

Introducing fisheries subsidies

FAO
FISHERIES
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PAPER

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ISBN 92-5-104935-1

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PREPARATION OF THIS DOCUMENT

In the middle of 2001 FAO's Fisheries Department organized a meeting of Inter governmental Organizations to review and – to the extent possible – coordinate work programmes related to fishery subsidies. The meeting concluded that an introductory text on fishery subsidies would be useful and suggested that FAO prepare and publish such a document.

FAO commissioned Prof. William E. Schrank of Memorial University, St. John's, Newfoundland, Canada, to prepare the text.

ACKNOWLEDGEMENTS

The author would like to acknowledge excellent research assistance from Aimee St. Croix and Mark Davis, undergraduate students in the Economics Department of Memorial University of Newfoundland.

FOREWORD

In 1992 FAO's Fisheries Department published *Marine Fisheries and the Law of the Sea: A Decade of Change*. The report draws the attention to subsidies apparently provided to capture fisheries world-wide. The amount of resources made available to the sector was large. During the years that followed "fishery subsidies" became a much debated issue internationally and in 2001 the World Trade Organization Ministerial meeting in Doha singled them out as an issue to review in the forthcoming negotiations of the WTO Agreement on Subsidies and Countervailing Measures.

The discussion of fishery subsidies has shown that the subject is complicated and that there is considerable confusion both about what actually are subsidies, and about their effects and impacts.

This document is meant to facilitate future discussions of fishery subsidies by analysing the debate that has taken place during the last decade, and by explaining the subsidy concept and its application in fisheries. In addition an attempt is made to provide an historical context by giving an account of their use during the last four decades. There was not enough time to obtain a worldwide coverage for the review. So it focuses on countries for which information was found easily. It is clear that more work needs to be done to obtain a balanced, global view, of the history of subsidy use in fisheries.

I would like to thank Professor Schrank for having agreed to write this document and for his unstinting collaboration and tenacity in finalizing the document.

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Introducing fisheries subsidies.

FAO Fisheries Technical Paper. No. 437. FAO, Rome. 2003. 52p.

ABSTRACT

FAO Fisheries Technical Paper 437 consists of three chapters and an annex.

The first chapter explains why fishery subsidies are of concern, discusses alternative concepts of subsidies, explains why subsidies are implemented, and briefly considers the difficulties caused by the existence of subsidies.

Chapter 2 sharpens the focus on fishery subsidies, discussing: first, the various types of subsidies that have been used, or are currently used, which affect fisheries; second, a selective history of fishery subsidies that have been implemented in a number of countries, mostly in the western hemisphere; third, a brief history of fishery management and overfishing; fourth, the concern with, and analysis of, fishery subsidies, both by national and intergovernmental agencies, that followed the publication of the FAO document *Marine Fisheries and the Law of the Sea: A Decade of Change* in 1992; fifth, problems encountered in the measurement of fishery subsidies; and sixth, the discussions of overfishing and fishery subsidies that have taken place in international fora from the Cancun International Conference on Responsible Fishing in May 1992 to the Johannesburg World Summit on Sustainable Development in September 2002.

The third chapter considers current discussions of how the international community might be able to impose sufficient discipline to bring under control the subsidies that stimulate overfishing.

The annex is a more technical discussion of the linkage between fishery subsidies and their effects on sustainability and trade.

Distribution:

FAO Fisheries Department
FAO Regional and Subregional offices
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and international organizations

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1. THE NATURE OF SUBSIDIES

1.1 Issues

The poor state of many of the world's marine capture fisheries has attracted increasing public attention in recent years. Not only is there the economic effect of diminished fish resources on the economies of regions in both the developed and lesser developed worlds, but the near commercial extinction of fish stocks has ecosystem effects. It also may have the even more serious effect of diminishing the availability of relatively inexpensive animal protein to those human populations that are least likely to be able to afford protein from alternative sources. The declaration that emanated from the Fourth Ministerial Meeting of the World Trade Organization (WTO) held recently in Doha focused specifically on fisheries as an area that needs to be considered during the next round of international negotiations on world trade.

While the concern is overfishing, the operational concern is the role of subsidies in stimulating overfishing. If overfishing is stimulated by the existence of subsidies, then the policy issue is to determine how those subsidies can be controlled or eliminated. One suggestion is that the enforcement powers of the WTO be brought to bear on the issue, thus, the mention of fisheries in the Doha statement. Subsidies play two additional roles: to the degree that they stimulate fishing they may increase the national income of the nation. As long as the fishery is underdeveloped, i.e. as long as fishing is at a level less than that which can be safely sustained, then subsidies which encourage fishing may be useful. In addition, subsidies may interfere with international trade. Control of this aspect of subsidies lies in the realm of the WTO through the international Agreement on Subsidies and Countervailing Measures.

The issue of subsidies is a delicate and complex one. It is delicate in that subsidies are introduced by governments for reasons which they consider to be valid, such as the economic development role mentioned above. Over time, subsidies which once may have served a useful social purpose may have become entrenched and now serve primarily the interests of participants in the industry receiving the subsidies. Eliminating these subsidies, then, becomes a local political issue with, perhaps, international implications. No nation wants others intruding on its domestic policies. Fishery subsidies, and to a considerable degree subsidies in general, have become subject to just such intrusion.

The issue of subsidies is also complex in that there is no agreement even on what a subsidy is. There is no agreement on how subsidies can be measured. There is no agreement on how the effects of subsidies can be measured. In the policy realm, there is no agreement on when subsidies are useful and when they are harmful. Part of the reason for the lack of agreement is the complexity of the problem of evaluating the effects of subsidies on the economy, the environment, international and internal trade, and the sustainability of fish stocks. Part of the

reason for lack of agreement on such basic issues as the definition of a subsidy is that since subsidies are now being targeted for elimination, it may be politically unwise for a polity to admit that a policy implies a subsidy.

This paper discusses a number of issues relating to subsidies:

- What is a subsidy?
- How are subsidies justified?
- What problems do subsidies create?
- What are the various types of subsidies?
- Why are subsidies introduced?
- What is the history of fishery subsidies?
- How do subsidies impinge on the history of fishery management?
- How are subsidies measured?
- How extensive are fisheries subsidies?
- How have discussions of fisheries subsidies entered international conferences?
- How are the effects of subsidies measured?
- Subsidies in 2003: What is the nature of the political debate?

What are subsidies?

Subsidies, loosely speaking, are government policies in aid of one or more industries, usually carrying a financial benefit to the industry.

At the most conventional level, subsidies are government financial transfers to an industry, through payments to workers or to firms. Probably nobody would deny that the government is subsidizing the industry if it is paying part of the wages of workers in the industry or it is granting firms in the industry funds to make capital purchases. This is the most narrow definition of a subsidy.

But what is the difference from the standpoint of the industry between a government transferring funds to it, on one hand, and waiving transfer payments, i.e. taxes, that the firm would normally make to the government, on the other? Assume that a firm starting a particular business is required to pay a business license tax. If the firm receives a government grant equal to the amount of the tax, there is no question that this payment, the grant, is a subsidy. Out of the subsidy, the firm must pay the tax. Alternatively, the government might not grant the payment, but may simply waive the license tax. Both actions (the granting of the subsidy and the waiver of the tax) have precisely the same effect on the firm in that the firm does not pay the tax with its own

money. The waiver is as much a subsidy as is the direct grant. Therefore, funds need not pass directly from government to workers or firms for the government policy to constitute a subsidy.

To illustrate: a government policy of aiding the fishing industry by offering firms a grant of 50 percent of the purchase price of a fishing vessel on the face of it would constitute a subsidy to the fishing industry. Yet it is not so simple. Subsidies are only important for their effects. If the subsidy were accompanied by a rule that the vessel must be built in the home country, then the grant is possibly not a subsidy to the fishery at all but rather a subsidy to the shipbuilding industry if that industry were to raise its prices by the amount of the subsidy. There would then be no advantage to the fishery. Defining subsidies, except loosely, opens all kinds of controversies, many of which have been discussed in the recent literature.¹

The range of possible definitions is extensive, from the narrow “financial aid furnished by a state or a public corporation in furtherance of an undertaking or the upkeep of a thing”² to the broad “government action (or inaction) that modifies (by increasing or decreasing) the potential profits earned by the firm in the short-, medium- or long-term.”³ Between the one, with its focus on direct government expenditures and the other, with its focus on the effect of a government’s policies on a firm’s anticipated profits, lies an abyss, filled with alternative definitions that lie between the two extremes.

Intergovernmental agencies, such as FAO and the OECD, being organizations with diverse membership, each member country having its own perceptions of its interests, tend to take a liberal view of subsidies: subsidies are what each member nation considers them to be. One result of this orientation is that studies of subsidies performed under the aegis of these agencies, such as the *Transition to Responsible Fisheries* document of the OECD, discussed later in this paper, have inconsistencies among the definitions of subsidies used by different countries. Comparisons are therefore difficult.

The one exception is that the Agreement on Subsidies and Countervailing Measures of the World Trade Organization (WTO) offers a precise definition of subsidies which has legal standing. The reason for this precision is to avoid ambiguity in the evaluation of subsidies when used to justify countervailing duties and other disciplines against nations that may violate the Agreement. Subsidies in the Agreement are defined as direct or potentially direct transfers of funds from governments to firms or individuals (e.g. grants, loans, loan guarantees, equity infusions), government revenue foregone (e.g. tax waivers or deferrals), government provision of goods and services, other than infrastructure, at less than market prices, and government support of prices

¹For a fairly comprehensive discussion, see W.E. Schrank, “*Subsidies for Fisheries: A Review of Concepts*” in Papers Presented to the Expert Consultation on Economic Incentives and Responsible Fisheries: Rome, 28 November – 1 December 2000, 11-39. Rome: *FAO Fisheries Report No. 638, Supplement (2000)*.

²*The Compact Edition of the Oxford English Dictionary*, Oxford: Oxford University Press, 1971, 3127.

³W.E. Schrank and W.R. Keithly, Jr., “*The Concept of Subsidies*”, *Marine Resource Economics*, XIV, (1999), 151-164 at 163.

and incomes. To be a subsidy, the action must confer a benefit on the firm or individual, and it must be specific to an industry or group of industries.⁴

As we shall see, this attempt, and probably any similar attempt, to unambiguously define what a subsidy is, leaves much room for debate when the definition is applied.

In the case of the WTO Agreement, the definition arises from two sources. For one, it is intended to seek out and stop government actions that impinge on international trade in such a way as to provide “unfair” advantages for industries under its jurisdiction. For the second, the Agreement is just that, an agreement, and its contents are what could be agreed. Thus, while the definition has distinct operational purpose, political realities played a role in determining its limits.

The WTO definition serves its operational purpose of setting a standard for maintaining “fair” international trade. For other purposes, individual countries may have different official definitions, and for various specific purposes, analysts may favour any of a variety of definitions.

Canada, for instance, defines a subsidy as including “any financial or other commercial benefit that has accrued or will accrue, directly or indirectly, to persons engaged in the production, manufacture, growth, processing, distribution, sale, export or import of goods, as a result of any scheme, programme, practice, or thing done, provided or implemented by the government of a country.”⁵ Hart interprets this definition as encompassing infrastructure support (e.g. the United States/Canadian St. Lawrence Seaway), land grants, government expenditures on cultural affairs, and major government purchases (e.g. military, space programmes).

An even broader view is presented by Stanford, who argues that government labour policies, such as those that hinder the organization of trade unions and that encompass weak or non-existent workplace health and safety regulations, are also subsidies.⁶ Although excluded from the WTO definition, such policies reduce costs, therefore permitting firms in the affected countries to lower their prices on world markets.

A more domestically oriented view has been presented by Shoup, who sees subsidies as government payment or tax relief policies intended to provide incentives for firms to alter the relative prices of their products and thereby to reallocate resources in directions favoured, for whatever reason, by the government. The changes in relative prices might impinge on

⁴*Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations*, Geneva: GATT Secretariat, (1994), 264-265.

⁵*Special Import Measures Act*, RSC, c. 25, §43, 1984, cited in M. Hart, *Canada-United States Working Group on Subsidies: Problem, Opportunity, or Solution?*, Ottawa: Occasional Papers in Trade Law and Policy of Carleton University (1992), 33.

⁶J. Stanford, *Going South: Cheap Labor as an Unfair Subsidy in North American Free Trade*, Ottawa: Canadian Centre for Policy Alternatives (1991).

international trade, and therefore may fall within the framework of the Agreement on Subsidies and Countervailing Measures, or they may not.⁷

The world of agricultural subsidies is characterized by many forms of governmental economic support, each of which falls into one of two general classes, the first involving the reduction of consumer food prices below the free market level and the other involving the support of farm production.⁸ The first class, often used in developing countries, includes such diverse approaches as rationing in Pakistan and price controls in India.⁹ The second class, often used in developed countries, is also diverse, including such approaches as supply management and formula pricing in Canada and acreage controls and subsidized credit and insurance in the United States of America.¹⁰

One distinction, admittedly fuzzy, is that between explicit and implicit subsidies. In the former, there are governmental budgetary outlays; in the latter, supply prices are suppressed. Explicit agricultural subsidies include such programmes as government purchases of agricultural surpluses and government payments to farmers to keep land idle. Implicit subsidies include utilization of such techniques as exchange rate manipulation (whereby, for instance, there are official multiple exchange rates applicable to different categories of transactions), price controls, and quantitative restrictions on trade, as well as other methods of manipulating the terms of trade either for or against farmers. By overvaluing domestic currency, for instance, the government provides an implicit import subsidy to consumers while placing an implicit tax on farmers since it forces them out of international markets. Trade barriers are usually intended to protect non-agricultural industry, with the agricultural sector being disadvantaged by an increase in its costs, particularly the costs of imported machinery and supplies. Implicit subsidies to consumers are in effect negative subsidies to farmers, although the term “negative” is not often used in this context. Rather the term “implicit taxation” is used. But from this brief description, it is also clear that implicit subsidies to the industrial sector may, in effect, be negative implicit subsidies (or implicit taxation) to the agricultural sector.¹¹

A combination of subsidies in both consumer price reducing and farm support classes has been applied in Mexico. Under this system, which was applied for maize and a number of other products, the government purchased domestic farm products at a guaranteed price and sold the raw products to processors at a lower price, absorbing the difference itself. The Government

⁷C.S. Shoup, “*The Economic Theory of Subsidy Payments*” in Joint Economic Committee of the Congress of the United States, *The Economics of Federal Subsidy Programs: A Compendium of Papers, Part I – General Study Papers*, Washington: United States Government Printing Office (1972), 55-73

⁸This discussion of agricultural subsidies follows closely the discussion in Schrank, “*Subsidies for Fisheries...*”, *op. cit.*, 18-19.

⁹Pinstrup-Andersen (ed.), *Food Subsidies in Developing Countries: Costs, Benefits and Policy Options*. Baltimore: Johns Hopkins University Press (1988).

¹⁰F.H. Sanderson (ed.), *Agricultural Protectionism in the Industrialized World*. Washington: Resources for the Future (1990).

¹¹A. Valdés, “*Explicit Versus Implicit Food Subsidies: Distribution of Costs*,” in Pinstrup-Andersen, 77-91.

absorbed, in addition, storage and distribution costs. The processed goods were then sold at prices set by the government. While the system may be complicated, its essential nature is simple: the government manipulated both the price received by farmers and the price paid by consumers.¹²

The focus of United States agriculture subsidies has been on farm support. Since the late 1930s, the United States has implemented a vast array of programmes to manipulate the production and sale of agricultural products. Gardner lists a range of such programmes.¹³ There have been direct payments from government to farmers: payments for idle acreage, payments on allotment-based output, payments for diverting acreage from one commodity to another, subsidy payments to support alternative uses of farm products, purchases of agricultural surpluses, storage payments, and disaster payments. There have been tax shelter programmes that were in effect tax waivers. There have been moves towards making programmes self-financing by levying assessments on producers to fund farm product purchases as part of price support programmes, in effect a tax on farmers to support specific payments to farmers. There have been loans at less than market rates of interest. There have been payments in kind. There have been price support and export subsidy programmes that may or may not have involved direct payments by the government. There have been export promotions which involved government payments, but not directly to farmers. There have been import tariffs that were not only not a cost to the government but a source of revenue. There have been policies, such as marketing quotas, import controls and price discrimination schemes that, other than management costs, were essentially cost-free to the government. The range of such programmes has been extremely broad.

Gardner implicitly considered all of these programmes to be subsidies. He ended his overview of programmes with the heading “other subsidies” where he listed such items as federally supported research and extension programmes, federally supported infrastructure programmes (e.g. electricity and irrigation projects) and exemptions from selected labour and environmental regulations. Gardner noted that the items listed in his “other subsidies” category “are not usually considered subsidies in the same category as deficiency payments,” although, as we have seen in the cases of Hart and Stanford, they are considered subsidies by some other analysts.

1.2 Economic justification of subsidies and the difficulties created by the existence of subsidies

When economists justify subsidies, they usually do so in one of three ways. First, there is the “infant industry” argument. An industry, for instance, may be dominated by foreigners (e.g. textile manufacture by England during the early days of the United States) and for reasons of social policy, the government may want to develop an indigenous industry. Insufficient private capital may be available to permit the private sector, on its own, to accumulate sufficient capital

¹²N. Lustig, “*Fiscal Cost and Welfare Effects of the Maize Subsidy in Mexico*,” in Pinstrup-Andersen, 277-288.

¹³B.L. Gardner, “*The United States*,” in Sanderson, 19-63.

to make the indigenous industry commercially competitive. The government then could subsidize the industry through grants, loans, equity infusions, tariff protection or tax incentives. When the industry has been built up to the point where it is self-sufficient, the subsidies would be removed.¹⁴

The logic of the argument is appealing, and the approach to economic development might work, but there is a tendency once the subsidy has been implemented to continue it long after it is necessary or long after it should have been necessary. The ultimate result can be that the industry, originally stimulated by the subsidy, comes to depend upon the subsidy and fails to improve its productivity along with the rest of the world. One is then left with an inefficient industry that cannot compete in the marketplace. The justification for subsidies then switches to the protection of employment which would fall if the government were willing to let the industry fail. Thus, subsidies which were intended to help the industry get started, become “necessary” to keep an inefficient industry afloat. The subsidy then becomes permanent until the government finally decides that it can no longer maintain the industry and the industry is shut down with all the economic and social dislocation that entails. Alternatively, the subsidy may be introduced to help the infant industry, the industry may then become self-sustaining, but it may be difficult to wean the industry off the subsidy.¹⁵

The second argument in favour of subsidization is that a large, important, firm may run into serious temporary difficulties and be in danger of ceasing operations. The government, in such a situation, would have at least three options: it can play no role and let the full market effects be felt; or it can directly subsidize the endangered firm with cash or equity infusions, loans or loan guarantees; or it can let the firm go bankrupt but intervene through the monetary system to prevent the bankruptcy of the firm from affecting other, healthy, firms.

