Government Financial Transfers to Fishing Industries in OECD Countries

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"Some countries consider that the reform of their financial transfers policies, combined with other management measures, have been successful with respect to their resource management objectives."
(OECD Committee for Fisheries)

Abstract: Government financial transfers (GFTs) to the marine capture fishery sectors in OECD Member countries represent a significant policy intervention. These transfers have a variety of objectives and governments employ a number of means to implement them. This paper reviews an OECD study and discusses the findings in the context of bio-economic theory and fisheries policy measures. In 1997-99 the OECD Fisheries Committee studied GFTs and their impact on fisheries resource sustainability in OECD countries. Simple theoretical analysis shows that the expected effects depend on the type of transfer as well as on the management system in place. A survey of government financial transfers in 24 OECD member countries shows that at least USD 4.9 billion was spent on general services in 1997 – 13 per cent of the value of landings. General services include fisheries research, enforcement, management, enhancement and infrastructure. Most of these services are considered important for ensuring the sustainable use of fish stocks and the aquatic ecosystem. A further USD 1.4 billion was spent on support in the form of revenue enhancing and cost reducing transfers to the sector in 1997 – 4 per cent of the value of landings. Common examples include modernization subsidies, decommissioning payments, tax exemptions and income support. Due to insufficient data the study was unable to explore in detail the impact on fisheries sustainability of government financial transfers. Nevertheless, the study advanced the understanding of the impacts of transfers on the fisheries sector and some useful findings and assessments were made.

Keywords: Government financial transfers, bio-economics, fisheries management, capacity reduction.

1. INTRODUCTION

This paper discusses how fisheries subsidies affect resource and industry sustainability by discussing possible effects within a bio-economic modeling context, and by presenting the main findings of the OECD Fisheries Committee's study on government Financial Transfers (GFTs).

Commencing with the seminal article of Gordon (1954), fisheries economists have been concerned with efficiency issues in fisheries management. The economic and resource implications of policy measures such as Pigouvian taxes, technical regulations, limited entry licensing and individual quotas have been extensively investigated in the fisheries economic literature. In the context of achieving optimal management of fisheries, subsidies have hardly been instrumental. On the contrary, fish price support and cost reducing subsidies have been considered to be counter-productive policy measures. Despite this, most industrialized countries have subsidized their fisheries over recent decades (OECD 1965, 1980).

In recent years it has become evident that many fish stocks are over-exploited[2] and that there is a need for policy reform. Technological change, price changes, lack of well-defined property- and user-rights, subsidies and management failures, may all have contributed to the problem of overfishing.

In the wake of number of initiatives and studies (FAO, 1992; Milazzo, 1998), several discussions on the magnitude and effects of government support have

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taken place at the international level. Inter-governmental organizations (IGOs) and non-governmental organizations (NGOs) have conducted their own work and discussions (for a review see Steenblik and Munro, 1999).

2. MODELLING THE EFFECTS OF GOVERNMENT FINANCIAL TRANSFERS

Government financial transfers (GFTs) alter the incentive structure faced by participants in a sector. This alteration affects the returns received and the costs faced by sector participants so they are encouraged to act in a way desired by the transfer scheme's architects, normally governments. In the OECD study, transfers were defined as the monetary value of government interventions associated with fisheries policies. As such, government financial transfers are the monetary value of interventions associated with fishery policies, whether they are from central, regional or local governments.

In the OECD study transfers to the fishing industry were classified under one of the following headings:

- Transfers in the form of ***direct payments*** from governments' budgets (i.e., financed by taxpayers) to fishers, including payments based on the level of catches, sales or on a per vessel basis; overall fishing income; fishers' historical interest. ***Cost reducing transfers*** such as those that reduce the costs of fixed capital and variable inputs.

- ***General services*** such as transfers paid from governments' budgets for fisheries management, enforcement and research costs, stock enhancement, development of fishing ports, free berthing at ports.

In the first two of these categories the transfers are contingent on the level of activity of an individual fisher. The final category — general services — involves transfers that are not contingent on the level of activity of a fisher, but they reduce the costs faced by all fishers and an implicit transfer thus occurs.

An important transfer that was not measured in the OECD study was market price support. This is support arising from policies that inflate the domestic price above the world price of a product. It is a transfer from consumers to fishers arising from a government policy.

