamers show the same level of fuel cost compared with the Dutch ones. Gear expenses and vessel repairs were extremely high for the United Kingdom beamers (270,000 ECU) compared with some 130,000 ECU for the Dutch ones.

The investment amount for these biggest vessels from the sample ranged from 1.5-2.0 million ECU (expressed by the insured value). Only the big beamers from Dutch northern ports could generate enough returns in 1990 to show a reasonable profitability (ROI of 7-8.5%), from a national economic point of view (figure 9.8).

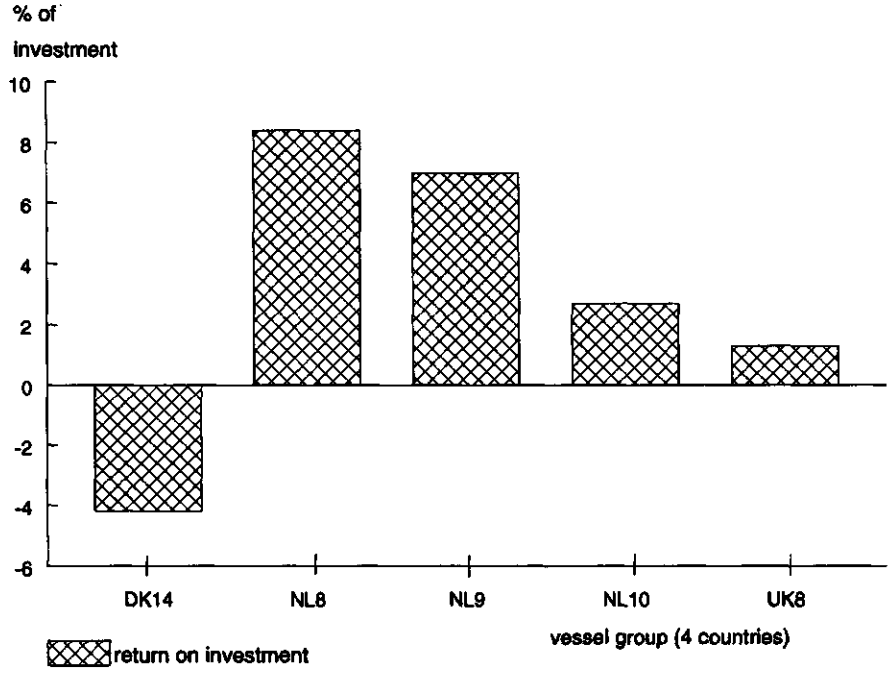

Figure 9.8 Return on investment of vessels, size class 250-400 GRT (code of vessel group is explained in table 9.18)

10. DISCUSSION OF RESULTS

Costs and earnings of an enterprise finally result in the figure on the bottom-line, net profit of the enterprise. One of the problems in economic science is that there are different definitions for the same important terms, like 'net profit'. In this study net profit is the balance that remains after deducting all costs of production factors. This includes labour of the skipper-owner and a full reward (interest) of the capital invested (assessing the value of this capital i.e. the vessel is a separate problem). In practice owners of fishing enterprises will be provided by another concept of profit: the profit or loss calculated for tax purposes. Differences with the 'economic' profit mainly occur with regard to depreciation, interest and labour costs of the owner (the latter item not being a cost amount when calculating fiscal profit).

The 'economic' profit alone does not have one clear definition. Especially regarding depreciation and interest imputation there are several alternatives. The depreciation system applied in this study is based upon the replacement cost. This means that annual savings for a new vessel (=depreciation cost) will be sufficient to acquire a new vessel at current building price, taking into account a period of 25 years. But in practice fishing vessels may be in operation during 50 years, as the insured value may indicate.

Nevertheless, the profit concept defined in this study, results from clear assumptions, which should be kept in mind when interpreting the profit amount.

Beyond this it has to be considered that the profit level will be a minimum level in many cases. Because there might be non-registrated earnings.

It is a valuable result of this study that costs, earnings and profits of fishing vessels in four countries have been brought together into one uniform calculation and presentation method. This does not need to be a final result. These costs and earnings data may be inputs for economic models, which have been build, or are being developed. As such, this study may fill the lack of data which usually exist in feeding these models.

11. FUTURE WORK

The following considerations refer to future work in addition to this study:

- the study contains costs and earnings data of two years, 1989 and 1990. These data may be used for more years, for estimations of subsequent years, because e.g. cost structure will not change completely. But continuation of this study for a longer period, including more countries, would be desirable. In this respect the Farm Accountancy Data Network (FADN or RICA in French) may act as an example. This data network enables the assessment of effects of the Common Agricultural Policy on incomes etc. of farmers;
- behaviour of fish is well studied, but the economic behaviour of fishermen is rather unknown, so far. The observed losses for a number of vessel groups in this study lead to the question: which minimum profit level is required, or maximum level of loss can be sustained, in order to survive in the Fishery Sector. Systematic questioning of fishermen/skipper-owners will be necessary to get knowledge about their (dis)investment policy and other economic decisions regarding their enterprise;
- fishermen are very well skilled in a technical sense, but there might be possibilities to improve their entrepreneurship. Taking economic decisions requires dealing with economic information, e.g. interpreting balance sheets, profit & loss accounts etcetera. Such information enables the skipper owner also to identify the strong and weak points of his enterprise.

The economic strength of fishery enterprises could be favoured by using the results of (national) costs and earnings investigations on behalf of management of individual enterprises. Therefore a clear costs and earnings statement should be provided to the participating skipper owner, which enables him to identify strong and weak points of his enterprise by comparing the data of his firm with average costs and earnings of similar vessels.

ANNEXES

ANNEX 1 References

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ANNEX 2 Examples of tax calculations in the four countries

Example of the Danish Tax calculation

Assumptions:

a) The tax calculation refers to the owner of a vessel of 45 GRT and 300 Hp. Investment in 1990: ECU 10,000. Age of the vessel: 12 years;
b) the person is taxed in accordance with the firm principles;
c) there is a net balance in the firm of 7,250 ECU (used for purpose of 'calculated capital income');
d) the family has no personal interest expenses.

