CANADIAN FISHERIES REPORTS NO. 14 - JUNE 1970

government programs of assistance for fishing craft construction in Canada: an economic appraisal

by C.L. MITCHELL and H.C. FRICK

ECONOMICS BRANCH
FISHERIES SERVICE
Canada
DEPARTMENT OF FISHERIES AND FORESTRY
OTTAWA

CANADIAN FISHERIES REPORTS NO. 14

GOVERNMENT PROGRAMS OF ASSISTANCE FOR FISHING CRAFT CONSTRUCTION IN CANADA: AN ECONOMIC APPRAISAL

C.L. MITCHELL and H.C. FRICK

Economics Branch
Fisheries Service
Department of Fisheries and Forestry
Ottawa

1970

99669—1

Cat. No.: Fs4-24/14

CONTENTS

Canadian Fisheries Reports is published by the Department of Fisheries and Forestry as a means of providing for circulation of specialized information of interest to the fishing industry, from the primary enterprise to the end product. Articles may deal with conservation, inspection, development, economics and related subjects. Responsibility for statements made or conclusions reached in published articles remains with the authors. Correspondence in connection with this publication should be addressed to the DIRECTOR, INFORMATION AND CONSUMER BRANCH, DEPARTMENT OF FISHERIES AND FORESTRY, OTTAWA, CANADA.

Published under Authority
of
HON. JACK DAVIS, M.P.
Minister of Fisheries and Forestry

99669—2

GOVERNMENT PROGRAMS OF ASSISTANCE FOR FISHING-CRAFT CONSTRUCTION IN CANADA: AN ECONOMIC APPRAISAL

Foreword

This is a revision of the preliminary report of a study begun more than two years ago to examine the cost-effectiveness of federal and provincial expenditures since World War II to assist in the modernization and expansion of Canadian fishing fleets, as a means to increase the productivity and incomes of fishermen in the Atlantic provinces. The analysis is based on developments in the period 1947 to 1967, although data for the two following years have been added to some tables to bring them up to date. The relevant statistics for these years support the conclusions reached in the preliminary report.

Mr. M.C. Cormier, of the staff of the Economics Branch, took part in the early stages of the investigation and his advice and assistance to the authors, particularly in the assembly and analysis of statistical material, is gratefully acknowledged.

W.C. MacKenzie,
Director, Economics Branch,
Fisheries Service,
Department of Fisheries & Forestry
of Canada.

ABSTRACT

Federal government subsidies to assist in the construction of fishing vessels in Canada are administered under two separate programs. The subsidy for medium-sized vessels up to 100 gross tons and wooden vessels of 100 tons or more, is administered by the Department of Fisheries and Forestry, in cooperation with provincial fisheries loan boards or agencies in the Atlantic provinces; the larger steel fishing vessels of more than 75 feet in length or more than 100 gross tons are included in the Department of Industry program of assistance to shipyards for ship construction. In addition, Quebec and Newfoundland have had fishing boat construction subsidy programs, and all of the Atlantic provinces have given their fishing industry other direct or indirect assistance in various forms.

Of the $16.5 million in subsidies expended under the Fisheries program from 1947 to March 31, 1969, 87 per cent or $14.4 million was spent in the last decade and 70 percent or $11.5 million in the last four years. Of the 1,604 vessels built under the program to March, 1969, 61 per cent were built in the last four years, after transfer to the Fisheries program of wooden vessels of 100 gross tons or more and the inclusion of "experimental" vessels less than 45 feet in length down to a minimum length of 35 feet. Subsidization of these smaller craft did enable many inshore fishermen to get more efficient and comfortable boats, but it ran counter to the primary objective of the program, which was to aid in the expansion and modernization of the Atlantic fishing fleet by helping inshore fishermen to move into employment in larger, more productive offshore fishing vessels.

With the assistance of the two federal government subsidy programs and various provincial measures, the Canadian Atlantic offshore fishing fleet–roughly defined as vessels of 25 gross tons or more–increased by one-half between 1957 and 1966, from 547 to 829 vessels. Between 1962 and 1966, the number of large vessels, 100 gross tons or more, increased by 162 per cent, from 111 to 273. Increases for the intermediate-sized vessels were less: 54 per cent, from 157 in 1962 to 211 in 1966, for vessels in the 50 to 100 tons classification, and five per cent, from 340 to 345, for vessels of 25 to 50 tons. Fleet expansion does not tell the whole story, however, because new vessels replaced many lost or obsolete vessels and, presumably, embodied many advances in technology, versatility, and general operating efficiency.