2.1 Impacts of Revenue Enhancing Transfers under Open Access

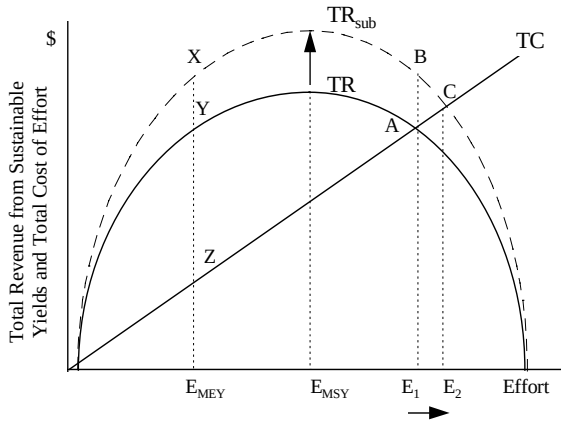
A simple model framework can be used to analyze the effects on resource stock and fishing capacity that are expected from some revenue enhancing and cost reducing transfers. The impact of these transfers is discussed in comparative static contexts. The standard Gordon-Schaefer (G-S) model can be used to illustrate the comparative static effects of different types of transfers on a fishery. It enables the comparison of two or more equilibrium situations in a fishery. A change in a transfer can be expected to alter the revenue or cost functions faced by agents utilizing a fish stock.

The effects of revenue enhancing market price support and direct payments are shown in Figure 1 [a similar study was published in Norwegian by Brochmann, B. (1981)]. The figure presents two situations. The first is where a fish stock is biologically over-fished in an open access situation. These fisheries are normally characterized by high unit prices relative the harvesting costs and, as such, are often vulnerable to long term biological exploitation. Figure 1.B illustrates a situation where the fish stock is under-fished. These fisheries normally have relatively low unit prices compared with harvesting costs. Each situation shows a total revenue curve (*TR*) associated with the sustainable yield levels of a fish stock. The second function is the total cost curve (*TC*) of the fishing industry.

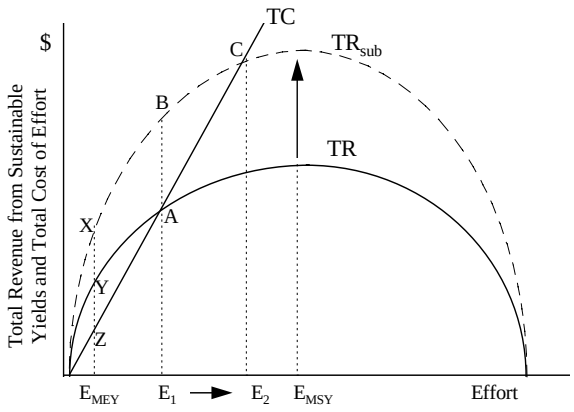
A revenue enhancing transfer, such as a price subsidy, increases the total revenue received at each level of effort. In Figure 1.A, the introduction of such a subsidy will shift the total revenue curve from *TR* to TR_{sub}. In an open access fishery, this may have the short-run effect of creating economic rent for existing fishers (signified by *AB*). However, entry of new participants attracted by the increased profits, or increased effort by incumbents, will increase effort to a new equilibrium (E_2) where no rent is yielded from the fishery (point *C*). An important effect is that fishing effort is shifted even further away from the levels associated with the maximum sustainable and economic yields. Furthermore the stock contracts and moves further away from the level associated with B_{MSY}. In the case of an under-fished stock (Figures 1.B and 1.D), fishing effort is likely to shift towards levels associated with maximum sustainable and economic yields. Although the stock contracts, it is likely to move towards B_{MSY}.

Figure 1. Effects of Revenue Enhancing Transfers

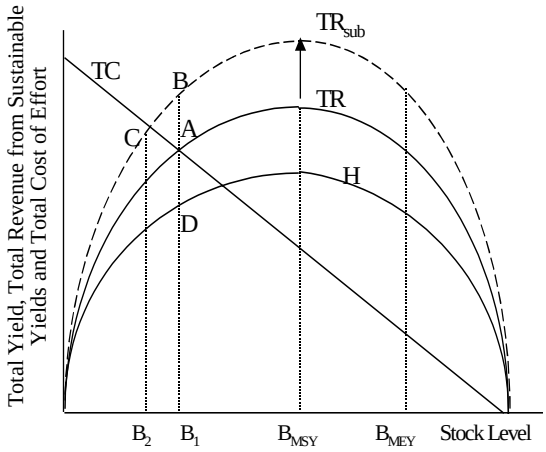
1.A. Biologically Over-fished Stock
(Effort Relationship)