Table 1 Calculation of Danish personal taxation, where one of the married has no income. (double allowance), 1990

	Total income		
	ECU 10,000	ECU 25,000	ECU 40,000
A) Personal income 1)	9,207	24,202	39,202
B) 'Calculated capital income' 2)	798	798	798
Total income	10,000	25,000	40,000
3% allowance 3)	450	450	450
Unemployment insurance	500	500	500
C) Taxable income	9,050	24,050	39,050
Income tax amount:			
General tax 51.8%			
double allowance			
(C - 6679) * 0.518	1,228	8,998	16,768
6% tax			
Double allowance			
(A + B - 36225) * 0.06	0	0	227
12% tax			
(A - 27850) * 0.12	0	0	1,362
Total income tax:	1,228	8,998	18,357
Balance to the owner	8,772	16,002	21,643

1) Calculated as the remaining income: total - calculated capital income = personal income; 2) Calculated as: net assets * interest on bonds (mean) (Firm tax law § 7) (7250 * 11%)=798; 3) The allowance is ECU currency at a exchange rate of 0.125 ECU/DKK, (8 DKK = 1 ECU).

In Denmark it is usual that both of a married couple are working, which means that the tax amounts in table 2 are more representative. In the port of Skagen the average vessel in the category (20-49.9 GRT; 15-18 meters; 305 Hp) earned about 21,250 ECU in 1990.

Table 2 Calculation of Danish personal taxation, in case of single allowance, 1990

	Total income		
	ECU 10,000	ECU 25,000	ECU 40,000
Taxable income	9,050	24,050	39,050
Income tax amount:			
General tax 51.8%			
single allowance			
(C - 3340) * 0.518	2,958	10,728	18,498
6% tax			
single allowance			
(A + B - 18113) * 0.06	0	413	1,313
12% tax			
(A - 27850) * 0.12	0	0	1,362
Total income tax:	2,958	11,141	21,173
Balance to the owner	7,042	13,859	18,827

Calculation of depreciation for tax purposes

The general depreciation calculation is shown in table 3, where capital is depreciated with 30% of the book value, and acquisitions and improvements in the year are depreciated with (5/6 * 30%) = 25%.

Table 3 Example of depreciation calculation; 1990

Balance of account for depreciation (this year)	275,000 *)
- value of sold capital	0
	275,000
Price index (4% 1990)	11,000
+ 5/6 of acquisition in the year	0
+ 5/6 of improvement cost in the year	0
balance value for depreciation	286,000
depreciation 30%	85,800
	200,200
+ 1/6 of acquisition in the year	0
+ 1/6 of improvement cost in the year	0
Balance of account for depreciation (next year)	200,200

*) Building costs of hull, engine and equipment.

In the twelfth year the calculation of depreciation is: (ECU)

balance of account for depreciation (year 11)	= 9,490
price index 1990 (4%) (0.04*9490)	= 380
balance with price index	9,870
depreciation 30% (0.3*9870)	= 2,961

Income terms and allowances in Denmark. Definitions

A) Capital income:

1) Interest gains and expenses;
2) capital gains and losses;
3) calculated 'capital income' 1) from firm;
4) dividend (shares);
5) 'interest correction' 2) from firm;
6) income from extra source of income, firms with more than 10 owners and where the individual is not participating in the running of the firm.

B) Personal income 3):

1) Salary;
2) income from the firm, which is not capital income;
3) current payment;
4) alimony.

allowance in the personal income (Tax value 68%):

1) Operating cost in the personal firm (including depreciation);
2) transfer for collaborating spouse;
3) transfer of fund to pension;
4) transference to investments.

C) Total income = A + B - personal allowance

allowance in total income (tax value 51%):

1) Wage earner's allowance max 3,600 DKK;
2) union dues and unemployment insurance;
3) employer's contribution;
4) alimony to children;
5) transference for business establishment savings account 4);
6) gifts for charities.

D) Taxable income = total income - allowance in total income

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1) The capital income is calculated on basis of the net assets in the firm * mean interest on bonds. ($7 in the firm tax law); 2) Interest is provided in order to tax the persons private debt in the firm; 3) Personal income is defined as the rest of the income, which is not Capital income; 4) Savings for establishment is allowance.

Example of the French Tax calculation

The tax calculation in the following table refers to an owner of a vessel of 45 GRT and 500 HP. Investment in 1990: ECU 10,000. Age of the vessel:12 years.

The tax rates are based on the situation of a married vessel owner with two children.

Table 4 Calculation of French tax amount at different levels of total income

	Total income	
	ECU 25,000	ECU 40,000
Wage 1)	19,000	19,000
Social security contributions	1,804	1,804
Wage tax amounts 2)	1,464	1,464
Wage after tax and social insurance	15,732	15,732
Fiscal profit 3)	6,000	21,000
Deduction for investment (15%)	1,500	1,500
Profits tax (37%)	1,665	7,215
Dividend tax (8,62%)	144	622
Dividend after tax	4,191	13,163
Total tax amount + social insurance	5,077	11,105
Balance to the owner 4)	19,923	28,895

1) This is an average wage calculated for an owner of vessel for 4 years (1987-1990) and about 10 ships; 2) The amount of the share of owner is taxable as a wage; 3) The exploitation results of vessels are taxable as those of a firm; 4) Social security contributions deducted.

Table 5 French depreciation system for skipper/owner for tax purposes

	Straight-line		Digressive	
	Hull	Engine	Hull	Engine
Purchase price minus subsidies	195,000	80,000	195,000	80,000
Depreciation rate (%)	8.33	16.66	20.83 1)	33.33 2)
Depr. year 1	16,244	13,328	40,619	26,664
2	16,244	13,328	32,158	17,777
3	16,244	13,328	25,459	8,890 3)
4	16,244	13,328	20,156	8,890
5	16,244	13,328	9,576 3)	8,890
6	16,244	13,328	9,576	8,890
12	16,244	0	9,576	0

1) Linear rate multiplied by the coefficient 2.5 for a duration of depreciation of more than 6 years; 2) Linear rate multiplied by the coefficient 2 for a duration of depreciation of 5 or 6 years (coefficient would be 1.5 for 3 or 4 years); 3) When the depreciation amount in fiscal year with the digressive method is less than with the straight-line method, a linear rate is calculated for the end of the period.