The effects of the fishing fleet expansion and modernization are evident in the growth of Canadian Atlantic fish landings from about 700,000 metric tons in 1957 to about one million in 1966, and in the increasing proportion of offshore landings in the total. In 1966, offshore landings, at nearly 600,000 metric tons, finally exceeded inshore landings, and their upward trend continues. The intermediate-sized vessels accounted for about two-thirds of offshore landings at the end of the period, down from more than three-quarters at the beginning. Increased versatility enabled the fleet to exploit some species more intensively to compensate for declining catches of other species, and the increases in the number and size of offshore vessels brought about a somewhat more even distribution of landings throughout the year. The rapid expansion of the large vessel fleet (100 tons or more) created some 2,000 additional job opportunities in the period 1962-1966. These vessels required more highly skilled manpower and, although training facilities were provided in all of the provinces, the supply of men with the requisite skills was inadequate and trawlers were frequently undermanned. The number of inshore fishermen fluctuated from year to year, but showed little change over the period; there is much concealed unemployment or underemployment in the inshore fisheries and the fluctuations, obscured as they are by statistical classification difficulties, reflect, albeit imperfectly, changes in regional economic conditions and the availability of alternative employment opportunities.

Fleet expansion was also accompanied by and interrelated with processing plant expansion, and both had linkage effects in the construction, manufacturing, shipbuilding, and service industries, and on expenditures at all levels of government for harbour development, water supply, roads, and other public services. It is impossible to measure all of these effects, but it is clear that they were important for regional development and the increase of employment and income.

The Fisheries subsidy policy erred in making 35 to 45-foot boats eligible for subsidy in 1964. In the

light of the existing excess of men, boats, and gear in the inshore fisheries, subsidization of small craft detracted from the drive to channel labour and investment capital into the offshore fisheries. Also, recent marketing difficulties for Atlantic groundfish products suggest that there was some over-investment in processing and fishing capacity, to which the vessel construction subsidy was a contributing factor. Although expansion may have recently proceeded too rapidly in some areas, increased market demand and increased fishing pressure on the stocks of the principal Atlantic species are in prospect. Consequently, further investment will be needed for the replacement and expansion of existing production capacity.

It is concluded that the vessel construction assistance program should be continued, with emphasis on selectivity and co-ordination with fisherman-training and other provincial programs. Both economic and technological research efforts should be increased.

CHAPTER I

GOVERNMENT PROGRAMS OF ASSISTANCE IN FISHING CRAFT CONSTRUCTION

There are both federal and provincial programs of assistance to fishing craft construction in Canada. The general objective of these programs is the encouragement of expansion and modernization of Canada's fishing fleets to increase output and returns to fishermen. The federal government has two programs: (1) a program of assistance to fishermen for the construction of medium-sized vessels of approximately 25 to 100 tons and wooden vessels of 100 tons and over, and (2) a program of assistance to shipyards for vessel construction, including steel fishing trawlers over 75 feet in length or over 100 gross tons. The first program, with which this study is concerned, is administered by the Department of Fisheries and the other by the Department of Industry. In this analysis, therefore, they will be often referred to as the Department of Fisheries and the Department of Industry's programs, respectively.[1]

A. FEDERAL GOVERNMENT PROGRAMS

Before World War II there was little experimentation in the Canadian Atlantic provinces in more efficient fishing techniques developed elsewhere—for example, in the application of dragging, Danish seining, or longlining methods to offshore Atlantic coast conditions. Government action to subsidize fishing craft construction, initiated during the war, constituted a reversal of the earlier policies of maintaining the status quo in fishing methods through restrictions on the use of trawlers or draggers employing the otter trawl net. The traditional fishing method utilized the handline or longline with baited hooks, set and pulled by one or two fishermen in a small boat such as a dory in inshore waters; on the offshore banks the dories operated from a mother ship—a schooner or "banker". The opposition of these fishermen to the trawler and the resulting restrictions were so strong that the Canadian trawler fleet dwindled to three vessels in the late 1930s, and fishing companies built and depended extensively on dory fishing schooners.[2]

During the war years it became increasingly difficult to man the schooner fleet, and when wartime scarcities brought higher fish prices, the general attitude toward trawlers changed. Willingness and ability to invest increased, not only in more efficient methods of catching fish, but in more efficient methods of processing and distributing the catch. Development of the Canadian trawler fleet, therefore, went hand-in-hand with the post-war development of the Canadian Atlantic fresh and frozen fish industry.