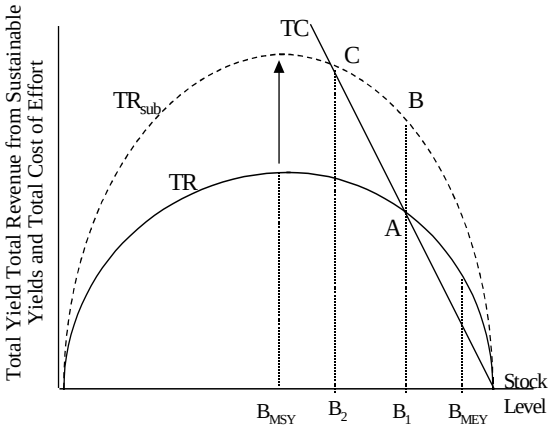
1.B. Biologically Under-fished Stock
(Effort Relationship)



1.C. Biologically Over-fished Stock
(Stock Size Relationship)



1.D. Biologically Under-fished Stock
(Stock Size Relationship)



The effects of cost reducing transfers can be easily derived within a similar model as for the revenue enhancing transfer. The cost curve will shift downward as an effect of an effort subsidy, and the fish stock and industry effects will be as described above.

The long-run effects of revenue enhancing and cost reducing transfers in an open-access fishery, are decreased stock levels and increased size of the harvesting industry. The long run equilibrium harvest may decrease or increase, depending on the characteristics of the stock. For a biologically overfished stock the transfers will have a negative impact on the stock. If the management system allows new effort to enter the fishery, as under open-access, the policy aim of improving the income and profitability of the fishing industry by use of financial transfers can be achieved only in the short-term. In the long run the smaller stock size will counter the affect of the transfers.

2.2 Effects of Transfers under Entry Restrictions

In a fishery where effort is effectively controlled at level E_{MEY}, economic rent will grow from *YZ* to *XZ*, shown in Figures 1.A and 1.B. Where effort is

constrained adequately by fisheries management instruments, the increased rent will not be dissipated in the short run. New participants wishing to enter the fishery will have to buy effort units at a price that will include the capitalized value of the transfer. The transfer is thus a straight windfall gain in terms of a transfer of wealth from taxpayers to incumbent fishers.

If entry to a fishery is effectively closed and if the existing number of vessels in the fishery is fixed (at E_1 in Figure 1), little will happen in the short run if a revenue enhancing or a cost reducing transfer is introduced. However, in a dynamic business environment *technical improvements* are likely to expand real capacity and effort. The total effort in the fishery will therefore expand. This will occur even if the number of vessels is kept constant by an effective system.

The suggested neutral short run effect on fish stocks of these transfers is unlikely to persist due to possibilities for factor input substitution. Fisheries effort is a compound of several primary factors (vessel hull, engine power, fuel, gear and manpower). As there are factor substitution possibilities, while vessel hulls may be subject to restrictions, the use of others factors (e.g. engine power and fuel) will increase with the introduction of a transfer. As a result, actual effort in the fishery will increase (E_1 to E_2 in Figure 1) and the stock level will contract (from B_1 to B_2).

2.3 Effects of General Services

Important general services in OECD countries include fisheries infrastructure, enhancement, research, management and enforcement. This section briefly discusses the characteristics of these last three activities.

2.3.1 Research

The above discussion of government financial transfers is based on the assumption that the manager has complete and costless information on the relationship between stock level and growth. However, in actual fisheries, a significant research effort would be necessary for managers to acquire such information. More and more, research is being used as a basis for management decisions and the creation of new management systems. Common examples of research activities include data collection, surveys, data analysis, stock assessment and risk assessment.

Research activities are normally determined by the information needs of the decision-makers that are implementing the management rules. For example, when setting a total allowable catch (TAC), information is usually required on the impacts of different catch limit strategies on size of the fish stock biomass. When developing new management systems or rules, research advice is usually sought on the likely impacts of the proposals being considered. For example, decision-makers are likely to be interested in how a change in a minimum mesh size limit affects the age-structure of the stock, recruitment, spawning biomass and the growth of the stock. From an economic perspective, they are usually interested in whether a change in this management setting will increase the returns to fishers (see text box).

2.3.2 Management

Management services usually comprises three functions:

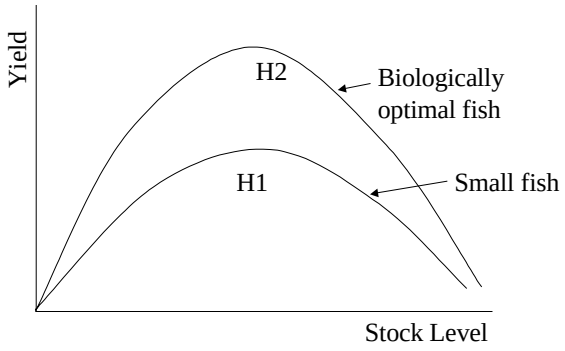
- Administering the existing management system. This can involve monitoring fishing licences, permits, vessel numbers and catch returns. That is, to administer the management system needed to keep effort at or near E_{MEY} in Figure 1.