If the bankruptcy had no social implications beyond those concerning the firm itself and its employees, then perhaps subsidization would not be considered, other than to ease the transition for displaced workers. There may, however, be severe financial implications for the economy. For instance, the firm may have been a respected, “blue chip” firm which had issued substantial volumes of unsecured bonds (e.g. “commercial paper”). The failure of the firm to honour those bonds when they matured as a result of the firm’s bankruptcy might suggest to bondholders that other blue chip firms could also default on their unsecured paper. Perfectly healthy firms then might be unable to follow their usual practice of turning over maturing paper because of nervousness in the bond market. If banks did not quickly offer substantial loans to the healthy

¹⁴For a discussion of infant industry protectionism, see H. Myint, “*Infant Industry Arguments for Assistance to Industries in the Setting of Dynamic Trade Theory*,” Chapter 7 in R. Harrod and D. Hague (eds), *International Trade Theory in a Developing World*, London: Macmillan & Company, (1963). See, also, A. Bhattacharjea, “*Infant Industry Protection Revisited*,” *International Economic Journal*, XVI, (2002), 115-133.

¹⁵This point is explicit in U. Tietze (ed), *Report of the Regional Workshop on the Effects of Globalization and Deregulation on Fisheries in the Caribbean*: Castries, St. Lucia, 4-8 December 2000, Rome: *FAO Fisheries Report No. 640*, (2001), 14.

but cash starved firms to enable them to pay off their matured unsecured debt, then healthy firms might collapse. Without government direction, banks might very well withhold their support, if only temporarily, because of the acute uncertainty created by the initial firm's bankruptcy. There may be a domino effect throughout the economy with the result being a severe financial crisis. The economic problem facing the firm may be seen as being cyclical, as being due to poor management, or as being the result of factors apparently beyond anyone's control, such as climatic disasters. The subsidy can be seen as a temporary measure to help the firm regain its footing. In June 1970, the Penn-Central Railroad Company went bankrupt after the United States government refused to provide financial support.¹⁶ The failure, of the largest railroad in the United States, was at the time the greatest bankruptcy ever to occur in the country. The financial system of the country was seen to be endangered because of the anticipated domino effect. The actions of the American central bank, the Federal Reserve System, were credited by some as saving the United States' economy from financial collapse.¹⁷ In this case, the government essentially applied the third option described above. The government, however, became wary of placing itself in the position of again being perceived as endangering the economy by not directly intervening in the event of a major impending bankruptcy.

Subsequently, when a year later the Lockheed Aircraft Corporation was similarly endangered, the United States government, following the second option described above, came to the rescue of Lockheed. Prior to Congress' approval of substantial loan guarantees to a consortia of major banks that were financing Lockheed, the chairman of the Federal Reserve System, the economist A.F. Burns, was explicit in his comparison of the Lockheed situation with that of Penn Central. He stressed the danger to the economy of the country if such a large company were allowed to fail. Burns suggested that there be generally applicable legislation permitting the government to provide loan guarantees when basically sound companies encounter serious, but most likely temporary, financial difficulties.¹⁸

During 1980, the United States Government similarly intervened with one and one-half billion dollars in loan guarantees for the Chrysler Corporation.¹⁹ In the cases of Lockheed and Chrysler, the firms did regain economic viability. One can always argue the costs and benefits of social and economic policy, but in these latter cases, the subsidies seem to have been effective. These subsidies were, indeed, temporary. The great danger, of course, is that instead of restoring health to the firm, thus permitting the subsidies to be safely withdrawn, or to lapse, the firm remains unhealthy and the subsidies become permanent.

Whether a government will subsidize a large company in financial difficulty is a recurring problem, as real today as it was a quarter century ago. In December 2002, the United States

¹⁶S. J. Maisel, *Managing the Dollar*, New York: W.W. Norton & Company, (1973). 41-43, 122.

¹⁷*Ibid.*, 5-9.

¹⁸*New York Times*, (June 17, 1971), 59.

¹⁹*New York Times*, (May 27, 1980), 1.

Federal Air Transportation Stabilization Board refused to provide loan guarantees of US\$1 800 000 000 to keep the parent company of United Airlines from bankruptcy.²⁰

The third argument in favour of subsidization is tied to current interests in environmental protection. Subsidies can be used to encourage firms and industries to behave in environmentally friendly ways. Fishing vessel and license buyback programmes fall into this category. As we shall see, while some economists favour such subsidy programmes, others believe that effective fishery management and market based solutions would be more effective than subsidy programmes.

Additional reasons for the implementation of subsidies, rarely justified by economists unless tied somehow to one of the arguments stated above, are to provide an industry with a long-term advantage in the international marketplace and to permanently assure a reasonable level of employment in a geographical area. Norway, for instance, has a policy of subsidizing the northern part of the country to sustain the physical presence of a population there and to maintain the fishing culture.²¹ For many years, until 2001, the Canadian government subsidized the uneconomical steel works on Cape Breton Island in Nova Scotia. Examples of this kind of subsidy are legion.

To illustrate with just a single example the difficulties that can be encountered when a government wants to withdraw established subsidies, consider the Fishing Vessel Assistance Programme (FVAP) which was introduced by Canada during the second world war and under which bounties were paid to enterprises that purchased fishing vessels. By 1970, the Canadian Government wanted to restrict the scope of this programme which, until that time, was entirely driven by the industry. There were no statutory or regulatory limits to the amount the Government would have to pay for this programme during the course of any year. The development of a revised programme was assigned to a committee of federal and provincial officials. Under pressure from the provinces, whose governments feared that a transformation of the programme would reduce the stimulus on their provincial economies they had enjoyed as a result of the transfer payments, and possibly weaken their fishery sectors, the revisions were never developed and the programme continued as before. Towards the end of the 1970s, when Canada and most of the coastal states of the world extended their fisheries jurisdiction to 200 miles from shore, the fishery of the Canadian province of Newfoundland expanded. The expansion was largely financed by subsidies, an important one being FVAP. It was clear that the fleet overexpanded, thus removing any economic justification for the programme. Yet the programme continued. It was only with a major change in Government that the programme, now hopelessly out of date, was abandoned in

²⁰See, "UAL Bankruptcy is a Smart Move" by M. Tatge and B. Copple, December 9, 2002 at the web site: www.forbes.com/2002/12/09/cz_mt_1209ual.htm (February 9, 2003).

²¹This argument is often couched in terms of maintaining employment in fishing communities, many of which are in the north. See, for example, M. Milazzo, *Subsidies in World Fisheries: A Reexamination*, Washington: *The World Bank Technical Paper No. 406*, (1998), 23. For a discussion in the context of Norway, see K.B. Lindkvist, "Dependent and Independent Fishing Communities in Norway," in D. Symes (ed) *Fisheries Dependent Regions*, Oxford: Fishing News Books, (2000), 53.

1986.²² Harold Macmillan, the former British Prime Minister, has described his political problems when, as Chancellor of the Exchequer in 1956, he had difficulty persuading his cabinet colleagues to eliminate a milk subsidy that he considered obsolete.²³ These examples illustrate the tenacity with which a subsidy, possibly instituted for good reason, can continue in existence long after the reason for its being has passed.

Similarly, the United States has a long standing tax benefit for fishing vessel owners, the Capital Construction Fund (CCF), whereby up to 100 percent of the profits generated by fishing can be placed in an interest earning income tax exempt fund as long as the holder of the account agrees to replace his or her vessel, or to make major changes in the structure of the vessel, within ten years. During the “Americanization” programme that followed the 1976 passage of the *Magnuson Act*, under which the United States expanded its fishery jurisdiction from 12 to 200 miles from shore, this programme served a well defined social purpose: it aided in the construction of American vessels when the social goal was to replace foreign fleets with American fleets. There can be little doubt that the American fleet overexpanded. Despite recent Congressional hearings on the subject, the tax benefits remain.²⁴ Once again, it can be very difficult to remove a subsidy that has outlived its usefulness. Some would argue that because of this difficulty, and others, subsidies rarely serve a useful purpose.²⁵

Having briefly discussed the issues surrounding economic subsidies, we now turn to the specific problems of fisheries subsidies.

2. SUBSIDIES AND FISHERIES

2.1 Types of fishery subsidies and why they are introduced

Forty years ago, subsidies were thought of generally as good things, as mechanisms whereby government policy could be implemented. Forty years later, because of questions about their effectiveness and controllability, about the role of government in society and the economy, and about the relative roles of environmental protection and economic development, subsidies in many areas of the economy generally are considered bad things, never more than in fisheries.

²²W.E. Schrank, “*Extended Fisheries Jurisdiction: Origins of the Current Crisis in Atlantic Canada’s Fisheries*,” *Marine Policy*, XIX, (1995), 285-299 at 294-295.

²³H. Macmillan, *Riding the Storm, 1956-1959*, New York: Harper and Row, (1971), 12-18.

²⁴See Chapter VI, “*Capital Construction Fund*” in J. H. Dunningan (ed), [U.S.] Federal Fisheries Investment Task Force: Report to Congress, July 1999. N.p.: n.publ., (July 1999) and M.L. Weber, *From Abundance to Scarcity: A History of U.S. Marine Fisheries Policy*, Washington: D.C.: Island Press, (2002), 34.

²⁵See, for instance, G. R. Munro, “*The Economics of Overcapitalization and Fishery Resource Management: A Review*” and R. Arnason, “*Fisheries Subsidies, Overcapitalization and Economics Losses*”, pp. 7-23 and 27-46, respectively, in A. Hatcher and K. Robinson (eds), *Overcapacity, Overcapitalization and Subsidies in European Fisheries: Proceedings of the First Workshop Held in Portsmouth, UK, 28-30 October 1998*, Portsmouth, England: Centre for the Economics and Management of Aquatic Resources, (1999).

Yet, it is useful to recall that each subsidy was introduced for a reason, was introduced in a context and, whether or not the subsidy was appropriate, was introduced for the benefit of some subset of individuals and for society as a whole.²⁶

There are many ways of categorizing subsidies. Here we offer one categorization,²⁷ another, proposed by an Expert Consultation of FAO, is briefly discussed later in this paper. The taxonomy presented here is applicable to any industry and most of the broad classes of subsidies have been noted earlier. The examples given here, however, are drawn from fisheries.

A. Direct government payments to the industry

Under this classification would be included such a diverse range of subsidies as grants made for the purchase of new fishing vessels, vessel decommissioning payments (buybacks), fishermen's unemployment insurance, compensation for closed seasons, equity infusions, and price support programmes.

Grants for the purchase of new fishing vessels might be introduced to aid in the development of an indigenous fishing industry. Vessel decommissioning payments may be introduced to stimulate a process of reducing excess capacity. Fishermen's unemployment insurance may be introduced to stimulate fishermen to enter or remain in the industry. Compensation for closed seasons may be introduced to permit fishermen to remain in the industry when their incomes are unexpectedly cut because of measures introduced by governments to protect declining fish stocks. Equity infusions may be made to avoid the bankruptcy of fishing firms when the bankruptcy would have catastrophic effects on the employment of a region, particularly when the bankruptcy is caused by a temporary economic occurrence such as the decline of markets during a severe business recession. Price support programmes, whereby government pays producers the difference between market price and an administratively set target price, may be introduced to support fishermen's incomes.

B. Tax waivers and deferrals

This classification includes such programmes as fuel tax exemptions for fishing vessel fuel, sales tax exemptions, special income tax deductions for fishermen and deferred tax programmes.

Fuel taxes may be allocated for the maintenance of highways. Since fishing vessels do not use highways, they may be exempted from that particular tax. Sales tax exemptions and special

²⁶In reality, of course, there are subsidies that are introduced because of corruption of one sort or another and which never did have a social goal other than some individual's gain. While we recognize the possibility of this occurring, it is ignored in what follows.

²⁷This list includes only a few examples from the much more extensive list included in Schrank, "*Subsidies for Fisheries...*", *op. cit.*, 31-33. Neither the list nor the explanations are intended to be comprehensive.

income tax deductions would be “justified” if the fishery were considered so important yet so financially precarious that these tax concessions were considered necessary to maintain the industry. Sales tax exemptions for inputs used by the fishing industry provide general support for the industry. They appear to be popular among the island nations of the Caribbean.²⁸ Deferred tax programmes also render the economics of the industry more favourable to participants, but if tied to special programmes such as vessel replacement, they may also serve a safety role. As a result of funds accumulated under terms of the programme, there may be funds available to purchase of new vessels, thus reducing the economic incentive to postpone replacement by using overage and unsafe vessels.

C. Government loans and loan guarantees, and insurance

The government may make loans to fishermen or fishing firms on favourable terms, such as loans with lower than market interest rates or longer than usual amortization periods. Alternatively, the government may guarantee repayment of private sector loans when financial institutions require added security that cannot be offered by the industry itself. The government may offer insurance when private insurers decline to insure fishermen because of the perceived highly uncertain risk in the industry.

Each of these subsidies is offered to enable the industry to operate at lower costs than would otherwise be possible. If the industry’s revenues are sufficiently low, then these subsidies may determine whether the industry has the economic health to survive.

D. Implicit payments to, or charges against the industry

These are programmes that do not transfer funds to the industry and do not waive or defer payments that normally would be made by the industry to the government. They may include programmes that reduce the prices that industry pays government for goods to below market prices, or programmes that may not involve government payments at all. There may also be negative subsidy programmes that reduce the profitability of fishing firms.

Programmes where government makes payments, or incurs costs, on behalf of the industry without the payments being made directly to the industry include: payments for fishing rights to foreign nations; fisheries management; fisheries enhancement; and gear development.

Nations may charge foreigners for access to their exclusive economic zones. Especially when the foreigners had traditionally fished in those waters, the government of the foreign fishermen may be willing to pay the fee and not recover it from the industry,²⁹ with the justification that the government was partially responsible for the situation arising since it participated in the United

²⁸See, Tietze, *op. cit.*, 10, 12, 13, 94, 104-5, 133-4.

²⁹Milazzo, *op. cit.*, 36.

Nations Conference on the Law of the Sea. Governments traditionally pay for fishery management but in recent years there has been movement towards user pay, fee recovery systems. Fisheries enhancement may involve the government developing artificial reefs, perhaps by sinking obsolete naval vessels, for the purpose of developing the fishery and, perhaps, ecotourism. Similarly, governments may design and test improved fishing gear (either more productive gear or gear that reduce bycatch) and then pass the technology to the fishing industry at little or no cost.

Governments may provide commodities to the fishing industry at less than market prices. When Newfoundland was a crown colony, for instance, the government maintained a bait programme to supply bait to fishermen at discounted prices. Under the 1949 terms of union of Newfoundland with Canada, the programme continued with the Government buying the bait and selling it to the fishermen at less than cost.³⁰

Examples of programmes, or policies, where the government supports (subsidizes) the fishery at no cost to itself (other than the administrative cost of running the programme) are tariffs, landing bans on foreign vessels, import quotas and prohibitions on foreign direct investment.

Negative subsidy programmes are programmes that, at least in the short run, reduce the profits of fishing firms. Examples are fisheries regulations that limit fishing, regulations that require bycatch excluder equipment and other environmental and safety regulations.

E. General programmes that affect fisheries

Finally, there are tax waivers applicable to all industries, subsidy programmes aimed at industries other than fisheries that may affect fisheries either positively or negatively, and general social programmes that affect the entire society.

Examples of general programmes that fit into the category of tax waivers are investment tax credit or accelerated depreciation schemes. These income tax programmes permit investors in capital equipment to increase their accounting costs for income tax purposes, thus reducing their book profits and thereby reducing their income taxes. Such a tax system would provide a stimulus for the firm to buy additional capital equipment, in the case of fisheries, for fishermen and fishing firms to purchase new fishing vessels. A subsidy programme for agriculture may involve increased use of pesticides where the runoff deleteriously affects fish stocks. Similarly, subsidies to the shipbuilding industry or for general food promotion can affect fisheries. General programmes that could affect fisheries include non-fishing specific infrastructure programmes, small business loans, disaster relief, labour legislation and national health programmes. In the

³⁰R.W. Crowley, B. McEachern and R. Jasperse, "A Review of Federal Assistance to the Canadian Fishing Industry, 1945-1990," in L.S. Parsons and W.H. Lear (eds), *Perspectives on Canadian Marine Fisheries Management*, Ottawa: National Research Council of Canada, (1993), 356.

latter case, for instance, the United States could claim that Canada “unfairly” subsidizes its fishery by providing a national health service out of general taxation whereas fishermen in the United States must purchase private health insurance. In this case, Canadians can respond by noting that they pay substantially higher income and sales taxes to finance the health system.

In every case, there are justifications of the programmes, and there are individuals and groups that benefit from the programmes, and others who do not. The goal in implementing the programme may be the desire to stimulate the development of the fishery or to modernize it and increase its productivity or to aid in selling its products or to protect the environment or to advance the safety of the fishermen themselves. This is not to justify all or any of the subsidies referred to here. Whether or not they are justifiable is a subjective decision subject to infinite argument. In recent times, certainly during the past decade, when there has been increased sensitivity to environmental issues, to the state of the fish stocks and to unimpeded private markets, worldwide subsidies have been falling³¹ and the justification for many of those that remain have weakened. There has been increased concern with the relationship among fishery management, overfishing and subsidies.

2.2 A selective history of fishery subsidies

A. United States of America

Fishery subsidies have a long history. The first European settlement of Massachusetts in what is now the United States occurred in 1620. Less than twenty years later, Massachusetts fishermen were being subsidized by exemptions from military duties and by waivers of taxes on vessels and gear.³² During the first presidential administration of the new United States, Congress responded favourably to a request from the executive branch to support the domestic fishery through tax relief and tariffs.³³

Advancing in time by some two hundred years, into the mid-nineteenth century, and arising out of disputes among longlining and trap fishermen in the American states of Massachusetts and Rhode Island, the federal Government of the United States of America established the U.S. Fish and Fisheries Commission to study fisheries to determine the state of stocks.³⁴ This was the beginning of federally funded fishery science in the United States. While the goal might have been the development of legislation to settle the squabble, the Government was sponsoring research for the benefit of the fishery and, at least by the broad definition, this constitutes a subsidy. At

³¹U.N. Wijkstrom, “*Global Overview of Fisheries and the Subsidies Issue*,” in Report of Proceedings: on the Impact of Government Financial Transfers on Fisheries Management, Resource Sustainability and International Trade Manila, 17-19 August 1998, n.p.: Asia Pacific Economic Cooperation Council.