The first federal government (wartime) vessel construction assistance measure, in April, 1942, provided a subsidy of $165 a gross ton for the construction of British Columbia packer-seiners 72-78 feet in length and of 80-110 gross tons. This was designed to mitigate the effects of naval requisitioning of vessels and of high construction costs. The first measure to encourage private investment in increasing the efficiency and capacity of the Canadian Atlantic fishing fleet came four months later, establishing a $165/ gross ton subsidy for the construction of draggers and assistance in the conversion of schooners to draggers

[1]Strictly speaking, a third federal program of assistance has been in effect: Under the Fisheries Improvement Loans Act, the Minister of Finance is empowered to guarantee loans made to fishermen by banks or other lending institutions at specified maximum interest rates, for the purchase or repair of vessels or boats, fishing equipment, shore installations, etc. Loans to a total of more than $7 million have been made since the Act came into force in 1955. In the nine fiscal years 1960-61 to 1968-69, loans for vessels accounted for 80 per cent of the total – $5.1 million for 1,274 vessels, or an average of $4,000 a vessel. The cost of the program in terms of claims paid under the guarantee has been very small.

[2]For discussion of the trawler controversy, see Stewart Bates, *Report on the Canadian Atlantic Sea-Fishery*, Halifax, King's Printer, 1944; *Report of the Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands*, Ottawa, King's Printer, 1928; *Canadian Fisheries Manual – 1945*, Montreal, Inland Press; Ruth F. Grant, *The Canadian Atlantic Fishery*, Toronto, Ryerson Press, 1934; *Proceedings of the Nova Scotia Fisheries Conference*, Halifax, King's Printer, 1938; Scott Gordon, "The Trawler Controversy", *The Dalhousie Review*.

amounting to two-thirds of the cost of such conversion up to a maximum of $12,000 for each vessel. Owners of the new or converted vessels were given also special or accelerated depreciation privileges for the purposes of the Income War Tax Act and/or the Excess Profits Tax Act of 1940, such as were extended to other investors in plant and equipment deemed necessary to the war effort.

The principle of assisting fishermen to get into larger, more efficient fishing vessels began to emerge more clearly in 1944 with an order-in-council (P.C. 3978, June 1st, 1944) under the War Measures Act providing for the $165/gross ton subsidy to be paid to groups of not less than four fishermen for the construction of draggers or long-line vessels of not less than 55 feet overall length, up to a maximum to be determined by the Minister of Fisheries. Subsidy expenditures under this program were not large, growing to about $89 thousand in the fiscal year 1945-46, $88 thousand in 1946-47, and declining to $57 thousand in 1947-48, the last year of the program.

1. THE DEPARTMENT OF FISHERIES PROGRAM

Fishing vessel construction assistance was continued, however, under the relevant Appropriations Act of 1947, by orders-in-council setting up regulations providing for the $165/ton subsidy to be paid to fishermen's loan boards (later, to a "provincial government department or agency") for draggers or long-liners 55 to 60 feet in length owned by one or more fishermen, and for such vessels not less than 60 feet up to a maximum length determined by the Minister, if owned by a group of four or more fishermen, including co-operatives and incorporated companies in which a majority interest was held by at least four fishermen, members of the crew.

Vessel construction costs continued to rise, decreasing the incentive effect of the subsidy. It was raised to $250/gross ton in 1961 (P.C. 1333). However, a flat-rate subsidy based on gross tonnage was inappropriate for vessels of widely varying size because building costs per ton increase with the size of the vessel. Accordingly, payment of subsidy as a percentage of approved cost was substituted for the flat-rate basis in 1964 (P.C. 855), vessels 35 feet to less than 55 feet receiving a subsidy of 25 per cent of approved costs, and those of 55 feet to less than 100 gross tons, 30 per cent. The minimum length was raised to 45 feet in 1968 (P.C. 198); the subsidy was 30 per cent on wooden vessels 45 feet to 100 gross tons. A new size category and rate were established in 1965 (P.C. 1199), wooden fishing vessels in excess of 100 gross tons becoming eligible for a subsidy of 40 per cent of approved cost.