- Adjusting management settings within an existing management system. An example of these types of adjustment is the annual process of setting TACs that commonly occurs in most countries having a science based management system.

- Recommending amendments or additions to the existing management system. An example of this more fundamental form of change might be the decision to introduce new effort controls (e.g., limits on number of vessels) or output controls (e.g., vessel or fisher quotas). Or it could be a change from management means related to the horizontal (effort) axis in Figure 1 to the vertical (economic and harvest) axis.

The relationship between stock level, yields and fish size

The figure below shows two yield curves for a fish stock. The upper curve (H2), depicts the maximum yield for each biomass level of the stock, and it assumes that the biological optimal age/size classes are fished. From a management point of view this would usually correspond to an optimal mesh size in a selective gear. The lower curve (H1) depicts the yield curve for a fishery using intra-optimal mesh size. Lack of technical regulations could in the extreme case imply a collapse of the yield curve; *i.e.,* the fish stock would be commercially or physically extinct. The aim of many technical regulations in fisheries is to assure that the sustainable yield is at, or close to, the optimal yield curve (H2). Technical regulations include rules on minimum mesh size, minimum landing size of fish, area closure, seasonal closure and discard bans.



A central government agency is normally responsible for creating and implementing the fisheries management systems. In most countries this activity lies within the purview of the Ministry of Fisheries or a similar government agency. In the case of the last two dot points above, close co-operation with the relevant political processes occurs. Adjusting management settings is often the decision of Minister(s). Making amendments or additions to management systems tends to require new laws and regulations that require the support and sponsorship of Minister(s) to navigate the relevant legal and parliamentary processes. Given the nature of these activities, and the concerns of Ministers, management services are usually funded out of general tax revenues.

2.3.3 Enforcement

Enforcement services typically involve surveillance of compliance with fisheries laws and a role in the prosecution of fishers who do not comply with those laws. Surveillance takes place at-sea and on-land. Often working in co-operation with the Coast Guard or the Navy, at-sea surveillance involves boarding of fishing vessels and checking of vessel licenses, fishing licenses, fishing gear and the size of fish. On-shore surveillance can involve the checking of landings at port and at auctions. Information collected on-shore can be used for the cross-checking of catch against licenses and quotas. Apart from minor offences, prosecution for non-compliance with fisheries rules usually involves the presentation of cases to the legal system. This preparation is normally carried out by the officials from the Fisheries Ministry or relevant sector department, or by general law enforcement officers.

Given its nature, enforcement is almost always conducted by a government agency, whether it be the Fisheries Ministry, the Police or the Coast Guard or Navy. Governments normally wish to ensure that these enforcement activities are only conducted in strict accordance with the law and by agencies that are directly responsible to a Minister(s) and the law-making body of representatives (e.g., a parliament, senate or congress). The funding for enforcement usually comes from general tax revenues.

3. GOVERNMENT FINANCIAL TRANSFERS IN OECD COUNTRIES

OECD Member countries spend a lot of money intervening in their fisheries sectors - some USD 6.3 billion in 1997. Most of this money is spent on general services. The largest item of expenditure is fisheries infrastructure (fishing ports, artificial reefs, “enhancing fishing communities”). The rest of the general services, in the main, were spent on fisheries research, management and enforcement. Money was also given to fishers to help with adjustment

pressures, modernize fleets, decommission vessels, reduce tax liabilities, support incomes and provide access to other countries' waters.

Unfortunately, the study did not measure transfers arising from market price support - i.e., the difference between the domestic price and the world price of fisheries products due to a government intervention - are not included in any of these figures (c.f. Milazzo, 1998).

A large proportion of transfers is spent on fisheries research, management and enforcement - some USD 2.2 billion in 1997. The OECD Fisheries Committee considers these expenditures essential for ensuring the sustainable use of fish stocks. These transfers will be explored in more detail in the Committee's forthcoming study on management costs (see Wallis and Flaaten , 2000).

Transfers that reduce fishing capacity are used in most OECD countries. The rationales for these policies were many and varied: boosting profitability, reducing dependency, meeting international obligations, reduce pressure on stocks. The evidence that came forward certainly suggested that capacity reducing transfers were successful in improving the profitability of the fishery (even when this was not a policy objective). The findings suggested that there is value in making sure that capacity reducing transfer policies work together with resource conservation policies. Transfers also seem to be a favored instrument when it comes to pacifying industry when stricter management policies are introduced.

Some direct payments and cost reducing transfers can encourage a build-up of capacity and an expansion of fishing activity. But well designed and operated management systems can constrain these undesirable effects. Few case studies demonstrated a strong causal linkage between transfers, fishing and resource sustainability.