³²S. Iudicello, M. Weber and R. Wieland, *Fish, Markets, and Fishermen: The Economics of Overfishing*, Washington, D.C.: Island Press, (1999), 60.

³³Weber, *op. cit.*, 19.

³⁴*Ibid.*, 3-4.

about the same time, the Commission became involved with fish hatcheries,³⁵ essentially the Government providing raw material for the fishing industry.

The Commission has gone through numerous metamorphoses during the past one hundred and thirty years. Its current descendants are the National Marine Fisheries Service of the Department of Commerce and the U.S. Fish and Wildlife Service of the Department of the Interior. These agencies continue to be involved with science, and have added resource management and grants programmes to their portfolio of responsibilities.

During the 1920s, the Bureau of Fisheries, in an attempt to increase the market for fish, worked with the private sector to develop a process for quick freezing fish.³⁶ In one form or another, Government supported efforts at developing new fish products and fish processing techniques continued for decades. In the 1960s, the Bureau of Commercial Fisheries developed a low cost process for producing an inexpensive human food additive called fish protein concentrate from schooling pelagic fish species.³⁷

During the great economic depression, in 1937, the United States Government for the first time introduced and financed a price support programme for fishery products.³⁸ Then, in 1940, the U.S. Congress explicitly authorized the Bureau of Fisheries to investigate the possibility of establishing a commercially viable fishery, in this case viewing the potential establishment of a king crab fishery off Alaska.³⁹ This was to become an important fishery and established the precedent of the Government, rather than private interests, searching for new fisheries. Since such a search, or the related population survey, reduce the cost to the fishing industry of establishing new fisheries, it constitutes a subsidy. This work has continued. In the mid-1950s the government's participation was expanded to include the evaluation of the effectiveness of alternative gear technologies when applied to specific fisheries.⁴⁰

With the end of World War II, the American fishing industry seemed to be in the doldrums: prices fell and catches remained static. The United States' fishing output fell relative to its trading partners and fish imports into the United States grew substantially. The Government faced the problem on two fronts: (1) it attempted to increase consumer demand; and (2) it stimulated an increase in fishing and processing capacity. With regard to the first front, starting in the mid-1950s, the Government started actively promoting the consumption of seafood by pursuing educational programmes in a variety of venues: television programmes, films, literature, and store demonstrations.⁴¹

³⁵Ibid., 40.

³⁶Ibid., 25.

³⁷Ibid., 27-28.

³⁸Ibid., 23.

³⁹Ibid., 6.

⁴⁰Ibid.

⁴¹Ibid., 19-23.

With regard to the second front, the Government increased its role in the identification and development of new fisheries. For instance, from the mid-1950s, Government research vessels searched for new fish stocks that the private sector could exploit. In 1964, the United States of America chartered a fishing vessel for commercial fishing purposes, presumably with the intention of showing the private sector that the particular fishery was commercially viable. Later, the Government transferred fishing equipment to the private sector, presumably at no cost.⁴²

From the mid-1950s, the federal Government assisted the fishing industry in expanding its markets, for instance by sponsoring trade shows abroad. After the extension of fisheries jurisdiction to 200 miles in 1976, this programme was expanded into a “fish and chips” policy that permitted foreign access for fishing to United States waters in return for increasing United States access to the foreign markets.⁴³

The *Jones Act* of 1936 constituted a subsidy to the shipbuilding industry by requiring that vessels landing fish in the United States be built in that country. In essence, this was a negative subsidy to the fishing industry since, as anticipated, the cost of shipbuilding in the United States rose as a result of the captive market. To counter this negative subsidy, in 1960 the Government offered the Fishing Vessel Construction Differential Subsidy Programme.⁴⁴

While the Differential Subsidy Programme was essentially a countervailing programme to counter the effects of the *Jones Act*, other positive subsidy programmes were instituted to promote the expansion and modernization of the American fishing fleet. Starting in 1957, the Fisheries Loan Fund was used to encourage the expansion of the fishing fleet, through the refinancing of old debt or the creation of new debt for vessel construction. This programme, which evolved into the Fishing Vessel Obligation Guarantee Programme and then the Fisheries Finance Programme, continues to this day. While the programme may be self-financing, there are generous amortization and other terms that make these loans appealing for fishing operators. This programme can now be used to finance vessel buyback programmes. Its use to increase capacity in overfished fisheries is restricted. The Vessel Mortgage Insurance Programme was established in 1960 to provide insurance for mortgages taken to finance fishing vessel construction.⁴⁵ In 1970, the Capital Construction Fund, discussed earlier, was established to permit fishing vessel owners to defer taxes on income derived from fishing operations.⁴⁶

Other, non-fishing-specific, subsidy programmes which encouraged the building of fishing vessels have existed in the United States from time to time. One such programme, of considerable importance, was the Investment Tax Credit which reduced the fishing firm’s income taxes by

⁴²*Ibid.*, 7-8.

⁴³*Ibid.*, 30.

⁴⁴*Ibid.*, 32.

⁴⁵Dunnigan, *op. cit.*, Chapter VII.

⁴⁶*Ibid.*, Chapter VI.

permitting a faster write-off of capital construction costs. This programme, intended as a general stimulus to the economy, was introduced in 1962, during the Kennedy administration and was repealed in 1986, during the Reagan administration.

Intended for environmental, rather than expansionary, purposes, the United States government has introduced a number of buyback programmes to aid in the reduction of the fishing fleet. Among these programmes are those to reduce capacity in the Pacific northwest salmon fleet (starting in 1976), the New England groundfish fleet (starting in 1995) and the Bering Sea and Aleutian Islands crab fleet (starting in 1999). While each of these programmes has been financed by the federal Government, the most recent introduces a new policy, whereby the surviving members of the fleet are expected over a period of time to repay the government's outlay for the programme.⁴⁷

This brief survey of the history of fishery subsidies in the United States is not intended to be comprehensive and, in fact, the *Federal Fisheries Investment Task Force* lists numerous other subsidy programmes that affect the fishing industry. Nonetheless, this survey should convey the impression that fisheries subsidies have a long provenance, that they have "always" been with us and that they continue to exist today even when their economic incentive effects contradict each other, as with the Capital Construction Fund which encourages capacity expansion, on the one hand, and the buyback programmes, which encourage capital shrinkage, on the other.

B. Canada

Canada's fisheries have also been highly subsidized over the years. The 17th century English fisheries in Newfoundland were developed as an integral part of English policy on international relations and trade. As such, the fisheries were Government controlled and stimulated by regulation and monopoly, the granting of which conveys a subsidy to the holders of the monopoly rights.⁴⁸

In these brief historical notes, we will focus on Canadian subsidies since World War II. Started during the war, the Fishing Vessel Assistance Programme, discussed earlier, provided bounty to fishermen to help with the purchase of fishing vessels. This Programme was cancelled in 1986 when it had become clear that the Canadian fishery had excess capacity.⁴⁹

Also originating during the war, the Fisheries Prices Support Board was established to smooth over the volatility of fish prices. Among the services provided by this programme are purchases of surplus Canadian fish products for the World Food Programme.⁵⁰ Marketing support was

⁴⁷*Ibid.*, Chapter VIII.

⁴⁸See, R.G. Lounsbury, *The British Fishery at Newfoundland, 1643-1763*, New Haven, CN: Yale University Press, (1934), *passim*, but especially 69-79.

⁴⁹R.W. Crowley, *op. cit.*, 349-350; and Schrank, "Extended Fisheries Jurisdiction....," *op. cit.*, 294-296.

⁵⁰Crowley, *op. cit.*, 343-344.

provided to the declining salt cod industry by the Newfoundland Associated Fish Exporters Limited, established in the then colony in 1947, being superceded by the Canadian Saltfish Corporation, a federal crown agency operating in Newfoundland and Quebec, in 1970. The agency continued to operate until the moratorium on the commercial fishing of cod was introduced in 1992 and the raw material simply disappeared.⁵¹

Under various programmes, starting in 1949, the federal Government, in conjunction with the provinces which, under the Canadian constitution, have jurisdiction over land based fish processing, has supported the construction, expansion and modernization of fish processing facilities. The most important of these programmes came under the *Regional Development Incentives Act* of 1969 which was used extensively during the period 1977-1981 to greatly expand the freezing capacity of the Atlantic Canadian fish processing industry.⁵² Also, mentioned earlier, is the Newfoundland Bait Programme which was absorbed by the Canadian Government after the confederation of Newfoundland as Canada's tenth province in 1949.

With Atlantic fishermen incurring serious losses due to bad weather, and with fishing vessel insurance available only at excessive premiums, if at all, the federal Government in 1953 introduced a Fishing Vessel Insurance Plan. Attempts to remove this subsidy through privatization of the insurance programme have been proposed but never acted upon.⁵³

In 1955 the federal Government introduced the Fisheries Improvement Loans Act, essentially small business loans to fishermen. This programme continued until 1987, at which time the largest single loan was of the order of US\$150 000. With the expiration of this programme, Canada's *Small Business Loans Act* was amended to permit loans to fishermen.⁵⁴

The most important fisheries subsidization programme, the fishermen's unemployment insurance system, was introduced in 1957. The net outlays of the federal Government for this programme in fiscal 1990/91 in the province of Newfoundland alone, amounted to nearly US\$98 000 000. As with most long-term subsidy programmes, this system has been revised, expanded, cut back, and reformulated many times. It continues in existence.⁵⁵

The Atlantic Canadian groundfishery suffered considerably from a combination of poor markets and low catches during the world economic recession that followed the substantial oil price increases of 1973-74. A number of support programmes were introduced at that time, most importantly the Temporary Assistance Programme that operated from 1975 to 1978. In

⁵¹*Ibid.*, 348-349.

⁵²*Ibid.*, 355-357; and Schrank, "Extended Fisheries Jurisdiction....," 290-291, 296.

⁵³Crowley, *op. cit.*, 351-354.

⁵⁴*Ibid.*, 354.

⁵⁵*Ibid.*, 358-360; W.E. Schrank, B. Skoda, P. Parsons and N. Roy, "The Cost to Government of Maintaining a Commercially Unviable Fishery: The Case of Newfoundland 1981/82 to 1990/91," *Ocean Development and International Law*, XXVI, (1995), 357-390 at 371; W. E. Schrank, "Benefiting Fishermen: Origins of Fishermen's Unemployment Insurance in Canada, 1935-1957," *Journal of Canadian Studies*, XXXIII, (1998), 61-87.

Newfoundland alone, in the fiscal year 1977-78, this programme, plus other catch related programmes, paid more than US\$15 000 000 in support payments to inshore fishermen and nearly US\$4 500 000 to fish processors.⁵⁶

The expansion of the Atlantic fishery ended with the world economic recession of the early 1980s. Although the Government had heavily subsidized the fleet and processing plant expansion, the processing firms had also taken on considerable long term debt which was subject to variable market interest rates. With the recession, markets again declined simultaneously with record high interest rates, creating a classic cost/price squeeze. Many of Atlantic Canada's fish processing and trawler firms collapsed financially. To maintain the industry, the federal and Newfoundland Governments nationalized much of the Newfoundland industry and the federal and Nova Scotia Governments bought substantial equity in the dominant Nova Scotia firm. In Newfoundland, from 1981 to 1986, the federal and provincial governments paid US\$208 300 000 to nationalize and maintain the industry, and to establish the firm Fishery Products International Limited. This firm was privatized in 1987 and US\$152 700 000 was returned to the governments.⁵⁷

Newfoundland's northern cod fishery was clearly in serious trouble in the late 1980s, with estimates of the fish population declining. The fishery collapsed completely in 1992, leading to a commercial fishing moratorium that essentially continues to this day. Shortly thereafter, most other groundfish stocks in Canada's Atlantic waters were either closed to fishing or had their fishing effort sharply curtailed. In essence, the result was the largest mass lay off of workers in Canadian history. The Canadian government established a number of programmes which ran from 1990 to 1998, including: the Atlantic Fisheries Adjustment Programme (AFAP), the Northern Cod Adjustment and Recovery Programme (NCARP), and The Atlantic Groundfish Strategy (TAGS). These programmes were intended primarily to help individuals and communities to adjust out of the fishery, largely through training, retirement and license buyback programmes. AFAP, NCARP and TAGS had the secondary purposes of providing income maintenance for the unemployed fishermen and fish plant workers and improving fisheries science. Although not necessarily as planned, the bulk of the money went for income maintenance and very little adjustment actually took place. These programmes cost in excess of US\$3 000 000 000.⁵⁸

The programmes discussed here are federal programmes, occasionally with some provincial government financial input. There are, in addition, numerous provincial programmes as well as

⁵⁶Crowley, *op. cit.*, 344-345; W. E. Schrank, B. Skoda, N. Roy and E. Tsoa, "Canadian Government Financial Intervention in a Marine Fishery: The Case of Newfoundland, 1972/73-1980/81," *Ocean Development and International Law*, XVIII, (1987), 533-584 at 570, 575, 577.

⁵⁷Crowley, *op. cit.*, 362; Schrank *et al.* "The Cost to Government..." *op. cit.*, 364-366.

⁵⁸W.E. Schrank, "The Newfoundland Fishery: Past, Present and Future," 35-70 in S. Burns (ed.), *Subsidies and Depletion of World Fisheries: Case Studies*, Washington, D.C.: World Wildlife Fund -United States, (1997).

additional federal programmes. The Canadian fisheries have been characterized by substantial subsidies over an extended period of time.⁵⁹

Both the United States and Canada have long histories of subsidizing marine fisheries. During the period immediately following the declarations of extended fisheries jurisdiction, the late 1970s, these subsidies were aimed at “developing” the domestic fisheries. They served the social goal of expanding the industry. With the realization in the 1990s that fisheries were being overfished, new subsidies were developed to reduce capacity. The expansionary subsidies were successful because they were perceived to serve everyone’s interest. They encountered little opposition. Contractual subsidies, by their very nature, are intended in part to encourage some individuals to leave the industry. Such a subsidy, if not exceedingly generous, is liable to encounter resistance. In fact, this is what has happened. The subsidies intended to help to contract the industry have been less successful than were their predecessors.

C. Norway

Norway also has a history of fishery subsidies. Trade among the increasing population of northern Norway and the merchants of the south was increasing during the first half of the nineteenth century. The cash crop of the north was cod and, since the cod catches fluctuated, the trade was uneven over time. Banks, during years when the fishery was poor, had difficulty recovering their loans. They exerted pressure on the government to determine what it was that caused those fluctuations. The banks’ pressure, together with recognition of the effect of low catches on the society of northern fishermen, led the government in 1864 to hire a fisheries biologist to study the fluctuations phenomenon and to make practical suggestions for the fishermen. A few years earlier, a scientist had been hired to study the fluctuations in the population of herring.⁶⁰ These Government sponsored investigations were the start of subsidies for the Norwegian fisheries.

Skipping nearly three-quarters of a century, by 1933 the Norwegian Government had established the Norwegian State Fisheries Bank which granted loans at beneficial interest rates and amortization periods for the purchase or modification of vessels and the purchase of fish processing equipment. In 1935, interest-free loans were authorized as was emergency relief for

⁵⁹For additional programmes, see Crowley, *op. cit.*; Schrank *et al.*, “Canadian Government Financial Intervention,” *op. cit.*; Schrank *et al.*, “The Cost to Government...,” *op. cit.*; W.E. Schrank, *Government Financial Outlays on the Atlantic Canadian Fishery, 1981/82 to 1990/91*, St. John’s, Newfoundland: Department of Economics of Memorial University of Newfoundland Discussion Paper No. 94-0, (1994); and “Final Affirmative Countervailing Duty Determination: Certain Fresh Atlantic Groundfish from Canada,” [U.S.] *Federal Register*, **LI**, (March 24, 1986), 10041.

⁶⁰This history is given in T.D. Smith, *Scaling Fisheries: The Science of Measuring the Effects of Fishing, 1855-1955*, Cambridge: Cambridge University Press, (1994), 10-14.

fishermen. The following year the Government introduced a health insurance subsidy for fishermen.⁶¹

In 1938 sales cooperatives were given the exclusive right to the ex-vessel sales of fish. Immediately after World War II, Norway's fisheries were highly profitable, yet because of Government restrictions, the excess profits earned at that time could not be spent. The excess profits of the sales cooperatives, therefore, were banked in reserve funds. Controls were removed by 1953, and the Cod Reserve Fund, for instance, then was used as a non-government subsidy for fishermen's income support until 1959 when the fund was exhausted.

An ad hoc Government financed subsidy lasted from 1959 to 1964 when a "Master Agreement for the Fishing Industry" was negotiated between the Government and the Norwegian Fishermen's Association. Under the Master Agreement, specific Government financed subsidies were negotiated each year, a primary goal of which was to ensure that fishermen received wages equivalent to those paid to shoreside workers. The amount of these subsidies depended on the state of the fishery, but they could become quite substantial. Subsidies under the Master Agreement took many forms: income earning measures (such as price support, insurance subsidies, operating subsidies); social programmes (minimum income guarantees, vacation support and unemployment insurance); miscellaneous support (such as bait subsidies, gear subsidies and damage compensation); and structural and efficiency support measures (such as buyback schemes, experimental fisheries, and market support). By the mid-1990s most of these subsidies had been eliminated.⁶²

During the period of the Master Agreement, there were, in addition, numerous additional subsidies outside the Agreement. There have been numerous subsidized vessel loan arrangements, first under the National Fishery Bank and later, starting in the late 1990s, under the Norwegian Industrial and Regional Development Fund which restricted the subsidies to the northern fisheries. The loans increased substantially in the later part of the decade.⁶³ Fish processing firms in the north were also given access to substantial loans, grants, and loan guarantees from the Fund.⁶⁴ There is also no attempt made to recover the substantial cost of fisheries management from the industry. Under the broad definition, this also constitutes a subsidy.

⁶¹ U.S. Tariff Commission, *Report to the United States Senate on Subsidies and Bounties to Fisheries Enterprises by Foreign Governments*, Washington, D.C.: United States Government Printing Office, (1936), 85-87.

⁶² M. Brouillon, *Income Determination in the Norwegian Fishing Industry*, paper prepared for the Canadian Task Force on Atlantic Fisheries, n.p., n. publ., (June 1982), C-12, C-13, C-19; R. Hannesson, *Fisheries Mismanagement: the Case of Atlantic Cod*, Oxford: Fishing News Books, (1996), 22; J. R. Isaksen, *Subsidies to the Norwegian Fishing Industry: An Update, Proceedings of the Expert Consultation on Economic Incentives and Responsible Fisheries*, Rome: FAO, (2000), 8; P.M. Jangaard, *Norway: A Discussion of the Norwegian 'System' of Fisheries Management*, Halifax, N.S.: Scotia-Fundy Region of the Canadian Department of Fisheries and Oceans, (1992), 6.