The various orders-in-council set out other regulations concerning the approval of vessel plans, inspection of the finished vessel, progress payments to the loan board, and ensurance by the board that the vessel would continue fishing for five years, with the refunding of an agreed part of the subsidy to the government if the vessel should fail to do so. A summary of the legislation and the principal regulations from 1942 to 1967 appears as an appendix to this study.

Expenditure and Number of Vessels Built, 1947-1969

Although this study is mainly concerned with the period from the fiscal year 1947/48 to 1966/67, expenditures under the program are given to the end of the fiscal year 1968/69.[1] From the beginning of the fiscal year 1947/48 up to March 31, 1969, a total of $16,505,680 was paid by the Department of Fisheries in assisting the construction of 1,604 fishing vessels in Quebec, the Maritime Provinces, and Newfoundland (Tables 1 and 2). The net cost of the program was somewhat less, because an undetermined amount has been refunded to the federal government in cases where vessels were lost or ceased fishing before the expiration of the five-year period, or where other terms of the subsidy agreement were not filled.

2. THE DEPARTMENT OF INDUSTRY PROGRAM

The Canadian Vessel Construction Assistance Act 1947, c. 11 (amended by R.S.C. 1952, c. 43; 1952-53, c. 14; 1957-58, c. 12) was sub-titled "An Act to Encourage the Construction and Conversion of Vessels in Canada". The encouragement was in the form of special depreciation privileges extended to the owner-taxpayer, permitting him to deduct from his enterprise income in any taxation year up to one-third of the capital cost or conversion cost (or if less, the remaining undepreciated capital cost or conversion cost) of a vessel whose construction or conversion in Canada was commenced after January 1, 1949. In the event of the sale of the vessel, the owner was given

[1] Some data for 1967/68 and 1968/69 are not yet available.

Table 1

VESSEL CONSTRUCTION ASSISTANCE PROGRAM, DEPARTMENT OF FISHERIES AND FORESTRY

ANNUAL SUBSIDY, BY PROVINCE, 1947/48 - 1968/69

Year	Que.	N.B.	N.S.	P.E.I.	Nfld.	Total
	$	$	$	$		$
1947-48		40,504				40,504
1948-49		49,392				49,392
1949-50		44,175				44,175
1950-51		19,354	13,263			32,617
1951-52		14,236	60,553	29,756		104,545
1952-53	6,486	25,257	101,264[1]	14,246		147,252[1]
1953-54	8,626	34,459	65,500	32,683	6,827	148,095
1954-55	25,171	57,268	40,045	16,515	82,049	221,048
1955-56	41,780	33,967	124,694	16,624	41,646	258,710
1956-57	63,810	112,568	203,107	–	10,352	389,837
1957-58	16,149	15,870	274,154	–	25,836	331,998
1958-59	109,111	53,064	174,920	11,403	1,135[2]	349,633[2]
1959-60	165,051	110,335	136,174[3]	38,938	34,013	474,511[3]
1960-61	122,976[4]	36,833	117,683	49,226	19,170	345,887[4]
1961-62	–	110,084	97,159	28,731	66,157	302,130
1962-63	174,168	121,775	167,659	–	36,397	500,000
1963-64	226,562	80,285[5]	150,302	–	42,850	500,000[5]
1964-65	176,000	75,233[6]	298,516	2,828	248,422	800,000[6]
1965-66	165,044	296,730	1,183,700[7]	6,733	119,008	1,771,215[7]
1966-67	212,748	59,794	1,559,803	14,809	302,444	2,149,699
1967-68	447,394	1,297,220	3,238,944	147,559	1,116,883	6,248,000[8]
1968-69	291,341	270,087	301,287	5,372	428,337	1,296,424
TOTALS	**2,252,419**	**2,958,492**	**8,308,828**	**405,423**	**2,580,518**	**16,505,680**

[1] Includes $5,085.60 unpaid balance from 1951-52.
[2] Rebate paid FLB Nfld. on refund of grant on loss of M.V. "Moose".
[3] Includes $1,849.65 increased grants on 3 previously assisted vessels.
[4] Includes $2,397.45 increased grants on 2 previously assisted vessels.
[5] Includes $261.20 unpaid balance from 1962-63.
[6] Includes $1,853.70 unpaid balance from 1963-64.
[7] Includes $8,269.00 unpaid balance from 1964-65.