Not all the effects of capacity reducing transfers were necessarily positive. Having effectively generated economic rent for existing fishers, these policies actually encouraged the infusion of new, more efficient, effort. In effect, these policies can act like inefficient fleet renewal programs.[2] The study also found that transfers that reduce capacity could create "spillover" effects in other fisheries. If these other fisheries are not adequately managed, the net contribution to resource sustainability could be negative. On the positive side, the study also identified cases where capacity reducing transfers reduced pressure on overfished stocks. Evidence presented suggests that these transfers have a role to play in improving resource sustainability if accompanied by well-designed and implemented management measures.

From the taxpayers perspective, a positive development in OECD countries has been programs were capacity reduction is funded by the remaining fishers in a fishery. These programs can temper the size of requests for adjustment assistance as well as reduce taxpayer costs.

The study identified a number of interesting points regarding the effects of transfers on fisheries governance. Transfers policies create and imbed expectations about the continuance of current capacity and activity levels that can be expensive and costly for governments to remove. Furthermore, excess capacity, primary the result of poor or absent management, and transfers policies, can increase pressures on fisheries management decisions at the expense of long term sustainability.

Some countries considered that reform of their transfers policies and accompanying management polices has been successful. In acknowledging that these situations have their own unique characteristics, the Committee found that such reforms "contribute to the possibility of having an economically profitable and biologically sustainable fishery that internalizes its own adjustment risks and functions without direct payments and cost reducing transfers" (OECD, 2000c).

Although the study advanced the understanding of the impacts of transfers, the Committee recognized the difficulties in isolating the impact of these policies on fisheries sustainability.

The information collected in the course of the study suggests that extent of the use of transfers vary considerably between countries. Current information indicates that the total value of transfers ranges from over 90 per cent of the value of the landings in some countries, to less than 2 per cent in others. Table 1 provides an overview of the estimated value of transfers in OECD countries.

Comparisons can be made between transfers to fisheries and transfers to agriculture. When market

[2] For a critical review of European Union decommissioning programs, see Jorgensen and Jensen (1999). For a theoretical discussion, see Munro and Clark (1999). Holland *et al.* (1999) present and analyse several interesting cases.

price support is excluded and an allowance is made for the more comprehensive nature of agriculture support monitoring, transfers to fisheries are a similar percentage of production value to that of transfers to agriculture. In 1997 transfers to fisheries in OECD countries was 17 per cent of the total landed value. In the same year transfers to agriculture were 22 per cent of farm gate value (excluding market price support). In fisheries the majority of the transfers fund general services (76 per cent), whereas for agriculture general services makes up 21 per cent of the total.

Table 1. Estimates of Government Financial Transfers to Marine Capture Fisheries in OECD Countries: 1997[1]

(USD million)

	Direct payments (A)	*Cost Reducing Transfers (B)*	*General Services (C)*	*Total Transfers (D)*	*Total Landed Value (TL)*	*(A+B)/ TL*	*D / TL*
Australia[2]	5	7	11	24	259	5%	9%
Canada	252	18	135	405	1621	17%	25%
European Union[3]	366	358	710	1434	9324	8%	15%
Belgium	-	3	2	5	99	3%	5%
Denmark	20	-	62	82	521	4%	16%
Finland	3	2	21	26	29	18%	90%
France	22	14	104	139	756[4]	5%	18%
Germany	8	3	52	63	194	5%	32%
Greece	12	-	38	50	387	3%	13%
Ireland	5	3	96	104	220	3%	47%
Italy	24	5	64	92	1749	2%	5%
Netherlands	4	-	32	36	466	1%	8%
Portugal	32	0	34	66	319[4]	10%	21%
Spain	205	81	59	345	3443[4]	8%	10%
Sweden	9	-	45	54	129	7%	42%
United Kingdom	23	4	101	128	1012	3%	13%
Iceland	-	18	18	36	877	2%	4%
Japan	25	22	2899	2946	14117	0%	21%
Korea	30	59	253	342	4929	2%	7%
Mexico	-	-	17	17	1017	-%	1%
New Zealand	-	-	17	17	475[5]	-%	4%
Norway	3	62	98	163	1343	5%	12%
Poland	-	-	8	8	215	-%	4%
Turkey	-	1	27	29	212	1%	13%
United States	21	194	662	877	3644	6%	24%
OECD Total	702	740	4856	6298	38032	4%	17%

- zero

0: Value less than 0.5 of the unit of measure.

1. The table does not reflect any assessment of whether individual transfers programs have positive or negative implications for fisheries resource sustainability. Therefore, proper care should be applied in interpreting this summary information to consult the country case studies provided in the following section that discusses these implications.