So, in the fiscal year, when the vessel has an age of 12 years, the amount of depreciation in case of the straight-line method is ECU 16,244 and ECU 9,576 in case of the digressive method.

It has to be stated that there is no single depreciation period for fiscal purposes. The fiscal duration for the hull for example may vary from 8 years to 20 years. The mean duration is mostly 12 years. Up to a certain point the rate of depreciation has to be negociated with Tax Receipts.

Example of the Dutch Tax calculation

Assumptions:

a) The calculation refers to a married vessel/owner with two children for the year 1990. He is the skipper of his vessel;
b) the fiscal profit of the enterprise is the only income for the family;
c) personal circumstances like interest payments for a loan on the house are omitted;
d) the size of the vessel is 42 GRT and 235 Hp and shrimp fishery is the main activity. In 1990 ECU 10,000 was invested in this vessel; a percentage of this amount is deductible in this year of investment.

Table 6 Calculation of Dutch tax amount at different levels of total income

	Total income		
	ECU 10,000	ECU 25,000	ECU 40,000
Income (=fiscal profit)			
Investment deduction 1)			
18% of ECU 10,000	1,800	1,800	1,800
Profit after inv. deduction	8,200	23,200	38,200
Deduction for capital of the owner			
in the enterprise, ECU 85,000 * 1% 2)	851	851	851
Deduction for self-employed people	2,517	2,517	1,623
Addition to reserve for old-age 3)	845	2,570	4,116
Taxable income	3,987	17,262	31,609
Married allowance	3,888	3,888	3,888
Charged taxable amount	99	13,374	27,721
Income tax amount:			
13% up to ECU 17,924 4)	13	1,739	2,330
50% from 17,925 up to 35,849	0	0	4,898
60% from 35,850	0	0	0
Total income tax	13	1,739	7,228
Insurance for retirement and			
special costs of sickness 22,1%	22	2,956	3,961
Social insurance premium	1,300	1,300	1,300
Balance to the owner	8,665	19,005	27,511

1) This is not a depreciation amount but a special fiscal allowance for investments, only in the year of investment; 2) A special allowance as a kind of compensation for inflation which decreases the value of the owners' capital in the firm; 3) In fact tax payment for this income deduction is postponed to future; in case of retirement and liquidation of the firm this reserve is taxed; 4) Tax perc. is in fact 35,1 but 22,1 is destined for pensioning and special costs of illness.

The average fiscal profit in 1990 for vessels in this category (200-250 Hp, shrimp fisheries) amounted to some ECU 26,000.

Depreciation system for Tax purposes

The main rules for the calculation of fiscal depreciation are:

- No allowance for inflation; historical building costs or the purchase price (for second handed vessels) should be the basis for the calculations;
- calculations should be in accordance with generally accepted accountancy principles;
- a capital gain, realized by selling the replaced vessel, may be deducted from the building costs of the new vessel. So, the depreciation amounts are lowered in subsequent years and, in fact, the taxation of the capital gains is spread during the life time of the vessel.

Table 7 Example of the calculation of depreciation (1990)

Vessel: length 20 m - Hp 250 - GRT 45 - age 12 years		(ECU)	
Historical building costs		275,000	
Capital gain replaced vessel		35,000	
Basis for depreciation		240,000	
Break down of this amount:		% depr.	Depr.
Equipment 5%	12,000	20	0
Hull 2/3 of 95%	152,000	5	7,600
Engine 1/3 of 95%	76,000	10	0
Total depreciation in fiscal year			7,600

Example of the Tax calculation in the United Kingdom

Assumptions:
Age of vessel 12 years
Length 20m.
Hp 250
GRT 40-45

Table 8 Calculation of British tax amount at different levels of total income

	Total income		
	ECU 10,000	ECU 25,000	ECU 40,000
Profit on owners account after depreciation & interest			
Married allowance 1)	6,636	6,636	6,636
Allowance for class 4 Nat. ins. contributions	73	547	734
Taxable income (2)	3,291	17,817	32,630
Deductions			
Nat. insurance			
Class II Fishermans's rate	320	320	320
Class IV rate (6.3%) (Lower limit ECU 7,654 Max. payment ECU 1,467)	147	1,093	1,467
Income tax			
25% up to ECU 29,073	823	4,454	7,268
40% for > ECU 29,073	0	0	889
Total income tax	823	4,454	8,157
Balance to owner 3)	9,030	19,453	30,376

1) No allowance for children. Received ECU 1200 child benefit; 2) Could invest tax free amounts in private pension scheme. The % of earnings depends up his age and the maximum pension he may obtain is ECU 91,400 per year (1990/91); 3) Nat. insurance payment also deducted.

- Assumed no cash drawn by skipper before calculation of profit;
- no allowance for investment other than depreciation;
- most likely that the Skippers' wife would own half the vessel; the wife's tax allowance could then be utilized.

Table 9 Depreciation system for skipper/owner for tax purposes

	Hull & Engine (ECU)
Historic building costs	275,000
Grants received	68,750
Annual depreciation	10%
Method of depreciation	Straight-line
Depreciation in fiscal year	0

ANNEX 3 Data about the Danish sample vessels

Mean crew size for the vessels in the local cost and earnings studies

Lemvig	Population	Crew per vessel
Trawlers 0-50 GRT	42	2.2
Trawlers 50-120 GRT	27	3.7
Trawlers 120-200 GRT	15	4.5
Trawlers > 200 GRT	20	5.2
Danish seine 0-30 GRT	15	3.1
Danish seine > 30 GRT	103	3.2
Gill net	109	2.7

Skagen	Population	Crew per vessel
Trawlers 15-19.9 GRT	60	2.1
Trawlers 20-49.9 GRT	21	2.9
Trawlers 50-99.9	22	3.5
Trawlers > 100 GRT	50	4.9

Hjørring	Population	Crew per vessel
Gill net and seiners	75	1.9
Trawlers 0-50 GRT	49	2.2
Trawlers 50-120 GRT	21	3.8
Trawlers > 120 GRT	29	4.9

Source: Files of Lemvig, Skagen and Hjørring from the Danish Ministry of Fisheries (31-12-1989).