[8] The great increase in subsidy payments since 1965 resulted from the inclusion of large wooden vessels over 100 gross tons in the Fisheries program, as well as "experimental" boats in the 35-55 foot size range. The number of these small boats built under subsidy was especially large in 1967-68.

Table 2

VESSEL CONSTRUCTION ASSISTANCE PROGRAM, DEPARTMENT OF FISHERIES AND FORESTRY

NUMBER OF VESSELS BUILT WITH SUBSIDY, BY PROVINCE, 1947/48 - 1968-69

Year	Que.	N.B.	N.S.	P.E.I.	Nfld.	**Total**
1947-48	–	7	–	–	–	7
1948-49	–	8	–	–	–	8
1949-50	–	7	–	–	–	7
1950-51	–	3	3	–	–	6
1951-52	–	2	11	4	–	17
1952-53	1	6	13	3	–	23
1953-54	2	7	8	4	1	22
1954-55	4	8	6	2	14	34
1955-56	6	5	16	2	6	35
1956-57	11	13	24	–	2	50
1957-58	2	2	31	–	4	39
1958-59	25	6	16	1	–	48
1959-60	31	16	17	3	6	73
1960-61	19	4	16	5	5	49
1961-62	–	17	9	2	18	46
1962-63	14	14	14	–	5	47
1963-64	13	7	14	–	4	38
1964-65	13	9	25	1	48	96
1965-66	9	10	66	6	24	115
1966-67	10	23	104	11	38	186
1967-68	15	131	112	154	123	555
1968-69	5	44	17	8	49	123
TOTALS	**180**	**349**	**522**	**206**	**347**	**1,604**

freedom from recapture of depreciation under the Income Tax Act if the proceeds of sale were used for replacement of the vessel in Canada under conditions satisfactory to the Canadian Maritime Commission. This was designed to encourage owners to dispose of older vessels and to use the proceeds to build replacements in Canada.

Under Appropriation Act. No. 4, 1961, P.C. 1290, Sept. 8, 1961, *Ship Construction Assistance Regulations* were established providing for a construction subsidy in respect of any eligible ship of 40 per cent of the approved cost incurred for work performed under a contract between May 12, 1961, and March 3, 1963, and for a 35 per cent subsidy thereafter. In respect of a fishing trawler constructed for use in any of the five Atlantic provinces, the subsidy could be an amount not exceeding 50 per cent of the approved cost for work performed under a contract after May 12, 1961. Initially, the subsidy was payable only for a trawler replacing a used fishing trawler of steel or wooden construction which was being permanently withdrawn from fishing operations in accordance with arrangements approved by the Commission; this requirement was later dropped. Restriction of the 50 per cent rate to vessels built for the Atlantic industry was also discontinued. Eventually, under P.C. 384, February 29, 1968, the subsidy rate on fishing trawlers was dropped to a maximum of 35 per cent in respect of acceptable applications received after December 7, 1967. The subsidy for eligible ships other than a fishing trawler was reduced to 25 per cent for a vessel completed in the period January 1, 1966 to May 31, 1969, and was to be further reduced by two percentage points in each successive year, to 17 per cent of the approved cost for an eligible ship completed after May 31, 1972.

The primary objective of this program was to proprovide work for Canadian shipyards, although the desirability of modernizing the Canadian commercial and fishing fleets was also recognized. Accelerated depreciation for income tax purposes was apparently considered to be an adequate incentive to investors at first, but as building costs increased and as European shipbuilders became more competitive with the recovery from war devastation, the additional incentive of subsidies was introduced.