⁶³ Isaksen, *op. cit.*, 14-16.

⁶⁴ Review of Fisheries in OECD Member Countries, 1989, Paris: OECD, (1991), 152.

Norwegian fishermen also pay reduced income, value added and fuel taxes. General programmes to support the economy of the north, such as transportation, community and education subsidies, also support the fishery, an important industry in that area.

Buyback programmes in Norway date back at least to 1969, when they were introduced to help modernize the fishing fleet by encouraging the elimination of inefficient vessels. This specific programme, which was not intended to result in a net contraction of the fleet, continued for a number of years. Other buyback programmes were introduced starting in 1978. In 1981 the government developed a specific buyback programme to reduce overcapacity. In one guise or another, buyback programmes existed almost continuously for more than thirty years.⁶⁵

D. Iceland

Icelandic fishery subsidies also have a long history but they have generally been low relative to those of other countries. The domestic Icelandic fishery, utilizing rowboats until the slow adoption of decked sailing vessels starting in the early nineteenth century, was a minor sector of the Icelandic economy. From 31 sailing vessels in 1855 to 65 in 1879, the number of these vessels grew substantially, reaching a peak of 168 in 1906. The largest surge came after 1893 when the Government bank started granting loans for the purchase of fishing vessels.⁶⁶ The semi-independent Government of Iceland between the world wars of the twentieth century encouraged the fishery through Government investments in infrastructure, including harbours and lighthouses which were used predominantly by the fishing industry. Lighthouses, for instance, grew in number from half a dozen in 1900 to 120 in 1938.⁶⁷ A special Government financed Fisheries Fund was established in 1905 as a source of loans for the purchase of fishing vessels and gear. This fund increased in importance after legal changes in 1930.⁶⁸ In 1934 the Government established the Herring Board and the Fishing Industry Board. The former had control of harvesting, processing and international trade of Icelandic herring, while the latter helped in the development of new products and fishing techniques and the search for new markets.⁶⁹

Perhaps the most important Government action in support of the fishing industry in the pre-World War II period was the devaluation of the krona in 1939, an action which helped to stimulate the international demand for Icelandic fish.⁷⁰

⁶⁵For details on buyback programmes, see various issues of the Review of Fisheries in OECD Member Countries.

⁶⁶S. Jonsson, *The Development of the Icelandic Fishing Industry 1900-1940 and its Regional Implications*, Reykjavik: The Economic Development Institute, (1981), 89-93, 181.

⁶⁷*Ibid.*, 179-180.

⁶⁸*Ibid.*, 182.

⁶⁹*Ibid.*, 185.

⁷⁰*Ibid.*, 186.

More recently, specifically in the 1970s, the Government again devalued the krona to improve the competitive position of its fish exports.⁷¹ By the broad definition, this is a subsidy since it improves the profitability of firms in the fishing industry. While this subsidy aided fish processors and exporters, it also raised the prices of imported fuel oil and the cost of vessels to fishermen. Both current costs of foreign built vessels and carrying charges on loans denominated in foreign currency increased. Thus, the devaluation amounted to a positive subsidy for some agents in the Icelandic fishery and a negative subsidy for others. On occasion, the Icelandic Government rectified this asymmetry of subsidies by taxing the windfall earnings of the exporters and redistributing the proceeds to those in the fishing industry who were negatively affected by the devaluation.⁷²

Starting in the 1970s, the Icelandic Government promoted a number of funds which were intended to cost the Government nothing, being financed through an export levy. These included the Catch Equalization Fund, the Fishing Vessel Capitalization Fund, the Fishing Vessel Oil Price Stabilization Fund, the Vessel Insurance Fund, the Fisheries Loan Fund and the Regional Development Fund. These funds redistributed income among fishermen, aided fishermen in modernizing old vessels or purchasing new, more modern, vessels, smoothed diesel fuel prices, paid most vessel insurance costs, provided investment funds for fish processing plants and fishing vessels, and provided loans on favourable terms to fishermen purchasing Icelandic-built vessels.⁷³

In 1979, the Government implemented a price support scheme, also financed by an export levy, to encourage fishermen to catch underutilized species.⁷⁴

From the mid-1980s, Icelandic fisheries subsidies have been limited to tax advantages, loan guarantees and occasional loans. An OECD document recently reported that financial transfers from the Government to the industry were US\$29 million in 1997, US\$21 million of which was in the form of tax waivers with the remainder in research and management expenditures. The US\$29 million figure is low, for example, compared to those for the United States (US\$877 million), Canada (US\$509 million) and Norway (US\$528 million).⁷⁵

From 1978, Iceland adopted a number of vessel buyback funds. Initially these funds were financed all or in part by export duties on fish and fish products; later they were financed through grants of cod quotas. Originally the focus was on obsolete vessels with the goal of aiding the modernization of the fleet. Later the goal was to reduce excess capacity. These programmes did

⁷¹K.J. Brewer, *Iceland: Subsidies and the Role of the State in the Fishing Industry*. Manuscript available in the Queen Elizabeth II Library of Memorial University of Newfoundland (1975), 3.

⁷²*Ibid.*, 4.

⁷³*Ibid.*, 8-12.

⁷⁴*Review of Fisheries in OECD Member Countries, 1982*, Paris: OECD, (1983), 118.

⁷⁵*The Impact on Fisheries Resource Sustainability of Government Financial Transfers*, Paris: OECD, (2000), 18.

not prove effective at reducing the fishing capacity of the fleet and they were abandoned in 1998.⁷⁶

Icelandic subsidies have been substantially lower than those of the other countries in this historical review, and the subsidies have not directly affected Government finance, again in contrast with those of the other countries. The reason for this is that the fishery has dominated the Icelandic economy, comprising the overwhelming percentage of exports. Since independence during World War II, there have been no other industries large enough, with sufficient financial surplus, to provide sources of funds with which to finance the Icelandic fisheries. The Icelandic fisheries, although encouraged by Government policy, have largely had to stand financially on their own.

E. South America (Peru, Chile, Brazil, Argentina, Uruguay)

Although by 1960, the Peruvian anchoveta catch exceeded 3 000 000 metric tonnes,⁷⁷ in general the South American fisheries at this time were underdeveloped, when compared to other economic activities in the region. There were some fishery subsidies before 1960, justified by the infant industry argument discussed earlier. Among the first of these were those governed under the 1948 Peruvian *Plan of the Directorate of Fisheries*. This *Plan*, having as its objective the development of the fishery for the purpose of promoting a regular supply of fresh and frozen fish products to the domestic market, included a government financed investment programme in fisheries infrastructure and equipment. In the absence of adequate numbers of Peruvian fishermen, it was proposed that provisions be made for the immigration of Italian fishermen who would be subsidized with respect to travel, housing and the acquisition of fishing gear. In the end, this aspect of the subsidization programme was never adopted.⁷⁸

With the 1960s emphasis on Government supported economic development, subsidies, again based on the infant industry idea, and with the goal of import substitution, were greatly increased during the decade. The Peruvian Government established the Ministry of Fisheries in 1970 and the Ministry, during the period from 1970 to 1975, established a series of state owned companies to centralize the marketing of fishmeal and oil, to concentrate the harvesting and marketing activities relating to fresh and frozen fish, to harvest and process anchoveta and to harvest and process fish for the canning sector of the fish processing industry. During the early part of this half decade, the Government also engaged in large-scale public investment programmes in port infrastructure, and market and fish storage facilities. From 1991 to 1996 the entire structure of Government owned fishery companies was dismantled and privatized.⁷⁹

⁷⁶Review of Fisheries in OECD Member Countries, various years.

⁷⁷FAO's FISHSTAT PLUS computerized data base.

⁷⁸R.E. Zalvidea, *La pesquería en el Perú y su incremento por medio de la inmigración*, Santiago, Chile: Andros Impresores, (1948).

⁷⁹Sociedad Nacional de Pesquerías, *El futuro de la pesquería: corrigiendo los errores del pasado*, Lima, Perú: Sociedad Nacional de Pesquerías, (1990); J. Csirke, L.M. Bombin, J. Gonzalez de la Rocha, A. Gumy, N. Jensen,

From 1960 to 1976, Chile had institutionalized a series of fishery subsidies intended to develop the industry. The measures included income tax reductions of up to 90 percent and import duty exemptions on industrial equipment for a period of ten years, both being subject to 75 percent of fisheries profits being reinvested in the sector. Even earlier, the Government had offered low interest loans to encourage the building of fishmeal plants and fishing vessels.

In response to the El Niño of 1965, which severely reduced catches, the Chilean Government acted to reduce the capacity it had so recently encouraged. The mechanism used was the making available of low interest loans from the Government development agency to encourage consolidation. The effects were the withdrawal of small entrepreneurs from the industry, the concentration of the industry a relatively few large companies, and the reduction by about half in the capital stock available to the industry. In the early 1970s, the Government acquired the main companies and again promoted investment the fishery. These activities were once again interrupted by the even stronger El Niño of 1973.⁸⁰

From 1967 to 1991, Brazil heavily subsidized its fishery through the mechanisms of tax exemptions for imported fishing vessels, federal sales tax exemptions for processed fish products, and income tax benefits for fishery investment projects approved by the Government. During the later part of this period, a 15 percent reduction in fuel taxes and a 30 percent reduction in fuel prices were implemented for fishermen. These subsidies had the effect of modernizing and expanding the harvesting and processing sectors of the industry, and promoting the marketing of high value processed fish products. In the absence of adequate scientific knowledge, and a reluctance of government's fisheries administration to restrain industry by formulating strategic plans for the sustainable development of the fishery, the ultimate effect of the subsidies was the building into the fishery of excess capacity. The problem of excess capital was compounded when neighbouring countries extended their fisheries jurisdiction to 200 miles, thereby closing off some of the previous Brazilian fishing grounds.⁸¹

Argentine fishery subsidies were introduced in 1962 and, at that time, included import tariff reductions, preferential exchange rates, tax exemptions, loans at preferential interest rates, and Government loan guarantees to facilitate the import of capital goods. Legislation enacted in 1967 continued the fishery subsidies but emphasized support for Patagonia, the poorer southern portion of the country.⁸² Narrower legislation in 1971 targeted fishery subsidies to benefit

A. Medina Pizzali, E. Ruckes and M. Shawyer, *La Ordenación y Planificación Pesquera y la Reactivación del Sector Pesquero en el Perú: Informe preparado para el Gobierno de la República de Perú bajo el Programa de Asesoramiento en Ordenación y Legislación Pesquera*. Rome: FAO, (1992); and Fishery Development Planning Service of the FAO Fisheries Department.

⁸⁰P. Camus and E. Hajek, *Historia ambiental de Chile*, Santiago, Chile: Andros Impresores, (1998).

⁸¹G. de Souza Neiva, *Subsidios para a politica pesqueira nacional*, Santos, Brazil: Terminal Pesquero de Santos, (1990).

⁸²Ley de Pesca No. 17500, (1967).

Patagonia and to promote exports.⁸³ The Argentine financial crisis of 1979 ended nearly two decades of substantial fishery subsidies. By 1980, the only remaining fishery subsidies were those tied to exports and fuel tax exemptions.⁸⁴

Since 1983, there has been an export promotion system in place in Argentina under which, for products exported through Patagonian harbors, payment is made by Argentine Customs to exporters based upon the value of the exporter's shipments, with the payment increasing as the product originates further south in the country. Since 1996, only fish products processed on land (as opposed to processed on board fishing vessels) have been included in this system, on the argument that if they are processed at sea, they are not Patagonian products. This is a general programme for Patagonian products, not only fish, but the fishing industry is important to the area and is a major beneficiary of the programme. Fisheries were also a major beneficiary throughout the 1990s of fuel tax exemptions that applied to fuel sold in Patagonia.⁸⁵

From 1969 to the mid-1980s, Uruguay used subsidies to develop its fisheries as a component of its campaign to strengthen the country's private sector. Subsidies included ten year income tax exemptions, five year customs duty exemptions for the importation of machinery and equipment, tax exemptions on infrastructure developments and vessel construction, and subsidized loans.⁸⁶ In 1976, the Uruguayan Government established a state owned fisheries company.⁸⁷

In general, as can be seen from these examples, the 1960s and early 1970s constituted a period of increased government activity in the expanding fisheries sector. These operations were accompanied during the decade following 1965 by international assistance, largely funded by the United Nations Development Programme and delivered by FAO. These projects were concerned primarily with technology transfer and with the development of management and research capabilities in the various countries. From 1984 to 1996, technical assistance continued to be provided by FAO, funded from a variety of sources including the Norwegian Government and the European Community. Since 1995, after the recognition a few years earlier of the overfished state of many of the world's commercial marine fisheries,⁸⁸ FAO assistance has been geared to strategic planning and management. In addition, also since 1995, several donor countries and regional groupings have delivered and financed technical assistance for South American fisheries.⁸⁹

⁸³Valdez Goyeneche, *La estructura pesquera argentina – El problema pesquero en la economía argentina*, Buenos Aires, Argentina: Editorial Universitaria de Buenos Aires, (1974).

⁸⁴Fishery Development Planning Service of the FAO Fisheries Department.

⁸⁵M. Onestini, "Subsidies in Argentine Fisheries," in *Fisheries Subsidies and Marine Resource Management: Lessons Learned from Studies in Argentina and Senegal*, Geneva: United Nations Environment Programme, (2002), 14-16.

⁸⁶Articles 35 to 40 of Law No. 13.833. *Riquezas del Mar*. (1969).

⁸⁷D. Artagveytia, *Planificación Pesquera – La experiencia de Uruguay*: Documento presentado en el Seminario Técnico Regional de Planificación para el Desarrollo Pesquero en América Latina. Montivideo, Uruguay: FAO (FIP:PDP/85/Inf.4, 1985), mimeo.

⁸⁸Marine Fisheries and the Law of the Sea: *A Decade of Change*, Rome: FAO, (1992).

⁸⁹Fishery Development Planning Service of the FAO Fisheries Department.

The 1980s ended with the economies of many fish producing South American countries in economic crisis, of greater or lesser degree. In return for receiving aid from international financial and monetary organizations, these countries adopted economic stabilization programmes which involved the dismantling of most government structures relating to fisheries and other industrial sectors. Specifically, government owned fish companies were privatized, government fishery administrations were given narrower mandates with drastic cuts in budgets and professional staff, and research, information, training and other technical services were decentralized or privatized.⁹⁰

2.3 Fisheries management and overfishing

Until the middle of the twentieth century, the existence of adequate supplies of natural resources was taken for granted. Although there were examples of fish stocks failing, there was a general belief that fish stocks would last forever. This view had a long pedigree, dating back at least to T. H. Huxley's statement in an 1884 debate that "the cod fishery ... and probably all the great sea-fisheries, are inexhaustible; that is to say that nothing we do seriously affects the number of fish."⁹¹ Although this view was challenged at the time, nonetheless it resonated over the decades and seemed to gain force as aggregate global fish harvests increased throughout the 1950s and 1960s.⁹² Global economic growth, at least in the developed world, had increased dramatically since the end of World War II. The use of natural resources grew apace.

Yet, warnings were being heard regarding fisheries. During the post World War II period, as commercial fish catches were rising steadily, distant water fleets were taking ever larger quantities of fish.⁹³ In 1954, Scott Gordon had explained, using economic analysis, the reasons

⁹⁰Fishery Development Planning Service of the FAO Fisheries Department and Fisheries and Aquaculture in Latin America and the Caribbean: Situation and Outlook in 1996, Rome: FAO Fisheries Circular 1991, 33. Examples of the stabilization plans of the period are those for Argentina (C.A. Rodriguez, *Ensayo sobre el Plan de Convertibilidad*, Buenos Aires, Argentine: Centro de Estudios Macroeconómicas, 1995) and Brazil (Ministerio de Hacienda de Brasil, *Exposición de Motivos de la Medida Provisional del Real*, Brasilia, Brazil: E.M. Interministerial No. 205/MF/SEPLAN/MJ/ MTb/MS/SAF, 1994).

⁹¹Quoted in Smith, *Scaling Fisheries...*, *op. cit.*, 53.

⁹²Weber, *op. cit.*, xxii, claims that this attitude was dominant in the United States into the 1990s. Fortrends in the world's commercial fisheries during the second half of the twentieth century, see R.J.R. Grainger and S.M. Garcia, *Chronicles of Marine Fishery Landings (1950-1994): Trend Analysis and Fisheries Potential*, Rome: FAO Fisheries Technical Paper No.359, (1996), 4.

⁹³For example, the northern cod fishery of Newfoundland had a century old history of catches of less than 300 000 metric tonnes per year. Then, in 1968 alone, foreign distant water fleets caught 660 000 metric tonnes of northern cod, while Canadian catches were only 123 000 metric tonnes, for a total of 783 000 metric tonnes. Given such an

why fishermen usually have low incomes. His explanation suggested that regulation of fisheries was necessary to restrict catches so that fishermen's incomes could rise.⁹⁴ Despite Anthony Scott's argument the following year that some form of privatization of ocean fisheries was necessary,⁹⁵ there followed, after a time lag, a sequence of events intended to restrict fisheries through regulation rather than privatization. Initially, limiting the entry of fishermen to the fishery seemed to be the obvious solution. When either this approach failed to control fishing effort, or for political reasons proved to be impossible to implement, the next "obvious" approach was to limit catches. In the international arena, for instance, the International Commission for the Northwest Atlantic Fisheries established national quotas for the commercial fisheries within its jurisdiction for the first time in 1972. It soon became clear that this was not an approach that would succeed in protecting the fish stocks since nations debating in international bodies were unlikely to agree to seriously restrict their own fishing activity. Even were agreement possible on constraining limits, the international bodies did not have the ability to adequately police the agreements.⁹⁶ The Third United Nations Law of the Sea Conference was convened in the early 1970s to establish a legal order for the oceans to "promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment."⁹⁷ At the first substantive meeting of the Conference, held in Caracas, Venezuela in 1974, consideration was given to means of protecting commercial marine fish stocks. Almost immediately agreement was

extraordinarily large catch, it was difficult to explain the subsequent drop in northern cod catches as being only the result of "normal" cyclical variations and not of overfishing. Yet it is easy to erroneously attribute fish population declines to specific subsidies. Porter has used, as a fisheries horror story, the example of Canadian subsidies from 1954 to 1968 grossly increasing the fishing fleet, leading to overcapitalization and overfishing. For the case of the major eastern Canadian stock, the northern cod stock, it seems unlikely, given the ratio of foreign to domestic catch, that the Canadian subsidies had much to do with the decline in the fish stock, although foreign subsidies may have played a major role. Yet the story of early Canadian subsidies has been retold by Porter and repeated by others. Canadian subsidies may have led to the decimation of the northern cod stock after the decision in 1976 to extend Canada's fisheries jurisdiction to 200 miles, but not before. See G. Porter, *Fisheries Subsidies, Overfishing and Trade*, Geneva: United Nations Environment Programme (1998), 42-43; G. Porter, *Fisheries Subsidies and Overfishing: Towards a Structured Discussion*, Geneva: United Nations Environment Programme, (2002), 12; and F.A. Khatun, D. Bhattacharya and M. Rahman, *Environmental Impact of Trade Liberalization and Trade-Related Policies on the Marine Fisheries Sector in Bangladesh*, Dhaka: Centre for Policy Dialogue (2002), 7. For the post-extended fisheries jurisdiction period, see Schrank, "Extended Fisheries Jurisdiction...", op. cit. The historical data appear in L. Harris, *Independent Review of the State of the Northern Cod Stock*, Ottawa: Fisheries and Oceans Canada, (1990). The 1968 figure appears in International Commission for the Northwest Atlantic Fisheries Statistical Bulletin 1968 (March 1970), 18. A similar experience off New England is described in Weber, op. cit., 64.