Mean age of the vessels in the local cost and earnings studies

Lemvig	Population	Mean age	Var age a)
Trawlers 0-50 GRT	38	24	126
Trawlers 50-120 GRT	26	22	48
Trawlers 120-200 GRT	22	17	35
Trawlers > 200 GRT	14	20	96
Danish seine 0-30 GRT	13	35	116
Danish seine > 30 GRT	98	33	79
Gill net	108	19	246

Skagen	Population	Mean age	Var age a)
Trawlers 15-19.9 GRT	58	35	185
Trawlers 20-49.9 GRT	18	35	167
Trawlers 50-99.9 GRT	21	26	63
Trawlers > 100 GRT	47	23	143

Hjørring	Population	Mean age	Var age a)
Gill net and seiners	75	28	347
Trawlers 0-50 GRT	49	32	215
Trawlers 50-120 GRT	21	23	115
Trawlers > 120 GRT	29	21	51

a) Var age = variance = $1/n * \Sigma (u_i-\bar{u})^2$
Source: Fiskeriårbogen 1991 (the fleet is registered on the 15th of September 1990)

ANNEX 4

Definition of ranges of Danish size groups

This annex gives some statistical measures on the vessel file the Fiskeriflåden Illisteret, which is applied to define range of GRT, lenght and kW.

Median is the middle observation in each sample. 25% and 75% are fractiles, which defines the range of GRT, Metres and kW.

Mean is: $1/n \Sigma x$, where n is the sample and x is either GRT, metres or kW.

The variance is: $1/n * \Sigma (x-\bar{x})^2$

The rel.std is the relative standard deviation defined as:

$$[1/n \sum_{1}^{n} (x-\bar{x})^2]^{1/2}/\bar{x}$$

Lemvig

GRT	Trawlers (GRT groups)				Danish Seine		Gill net
	<50	50-100	120-200	>200	<30	>30	
Population	6	27	20	13	5	60	15
Median	42	71	151	286	28	37	29
25%	37	56	150	238	28	33	18
75%	48	88	178	353	29	43	43
Mean	39	72	161	290	27	38	36
Variance	108	330	379	4 429	15	45	901
Rel.std	0.27	0.25	0.12	0.23	0.14	0.18	0.83

Skagen

GRT	Trawlers (GRT groups)			
	15-19.9	20-49.9	50-99.9	>100
Population	27	14	23	47
Median	19	35	73	162
25%	19	30	57	149
75%	19	40	82	188
Mean	19	36	71	174
Variance	0.8	37.7	242.1	2600.4
Rel.std	0.05	0.17	0.22	0.29

Hjørring

GRT	Gill net Danish seine	Trawler (GRT groups)		
		<50	50-120	>120
Population	23	29	26	67
Median	34	19	80	150
25%	19	19	55	149
75%	45	38	96	171
Mean	45	28	78	202
Variance	2504.7	116.2	481.9	19851.7
Rel.std	1.12	0.39	0.28	0.70

ANNEX 5

Importance of North Sea fishing areas for fishing vessels from Boulogne sur Mer

ICES's area	Fresh industrial	Freezer trawlers	Deep-sea artisanal
		(Percentages)	
4A northern North Sea	44.6	78.56	0.01
4B central North Sea	8.2	2.09	3.5
4C southern North Sea	1.7	0.71	36.10
2A Norway Sea	8.6	0.02	0.01
5B Feroe	12.5	1.09	
6A west Scotland	23.4	11.63	
6B Rockall	0.3	2.31	
7D east Channel	0.7	3.44	59.5
7E west Channel		0.09	
7F Bristol Channel			0.7
7G south Ireland		0.09	0.01
7H Little sole bank			0.02
7I south Ireland		0.02	
	100	100	100

ANNEX 6 Presentation of costs and earnings in the Danish, French, Dutch and British way

Category trawler 0-50 GRT, port of Thyborøn, number of vessels in 1990:7
Average figures (thousands DKK)

	1989	1990
Earnings:		
Reduction	363	0
Consumption	1,120	1,482
Total earnings	1,484	1,482
Landing costs	163	164
Net earnings	1,320	1,317
Running costs		
Wage (skipper + crew)	728	581
Fuel and lube oil	173	147
Maintenance total	268	243
Vessels costs:		
Insurance	65	67
Social costs	20	27
Administration costs	42	43
Other costs	76	62
Interest:		
Interest expenses	-253	-251
Interest income	6	5
Other income	14	16
Gross earnings before depreciation	-285	-83
Assets:		
Liquid asset	2	3
Insurance value	1,800	2,212
Other assets	225	115
Total assets:	2,027	2,330
Liabilities:		
Short term debt	972	996
Long term debt	1,017	1,090
Total debt	1,989	2,086
Own capital	38	244
Total liabilities	2,027	2,330