Scope and modifications

The Vessel Construction Assistance program was administered by the Canadian Maritime Commission, Department of Transport, until 1966, when responsibility was transferred to the Department of Industry. Until 1965, fishing vessel construction assistance administered by the Department of Fisheries was limited to vessels under 100 gross tons, consequently both wooden and steel fishing vessels of 100 gross tons or more were built under the auspices of the Canadian Maritime Commission. Order-in-Council P.C. 1199, June 30, 1965, included wooden vessels in excess of 100 gross tons, subsidized at 40 per cent of approved cost, in the Department of Fisheries program.

By the end of 1969, 266 steel and wooden fishing vessels had been approved for subsidy under the Vessel Construction Assistance program, involving a total subsidy expenditure exceeding $67 million (Table 3). Most of the 240 vessels built for use on the Atlantic Coast were trawlers or draggers (the latest ordered were trawler-seiners), but eight longline vessels were included among the wooden ones. The Pacific Coast steel vessels included seiners, gillnetter-troller and other combination boats; the wooden boats were four fish barges or camps and a wooden oyster dredge. The eight vessels built for use on inland waters were Great Lakes steel fishing tugs; a wooden fish freighting vessel for Lake Winnipeg is not included in the list of fishing vessels.

B. RELATED PROVINCIAL SUBSIDY PROGRAMS

In all of the Atlantic provinces, it was recognized early in the 1930s that inshore fishermen lacked the capital or credit resources to enable them to invest in more efficient boats and fishing techniques. If their productivity and incomes were to be increased, government credit agencies would have to provide the major share of the financing of larger vessels that could go farther offshore and fish a greater number of days in the year, and government also would have to assist fishermen to upgrade their skills to enable them to make better use of the new techniques, boats, and equipment. To achieve these ends, provincial fishermen's loan boards were established in the 1940s in the Maritime Provinces and Newfoundland, and a loan agency in the Quebec Department of Industry and Commerce to provide similar services to Quebec fishermen; boat construction subsidy programs (additional to the federal schemes) were instituted in Newfoundland and Quebec; and indirect assistance in various forms was included in provincial programs, such as provision of fishermen's training courses, loans made available at lower than current interest rates, payment by government of all or part of insurance premiums on vessels and equipment, and provision of certain other services at less than cost or free of charge.

More recently, emphasis has been placed on provincial industrial development by provincial governments and under federal-provincial development agencies to promote the growth of employment and incomes. Assistance has been given to fish processing plants in the form of loans, provision of plant, land, water supplies, roads, etc. The establishment of new fish plants and enlargement of others have necessitated larger and more regular supplies of raw fish, leading in turn to the expansion and modernization of fishing fleets with a large measure of government assistance.

Direct subsidies

The Government of Newfoundland under the Bounties Act of 1955 pays a subsidy of $160 a gross ton on vessels built and equipped in Canada in the size range of 12 to 150 gross tons. Grants may be paid on larger or smaller vessels.

Assistance in rebuilding or repairing vessels is available also, under the Fishing and Coastal Vessels Rebuilding and Repairs (Bounties) Act of 1958. The

Table 3

Fishing Vessels Approved for Subsidy by the Canadian Maritime Commission (D.O.T.) and the Department of Industry, Trade and Commerce, to December 31, 1969

Region of Use	Category	Number	Total Approved Cost	Subsidy Rate	Total Estimated Subsidy
			$	%	$
Atlantic:	Steel trawlers 100 ft. or more	113	106,351,999	50	53,176,000
		7	4,702,200	35	1,645,770
	Steel draggers 75 ft. but less than 100 ft.	39	11,805,919	50	5,902,960
	Sub-total, steel vessels	159	122,860,118		60,724,730
	Wooden fishing vessels 100 gr. tons or more & 100 ft. or more	20	4,973,717	40	1,989,487
		8	2,143,785	35	750,325
	Wooden fishing vessels 100 gr. tons but less than 100 ft.	38	6,479,225	40	2,591,690
		15	2,527,025	35	884,459
	Sub-total, wooden vessels	81	16,123,752		6,215,961
	Total, Atlantic	240	138,983,870		66,940,691
Pacific:	Steel fishing vessels	5	1,717,378	50	858,689
		5	1,378,350	40	551,340
		3	803,527	35	281,234
	Sub-total, steel vessels	13	3,899,255		1,691,263
	Wooden fish camps, barges, and oyster dredge	5	134,137	40	53,655
	Total, Pacific	18	4,033,392		1,744,918
Inland:	Steel fishing vessels	6	570,901	50	285,450
		2	127,565	40	51,026
	Total, Inland	8	698,466		336,476
All regions:	Steel vessels	180	127,457,839		62,752,469
	Wooden vessels	86	16,257,889		6,269,616
	Grand total, all regions	266	143,715,728		69,022,085*