⁹⁴H. S. Gordon, "The Economic Theory of a Common Property Resource: The Fishery," *Journal of Political Economy*, LXII, (1954), 124-142.

⁹⁵A. D. Scott, "The Fishery: The Objectives of Sole Ownership," *Journal of Political Economy*, LXIII, (1955), 116-124.

⁹⁶L.S. Parsons, *Management of Marine Fisheries in Canada*, Ottawa: National Research Council of Canada, (1993), 112, 239-242.

⁹⁷*The Law of the Sea: United Nations Convention on the Law of the Sea with Index and Final Act of the Third United Nations Conference on the Law of the Sea*, New York: United Nations, 1983, 1.

reached on at least one crucial question facing the Conference: coastal states would be permitted to extend their control of fisheries to 200 nautical miles from their shoreline.⁹⁸ Coastal states with sole authority presumably would have adequate enforcement powers.

Unfortunately, once again the “obvious” solution was not so obvious and in this case did not work. In retrospect, it is clear that the extension to 200 miles was a necessary condition for the protection of fish stocks, but it was not a sufficient condition. There were at least two reasons why the extension was insufficient. First, there was no protection for fish beyond the 200 mile limit. At the time of the UN Conference, this did not seem to be a serious problem since nearly all commercial fishing, except that for some highly migratory species such as tunas, occurred within two hundred miles of shore. This changed suddenly. Problems arose worldwide in relatively shallow waters that fell outside any nation’s 200-mile limit: the nose and tail of the Grand Banks of Newfoundland, the donut hole of the Bering Sea, the loophole of the Barents Sea and the peanut hole of the Sea of Okhotsk. In these areas, foreign, largely unregulated, fishing continued. Distant water fleets, exiled from traditional fishing grounds, sought out those remaining areas of the oceans where they could still fish and where fish were still found in quantity. By the early 1990s, fish stocks were clearly diminishing and the distant water fleets were considered to be at least partially to blame. Just as a new session of the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks was about to begin, a precipitating incident arose that probably helped spur the Conference to a successful conclusion.

In February 1995, the Northwest Atlantic Fisheries Organization (NAFO), the international body responsible for controlling fishing beyond the national 200 mile jurisdictions in the northwest Atlantic, set quotas for Greenland halibut for the first time, the fishery previously having been unregulated. The European Union, having been outvoted, instituted an appeal for a larger share than it had been allocated. During the life of an appeal, under NAFO rules, the original quota is set aside for a limited period. The European Union then set its own quota for Greenland halibut at nearly six times the level set by NAFO.

The stage was set for a confrontation. Canadians were forbidden by their Government to fish for Greenland halibut beyond the two hundred mile limit and were having their quota within the 200 mile zone reduced. Under pressure from its Atlantic fishermen, Canada insisted that the European Union accept a 60 day moratorium on fishing for Greenland halibut, a delay that presumably would permit adequate time for a decision to be issued on the pending appeal. The European Union refused and in March Canada sent an armed fleet to arrest the *Estai*, a Spanish trawler then fishing on the high seas off Newfoundland. World opinion on this action was divided but the very fact that there was a division with strong international support from some quarters for Canada’s action suggested that the time had come for an attempt to solve the problem of fishing on the high seas.⁹⁹

⁹⁸*Ibid.*, 191. The 1974 Caracas agreement on the 200-mile limit is discussed in Parsons, *op. cit.*, 237-238.

⁹⁹For a more detailed discussion of the *Estai* incident, see W.E. Schrank, “The Grand Banks ‘Turbot War’ of

The United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks had been meeting since 1993 but, under the stimulus of current events, agreement was close when the Conference resumed at the end of March 1995. Agreement was reached in early August. Presumably, once the agreement had been ratified the problem of distant water fleets fishing virtually unregulated beyond the 200 mile limits would be solved. The treaty came into force at the end of 2001.¹⁰⁰ Only time will tell how effective it will be.

The second and more important problem following the extension of fishing jurisdiction was that coastal states found it virtually impossible to adequately limit the fishing activities of their own nationals.

Following the passage of the *Magnuson Act* in 1976, the United States adopted an Americanization policy of encouraging the replacement of foreign fleets which historically fished within the 200-mile zone, first with foreign vessels operating under the aegis of joint ventures between American and foreign companies and then, as American vessels became available, with American flagged vessels. An elaborate management system was implemented to generate and enforce fishery management plans which would restrict fishing to sustainable levels. Despite the best of intentions, the United States fishing fleets were overcapitalized¹⁰¹ and the effects of that overcapitalization were soon felt. In 1999, for instance, one-third of those commercial fish stocks in United States waters whose status were known were listed as being overfished.¹⁰² Overcapacity and overfishing, the conditions that the fishery management plans were intended to eliminate, continued to exist and in fact had worsened.

To take just a second example, when the Canadian Government announced in June 1976 that it would be adopting 200-mile exclusive fisheries jurisdiction by the first of the new year, it was quite explicit that foreign fleets were seen as overfishing Canadian fish stocks, that these fleets largely would be displaced, and that the Canadian fishery would gradually be developed over a period of time so that the stocks could rebuild and sustainable fishing continue thereafter.¹⁰³ Things once again did not work out as anticipated. The overexpansion of the Newfoundland fleet, referred to earlier, for example, occurred.¹⁰⁴ Fishing pressure became so great that by July 1992 the northern cod fishery had to be closed to commercial fishing.¹⁰⁵ During subsequent years, the

1995," *EEZ Technology*, I, (1997), 9-14. See also the note by B. Atkinson on the web site: <http://whale.wheelock.edu/archives/whalenet95/0084.htm> (July 30, 2002).

¹⁰⁰See the web site: <http://untreaty.un.org/English/TreatyEvent2002/index.htm> (July 21, 2002).

¹⁰¹See Weber, *From Abundance...*, *op. cit.*, 75-76, 155, 177-181.

¹⁰²Our Living Resources: Report on the Status of U.S. Living Marine Resources, 1999, Washington, D.C.: National Marine Fisheries Service, (1999), 15.

¹⁰³*New York Times*, (June 5, 1976), 5.

¹⁰⁴See Schrank, "*Extended Fisheries Jurisdiction...*", *op. cit.*, 290-291.

¹⁰⁵Canada Department of Fisheries and Oceans, *News Release*, NR-HQ-92-58E, (July 2, 1992).

northern cod closure was extended to recreational and “food” fisheries, and many other eastern Canadian groundfisheries were closed as well.¹⁰⁶

We have cited only two examples but the situation of many of the world’s commercial fisheries was in similar difficulty. FAO reported that, worldwide, at least one quarter of all commercial fish stocks were overexploited, depleted or recovering from depletion.¹⁰⁷ Catches of Atlantic cod, to take one of the worst and most important cases, fell from more than four million metric tonnes in 1968 to slightly more than one million tons in 1993.¹⁰⁸ The downward trend for a quarter of a century is very clear. Similar declines of other important commercial species have been documented by FAO.¹⁰⁹

2.4 A global crisis recognized

In 1992 the tocsin sounded. The dramatic closing of the northern cod fishery occurred in July. But the great international warning was issued that year in the form of an FAO document, *Marine Fisheries and the Law of the Sea: A Decade of Change*.¹¹⁰ That document opens with reference to an earlier FAO document, issued in 1980 just after coastal states extended their fisheries jurisdiction. The earlier document noted that “the opportunity exists, as never before, for the rational exploitation of marine fisheries.”¹¹¹ One might have expected the ten year review to be optimistic, demonstrating the success of the experiment of limiting freedom of the seas by permitting coastal states to extend their fisheries jurisdiction. Unfortunately that was not the case. The 1992 report concluded with the statement that “the situation is generally worse than it was ten years ago. Economic waste has reached major proportions; there has been a general increase in resource depletion, as fishing effort has moved down the food chain; the marine environment has become increasingly degraded; conflicts have become more widespread; and the plight of the small-scale fisherman has intensified.”¹¹²

The report implied that there were a number of causes for the decline in the state of the world’s fisheries, costs of the global marine fishing fleet in 1989 were in the order of US\$22 000 million but it focused on two. First, many fisheries were still open access fisheries and the argument of the Gordon article explaining why such fisheries tend to decline remained valid. Second, “the annual operating greater than total revenues, with no account being taken of capital costs.”¹¹³ In other words, marine fisheries were heavily subsidized. Subsidization artificially elevates profits and the economic signal that would show that it is no longer economical to catch the fish is lost.

¹⁰⁶*The Express* (St. John’s, Newfoundland), (December 22, 1993); *The Evening Telegram* (St. John’s, Newfoundland), (January 31, 1994).

¹⁰⁷*The State of World Fisheries and Aquaculture, 2000*, Rome: FAO, (2000), 10.

¹⁰⁸*The State of World Fisheries and Aquaculture*, Rome: FAO, (1995), 12.

¹⁰⁹C. Stamatopoulos, *Trends in Catches and Landings: Atlantic Fisheries 1970-1991*, Rome: FAO, (1993).

¹¹⁰*Marine Fisheries ... A Decade of Change*, *op. cit.*

¹¹¹*Ibid.*, 1.

¹¹²*Ibid.*, 52.

¹¹³*Ibid.*, 21.

The effect is that fishing continues beyond reasonable limits and the stocks can be decimated.

These subsidies were world-wide, with European Union fisheries support, for instance reaching nearly US\$600 million by 1990, excluding the support provided by individual countries. Norway provided support amounting to about US\$150 million.¹¹⁴ These are just examples, a more complete study of fisheries subsidies was done by Milazzo a few years later.¹¹⁵

Such figures are only approximate and are subject to infinite debate over what expenditures should be included and which excluded. Nonetheless, the *Decade of Change* helped to focus the world's attention on the problem of fisheries subsidies. Fisheries were only one of many industries that were of increasing concern to global leaders who, by this time, were starting to focus on the world's environmental problems.

2.5 The focus on fishery subsidies

A Decade of Change attributed the crisis in the fisheries in large part to the existence of subsidies. Since publication of the report, there have been a number of major studies of fishery subsidies. We have already discussed *A Decade of Change* and mentioned Milazzo's *Subsidies in World Fisheries*.

In its July 1999 report to the United States Congress,¹¹⁶ the Federal Fisheries Investment Task Force included a chapter on fisheries subsidies, working through different components to yield the broad definition cited at the start of this paper. Examples of different classes of fisheries subsidies and how they might affect investment in fisheries capital were discussed. The chapter emphasized that subsidies themselves were value free: they are not necessarily "good" or "bad" in their effects on the fishery. Each case must be investigated on its merits. They could be "positive" if they tended to inflate profits, or "negative" if, as in the case of restrictive regulations, they deflated profits. They could cost the government money by constituting an expenditure (as does a grant) or by foregoing income (such as various tax incentives through tax waivers). Or they could cost the government nothing (as a quota on imports). A key emphasis of the chapter was that the expression "subsidy" should carry no emotive connotations. Whether or not some action or inaction is a subsidy should depend on some objective criteria, which is why the concept of the potential effects on profits was brought in to the definition. An action, such as a boat bounty that was considered favourably during a period when the government was attempting to build up an undeveloped fishing industry, is no less a subsidy than the same programme when it is continued beyond the point when the fishery is fully developed and the stock is overfished. Most would agree that in the latter case the subsidy is a bad thing. Many

¹¹⁴*Ibid.*, 25.

¹¹⁵Milazzo, *op. cit.*

¹¹⁶Dunnigan, *op. cit.*

would argue that initially the subsidy was a good thing “if only it were stopped in time.” But whether good or bad, the action is the same and it should not be considered a subsidy at one time and something else at another. The chapter presents a taxonomy of subsidy types. What is missing from the chapter, however, is any attempt to measure the magnitudes of the subsidies or to empirically determine their effects.

The Organization for Economic Cooperation and Development (OECD) has had an explicit concern for fisheries subsidies at least since 1987, when its Committee for Fisheries set the goal of establishing “transparency on economic assistance measures, direct as well as indirect, and to develop an analytical framework to help understand how these measures affect the industry.”¹¹⁷ In 1992, the year of *Decade of Change*, the OECD published an inventory of government assistance programmes.¹¹⁸ This was followed by a major study of “Government Financial Transfers” to fisheries, the title of which clearly expressed the concern of the OECD: the *Transition to Responsible Fisheries*.¹¹⁹

The inventory was just that, an inventory. It listed programmes and gave some operating rules but for the most part made no effort to quantify the programmes, either in terms of the cost to government or the benefits to the industry.

The *Transition* document was more ambitious, attempting to quantify the cost to government of each programme. The term “government financial transfer” was clearly intended to avoid the emotive connotations currently associated with the word “subsidies” and to permit the study to include such items as fisheries management costs which most governments do not consider to be subsidies. But it is also limiting in that it neglects programmes that do not cost the government money but which may nevertheless constitute subsidies.

The use of euphemisms can be handy. The Canadian contribution to the *Transition* study includes “Fishers Unemployment Insurance,” a very substantial item which is defined as “special income support provided to self-employed fishers and wage earning fishers.” Canada, completing the questionnaire voluntarily, might have been reluctant to include this item were the term “subsidies” used. When the fishermen’s unemployment insurance system was being established in the 1950s, the goal was to supplement fishermen’s income and to do so in a manner that would avoid the danger of countervailing duties against Canadian exports being implemented by the United States, the primary market for Canadian fish products.¹²⁰ In 1985 there was a petition from part of the New England fishing industry asking the United States Government to invoke countervailing duties against certain fresh groundfish imports from eastern Canada. To a considerable degree, the success of the petition would depend on convincing the United States Government to interpret fishermen’s unemployment insurance as a subsidy. In the event, the

¹¹⁷*Economic Assistance to the Fishing Industry: Observations and Finding*, Paris: OECD, (1993).

¹¹⁸*Inventory of Assistance Instruments in the Fishing Industry and Management Systems*, Paris: OECD, (1992).

¹¹⁹*Transition to Responsible Fisheries – Economic and Policy Implications: Part 3, Government Financial Transfers and Resource Sustainability*, Paris: OECD, (2000).

¹²⁰Schrank, “Benefiting Fishermen...,” op. cit., 70, 73.

decision was made that the fishermen's unemployment insurance system was part of a general system of unemployment insurance and as such was not "specific" to fisheries. It was therefore exempt from the countervail rules of GATT. That part of the petition failed.¹²¹

Whatever term is used: subsidies, assistance instruments or government financial transfers, there are at least two major transmission mechanisms by which the government action can affect the fishery. The first is that the action can "interfere" in the marketplace in such a way as to provide an advantage to the fishing industry with respect to international trade. International agreements to limit certain of these practices, for instance direct export subsidies, have been the concern for many years of such bodies as the GATT and more recently the WTO.

The second transmission mechanism is that the government action can stimulate the industry to change its output, regardless of whether or not the action affects international trade. By stimulating production in a fully exploited or overfished fishery, the effect of the government's action is to endanger the fish stock. This concern has been considered important only recently, particularly since the publication of *A Decade of Change*.

The reason for our concern with subsidies is that in one way or another the behavior of the individual, firm or industry is affected by the existence of the subsidy. No matter how widely or narrowly the term is defined, the important thing is the effect of the subsidy on behavior. Under the broad definition, any government policy that affects the firm's profits is a subsidy. The important thing is the effect on profits and the firm's reaction to the change in profits. In the context of fisheries, increased profits will generally lead to an expansion in the activity of the industry and, if the effect is strong enough, ultimately to the decimation of the fish stocks. Among the many reasons offered to justify the extension of the unemployment insurance system to fishermen in the Canadian case cited above was that without unemployment insurance the number of fishermen would decline.¹²² The effect of implementing the fishermen's unemployment insurance system on individuals was to make the occupation of fishermen more attractive by substantially increasing the income of fishermen. Individuals presumably acted precisely as one would expect, given the financial incentive offered. From the perspective of fishing firms, unemployment insurance increased the incomes of fishermen without significant cost to them.

It is unlikely that the Atlantic Canadian fishery would have had the structure in the early 1990s that it did were there no unemployment insurance system to encourage fishermen to stay in the industry in the face of declining catches throughout the 1980s. Within the international trade framework, fishermen's unemployment insurance was not considered a subsidy, but that is because of the way treaties and regulations are written, not because of the potential effect of the programme on the fishery.

¹²¹Final Affirmative Countervailing Duty Determination. (March 24, 1986), op. cit.

¹²²Schrank, "*Benefiting Fishermen...*", op. cit., 75.

The determination of the effects of a subsidy can be complicated, as can be the subjective decision to be made subsequently of whether the effects of the subsidy are favourable or unfavourable given the social ambience of the time. But restricting the analysis to those subsidies that affect international trade is to lose track of the major concern with regard to the fishery. That is, does the subsidy have either a positive or negative effect on the sustainability of the fishery? In addition, there is a certain measure of arbitrariness in the interpretation of subsidies in the international context. Referring again to the ITA decision in the groundfish case, the ITA reviewed the Canadian Fishing Vessel Insurance Plan (FVIP), a plan, mentioned earlier, administered by the federal government, which insures fishermen against abnormal losses caused by perils at sea, accidents in handling cargo, and negligence of master, crew or pilots. The ITA decision was that FVIP did not offer insurance at beneficial rates and therefore was not countervailable. The purpose of the FVIP programme was interpreted as supplying insurance where private insurers declined to operate because of the high cost of doing business. The government had the infrastructure in place so it did not have to face the greater expenses. The FVIP plan was ruled non-countervailable because the rates charged by government were comparable to (or even higher than) private rates in those instances when private insurers would offer the insurance. But this argument missed the main point, which is that insurance rates would have been even higher than they were if not for a social decision made by government to offer the insurance so that the fishery could continue. Even were the insurance programme entirely self-financing, the presence of the federal government implies that fewer vessels would be involved in the fishery were it not for the government's intervention.¹²³ Alternatively, vessels might have participated in the fishery without insurance, but this could be prevented by the government mandating appropriate insurance, as do many governments in the case of motor vehicles. The mandated insurance would constitute a negative subsidy, i.e. would imply additional costs to the firm, and might have the effect of reducing the number of fishing vessels.