2. Commonwealth fisheries only.

3. European Union values are the sum of all EU Member State values. The exception to this is cost reducing transfers, where payments for access for third country waters are not allocated among each Member State. In this case, the value is added to the EU total figure.

4. Does not include national landings in foreign ports.

5. 1996 figure.

Source: OECD (2000c).

4. A CASE STUDY ON SUBSIDY REFORM: NORWAY

Norway's fishery catch has fallen significantly in volume terms since the introduction of EEZs in the North Atlantic in the late 1970s, but has risen during the 1990's as shown in table 3. Due to the effect of extended jurisdictions and declining North east Arctic cod and Barents Sea capelin stocks, catch almost halved between 1977 and 1990. Norway's two main fisheries can be group under the headings "herring" fisheries (herring, capelin and mackerel) and "cod" (cod, haddock and saithe) fisheries. Combinations of output controls, input controls and technical measures regulate access to stocks. Table 2 provides an overview of the catch from, and the transfers to, the fishery for 1977-1997.

Figure 2 shows the transfers to the fishing industry (excluding general services costs) for 1977 – 1997 in nominal and real value terms (1996 kroner) and its share of total sales value and export value of catch. Transfers increased through the 1970s, peaked in 1981, and decreased in later years as the industry became more profitable. International obligations have made a major contribution towards the reduction of support in the 1990s. The ratio of transfers to total sales value varied between 32 percent in 1981 and 2 percent in 1996, whereas the ratio of transfers to the export value varied between 26 percent in 1981 and one percent in 1996.

Support levels are set each year in the context of the annual agreement negotiated between the government and the Norwegian Fishermen's Association (NFA). The provisions of the agreement emphasize the importance of introducing measures that can promote more efficiency in harvesting, processing and trade and, as a result, increase the profitability in the industry and thereby make it independent of government support. Another objective of the agreement was to discourage depopulation of fisheries dependent regions in the northern and western parts of Norway.

Generally speaking, there has been a shift in emphasis toward transfers provided through the National Fishery Bank and tax refunds and exemptions. The proportion of support provided by other transfers to intermediate inputs, price support, decommissioning and social schemes has fallen.

Fish product prices are more or less given in the world market and the fishermen's raw fish sales organizations can, through legislatively-given rights, fix minimum prices for the first hand sale of fish. Whenever the difference between the world market price and the first-hand price of fish was too low to cover the costs of the processing industry and the distribution sector, the Government would be requested to pay a price subsidy. Although the price subsidy was formally paid to the fish-harvesting sector, it is obvious that it benefited the total industry. This is also indirectly the case for the cost reducing and social financial transfers paid to the Norwegian fishing industry. Without such transfers, the private cost of harvesting would have been higher, implying higher first-hand prices for raw fish fixed by the sales organizations to cover fishermen's costs. The cost of raw fish amounted to as much as 60-70 percent of the processing industry's total costs of producing frozen fish products.

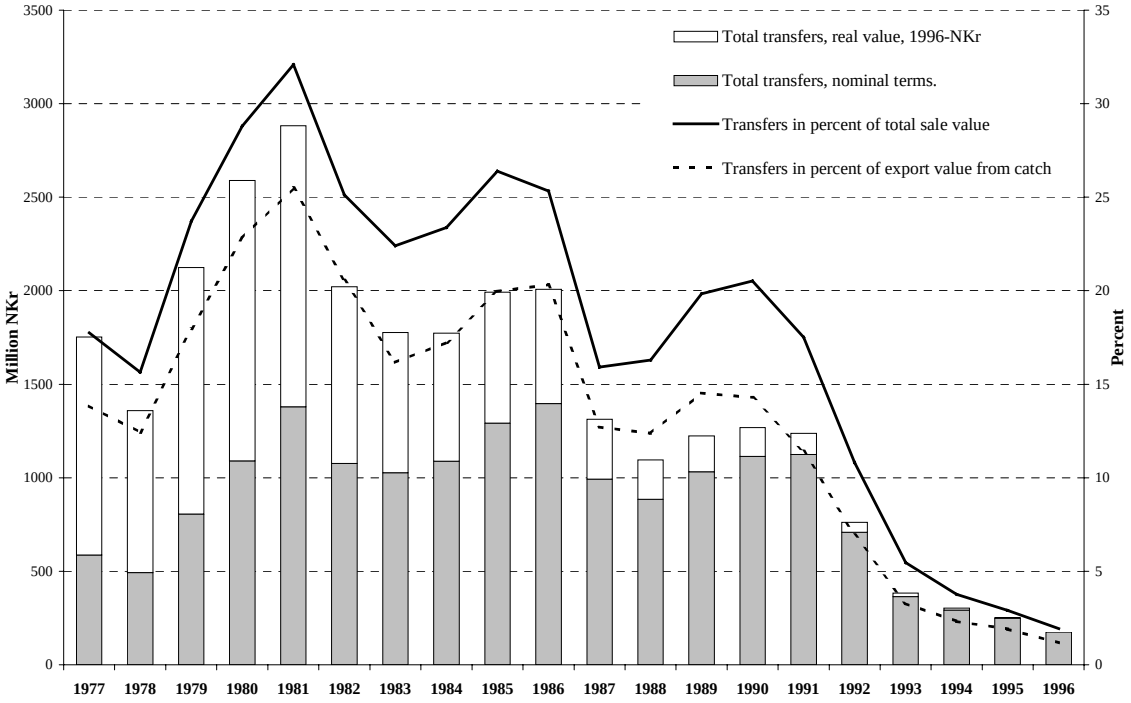
Price support is provided to fishers on the basis of landed value — fishers can increase the amount of support they receive in any given year by harvesting more fish. Price support has tended to move in the same direction, in aggregate terms, as catch. However,