French cost and earnings statement

	Vessels less than 16 metres		Vessels less than 25 metres but greater than 16 metres		Industrial vessels	
	1989	1990	1989	1990	1989	1990
TOTAL EARNINGS	1,295,337	1,223,002	2,291,623	2,317,992	13,800,530	-
Fuel	105,856	135,973	278,138	317,442	1,706,776	-
Boxes, ices	-	-	-	-	146,912	-
Food	-	-	-	-	-	-
Other running costs	230,068	262,634	407,159	385,107	-	-
Vessels costs	-	-	-	-	3,398,963	-
TOTAL EXPENSES	335,924	398,607	685,297	702,549	5,252,651	-
VALUE ADDED	959,413	824,395	1,606,326	1,615,443	8,547,879	-
Harbour dues	38,860	36,690	68,749	69,540	264,609	-
Costs of selling fish (auction fees)	148,964	140,645	263,537	266,569	1,385,755	-
Wages	489,095	341,658	765,803	678,160	4,289,163	-
Social insurance	154,112	166,221	300,440	262,415	2,572,888	-
GROSS CASH FLOW	128,382	139,181	207,797	338,759	35,464	-
Depreciation	135,622	258,523	244,990	235,238	-	-
TRADING RESULTS	-7,240	-119,342	-37,193	103,521	-	-
Interest	50,666	85,181	56,507	87,067	-	-
CURRENT RESULTS	-57,906	-204,523	-93,700	16,454	-	-
NET PROFIT	-57,906	-204,523	-93,700	16,464	-	-

Accounts of costs of fleets commissioned at Boulogne sur Mer (amounts are in FRF).

Average costs and earnings of smaller cutters in the Netherlands in 1990

Hp group	151-200	201-260	261-300	
Region	North	North	North	South
		(Amounts in NLG)		
Number of days at sea	136	127	133	141
Average crew	2.1	2.3	3.6	3.6
Total earnings	297,502	315,704	623,496	743,423
Gasoil, litres	56,190	74,072	158,891	237,412
Costs of gasoil	22,256	29,677	58,889	84,267
Lube oil	1,734	2,507	4,744	5,003
Deck equipment	2,157	2,880	3,729	3,694
Equipt. for navigation/ fish finding	5,686	8,290	16,313	19,372
Hull repairs	17,564	20,961	26,796	26,466
Engine repairs	9,782	8,915	17,072	20,540
Vessel insurance	8,562	11,187	21,168	29,668
Costs of gear	8,097	9,563	29,247	31,457
Costs of shrimp processing	7,857	7,295	3,201	5,493
Ice and cooling	4,404	4,652	13,361	20,591
Salt and barrels	499	262	114	984
Crew travel costs	4,629	5,835	8,302	8,828
Social insurance	8,681	9,113	13,934	12,397
General costs	9,052	9,932	20,898	22,313
Withdrawal fund	312	380	1,423	1,664
Auction fee	8,977	8,165	16,752	22,208
Levy fish commodity board	1,331	1,079	1,356	2,163
Costs of unloading and sorting	7,253	7,504	19,549	20,903
Costs of freight	8	565	61	482
Sub total	128,840	148,762	276,910	338,492
Gross profit + labour share	168,662	166,942	346,586	404,931
Labour share a)	115,163	117,446	236,676	253,277
Gross proft	53,500	49,496	109,909	151,654
Depreciation hull + engine	29,634	48,791	75,371	101,796
	15,152	27,601	43,904	85,290
Net proft	8,714	-26,894	-9,365	-35,431
Share per crew member	56,123	50,534	67,147	68,613

a) Imputed, not paid, share of skipper included.

Lenght Group	Up to 39.9ft (12.2m)		Regd Length.	Scotland 1989/90	
	1990	1989		1990	1989
Total Insurance Value	£ 630,500	£ 995,400	Return on Capital	14%	21%
Avge Insurance Value	£ 48,500	£ 66,360	Avge Crew/Vessel	2.2	2.5
Avge Days at Sea/Vessel	133.7	134.9	No of Vessels	13	15

	Avge per Vessel		
	1990	1989	% Change
TOTAL EARNINGS	40,249	60,771	-33.8%
Running Costs			
Fuel & lube oil	3,107	3,787	-18.0%
Salesmen's commission	1,057	1,726	-38.8%
Harbour dues	763	814	-6.3%
Boxes	100	529	-81.1%
Ice	73	230	-68.4%
Food	1,185	1,818	-34.8%
Travel	1,165	726	60.5%
Other running costs	2,115	1,765	19.8%
TOTAL RUNNING COSTS	9,565	11,394	-16.0%
LABOUR SHARE	13,917	19,438	-28.4%
VESSEL & GEAR SHARE	16,767	29,939	-44.0%
Vessel costs			
Gear expenses	2,634	2,649	-0.6%
Vessel repairs (net)	1,773	5,815	-69.5%
Vessel insurance	1,887	2,536	-25.6%
Equipt hire & maint.	892	1,663	-46.4%
Other vessel costs	2,730	3,257	-16.2%
TOTAL VESSEL COSTS	9,916	15,920	-37.7%
TOTAL EXPENSES	33,398	46,752	-28.6%
NET PROFIT/LOSS	6,851	14,019	-51.1%
Estimated depreciation	4,850	6,636	-26.9%
NET PROFIT/LOSS after depreciation	2,001	7,383	-72.9%

ANNEX 7 Depreciation and interest calculations for Danish sample vessels. Common and national method

Imputation of depreciation 1990 (ECU) (Common method)

	GRT	KW	Age	Replacement value			Depreciation		
				engine (1)	vessel (2)	total (3)	engine (4)	vessel (5)	total (6)
Lemvig									
Trawler 0-50	39	296	24	100640	487500	588140	10064	19500	29564
Trawler 50-120	72	324	22	110160	747000	857160	11016	29880	40896
Trawler 120-200	161	546	17	185640	1670375	1856015	18564	66815	85379
Trawler > 200	290	830	20	282200	300875	3290950	28220	120350	148570
Danish seine < 30	27	106	35	36040	337500	373540	2415	6750	9165
Danish seine > 30	38	157	33	53380	475000	528380	3576	9500	13076
Gill net	36	156	29	53040	450000	503040	3554	9000	12554
Skagen									
Trawler 15-19.9	19	157	35	53380	237500	290880	5338	4750	10088
Trawler 20-49.9	36	247	35	83980	450000	533980	8398	9000	17398
Trawler 50-99.9	71	369	26	125460	736625	862085	12546	14733	27279
Trawler > 100	174	633	23	215220	1805250	2020470	21522	72210	93732
Hjørring									
Gill net	45	174	28	59160	562500	621660	3964	11250	15214
Trawler < 50	28	215	32	73100	350000	423100	7310	7000	14310
Trawler 50-120	78	359	23	122060	809250	931310	12206	32370	44576
Trawler > 120	202	683	21	232220	2095750	2327970	23222	83830	107052

(1) Replacement value engine = 340 * KW.