Similarly, loan guarantees do not necessarily cost the government anything, and the loans might be made at conventional interest rates, but they still affect the business. Without the loan guarantees, there would be less of a fishery and this presumably would have an effect on the degree of exploitation of the stock.

An additional difficulty with the OECD study is that, after definitions were established and questionnaires distributed to the participating countries, countries were left the discretion of determining what items would be included. It is unlikely that the responses were consistent across countries.

The breadth of the study is sufficient to encompass "General Services", the provision of management services such as stock assessments, establishment of quotas or total allowable

¹²³The view that government supported banks financing fisheries at market rates of interest, regardless of beneficial amortization rates and the general reluctance of the insurance industry to enter the business, are not subsidies, is widespread. See Tietze, *op. cit.*, 94, 104-5, and 141.

catches, and surveillance and enforcement. Most nations do not think of these items as being subsidies. Of course, these expenditures, are not exactly *transfers* either. Under certain conditions, these expenditures clearly would be subsidies. If, for instance, one trading partner recovered its cost of stock assessment from the industry while the second trading partner did not, the latter would be in the advantageous position of having its costs reduced relative to those faced by its trading partner who had to pay for stock assessments.

In addition to the OECD, FAO also has had a long-standing interest in the question of fishery subsidies, dating back at least to *A Decade of Change*. In November 2000, FAO sponsored an Expert Consultation on Economic Incentives and Responsible Fisheries, the title yet another euphemism for subsidies, the actual subject of the Consultation. The Consultation concluded that a single definition of subsidies, no matter how broad or narrow, would cloud some of the relevant issues and instead opted for a series of four nested “sets” of subsidies.¹²⁴

The first set consists of “government financial transfers that reduce costs and/or increase revenues of producers in the short-term.” These transfers would include such items as grants to purchase or modernize fishing vessels, income support payments, and other actual expenditure items.

Set two consists of “any government interventions, regardless of whether they involve financial transfers, that reduce costs and/or increase revenues of producers in the short-term.” Set two consists of all subsidies that would fall into set one plus other items that do not require explicit cash transfers such as, tax waivers and deferrals, insurance, loans, loan guarantees and the provision of goods and services by government at less than market prices. Set two subsidies are those that are generally believed to affect world trade and fall under the umbrella of the WTO.

Set three consists of “set 2 subsidies plus the short-term benefits to producers that result from the absence or lack of interventions by government to correct distortions (imperfections) in production and markets that can potentially affect fisheries resources and trade.” This set includes set two plus implicit subsidies such as the failure of government to charge the industry for negative externalities imposed on others: such as the implied cost of turtle destruction during trawling operations or the implied cost of overfishing.

The unrecovered cost of fisheries management might be included in set three but there was no agreement among the participants at the Consultation on the question of whether these items ever constitute subsidies. The conclusion was drawn that economic reasoning leads to ambiguous conclusions on this question.¹²⁵

¹²⁴*Report of the Expert Consultation on Economic Incentives and Responsible Fisheries*, Rome, 28 November – 1 December 2000. Rome: FAO Fisheries Report No. 638, (2000), 2-5.

¹²⁵There is some discussion of this issue in: W.E. Schrank, R. Arnason and R. Hannesson (eds.), *The Cost of Fisheries Management*, Aldershot: Ashgate Publishers, (2003).

Set four adds a time dimension, includes set three with the broad definition: “Set 4 subsidies are government interventions, or the absence of correcting interventions, that affect the costs and/or revenues of producing and marketing fish and fish products in the short-, medium- or long-term.” An example of a set four subsidy excluded from set three is an action such as closing a fishery to permit the fish stock to grow in anticipation of larger and more profitable catches being taken in the future. By the broad definition of subsidy given at the start of this paper, the government action of this example would constitute both a negative subsidy in the short term (since profit falls) but a positive subsidy in the long term (since profits rise).

The report of the FAO Consultation laid out some of the difficulties and methodologies involved in measuring the impact of subsidies on fish stocks, emphasizing that the effects of subsidies depend largely on how well fishing effort can be controlled. It is not the subsidy itself that leads to added pressure on fish stocks, but rather the effective change in fishing effort that results from the subsidy. The subsidy adds the economic incentive for change; effective fisheries management can, at least theoretically, limit the actions taken in response to that incentive. It is possible, although difficult, to have a positive subsidy programme that stimulates the fishing firm's profits without permitting an expansion of effort. To refer once again to the earlier cited case of a government grant to lower a firm's cost of purchasing a fishing vessel, the subsidy *in vacuo* would lead to an expansion of effort. If, however, there were a perfectly restrictive fishery management system in place, vessel replacement rules could prevent the purchase of the new vessel from increasing net effort and the pressure on the fish stock. Thus, “the effects of subsidies will depend on the extent to which fishing effort is controlled.”¹²⁶ The report also discusses the difficulties and methodologies involved in measuring the impact of subsidies on trade. In both cases, the effects of subsidies on sustainability and on trade, the consultation agreed that the existing state of knowledge about the magnitude of these effects is limited and requires further research.

With respect to trade and sustainability, the Consultation concluded that “in the broad sense...subsidies have an effect on trade whenever they have an impact on the volume of fisheries products moving across international frontiers...” but that “in more practical terms...the experts assumed that the FAO Committee on Fisheries was interested primarily in the state of knowledge regarding [the role of subsidies] whether through increased exports or the displacement of imports.”¹²⁷

The enforcement powers of international fisheries commissions are limited. It was just such limitations that led to the extension, a quarter century ago, of coastal states' jurisdiction over fisheries to 200 miles from shore. Similarly, it was frustration over the effectiveness of existing

¹²⁶ *Report of the Expert Consultation...*, *op. cit.*, 7. This issue is briefly discussed in Porter, *Fisheries Subsidies and Overfishing...*, *op. cit.*, 15-16.

¹²⁷ *Ibid.*, 11.

arrangements to protect straddling stocks and highly migratory species that led to the 1995 convention in this area. Tying subsidies to sustainability, therefore, is an interesting exercise which, if done properly, would tell nations what needs to be done to protect stocks, and if done publicly might shame countries into adopting appropriate policies and actions. Nonetheless, unless international law is changed to permit international enforcement of sustainability rules, knowledge of the link between subsidies and sustainability will have no effect on reality unless the states involved voluntarily agree to withdraw subsidies that have a negative effect on fish populations. Since the subsidies presumably were adopted for a reason, it might be politically difficult for the subsidies to be removed, although some countries, particularly New Zealand, Australia and Norway, have moved in this direction.

But the relationship between subsidies and trade is different from the relationship between subsidies and sustainability. The World Trade Organization has police powers and its regulations are enforceable. Therefore there has been an emphasis on the trade effects, rather than the sustainability effects, of subsidies. This emphasis goes back into history many years as is attested to by, for example, the sequence of analyses by the United States International Trade Administration and the International Trade Commission in fisheries countervailing duty cases under GATT. These bodies have developed methodologies for determining both the effect of subsidies on prices and the degree of material injury to the domestic industry.

In the interest of learning more about the extent of fisheries subsidies that might impinge on international trade, the Fisheries Working Group of the Asia Pacific Economic Co-operation (APEC) group of nations contracted with PricewaterhouseCoopers International Limited to study fishery subsidies in the APEC nations. The resulting study¹²⁸ includes one of the most sophisticated quantified and categorized listings of fisheries subsidies available to date. Despite the primary interest in trade matters, the analysts interpreted subsidies broadly. The costs of fisheries management, as we have seen, are usually not considered subsidies. Nonetheless, the costs of fisheries management are included among the “subsidies” listed in the Pricewaterhouse inventory.

Excluded from the Pricewaterhouse inventory are subsidies without fiscal implications for governments. The inventory includes both budgeted subsidies, e.g. direct transfers to fishermen, infrastructure and capital equipment support and market and price supports, as well as unbudgeted subsidies such as loan guarantees and tax preferences. Restrictions on entry to the fishery are excluded, although the cost to government of developing the policy and of licensing to restrict entry would be included. They also consider how, quantitatively, subsidies might tend to either positively or negatively affect the sustainability of the fishery.

¹²⁸ *Study into the Nature and Extent of Subsidies in the Fisheries Sector of APEC Members' Economies, n.p.: PricewaterhouseCoopers LLP, (2000).*

In at least one regard the Pricewaterhouse study is constrained by the WTO rules. Pricewaterhouse only considered subsidies that are targeted to the fishery sector and omit broader subsidies, excluded from consideration for countervailing duties under the WTO Agreement on Subsidies and Countervailing Measures, because they are not “specific” to the fishery. Their inventory, nevertheless, is quite broad. For Canada, for instance, they include the fishermen’s unemployment insurance programme, a programme, as we have seen, that was judged by the United States of America to be part of a general programme, not a specific subsidy to the fishery, and therefore not countervailable. Even more broadly, some infrastructure programmes that are included in the inventory, e.g. those relating to ports and harbours, affect other industries as well as the fishery.

Ultimately, the Pricewaterhouse study, which grouped subsidies into six “modalities”: direct assistance to fishermen and fish workers; lending support programmes; tax preferences and insurance support programmes; capital and infrastructure support programmes; marketing and price support programmes; and fisheries management and conservation programmes, identified an annual cost to APEC governments of US\$12.6 billion. The countries represented are responsible for 85 percent of the world’s production of seafood from coastal and high seas fisheries and from aquaculture.

In addition to the inventory, the Pricewaterhouse study included analyses of the effects of particular subsidies on trade. Specifically, the analysts considered the effects of vessel buyback, access fee, and fishery enhancement programmes on consumers, government expenditure, the fishing industry and fish stocks.

2.6 The measurement of fishery subsidies

To date, the most substantial studies of the magnitude, world-wide, of fisheries subsidies are those of APEC and of Milazzo.¹²⁹ Milazzo works primarily within the WTO’s Agreement on Subsidies and Countervailing Measures, and focuses on the direct fiscal implications to governments of their subsidy programmes. Budgeted subsidies, divided into domestic assistance and foreign access, are evaluated by determining the government expenditure on the programme,

¹²⁹Milazzo, *op. cit.* discusses his approach to assessing the impacts of subsidies at some length. He also briefly comments on an alternative measure, the producer subsidy equivalent, that was earlier experimented with by the OECD for application to fisheries and was subsequently abandoned (14-17). R. Hannesson, in *Economic Support of the Fishing Industry: Effects on Efficiency and Trade*, n.p.: paper prepared for the OECD, (n.d.), 5, also discusses the concept of producer subsidy equivalent, concluding that the heterogeneous nature of fisheries products renders it difficult, if not impossible, to adequately quantify subsidies using this technique. A major global study of subsidies is that of the OECD (OECD, *Transition...*, *op. cit.*) which focuses explicitly on subsidies with fiscal implications for the governments concerned. In their narrower study, focusing only on vessel buyback subsidy programmes, J. Gates, D. Holland and E. Gudmundsson [“*Theory and Practice of Fishing Vessel Buyback Programmes*” in S. Burns (ed), *Subsidies and Depletion of World Fisheries: Case Studies*, Washington, D.C.: World Wildlife Fund, (1997), 71-117] note that they use a literary and descriptive approach because of the difficulty in acquiring suitable data necessary for more analytical approaches.

excluding the administrative costs of operating the programme. For the most part, at least theoretically, the relevant figures can be determined from the public accounts of the subsidizing country. The critical difficulty arises because the public accounts are usually based on too broad aggregates and it is necessary to break down the published accounts into component parts. The required information is often not in the public domain and may be very difficult to obtain.

As difficult as it may be to establish the value of expenditures on budgeted subsidies, the problem becomes far more formidable when one considers unbudgeted subsidies. Milazzo includes as unbudgeted subsidies, subsidized lending by government and tax preferences. Here it is difficult to estimate the cost of subsidies and Milazzo's figures are extremely rough. In the case of loans, his figure is determined from an estimate of the annual global expenditures on capital, supplies, gear, maintenance and repairs. He then assumes that "a good deal of this total is probably financed."¹³⁰ He then arbitrarily assumes that $\frac{1}{3}$ ^{ths} of the value is financed by loans and that 10 percent of these loans constitute government subsidies.

The three types of tax preferences that Milazzo believes are most important are exemptions from fuel taxes, accelerated depreciation of vessels, and deferral of income taxes.¹³¹ In the absence of hard evidence, Milazzo's estimate once again is very rough, intended to approximate the loss of revenues to the government.

Milazzo also considers three additional categories of subsidies: (1) cross-sectoral subsidies such as: (a) those to the shipbuilding industry that may impinge on fisheries; and (b) infrastructure or public works spending that may or may not be targeted to fisheries infrastructure but which is paid for by government and which affects fisheries; (2) resource rent subsidies such as unrecovered costs of fisheries management, the cost of collateral environmental damage and the value of the fish removed from the sea; and (3) conservation subsidies such as vessel and fishing permit buybacks, stock enhancement, retraining of fishermen and research and development of environmentally improved gear.¹³² Where the subsidies listed here conceptually enter the public accounts as fishery related expenditures, such items as fisheries infrastructure, the cost of fisheries management, and the classes of conservation subsidies listed above, the figures are at least theoretically available on the same terms as are the expenditures on budgeted subsidies. The remaining subsidies are difficult if not impossible to evaluate with the approach taken by Milazzo.

¹³⁰Milazzo, *op. cit.*, 46-47.

¹³¹*Ibid.*, 47.

¹³²*Ibid.*, 49-72. Munro and Sumaila take strong issue with the concept of buyback programmes as conservationist subsidies. On the assumption that the government buybacks are foreseen by the fishing industry, they demonstrate that the equilibrium fishing capital (before the buyback becomes effective) would be much higher with the buyback than without, and therefore that a government financed buyback would lead to great pressure for overfishing. Government mandated industry financed buybacks and fisheries with effective effort controls are not considered by Munro and Sumaila. G. Munro and U.R. Sumaila, "The Impact of Subsidies Upon Fisheries Management and Sustainability: The Case of the North Atlantic," University of British Columbia Fisheries Center Working Paper (2001). The literature is briefly reviewed in Porter, *Fisheries Subsidies and Overfishing...*, *op. cit.*, 16-22.

Other subsidies which raise the same questions and which are mentioned in passing by Milazzo are international trade-for-access agreements and tariff and non-tariff trade barriers.¹³³

Milazzo worked on his own and drew his information from published sources and from his contacts in the United States and other countries. That he was able to arrive at what seem to be reasonable numbers (a total of between US\$14 billion and US\$20.5 billion, worldwide)¹³⁴ reflects the successful conclusion of a Herculean task. Perhaps to make the project feasible, although he is primarily concerned with the role of fisheries subsidies on the sustainability of fisheries, he, for the most part, ties his work to the WTO agreement and thus focuses primarily on subsidies with trade implications.

Our objective here is more general, in addition to trade considerations, to determine a framework for evaluating subsidies from the sustainability perspective. Milazzo raises some of the relevant questions.

For instance, Milazzo notes that the European Union (EU) engages in trade-for-access agreements with various countries under which fishing firms within the EU gain access to distant fishing waters in return for the EU allowing access of the foreign partner's fish products to EU markets under preferential conditions. Since he evaluates subsidies by their fiscal effects on government, he asks whether these agreements should be considered as subsidies under the category of "foregone government revenue".¹³⁵ We suggest that the question is broader than this and we return to it later. Yet, with respect to tax preferences, Milazzo asks not only what are the costs to government of foregone taxes but also the critical question of what are the benefits to the industry. After all, it is the perceived benefits to the industry that will motivate firms to modify their behavior. But he drops the matter there.¹³⁶ We propose that an important step on the way to evaluate subsidies is to evaluate the benefits to the industry. It is only in this way that we will be able to determine the reactions of the industry and therefore the effect of the subsidy on the sustainability of the fish stock. The usual method of determining the benefits of a subsidy to the industry, or to the firms in the industry, is to determine whether, and to what extent, revenues are enhanced or costs lowered by the subsidies. In fact, what is happening, is that the profits of the firm are being modified, and it is this modification that is motivating change in the behavior of the firm. We shall therefore generally focus on profits, consistent with the broad approach to subsidies, mentioned at the start of this paper, which focuses on the effect on potential profits resulting from a government action (or inaction).

¹³³ *Ibid.*, 42, 74.

¹³⁴ *Ibid.*, 73.

¹³⁵ *Ibid.*, 42.

¹³⁶ *Ibid.*, 49.

By focusing on potential profits, this definition emphasizes the effects of the government's actions or inactions on the behavior of the firm. Presumably, a "positive" subsidy, i.e. one which potentially increases profits, stimulates expansion of the industry, while a "negative" subsidy, which potentially decreases profits, leads to a reduction of output. Notice that the terms "positive" and "negative" carry no connotation of good or bad, they simply point to the direction of potential changes in profits that can be expected to result from the government policy. Whether a subsidy is good or bad depends on the objectives of policy and can be evaluated alternatively from the perspective of the firm, the industry or the society as a whole. But the results of this evaluation are not inherent in the definition of the subsidy; they result from the economic analysis of the policy and the subjective judgement of the quality of the effects of the policy.

The term "potential profit" rather than "profit" appears in the definition to reflect the fact that it is the potential effects of the policy that will stimulate the firm to act. The potential effects may not be realized but the actions of the firm will have been taken before that is determined. In addition, the potential effects are determined over the short-, medium-, or long-term. These expressions are added to the broad definition because government policy can have very different effects on profits as the time frame changes and as firms react over time to the policy. Note that the focus here is on the potential effects of the subsidy, not on the intent behind the subsidy.

Take, for instance, the government policy, referred to earlier, where a 50 percent grant is made towards the purchase of fishing vessels and, for the sake of the argument, ignore the effects on the shipbuilding industry. Firms will see a major capital cost reduced by half. With cheaper capital, they would be inclined to expand their capital stock, i.e. to purchase fishing vessels. Assuming there is an adequate stock of fish, employing the new capital will increase output (the fish harvest) and revenues. If the fishery were viable in the first place, revenues would exceed costs, and profits would increase. Thus, the government policy of instituting the grants would potentially increase the profits of the firms and they would react accordingly, as described. But this would not be the end of the story. In any fishery where fishermen are allowed to catch as much as they can until an overall quota is reached, whether open access or limited entry, the availability of profits, especially when combined with cheap capital costs, will lead to both an expansion of the operations of existing firms and, in the open access case, to the entry of new firms. Thus, after an initial increase in the profits of existing firms, the increase in effort stimulated by the potential increase in profits can lead to a substantial increase in catch and to a substantial decline in the fish population. Ultimately fishing costs rise and revenues fall, leading to a drop in profits and ultimately to their disappearance.