Table 2. Norwegian Fishery: Catch and Transfers: 1977 to 1996

	1977	*1981*	*1984*	*1987*	*1990*	*1993*	*1996*	*1997*
Catch								
Quantity (000 tonnes)	3 403	2 539	2 440	1 893	1 592	2 415	2 633	2 652
Value (1990 NOK million)	8 654	7 890	6 661	7 245	5 428	6 163	8 004	8 783
Value-Added (1990 NOK million)	4 979	4 941	3 809	4 510	3 101	3 829	5 434	N/A
Transfers (1990 NOK million)[1]	1 412	2 300	1 387	971	1 070	459	346	170[2]

Source: 1977-1996: Flaaten and Isaksen (1998); OECD (2000c). 1997: OECD (2000a).
N/A: Information not available.
1. Does not include government expenditures on research, enforcement and management services.
2. Does not include mineral tax exemptions.

Figure 2. Total transfers to the fishing industry in nominal and real value terms (1996 NKr), and its share of total sales value and export value of catch, 1977–1996



Sources: Reports to the Storting on the accomplishment of the support measures for the fishing industry, Statistical Yearbook, Fishery Statistics (Statistics Norway), and a special data set from the Norwegian Seafood Export Council. [For a detailed description, see Flaaten and Isaksen (1998); OECD(2000b)].

the process of setting price support in the context of the annual agreement negotiations brings an additional dimension to the relationship between price support and catch. The primary factor for setting the total value of available price support under the agreement was the expectations of profitability in the year to come. It is evident that in some years price support and other transfers — as a percentage of the value of catch — followed a distinctly counter-cyclical pattern in comparison with the movements in catch.

The decline in catch in 1977-1980, primarily due to the fall in cod and capelin landings, appears to have prompted a sharp rise in price support and transfers to intermediate inputs (especially support to operational costs). The downturn in landings therefore appears to have created profitability problems that required increased transfers in subsequent years. The economic effect of the downturn in catch from key stocks was effectively masked by a surge in government support.

Between 1977 and 1981, net value added[3] fell by NOK 925 million (1990 kroner), while transfers increased by NOK 890 million (1990 kroner). The effect of these transfers in de-linking the decline in landings and net valued added from economic decisions had flow-on effects. Despite the declining trends for landings and returns from the fishery, the size of the fleet continued to expand.

Landings from cod fisheries grew strongly in the 1984-1987 period. However, this growth was more than offset by the collapse of the capelin fishery, which ended with the declaration of a moratorium in 1987. In response, transfers were increased in 1984 and 1985, primarily using price support. In 1987 and 1988, price support fell dramatically, primarily due to a breakdown in negotiations between the Government and the Fishermen's Association. Another contributing factor would have been the favorable effect on profitability of strong growth in the cod

[3] In this context, net value-added means value-added (c.f. table 2) less transfers.

fisheries.

Examples of Government Transfers available to Norwegian Fishers: 1977-1997

► *Price support* — involving fixing the first-point-of-sale price of the fish (the subsidy element equivalent to the difference between the fixed price and the border price).
► *Low interest loans from the National Fishery Bank* — for the purchase of new and used vessels.
► *Decommissioning schemes* — for the removal of vessels from a particular fishery.
► *Income guarantee compensation* — to assure incomes for fishers when fisheries fail.
► *Unemployment insurance.*
► *Transfers for intermediate inputs* — compensation for excise duty on petrol, insurance subsidies, bait services.
► *Tax Exemptions* - refund and exemption of mineral oil taxes.