(2) Replacement value vessel = (12500 * GRT; if 0 < GRT ≤ 50)
(10375 * GRT; if GRT > 50).

(3) Replacement value total = replacement value engine + replacement value vessel.

(4) It is assumed that heavy and light used engines are replaced after every 10 and 15 years, and the yearly depreciation is: depreciation heavy used engine = 10% * replacement value engine; depreciation light used engine = 6.7% * replacement value engine.

(5) Depreciation vessel = (4% of replacement value vessel; if 0 < age ≤ 25)
(2% of replacement value vessel; if age > 25).

(6) Depreciation total = depreciation engine + depreciation vessel.

Imputation of interest 1990 (ECU) (Common method)

	Engine age (7)	Booked value			Imputed interest (11)
		engine (8)	vessel (9)	total (10)	
Lemvig					
Trawler 0-50	4	60,384	19,500	79,884	5,616
Trawler 50-120	2	88,128	89,640	177,768	12,497
Trawler 120-200	7	55,692	534,520	590,212	41,492
Trawler > 200	0	282,200	601,750	883,950	62,142
Danish seine < 30	5	23,967	13,500	37,467	2,634
Danish seine > 30	3	42,651	19,950	62,601	4,401
Gill net	14	3,288	20,700	23,988	1,686
Skagen					
Trawler 15-19.9	5	26,690	9,500	36,190	2,544
Trawler 20-49.9	5	41,990	18,000	59,990	4,217
Trawler 50-99.9	6	50,184	36,095	86,279	6,065
Trawler > 100	3	150,654	144,420	295,074	20,744
Hjørring					
Gill net	13	7,632	26,438	34,069	2,395
Trawler < 50	2	58,480	15,050	73,530	5,169
Trawler 50-120	3	85,442	64,740	150,182	10,558
Trawler > 120	1	208,998	33,520	544,318	38,266

(7) Light used engines are assumed to be replaced every 15th year, and every 10th year for heavy used.

(8) Booked value engine =
((1-engine age*10%)*replacement value engine; if engine heavy used)
((1-6.7%*engine age)*replacement value engine; if engine light used).

(9) Booked value vessel = (1-4%*vessel age)*replacement value vessel; if age ≤ 25). If the vessel is more than 25 years the booked value after 25 years is assumed to be 5% of the replacement value. Booked value vessel = ((1-2%*(vessel age - 25))*5% of vessel replacement value; if age > 25).

(10) Booked value total = booked value engine + booked value vessel.

(11) The interest basis for imputation is the nom. Interest on Government Bonds 9.33% (1990) reduced with inflation 2.3% (1990). Imputed interest expenses = 7.30% of the total booked value.

Note: For 1989 the vessel is valued like:
Replacement value = 340 * kW + 12 413 * GRT (if 0 < GRT ≤ 50)
Replacement value = 340 * kW + 10 303 * GRT (if 50 < GRT)
The nom. interest of Government bonds was 8.48% in 1989, and the inflation was 4.33%.

Danish imputation of depreciation and interest.

Imputation of economic depreciation in Denmark 1990 (amounts in ECU)

Lemvig	Age	Replacement value 1)	Insured value	Average deprec. per year 2)
Trawler 0-50	24	588,140	276,500	0.022
Trawler 50-120	22	857,160	421,125	0.023
Trawler 120-200	17	1,856,015	990,375	0.027
Trawler > 200	20	3,290,950	1,977,500	0.020
Danish seine < 30	35	373,540	150,875	0.017
Danish seine > 30	33	528,380	275,375	0.015
Gill net	29	503,040	176,250	0.022

Skagen	Age	Replacement value a)	Insured value	Average deprec. per year b)
Trawler 15-19.9	35	290,880	181,625	0.011
Trawler 20-49.9	35	533,980	274,625	0.014
Trawler 50-99.9	26	862,085	459,500	0.018
Trawler > 100	23	2,020,470	1,129,875	0.019

Hirthals	Age	Replacement value a)	Insured value	Average deprec. per year b)
Gill net and seiners	28	621,660	166,162	0.026
Trawler < 50	32	423,100	165,605	0.019
Trawler 50-120	23	931,310	575,201	0.017
Trawler > 120	21	2,327,970	1,101,175	0.025

1) Replacement is imputed like:
(≤ 50 GRT) 340 * kW + 12 500 * GRT
(> 50 GRT 340 * kW + 10 375 * GRT

2) The average depreciation rate is calculated like:
[1-(insurance value/replacement value)]/vessels age;
the mean depreciation rate is 2.2% for vessels ≤ 25 years; and a depreciation rate of 1.8% for vessels > 25 years.

Imputation of depreciation, interest and booked value of vessel, 1990 (amounts in ECU, Danish method)

Lemvig	Age	Deprec. (1)	Booked value (2)	Interest (3)
Trawler 0-50	24	20,789	290,484	20,421
Trawler 50-120	22	27,450	473,580	33,293
Trawler 120-200	17	55,312	1,101,347	77,425
Trawler > 200	20	94,413	1,967,100	138,287
Danish seine < 30	35	8,490	115,092	8,091
Danish seine > 30	33	12,126	188,001	13,216
Gill net	29	11,654	173,388	12,189

Skagen	Age	Deprec. (1)	Booked value (2)	Interest (3)
Trawler 15-19.9	35	9,613	90,815	6,384
Trawler 20-49.9	35	16,498	163,490	11,493
Trawler 50-99.9	26	25,805	368,406	25,899
Trawler > 100	23	61,238	1,042,448	73,284

Hirthals	Age	Deprec. (1)	Booked value (2)	Interest (3)
Gill net and seiners	28	14,089	230,382	16,196
Trawler < 50	32	13,610	171,880	12,083
Trawler 50-120	23	30,010	485,212	34,110
Trawler > 120	21	69,329	1,336,512	93,957

(1) Depreciation = 2.2% of replacement value (if age ≤ 25 years)
1.8% of replacement value (if age > 25 years)

(2) Booked value is imputed like:
replacement value * (1-2.2% * age) (if age ≤ 25 years)
replacement value * [1-(2.2% * 25)-(1.8% * (age-25))]
(if age > 25 years)

(3) Interest = 7.03% of booked value.