While initially, potential profits and the realized short-term profits drive the expansion of the industry, in the longer term, profits disappear.

Let us return to the trade-for-access arrangements of the European Union. Is the foregone government revenue that is Milazzo's focus the important measure? Broken into its component parts, there are two types of activity occurring. First, the EU is in effect purchasing the right of its fishermen to fish in distant waters. The matter is complicated by the fact that the payment is in-kind, but nonetheless, the critical aspect for the firm is that the government is purchasing access to fishing grounds for the firm. The benefit to the firm is the increase in profits that the firm will receive from gaining that access without paying for it. This is a situation where it will be useful to consider only the cost reducing aspect of the "purchase". The problem is difficult, requiring either: (a) that in a comparable case the access rights are literally sold to a third party so that the price actually paid by third parties is considered to be the amount by which the distant water fleet's costs are reduced; or (b) that the price of access be imputed by some means, for instance by evaluating the worth of the preferential trade to the country granting access, or the value of the fish being removed from the sea. If there is a sale of access to a third party, then the problem is relatively easy. If not, it becomes exceedingly complicated.

The second aspect of the trade-for-access agreement that must be considered is the trade that follows from the agreement. If the trade preferences were general, not restricted to fish products, then the trade aspect has little subsidy component for the fishery. The only subsidy is the positive subsidy inherent in the access component of the agreement. If the trade preferences are restricted to fisheries, as in the case cited by Milazzo, then there is probably a negative subsidy component to the fishing nation's fish marketing firms because of the increased competition generated by the preferential trading arrangement. Measurement of this negative subsidy also could be very difficult.

Is the measurement of subsidies *per se*, by their fiscal effects on governments appropriate if the concern is the sustainability of fish stocks, or for that matter, if the concern is international trade? If trade were the focus of the discussion, a much more serious concern than fiscal considerations is the effect of the subsidy on the price charged for the commodity in international markets. Hannesson, in evaluating the effects of tariffs and import quotas, focused explicitly on price effects.¹³⁷ Implicit in Milazzo's computations is the assumption that, as a first approximation, a fiscal transfer or tax waiver is directly passed along to the trading partner in the form of a price reduction, and it is this price reduction which is viewed as actionable under WTO rules. This is the approach taken by the United States International Trade Administration which calculates the estimated net subsidy as a percent *ad valorem* by dividing the annual value of the grant by the annual value of production.¹³⁸ This percentage is taken as a measure of the extent to which the price charged by the exporter is less than fair value.

2.7 The effect of subsidies on sustainability

¹³⁷R. Hannesson, *op. cit.*, 3.

¹³⁸See, for instance, the discussion of the FVAP programme in *Final Affirmative Countervailing Duty Determination...*(March 24, 1986), *op. cit.*

It is difficult enough to define and measure subsidies. What is simultaneously most difficult and most important is that we determine the effects of subsidies. These effects are threefold: the effect on sustainability, the effect on international trade and the effect on economic growth.

Our concern with sustainability requires a focus on the effect of the subsidy on the fish stock. Clearly, the relationship is indirect. The subsidy in itself does nothing but aid the profit line in a firm's income and expenditure statement. What is critical is the question of how the firm's behavior changes as a result of the subsidy. What incentives to motivate the firm are built in by the subsidy? How does the firm react to those incentives? What counteracting fishery management regulations restrain the firm? What, ultimately, is the effect on the fish stock?

The report of the US Federal Fisheries Task Force, with regard to the Capital Construction Fund (CCF) subsidy in the United States, stated that it "believes that the CCF programme is a subsidy that has influenced aggregate capital investments in the fisheries" but that "the extent of the impact of this subsidy ... is impossible to measure."¹³⁹ The fundamental reason given is that it is impossible to determine how many vessels would have been built had there not been the subsidy. This is the same problem faced in evaluating any accelerated depreciation or investment tax credit scheme. The secondary reason given is that there is too little information available. Presumably information can be obtained, albeit with difficulty. We will assume that the appropriate amount of information is, in fact, available. If the information is not available, then the first priority must be to build an adequate data base.¹⁴⁰

Our problem then becomes, given the specification of the programme: how do we link the programme itself to changes in fish stocks? Similarly, if the focus of the analysis was on trade, the linkage has to be made to the effect of the subsidy on international trade. This is the situation most often faced by government agencies evaluating countervailing duty petitions. Finally, if the focus of the analysis is on economic growth, the linkage must be established between the subsidy and growth.

As the answers to these questions become technical, this problem is discussed at some length in Annex 1.

2.8 International conferences

¹³⁹Dunnigan, *op. cit.*, 63. Milazzo, *op. cit.*, makes a similar comment, also not quantified, 48.

¹⁴⁰Most studies, like that of the US Federal Fisheries Task Force, simply assume the relationships among subsidies, overcapacity and overfishing. See Porter, *Fisheries Subsidies and Overfishing...*, *op. cit.*, 9-15 and M. Onestini, "Subsidies in Argentine Fisheries," in *Fisheries Subsidies and Marine Resource Management: Lessons Learned from Studies in Argentina and Senegal*, Geneva: United Nations Environment Program (2002), 17-20. The difficulties inherent in analyzing the relationships among fisheries subsidies, overcapacity and overfishing are clear from the World Trade Organization Committee on Trade and Environment, *UNEP Fisheries Subsidies Workshop: Chairman's Summary*, WT/CTE/W/187, (March 15, 2001).

While there had been many international conferences concerned with fisheries management and development in the past,¹⁴¹ the events of the early 1990s led to a sequence of meetings which helped establish the ambience of today's concerns about the world's commercial fisheries. The emphasis was on environmental issues and in particular for fisheries, on overcapacity, overfishing, and initially only implicitly on the role of fishery subsidies.

In May 1992, 67 nations and international organizations met in Cancun, Mexico at the International Conference on Responsible Fishing to consider problems of world fisheries. Among the concerns were the role of fish as a major source of human nutrition, the importance of preserving the marine environment, and the problems of fishing overcapacity. The Cancun Declaration on Responsible Fishing included twenty clauses largely focused on problems identified in the contemporaneous *Decade of Change* document. The title told it all: the concern reflected in the declaration was that there was a need for the adoption by nations of improved and effective planning and management standards for fisheries and for the further development of the paraphernalia required for effective fishery management, including improved data collection and scientific knowledge. FAO was asked by the Conference to draft an International Code of Conduct for Responsible Fishing, thus encouraging FAO to continue with work that was suggested by its own Committee on Fisheries a year earlier.¹⁴² There was no reference to subsidies other than that which is implicit in any consideration of responsible fishing.¹⁴³

The following month, June 1992, the great Earth Summit, the United Nations Conference on Environment and Development, met in Rio de Janeiro. This meeting, two years in preparation, received extensive media coverage and focused the world's attention on the problems of the environment. Nearly every country participated and several documents were agreed to at the Conference, most importantly, the Rio Declaration on Environment and Development which consisted of a statement of 27 principles. While biodiversity, the ecosystem, and habitat degradation were among the subjects of the principles, and the principles were broad enough to encompass fisheries problems, there were no direct references to fisheries or to subsidies.¹⁴⁴ The agenda (Agenda 21) adopted at the Rio Conference, however, explicitly called for the convening

¹⁴¹A comprehensive strategy and a programme of action for nations to follow in developing their fisheries are discussed in the *Report of the FAO World Conference on Fisheries Management and Development: Rome, 27 June – 6 July 1984*, Rome: FAO, (1984). Nations officially participated in regular meetings of the Committee on Fisheries of the FAO (COFI) and the Fisheries Committee of the OECD.

¹⁴²See the working paper: *[FAO] Committee on Fisheries [COFI] Nineteenth Session, Rome, 8-12 April 1991: Environment and Sustainability in Fisheries (COFI/91/3)*, Rome: FAO, (February 1991), especially 23. The Committee was invited to consider the need for guidelines on responsible fishing. In particular, COFI was asked to support limiting the use of subsidies to “remedial or initial development measures. (22)” These are the two situations noted earlier where economists are inclined to justify subsidies.

¹⁴³See references to the Cancun Declaration in the Internet Guide to International Fisheries Law: <http://www.oceanlaw.net/texts/summaries/cancun.htm> (July 11, 2002) and <http://www.oceanlaw.net/texts/concun.htm> (February 11, 2002).

¹⁴⁴For the text of the Rio Declaration on Environment and Development see the web site: <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> (July 21, 2002).

of the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks referred to earlier.¹⁴⁵ The chief role of the Rio Conference was to focus the world's attention on environmental questions and to establish a continuing world agenda. This was not a Conference to be held and forgotten; it has made a lasting impression on the world's psyche.

Three years after the Rio Conference, FAO sponsored a Ministerial Conference on Fisheries. After noting that 70 percent of the world's fish stocks were classed as being fully exploited, overexploited, depleted or recovering from depletion, the Rome Consensus on World Fisheries, a product of the Ministerial Conference, declared that there was a need for urgent measures to avoid further decline. More than a dozen steps were urged on governments and international organizations, steps that included reducing fishing to sustainable levels and reducing overcapacity in fishing fleets. There was mention in the Rome Consensus of neither the causes of the problems nor how the steps were to be implemented. Subsidies, once again, were never mentioned.¹⁴⁶

The Twenty-eighth FAO Conference in October 1995 adopted the Code of Conduct for Responsible Fisheries,¹⁴⁷ a document that had been under development since the 19th COFI meeting four years earlier. The voluntary Code laid out extensive rules that should be followed to maintain responsible fisheries. Among many others, these include: providing for the economic conditions under which fishing industries operate to promote responsible fisheries (7.2.2b); ensuring that the permitted level of fishing is commensurate with the state of the fish resource (7.6.1); establishing mechanisms to reduce capacity where excess capacity exists (7.6.3); and liberalizing trade in accordance with the WTO Agreement (11.2.5). Once again, while subsidies are never mentioned, restricting those subsidies which negatively affect fish stocks is implicit in these rules. Acting directly under the stimulus of the Code of Conduct, FAO developed the voluntary International Plan of Action for the Management of Fishing Capacity.¹⁴⁸ Among the urgent actions called for in the International Plan of Action were that nations assess the impact of subsidies which contribute of overcapacity and thereby affect the sustainable management of their fisheries, and reduce and progressively eliminate such subsidies. The Plan further called upon nations to distinguish between those subsidies that have a deleterious effect on sustainability, on the one hand, and those that are neutral or have a positive effect on the other.

¹⁴⁵Chapter 17 of Agenda 21, "Protection of the Oceans, All Kinds of Seas, Including Enclosed and Semi-enclosed Seas, and Coastal Areas and the Protection, Rational Use and Development of Their Living Resources", is concerned with the protection of all aspects of the oceans, including fisheries. There is no explicit mention in the fisheries section, paragraphs 17.44 – 17.95, of subsidies. For the text of Agenda 21, see the web site: <http://www.habitat.igc.org/agenda21> (November 18, 2002).

¹⁴⁶*The Rome Consensus on World Fisheries Adopted by the FAO Ministerial Conference on Fisheries: Rome, 14-15 March 1995*, available from the web site: <http://www.fao.org/fi/agreem/consensu/cone.asp> (February 11, 2002).

¹⁴⁷*Code of Conduct for Responsible Fisheries*, Rome: FAO, (1995).

¹⁴⁸*International Plan of Action for the Management of Fishing Capacity*, Rome: FAO, (1999).

In December 1995, representatives of 95 nations meeting at the International Conference on the Sustainable Contribution of Fisheries to Food Security issued the Kyoto Declaration and Plan of Action.¹⁴⁹ The Kyoto Declaration further strengthened the call for responsible fisheries.

Five years after the Rio Conference, the United Nations General Assembly reviewed the world's accomplishments since 1992 and resolved to continue the Rio agenda.¹⁵⁰ The resulting document was long and comprehensive, covering virtually all environmental areas. With regard to fisheries, the resolution accepted that many fish stocks continued to decline and called on governments to act to prevent and eliminate overfishing. All that was said about subsidies was that governments should consider the positive and negative impacts of subsidies on the conservation and management of fisheries.¹⁵¹

Similarly, the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, meeting in October 2001, issued the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem which again reinforced the urgency of the need for improved fishery science and monitoring to continue the implementation of the FAO Code of Conduct.¹⁵²

The Fourth Ministerial Meeting of the WTO, held in Doha, Qatar in November 2001, referred to at the very beginning of this paper, outlined a work programme for the next round of negotiations under the auspices of the WTO. Fisheries, alone among all industries, are mentioned as requiring improved WTO discipline to control subsidies.¹⁵³ In a strange reference for a document concerned with trade distortions, the WTO's official interpretation of the Doha Declaration noted that the WTO Committee on Trade and Environment had studied the question of fisheries subsidies for several years and found that fisheries subsidies can be environmentally damaging.¹⁵⁴

Most recently, the Johannesburg World Summit on Sustainable Development in September 2002 included in its Plan of Implementation reference to the need, in the interest of sustainable fisheries, to eliminate "subsidies that contribute to illegal, unreported and unregulated fishing and to over-capacity". The Plan reemphasized the Doha Declaration's call for the WTO "to clarify and improve its disciplines on fisheries subsidies."¹⁵⁵

¹⁴⁹The Kyoto Declaration and Plan of Action on the Sustainable Contribution of Fisheries to Food Security, n.p., Fisheries Agency of the Government of Japan, (1995).

¹⁵⁰Resolution Adopted by the General Assembly for the Further Implementation of Agenda 21 (A/RES/S-19/2), text available from the web site <http://www.un.org/documents/ga/res/spec/aress19-2.htm> (July 12, 2002).

¹⁵¹Ibid., 17-19.

¹⁵²The text of the Reykjavik Declaration is at the web site: <http://www.refisheries2001.org/sidur/facilities.htm> (February 11, 2002) and a summary of the Reykjavik meetings appears at the web site:

<http://www.iisd.ca/linkages/sd/sdice/sdvo161num1.html> (July 21, 2002).

¹⁵³*Ministerial Declaration, Doha, November 14, 2001* at the web site:

http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm (February 19, 2002).

¹⁵⁴*The Doha Declaration Explained* at the web site: http://www.wto.org/english/tratop_e/dda_e/dohaexplained_e.htm (February 19, 2002).

¹⁵⁵The World Summit on Sustainable Development Plan of Implementation is available at the web site: http://www.tebtebba.org/tebtebba_files/wssd/plan_final1009.rtf (October 16, 2002).

We next turn to the current political debate concerning the future control of world fishery subsidies.

3. SUBSIDIES AND FISHERIES AT THE END OF 2002: THE POLITICAL DEBATE

For reasons stated earlier, many of the recent discussions of fisheries subsidies has taken place in the context of the WTO. In 1999, five nations presented to the WTO's Committee on Trade and Environment (CTE) a submission urging governments to pursue work within the WTO to achieve the gradual elimination of environment damaging and trade distorting fishery subsidies.¹⁵⁶ There was then an extensive discussion at the CTE in October 2000 on that subject.¹⁵⁷

At that meeting, Japan questioned why the United States, in its presentation to the Committee, stressed fisheries subsidies when these subsidies were covered by the umbrella Agreement on Subsidies and Countervailing Measures. Japan argued that the technical analysis of fishery subsidies and their impact on fishery resources was the role of FAO; that the WTO should not be expected to do such work. New Zealand took the position that the WTO, given its expertise, had a key role to play with regard to subsidies.

At the June 2001 CTE meeting, Iceland, referring to FAO's Expert Consultation of November/December 2000, stressed that subsidies affected trade whenever they had an impact on the volume of products traded internationally. Australia suggested that the WTO itself was the appropriate body to examine the question of how the WTO could contribute to the reduction of subsidies which promote overfishing. Also at this meeting, Japan emphasized that there were many factors that had deleterious effects on fish stocks, subsidies being only one of them, and that the quality of fisheries management had a major role in mitigating the negative effects of such factors as subsidies. Japan concluded that it was wrong to focus only on subsidies while neglecting other factors and therefore that Japan could not support the continuation of the sustainability discussions at the WTO. Chile complained that fisheries subsidies as an issue were never considered directly; yet concrete action was needed. The WTO, in the opinion of Chile, had exclusive competence for subsidies. Although the United States agreed that there was a need to consider the role of effective fisheries management, it felt that the need for the analysis of fisheries management should not be a reason for delaying the consideration of fisheries subsidies by the WTO. The representative of FAO noted that FAO's Committee on Fisheries felt that

¹⁵⁶World Trade Organization Committee on Trade and Environment: *Benefits of Eliminating Trade Distorting and Environmentally Damaging Subsidies in the Fisheries Sector; Annex I – Promote Sustainable Development by Eliminating Trade Distorting and Environmentally Damaging Fisheries Subsidies*, WT/CTE/W/121, (28 June 1999). The five countries were Australia, Iceland, New Zealand, the Philippines and the United States.

¹⁵⁷World Trade Organization Committee on Trade and Environment: *Report of the Meeting held on 24-25 October 2000*, WT/CTE/M/25, (12 December 2000). See also the *Report of the Meeting held on 27-28 June 2001*, WT/CTE/M/27, (8 August 2001).

“the study of the trade aspect of fisheries subsidies should be technical and be coordinated with the WTO, as the competent body.” But the lead role in the “promotion of cooperation on fisheries subsidies and the relationship with responsible fisheries” should be taken by FAO.

The effect of subsidies on the trade in fish and fish products falls clearly under the WTO umbrella, to the extent that the WTO regulates international trade. Subsidies, in their effect on sustainability separate from any effect on trade, would not fall into the domain of an international trade organization. Yet, as has been noted repeatedly, there is great frustration with the apparent inability of existing arrangements to control overfishing. Because of the existence of strong enforcement procedures under the WTO, there is interest in determining whether there is a legitimate way for the WTO to become involved in sustainability issues. It is this interest that has led over the past three years to the discussions at the CTE meetings which were cited above.

In April 2002, eight countries submitted to the WTO’s Negotiating Group on Rules a document intended to orient discussions on fisheries subsidies, on purported gaps in the Agreement on Subsidies and Countervailing Measures concerning such subsidies, and on the role of WTO discipline with regard to fishery subsidies.¹⁵⁸ The argument raised in this submission starts with the statement that often commercial fisheries are exploited or potentially exploited by more than one nation, either because fishermen from more than one country may operate in the same area or because the fish may migrate from one jurisdiction to another. As a result, the argument continues, fishery subsidies have implications for trade far beyond the distortion of competitive relationships. In most industries, subsidies that encourage production impinge on trade only at the market level, they have no effect on the trading partners’ ability to produce the good. With shared resources, a trading partner’s ability to produce fish products may be hindered if one country subsidizes the fishery to the extent that the resource is diminished.