*The total estimated subsidy is only approximate, because of possible contract revisions and items in the cost that were ineligible for subsidy. The total amount of subsidy payments to December 31, 1969, was $67.0 million, but some further payments would have been due on vessels not yet completed or delivered on that date.

bounty for rebuilding fishing vessels is from $100 to $250 a ton, depending on the size of the vessel, or 50 per cent of the approved cost, whichever is less. For repairing a vessel, the bounty is 25 or 35 per cent of the approved cost, depending upon the size, or $100 a gross ton – whichever is less.

A subsidy has been paid also (since December 31, 1961) on the construction of smaller, powered, boats that have been certified by a provincial authority as suitable for the Newfoundland fisheries. The grant is $8 a foot for boats 24 to 30 feet in length and $10 a foot for those 31 to 35 feet long. Fishermen are assisted also to purchase nylon and other synthetic fibre gillnets and nylon trawl lines and long-lines. The bounty is $12.50 per 100 fathoms of unmounted netting and $25 per 50 fathoms of mounted nets; for nylon trawl lines, the bounty is $10 per package of six double lines of 50 fathoms each. The inshore fisheries development program is administered by the Newfoundland Fisheries Development Authority.

The Province of Quebec has paid a grant of $8 a foot for the construction of vessels 18 to 25 feet long, and $12 a foot for those 25 feet or more but less than 45 feet long. The program has been under revision and the current situation is not known. A subsidy has been paid on gillnets—$10 or $20 without mountings and $15 or $30 with mountings, depending on size.

Indirect subsidies

Indirect subsidies have come in various forms, summarized as follows:

(1) Low interest on loans for building, purchasing or improving fishing boats and for the purchase or engines, fishing gear, and equipment. Loans plus subsidies have provided from 70 to 90 per cent of the capital required (50 to 70 per cent in the case of engines and equipment), reducing the fishermen's cash down requirement to a small fraction of the total cost (and even this he may borrow from other sources such as the fish buyer). The interest rate paid to loan boards has been of the order of 3,3-1/2, or 4 per cent. In Quebec, for vessels more than 45 feet in length, that part of the cost not covered by the federal subsidy and the owner's 10 or 20 per cent down payment is loaned free of interest charges. Loans by the Credit Maritime and chartered banks to fishermen and syndicates of fishermen are guaranteed by the Province, which also pays interest charges of 4 per cent a year and a life insurance premium on the loan at one per cent.

(2) Low insurance rates on vessels and gear. Quebec supplemented the federal Fishermen's Indemnity Plan, which before 1968 provided insurance on fishing craft only up to $15,000 value at a premium of one per cent of the appraised value,[1] with assistance for the insurance of larger vessels. The Quebec Government before April 1, 1961, paid an equal share with the vessel owner of the cost of "trawler form insurance" covering partial or total loss of vessels, but now pays the entire premium, except in the case of trawlers which fish throughout the year and land their catches outside of Quebec during the winter; for these trawlers, the Province pays one-half of the premium.

(3) The Quebec Government operates a network of 53 cold storage plants, 108 collection depots, 8 artificial ice plants, 6 salt depots and one drying plant. The cold storage plants store bait supplies, and are used also for storage of fish and farm products by cooperatives and dealers.

[1] Effective June 15, 1968 the value maximum limit was raised to $25,000 at a premium rate of 2 per cent on vessels with an appraised value of more than $15,000. The rate was raised to 1-1/2 percent for vessels valued at less than $15,000 whose home ports were in Nova Scotia, Newfoundland, or British Columbia.

CHAPTER II

EXPANSION AND MODERNIZATION, ATLANTIC COAST FISHING FLEET, 1957-1966

In this chapter the expansion and modernization of Canada's Atlantic coast fishing fleet and the effects on landings, employment and the structure of the fishing industry are analysed. This analysis, because of the inadequacies of statistical data which make it impossible to start from 1947 when the fishing vessel subsidy program was initiated,[1] covers the period 1957 to 1966. The contribution of the program to fleet expansion and modernization in its early stages from 1947-1956 was not very great, however, as indicated in Chapter IV. Special emphasis is placed on the intermediate-sized vessels in the fleet, which are those eligible for the subsidy.