ANNEX 8 Depreciation and interest calculations for French sample vessels. Common method and national method

Replacement value breakdown (ECU)

Vessel size	Hull	Engine	Other	Total
< 12 metres	101,302	45,861	35,306	182,469
12 - 16 metres	160,887	63,525	60,536	284,948
16 - 25 metres	372,846	131,112	61,651	565,609

Mean age breakdown (years)

Vessel size	Boulogne	Douarnenez	Le Guilvinec	Lorient
< 12 metres	16	11		10
12 - 16 metres	17	26	10	10
16 - 25 metres	13	15	10	8

Calculated depreciation breakdown (ECU)

Vessel size	Boulogne	Douarnenez	Le Guilvinec	Lorient
< 12 metres				
Hull	4,052	4,052		4,052
Engine	1,834	1,834		4,586
Other	3,531	3,531		3,531
Total	9,417	9,417		12,169
12 - 16 metres				
Hull	6,435	3,218	6,435	6,435
Engine	2,541	5,244	13,111	6,353
Other	6,054	6,054	6,054	6,054
Total	15,030	14,516	25,600	18,842
16 - 25 metres				
Hull	14,914	14,914	14,914	14,914
Engine	5,244	5,244	13,111	13,111
Other	6,165	6,165	6,165	6,165
Total	26,323	26,323	34,190	34,190

Electrical and electronical fittings are depreciated by periods of 10 years.

Total of theoretical depreciation till the beginning 1990 (ECU)

Vessel size	Boulogne	Douarnenez	Le Guilvinec	Lorient
< 12 metres	150,674	105,754		117,675
12 - 16 metres	255,512	373,780	263,424	183,714
16 - 25 metres	342,205	390,631	328,224	262,237

Theoretical book value of vessels (ECU)

Vessel size	Boulogne	Douarnenez	Le Guilvinec	Lorient
< 12 metres	31,795	76,715		64,794
12 - 16 metres	29,437	14,247 *)	21,524	101,234
16 - 25 metres	223,405	174,978	237,385	303,372

(*) The theoretical book value is negative, we take 5% of the replacement value.

Rate for government bonds	Inflation rate	Real interest rate
9.50%	3.20%	6.30%

Imputed interest breakdown (ECU)

Vessel size	Boulogne	Douarnenez	Le Guilvinec	Lorient
< 12 metres	2,003	4,833		4,082
12 - 16 metres	1,855	898 *)	1,356	6,378
16 - 25 metres	14,074	11,024	14,955	19,112

(*) The theoretical book value is negative, we take 5% of the replacement value.

Comparison of common and French method (ECU)

	Boulogne Sur Mer			Douarnenez			Lorient			Le Guilvinec	
Metres	< 12	12-16	16-25	< 12	12-16	16-25	< 12	12-16	16-25	12-16	16-25
kW	110-250	190-350	400-625	110-250	190-350	370-850	200-320	320-550	450-750	315-500	500-700
GRT	< 10	10-30	30-100	< 10	10-30	30-100	< 10	10-30	30-100	10-30	30-100
Real gross cash flow	10 554	20 719	47 812	34 166	25 402	40 598	10 345	27 108	41 994	30 042	67 316
Real depreciation	12 243	49 950	38 818	8 525	7 038	43 369	19 391	28 035	61 072	23 760	40 469
Real interest	5 178	16 487	17 174	2 612	3 271	11 982	5 918	9 996	18 945	8 262	14 604
Real net profit	-6 866	-45 718	-8 181	23 030	15 094	-14 753	-14 964	-10 923	-38 022	-1 980	12 244
Calculated deprec.	9 417	15 030	26 323	9 417	14 516	26 323	12 169	18 842	34 190	25 600	34 190
Imputed interest	2 003	1 855	14 074	4 833	898	11 024	4 082	6 378	19 112	1 356	14 955
Theoretical net profit	-866	3 834	7 415	19 916	9 988	3 251	-5 906	1 888	-11 308	3 086	18 171
Real net value added	41 291	31 287	106 151	47 457	98 478	171 629	61 026	142 906	170 690	113 014	241 187
Real gross value added	53 534	81 237	144 969	55 982	105 516	214 998	80 417	170 941	231 762	136 774	281 656
Theoretical NVA	44 117	66 207	118 646	46 565	91 000	188 675	68 248	152 099	197 572	111 174	247 466
Share income/crew	21 490	16 316	21 591	14 544	26 705	34 880	35 036	41 095	37 953	30 495	42 868

ANNEX 9 Depreciation and interest calculations for Dutch sample vessels. Common method and national method

Average technical parameters and depreciation of Dutch cutters (1990)

Size group	GRT	kW	Age hull	Replacement value	Depreciation hull	Depreciation engine
				(amounts in ECU)		
Cutters, region North						
110- 150 kW	34.6	126	50	438,840	6,614	7,598
151- 190 kW	41.8	172	33	547,204	10,013	10,234
191- 220 kW	64.4	220	24	760,252	15,748	15,861
295- 440 kW	101.4	390	23	1,012,533	20,348	18,680
810-1100 kW	238.5	992	16	1,873,994	40,835	59,813
1101-1470 kW	284.3	1 343	11	2,290,316	45,433	93,304
> 1470 kW	359.0	1 878	6	2,937,380	52,927	161,420
Cutters, region South						
191- 220 kW	65.5	220	11	758,269	22,739	17,460
810-1100 kW	218.1	987	14	1,818,247	38,790	67,270
> 1470 kW	329.4	1 801	6	2,796,620	49,960	154,763