Three implications are noted: (1) countries that do not subsidize and that restrain total catch to maintain the resource lose the extra catch to countries that subsidize and do not restrain total catch; (2) competition from subsidized distant water fleets can make it economically unviable for developing countries to develop their own fisheries and therefore to realize the benefits of their own 200-mile zones of fishery jurisdiction; (3) subsidies can contribute to stock depletion, with negative economic, trade and environmental effects for other countries that have an interest in the stock.

The argument continues, stating that the problems are exacerbated by the heterogeneous nature of fishery products, the diffuse nature of subsidies to the sector, and the inaccessibility of information on fishery subsidy programmes, all of which make it difficult to demonstrate the existence of market distortions in the fisheries sector. Therefore, while fisheries subsidies are

¹⁵⁸World Trade Organization Negotiating Group on Rules: *The Doha Mandate to Address Fishery Subsidies: Issues*, TN/RL/W/3, (April 24, 2002). The eight countries are Australia, Chile, Ecuador, Iceland, New Zealand, Peru, the Philippines, and the United States.

subject to the Agreement on Subsidies and Countervailing Measures,¹⁵⁹ the special features of fisheries limit the effectiveness of the policing powers of that agreement. “Improved WTO disciplines are required.” In a counter-submission,¹⁶⁰ Japan emphasized that to the extent that fisheries subsidies distort trade, the Agreement on Subsidies and Countervailing Measures is intended to remedy the problem and until it is demonstrated that the agreement cannot do so, no “jumping” to amend the agreement should occur. If there is a deficiency in the wording of the agreement, then the deficiency is not specifically related to fisheries.

The counter-submission queried how the limitation on access to a resource affects international trade. The submission then argued that the matter of resource depletion, either in the zone of exclusive jurisdiction, or on the high seas, is a question of effective fishery management and as such is a matter for the United Nations Convention on the Law of the Sea and its derivatives, not for the WTO. Essentially, and explicitly, Japan argued that there is no need to treat fisheries subsidies in a special fashion and, therefore, there is no need to change the WTO “discipline” because of factors unique to fisheries.

New Zealand has filed an explanation of the original statement of the eight countries.¹⁶¹ The focus of this submission is the heterogeneous nature of fishery products and the economic structure of the fisheries industry, and the view that these special characteristics of fisheries make it difficult to identify the trade distortions that the Agreement on Subsidies and Countervailing Measures was intended to rectify. Since fishing nations can be consumers and importers of fishery products as well as exporters, subsidized benefits to the domestic industry make it more difficult for the exporting country to compete in the market for fishery products in the subsidizing country. Countervailing duties are not relevant here because the subsidizing country is not necessarily exporting its fishery products.

The New Zealand explanation notes that because of the diversity of species, products, and processing techniques, it can be very difficult, or impossible, to establish the reference price of equivalent products for the purpose of evaluating the effects of fishery subsidies on trade. Other industries are so structured that unsubsidized reference prices form a basis for evaluating the effects of subsidies.

The submission of the eight countries appears to focus on three facets of the problem of fisheries subsidies:

¹⁵⁹Final Act...Uruguay Round of Multilateral Trade Negotiations, op. cit., 264-314.

¹⁶⁰World Trade Organization Negotiating Group on Rules: *Japan's Basic Position on the Fisheries Subsidies Issue*, TN/RL/W/11, (July 2, 2002).

¹⁶¹World Trade Organization Negotiating Group on Rules: *Fisheries Subsidies: Limitations of Existing Subsidy Disciplines, Submission from New Zealand*, TN/RL/W/12, (July 4, 2002).

1. Because of the heterogeneous nature of fishery products, the variety of fishery subsidies, and a lack of information about the subsidies, the usual WTO rules cannot be applied where they are appropriate;
2. Fish processors and fishermen in a subsidizing country are able to sell their fish in their own country cheaper than can unsubsidized foreigners. Unsubsidized foreigners cannot match the prices so they lose their export business in the subsidizing country. Therefore, international trade is interfered with and WTO disciplines should apply;
3. Where fishing by several nations occurs, as in the case of straddling stocks and highly migratory stocks, and one country runs down the stock by overfishing, then the other countries that fish for that stock have fewer fish to catch. If those other countries normally trade in fish, they can no longer do so because of an insufficient fish population. Once again, the overfishing subsidizing country is interfering with international trade and WTO disciplines should apply.

With regard to the first point, a lack of information is a widespread problem, not only for fisheries. It may be difficult to establish both the magnitude of subsidies in fisheries and their effect on international trade, although the United States International Trade Administration appears to have done so for a variety of fishery products from several countries. This would not appear to be an insurmountable problem under the current rules. Similarly, the United States International Trade Commission (ITC), in evaluating material injury to the domestic industry resulting from subsidized imports to the United States in countervail cases, must define the equivalent domestic industry. The focus here is on the production of like products. While there is always an element of arbitrariness in these judgements, the ITC does not seem to have excessive difficulty in defining like fishery products.¹⁶²

With regard to the second point, this again is not a uniquely fisheries issue. GATT and WTO have traditionally been concerned with the actions of exporting countries that interfere with international trade, often by distorting the price structure by means of, for instance, subsidies, and with the actions of importing countries that impose tariffs and non-tariff barriers (quotas), but not usually by other actions that lead to price distortion. The question raised here is whether there is a meaningful difference in the effects on international trade when importing countries, rather than exporting countries, subsidize prices. Perhaps the jurisdiction of the WTO should be expanded to include price distortions caused by importing nations. But such a major policy change, if necessary and agreed to, would only incidentally be related to the fishery, and the issue

¹⁶²See for instance, the discussion in United States International Trade Commission, *Certain Fresh Atlantic Groundfish from Canada, Final Determination*, Washington, D.C.: USITC Publication 1844, (May 1986), 3-5. Korea, in a response to the New Zealand note, argued, using the example of Bordeaux wine, that fish products are not more heterogeneous than other products. Korea was concerned that, in implementing the Doha Declaration on improving disciplines, the basic structure of the Agreement on Subsidies and Countervailing Measures not be undermined. World Trade Organization Negotiating Group on Rules, *Statement of Korea at the Negotiating Group on Rules Concerning Fisheries Subsidies on 8 July 2002*, TN/RL/W/18, (July 17, 2002).

would be deserving of a wide discussion. If a change were made in the WTO disciplines with respect to fisheries on this matter, there can be little doubt that fisheries would be cited as a precedent and the change would be more generally applied. It is difficult to see how the WTO can act unless one assumes that it does so in every instance, in every industry, where a nation subsidizes an industry which faces import competition.

Yet, it is not clear that any expansion of WTO authority is necessary for action to be taken in such an import displacement case. Article 6 of the Agreement on Subsidies and Countervailing Measures declares a subsidy in one country that seriously prejudices the interests of another country to be actionable, that is, to be subject to WTO discipline. Serious prejudice is then considered to exist when a subsidy has the effect of displacing or impeding the imports into the subsidizing country of the products of the other.¹⁶³ Apparently there has been only one successful case in this category, and that did not concern fisheries. Perhaps the reason that this part of the agreement is unused is that, if applied at all, it could be very widely applied and would in effect amount to an extension of WTO jurisdiction.

With regard to the third point, it may not be primarily a WTO issue. The United Nations Convention on Straddling Fish Stocks and Highly Migratory Fish Stocks has only just come into force. There are methods built into that convention intended to prevent overfishing. The trade implications of overfishing these stocks are secondary to the issue of sustainability. In the first instance, rather than stretch the enforcement role of the WTO, it has been argued that the convention should be given sufficient time to see if it is capable of providing an adequate framework for solving the problems it was intended to solve. Even were the WTO to enter this arena, it would have to establish that the stocks were being diminished as a result of fishing effort on the part of the subsidizing country. It would probably also have to determine that there was no excessive fishing by unsubsidized fleets as well. These would be very difficult tests to satisfy. It is possible that Article 6 of the Agreement on Subsidies and Countervailing Measures can be applied here as well as in the previous case, but this would be, to date, an untested aspect of the agreement.

In addition, in considering the issue of one or more foreign nations fishing legally within the 200-mile zone of a coastal state, the United Nations Convention on the Law of the Sea takes precedence over the WTO. Article 56 of the convention gives the coastal state the exclusive right to manage its resources within the exclusive zone. Article 62 instructs the coastal state to arrange for fishing within its exclusive zone by foreign vessels when the coastal state does not have the capacity to harvest the entire allowable catch.¹⁶⁴ The issue of a coastal state permitting overfishing and then setting low catch quotas accordingly, is not an issue of international trade but of fishery sustainability. As such, correction of the problem lies within the framework of a possible auxiliary agreement under the Law of the Sea. The international trade implications of this

¹⁶³*Final Act... Uruguay Round of Multilateral Trade Negotiations, op. cit.*, 268-269.

¹⁶⁴The Law of the Sea: United Nations Convention..., *op. cit.*, 18, 21.

situation, as apparently conceived by the eight nations, are minor compared to the sustainability implications. If the WTO were used as a framework for solving the problem, there are likely to be future implications for a range of other industries.

THE LINKAGE BETWEEN THE SUBSIDY AND ITS EFFECTS

Consider, first, the determination of the effect of a fishery subsidy on the size of the fish stock. The problem is to determine the magnitude of the shock (the subsidy) being exerted on the system (the fishery) and to trace the effects of this shock through the system to the point where it impinges on the fish population. The decision chain would follow the following pattern:

- A. Specification of the programme
- B. Implementation of the programme
- C. Stimulus provided to the firm
- D. Firm's reaction to that stimulus
- E. Effect on fish stocks of the firm's reaction to the stimulus.

Take the case of the United States' Capital Construction Fund (CCF) which was previously described. Step "A" of the decision chain requires that the requirements for a firm to benefit from the CCF programme be specified and step "B" requires knowledge of the extent of the utilization of the programme. The stimuli, in step "C", are twofold and operate at distinct points in time. At the time the contract between the fisherman and the government is signed, the fund is established. The fisherman knows that any part of his or her fishing income can be protected from income taxes in the CCF. Does the fisherman increase his or her capital stock (i.e. expand his or her fishing operation) at that time? If so, then any resulting profits can be protected from taxes by being placed in the fund. If, in step "D", we assume that the fisherman expands his or her operations as a result of this stimulus, the next question is: does, or when does, the fisherman satisfy the terms of the contract with the government and purchase the new vessel? The firm therefore reacts to a double stimulus: first, the firm expands its fleet in response to the stimulus in anticipation of increased profits that would permit it to accumulate funds in the CCF; and, second, later, the firm uses the CCF fund to purchase a new vessel or modernize the old one. An important question is by how much does the fleet (or, more precisely, the catching capacity of the fleet) expand in reaction to each round of CCF stimulus. An even more critical question is by how much does fishing effort increase, since it is fishing effort and not vessel capacity that directly affects the catch.¹⁶⁵ Given the fleet expansion, the next question to be answered, in step "E", is: "what is the effect of the expansion of the fleet on the fish population"?

This kind of analysis, "A" to "E" must be applied to each identified subsidy. This generic analysis is applicable to any type of subsidy, regardless of how "subsidy" is defined. If a

¹⁶⁵The distinction between vessel capacity and fishing effort is important. Unused, or latent, capacity exists. One of the arguments against vessel buyback programmes is that they tend to remove latent effort from the fishery. Since these vessels are not used in the fishery, or are used only marginally, removing them from the fishery does nothing to improve the status of the fish stock.

sufficiently broad definition of subsidy were applied, then, for instance, a general programme of investment tax credits (applicable to all industries) would be a subsidy although it clearly falls outside the realm of the WTO. There is no essential difference in the nature of the analysis of the subsidy's effects, be the subsidy an investment tax credit, the CCF, a regulation restricting fishing, or any other. Although here we have emphasized the effects of subsidies on sustainability, similar arguments could be made concerning the effects of subsidies on international trade.

Among the approaches to determining the effect of the subsidy on sustainability suggested by FAO's Expert Consultation at the end of 2000, were simple qualitative models and econometric estimation. The consultants did not elaborate.

Simple qualitative models require the least analysis and the least amount of precise data. Therefore, although the results are of necessity fairly crude, this is the approach that will generally be taken in the absence of well funded, long term projects. As can be attested to by the Milazzo report, the APEC (PricewaterhouseCoopers) study and the OECD analysis of government financial transfers, a major project is necessary just to adequately satisfy the first two of the five steps in the decision chain. And since hard data are at least conceptually available for these two steps, satisfying them is the easier part of the project. This is not to imply that satisfying the first two steps requires anything other than great diligence, much effort, much time, and adequate funding.

Let us continue with the CCF example. We know, or should be able to determine, the specifications of the programme, the amount of money deposited in the funds each year, and the amount withdrawn as per the fishermen's contract for vessel construction or modification. That takes care of the first two steps.

The third step is easy and verbal: the stimulus is to build vessels. There are counterstimuli in that new vessels are banned in certain fisheries, meaning that to all intents and purposes the firm cannot take money out of the fund. This constraint would have to be considered in any evaluation of the CCF programme.

The remaining steps involve three critical questions: what extra capacity does the CCF programme add to American fishing fleets each year; what is the increased fishing effort; and what is the effect of this increase on fish stocks.

The answer to the first question should be available from government records. Presumably, when a firm wants to withdraw funds from the CCF to buy or renovate a fishing vessel, the government is told what is being done. If the vessel is being modified, the government should know what changes are being made, if only to determine whether the modifications satisfy the terms of the

original contract. If a vessel is being replaced, the net increase in fishing capacity is what is wanted and should be estimable.

The second question might be answerable through the study of vessel logs. By how much did effort change? In the absence of suitable econometric work, some very broad assumptions would have to be made to determine, *ex ante*, the anticipated change in fishing effort.

The final question, satisfying step “E”, depends on the state of the fish stock that is to be fished with the new or modified vessel. Since vessels can move about from one fishery to another, assumptions must be made about which fishery is to be the object of the vessel. A population dynamics relation can then tell how much of the fish stock will be caught. Combined with other information, one should be able to judge the effect on the sustainability of the stock.

Arnason¹⁶⁶ has developed a theoretical, generic, model that can be adapted for applying the above approach. The focus of his analysis is profits: the changes in profits resulting from the government programme; and the response of the firm to the change in profits. Profits are defined in economic terms, so that costs include not only explicit cost outlays but also the opportunity cost (in excess of the explicit cost outlays) to the firm of harvesting fish.¹⁶⁷ Expected profit stimulates changes in fishing effort.¹⁶⁸ Changes in fishing effort interact with fish populations. We have, in effect, described the five steps in our decision chain.

The relationships Arnason uses are the following:

- A. Catch is determined by fishing effort applied to a fish stock
- B. “Outlay” costs are determined by effort
- C. Revenues are determined by catch
- D. Fishing effort is determined by profits (or expected profits)
- E. Fish populations are determined by their natural growth less the catch
- F. Profits are determined by revenues less outlay costs less opportunity costs, all of which are affected by subsidies.

The model can be condensed into three functions: profits, fishing effort change, and fish population change. Arnason performs no statistical estimation but assumes “reasonable” values for the parameters (including prices and unit costs) and draws conclusions concerning the effects of subsidies.

Arnason’s approach can be further developed into an econometric model which would involve the development of a series of equations describing each aspect of the fishery. Many an economist’s

¹⁶⁶ Arnason, “*Fisheries Subsidies, Overcapitalization...*”, op. cit.

¹⁶⁷ The opportunity cost, for instance in a fishery with individual transferrable quotas (ITQs), would be the market price of a unit of quota (Arnason, 29).

¹⁶⁸ Arnason’s model is developed in mathematical terms in continuous time. In this verbal description of the model, we adapt the model to our needs.

debate centers on elasticities, the sensitivity of responses to stimuli. Theoretically, it may be clear that a particular response occurs if certain pressure is put on the economic system. Yet the question remains of whether the response is relatively large, substantial, important or whether it is small, insubstantial and inconsequential. "Reasonable" values may be assumed for parameters, but what is reasonable and what is true may be two totally different things. Econometric estimation, done properly with adequate data, enables one to evaluate the nature of the response. Such a model would be larger than that of Arnason, and the parameters would be determined for the most part by statistical estimation. When statistical estimation proves impossible, historical allocators could be used. The data requirements are extensive, but the model would be able to provide good descriptions of the fishery under study and could be used to provide simulations of the effects of various shocks, or subsidy programmes, on the fishery.¹⁶⁹

An integrated fisheries econometric model would include a marketing sector (essentially a demand model for the products produced in this fishery), a processing sector (showing relative factor shares and profitability given the revenue and cost structures of the industry), and a harvesting sector (showing the relationships between effort and catch, and catch and fish population).¹⁷⁰ Some subsidies simply increase or decrease revenues or costs and these can easily be built into the cost and revenue functions. Other subsidies, such as tariffs, import quotas, vessel buybacks and restrictive fishing regulations, to cite just a few, are more difficult to incorporate into the model but, with a little ingenuity, it can be done. Since the net effect of a subsidy on sustainability is the effect of the subsidy less the restraining effect of effective fisheries management, the model should also incorporate both the effects, and the costs, of fisheries management.

Similar modeling exercises can be used to evaluate the effects of fishery subsidies on international trade and economic growth.

¹⁶⁹Porter, *Fisheries Subsidies and Overfishing...*, *op. cit.*, 24 states, without explanation, that techniques such as this would be inappropriate for overexploited fisheries and that other, unstated, techniques must be developed to analyse this problem. It is unclear to this author why this is so.

¹⁷⁰An example of such an integrated model, without subsidies however, is W..E. Schrank, N. Roy and E. Tsoa, "Employment Prospects in a Commercially Viable Newfoundland Fishery: An Application of 'An Econometric Model of the Newfoundland Groundfishery'," *Marine Resource Economics*, III, (1986), 237-263.

Introducing fisheries subsidies explains why fishery subsidies are of concern, discusses alternatives to subsidies, explains why they are implemented and briefly considers the difficulties caused by their existence. The discussion then sharpens the focus to analyse a number of relevant topics. The final chapter considers current discussions on how the international community might be able to impose sufficient discipline to bring the subsidies that stimulate overfishing under control. There follows a more technical discussion of the linkage between fishery subsidies and their effects on sustainability and trade.

ISBN 92-5-104935-1 ISSN 0429-9345



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TC/M/Y4647E/1/5.03/1300