The period of support reduction has been characterized by improved stability in the sector. The variability in catch levels, value and value-added have all decreased since 1993. Certain cost reducing transfers are closely related to the level of investment and activity in the fishery. There is a strong positive correlation between the interest transfers provided by the National Fishery Bank and the number of newly built vessels entering the fleet. Furthermore, there is a strong correlation between mineral tax refunds and exemptions and landings of cod, herring and capelin for the years 1989 to 1996 (especially after 1993).

The regular pattern of transfers to ensure profitability suggests that the annual agreement process did not achieve one of its primary objectives — to make the industry independent of government support. On the contrary, the removal of significant parts of the support policy seems to be associated with a significant growth in profitability in the sector. According to the annual survey of Norwegian fishing vessels, operating profits for larger fishing vessels (13 meters in overall length and above) increased by 40 per cent between 1994 and 1996. While this trend can be attributed to the improved health of the cod and herring fisheries, better management systems and the reform of the transfers policy will have contributed to this positive development.

At first sight, there seems to be a clear correspondence between the removal of support and the improvement in the health of key fish stocks. Between 1981 and 1996 support to the sector fell by 85 per cent. At the same time there have been remarkable improvements in size of cod and herring fish stocks, up 110 and 1040 per cent, respectively. However, in the same period more effective management measures were introduced for managing the most important fish stocks. It is therefore difficult to isolate the relationship between reduction in transfers and the improvement in fish stocks.

ICES notes that in the Norwegian spring-spawning herring fishery a "large increase in fishing effort, new technology and environmental conditions contributed to the collapse of this stock around 1970" (ICES, 1998). The role of transfers in this collapse could therefore be found by investigating the effects of transfers on fishing effort and the uptake of new technology. Information is not available to explore that linkage, but given the fact that this was primarily a high seas fishery (and therefore without output controls and effort limitations) at that time, it is expected that government support would have been a contributing factor. The size of the cod fish stock was at low levels in the 1980s. In the period immediately preceding the introduction of vessel quotas in the distant water fleet in 1979 — i.e., when output was not constrained and significant support was available — landings were between 500 000 and 1 000 000 tonnes, possibly contributing to a decline in the biomass (ICES, 1998).

5. CONCLUSIONS

Clarity in understanding the impacts of government financial transfers can help guide policy makers who design and implement them. The consequences of government financial transfers will depend on how they are implemented and how they interact with other government policies.

In this respect the OECD study has made a useful contribution to the current debate. Based on information volunteered from Member countries, the OECD's Fisheries Committee has come to a number of findings of direct relevance to policy makers.

First, a transfer that seems "good" at first glance may not be so. Capacity reducing transfers are an instrument of choice in OECD countries when it comes to managing capacity. But unless the effects of these policies are well controlled by global, well-designed and implemented management policies, difficulties with technology infusion, spillover effects and governance are likely to result. Furthermore, such

policies whet industry appetites for more adjustment assistance next time round; in effect transferring adjustment risk from commercial fishers to taxpayers. Instruments that shift adjustment costs back onto the sector are perhaps a promising policy alternative.

Second, the fisheries management system in which transfers are applied is a key factor determining the overall impact of transfers policies on production and resource sustainability. In principle, output control policies can be expected to restrain negative impacts on production and resource sustainability. Input controls can be expected to do so as well over the short term. In all cases however, economic waste can be expected to occur due to the distorting effect on factor prices and hence resource allocation decisions within the economy.

Third, Member countries spent a lot on fisheries research, management and enforcement - USD 2.2 billion in 1997. The Committee considers that these expenditures are essential for ensuring the sustainable use of fish stocks and the aquatic ecosystem. It will of interest to explore the nature and extent of these costs and to see how they match up with the benefits they are designed to produce. This topic will be explored in more detail in the OECD's forthcoming study on the costs of managing fisheries.

Fourth, some OECD countries seem to be getting on just fine with significantly reduced levels of support to their fishing sectors. The Norway case study illustrates this nicely. Other countries, like Australia, Iceland and New Zealand also seem to have well-functioning fisheries sectors without revenue enhancing or cost reducing transfers. Some countries have even gone as far as charging for the fisheries research, management and enforcement. Whatever next?

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[1] Member countries of the Organisation for Economic Co-operation and Development are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, France, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden Switzerland, Turkey, United Kingdom and the United States.

[2] Among major fish stocks for which information is available, the FAO reports that for 1996, 29 per cent are under, or moderately, exploited, 49 per cent are fully exploited, 15 per cent are overfished and 9 per cent are depleted or recovering, thus 24 per cent are over-exploited