National (LEI-DLO) method of depreciation and interest calculation

Size group	Depreciation Hull + Engine	Interest
	(amounts in ECU)	
Cutters, region North		
110- 150 kW	12,884	6,588
151- 190 kW	21,213	12,000
191- 220 kW	32,770	19,089
295- 440 kW	37,334	15,818
810-1100 kW	99,051	45,040
1101-1470 kW	152,309	84,643
> 1470 kW	271,775	160,534
Cutters, region South		
191- 220 kW	44,259	37,083
810-1100 kW	101,695	52,134
> 1470 kW	218,253	120,745

Normative amounts for the calculation of the replacement cost (1990)

Hull, per GRT		Hull, fix amount	Engine, per Hp
up to 60 GRT	> 60 GRT		
		(ECU)	
9,552	2,509	422,552	633

The replacement value for the whole vessel results from the formula:

GRT x 9 552 + HP x 633 (up to 60 GRT)
GRT x 2 509 + 422 552 + HP x 633 (> 60 GRT)

Depreciation, both for the common and the national (LEI-DLO) method, are based upon the replacement value of the vessel.

The LEI-DLO method contains a digressive depreciation system, whereas the common method consists of a straight-line depreciation during 25 years (hull, 4% per year) or 10 years (engine, 10%) per year.

Depreciation periods for the LEI-DLO method are 20 and 10 years for hull and engine respectively. In the first year the hull of the vessel is depreciated by 6.7%; this percentage diminishes each year by 0.2%. The engine is depreciated in the first year by 17.2%. each year declining by 1.6%.

The LEI-DLO interest imputation contains the real interest rate, raised by a estimated percentage for extra cost of interest smaller companies have to pay to lenders. This interest rate is calculated from the book value (based upon replacement value) of the vessel.

This imputed LEI-DLO interest cost amount exceeds the interest amount resulting from the common method. Because the interest rate is higher, but moreover the LEI-DLO interest costs contain also interest costs with respect to the working capital related to the vessel. The common method does not include this part of interest cost.

ANNEX 10 Depreciation and interest calculations for British sample vessels. Common method and national method

In case of the common method replacement value of the sample vessels, apart from the beam trawlers, results from the formulae: (Reg. length m. - 18) x 3598) + 52920) ECU x meters of the vessel.

For the beam trawlers the Dutch formulae for calculating of replacement cost (appendix 9) has been used.

The common method of depreciation as described in section 7.4.1 has been applied.

The imputed interest has been based upon the book value, resulting from the replacement cost and the common depreciation method. The real interest rate (1.58% in 1990) has been applied.

The national (SFIA) method comprises depreciation by 10% of the insured value of the vessel. The table below show that only minor differences result from depreciation calculation either by the common or SFIA method, with respect to the Scottish based vessels.

Vessel group	Depreciation	
	common method	SFIA method
	ECU	
Scottish trawlers, 20-130 GRT	50,903	48,924
Scottish seiners, 35-125 GRT	56,975	55,715
English beam trawlers, 100-380 GRT	89,159	111,798

The sea fish costs & earnings investigation does not contain interest cost. Therefore the net profit resulting from the common method in lower compared with the 'net profit/loss' from the SFIA investigation, apart from the beamers.

ANNEX 11 Imputing of crew's and owner's shares for Danish sample vessels

Imputing the crew share based on cost and earnings studies from the districts of Skagen and Hjørring, 1990 (amounts ECU)

	Crew size (%) (1)	Actual income to skipper	Crew share (2)	Total earnings (3)	Landing costs + fuel and lube oil	Imputed crew share (4)
Skagen						
Trawler 15-19.9	2.1	24,500	28,125	127,875	20,250	26.1
Trawler 20-49.9	2.9	24,500	48,625	181,500	32,000	32.5
Trawler 50-99.9	3.5	28,750	64,875	250,625	53,500	32.9
Trawler > 100	4.9	30,250	117,875	465,125	117,000	33.9
Hjørring						
Gill net and seiners	1.9	11,706	37,414	136,485	22,875	32.9
Trawler < 50	2.2	15,144	19,747	99,170	20,750	25.2
Trawler 50-120	3.8	21,310	96,853	355,559	96,000	37.3
Trawler > 120	4.9	29,796	114,381	492,946	150,250	33.4
						31.8

(1) Crew size is including skipper.
(2) Crew share exclusive social insurance.
(3) Total earning = consumption + reduction.
(4) Imputed crew share is defined: [total earning-landing costs-fuel and lube oil]; which gives an average per crew of 31.8%.

Imputing of crew's and owner's share in Lemvig, 1990

	Crew size	Total wage	Total earnings	Landing costs + fuel lube oil	Esti. crew share (1)	Esti. owner share (2)	Esti. share per crew (3)
Lemvig							
Trawler 0-50	2.2	72,625	185,250	38,875	46,547	26,078	38,789
Trawler 50-120	3.7	108,750	284,625	61,625	70,914	37,836	26,264
Trawler 120-200	4.5	132,750	446,375	124,750	102,277	30,473	29,222
Trawler> 200	5.2	243,125	825,500	239,750	186,269	56,857	44,350
Danish seine < 30	3.1	65,750	161,625	26,750	42,890	22,860	20,424
Danish seine > 30	3.2	87,500	211,625	34,250	56,405	31,095	25,639
Gill net	2.7	83,500	203,125	27,125	55,968	27,532	32,922

(1) The crew share is estimated by using the imputed average percentage of 31.8% as: 31.8% of [total earning-landing costs-fuel and lube oil].

(2) Owner share is calculated like: total wage -esti. crew share.

(3) Esti. share per crew member is calculated like: esti. crew share/(crew size less skipper).