1. EXPANSION AND MODERNIZATION OF FLEET 1957-1966

Fleet expansion and modernization are often considered to be almost synonymous. This is based on the assumption that new vessels incorporate modern fishing technology and equipment and thus utilize the best fishing techniques. This is not always the case, and more reliable criteria for modernization are structural changes in the fleet involving (1) a greater emphasis on larger vessels, (2) the increased use of technology and equipment, and (3) the increased versatility and mobility of fishing vessels.

Canada's Atlantic Coast fishing fleet is comprised of small boats under 10 tons, many of them non-powered, and vessels ranging from 10 tons to over 500 tons. Because of the great range in sizes involved, the fleet is sub-divided into (1) a fleet of small vessels and boats under 25 tons, (2) a fleet of intermediate-sized vessels from 25 to 99.9 tons, and (3) a fleet of large vessels of 100 tons and over. These classifications are consistent with fishing operations and type of ownership. Small vessels, which are fishermen-owned, engage exclusively in inshore operations; intermediate vessels, the majority of which are fishermen-owned, engage in inshore and offshore operations; and large vessels, which are owned mainly by processing companies, engage primarily in offshore operations.[2] In the analysis to follow, however, vessels 25 tons and over will be considered offshore vessels because it is impossible to demarcate categorically by sizes, inshore and offshore vessels in the intermediate fleet.

The Atlantic Coast fishing fleet expanded considerably during the period 1957-1966: the number of inshore vessels and boats increased by four thousand, from 32 thousand to 36 thousand, and offshore vessels by nearly three hundred, from 547 to 829 (Table 4).[3]

The provincial distribution of inshore and offshore vessels shows that Nova Scotia has by far the largest number of offshore vessels and Newfoundland the the largest number of inshore vessels. The number of offshore vessels increased in all the provinces however, while the number of inshore vessels increased only in Newfoundland, Nova Scotia and Prince Edward Island. The relative increase in offshore vessels was greatest in Quebec, whose offshore fleet increased by 69 vessels or by 182 per cent. The offshore fleet doubled in Newfoundland and Prince Edward Island.

Concomitant with the increase in the number of vessels and boats in the Atlantic Coast fishing fleet during the period 1957-1966, were changes in the structure of both the inshore and offshore fleet. For the inshore fleet these changes are exemplified by the increasing importance of vessels[4] and powered fishing boats (gasoline and diesel engined) and the decline, in relative and absolute terms, in the number of non-powered boats (Table 5).

---

[1] The statistical data in D.B.S. *Fisheries Statistics of Canada* leave much to be desired due to changes in classification and inter-provincial differences. Consistent time series data from 1947 to 1966 are almost impossible to obtain.

[2] Some of these vessels operate in inshore waters. For example, in the herring fishery, some large seiners operate within a few miles from shore.

[3] This pertains to the number of vessels fishing on an annual basis, not to the number of new vessels in the fleet, which would be greater, since many of these vessels replace old vessels or vessels lost at sea.

[4] In Chapter IV, it is noted that the fishing vessel subsidy program contributed to the increase in these vessels under 25 tons in the fleet, especially since 1964, when vessels as small as 35 feet in length overall became eligible for subsidy.

Table 4

OFFSHORE* AND INSHORE VESSELS,** ATLANTIC COAST SELECTED YEARS, 1957-1966

Province	Type of Vessels	1957	1962	1966	Increase 1957-1966 No.	Per Cent
Newfoundland	Offshore vessels	67	79	135	68	101
	Inshore vessels	12,799	17,159	17,102	4,303	34
P.E.I.	Offshore vessels	13	16	26	13	100
	Inshore vessels	2,047	1,923	2,226	179	9
Nova Scotia	Offshore vessels	317	275	386	69	22
	Inshore vessels	9,701	9,701	9,687	462	5
New Brunswick	Offshore vessels	112	164	175	63	56
	Inshore vessels	4,872	4,471	4,218	-654	-13
Quebec	Offshore vessels	38	74	107	69	182
	Inshore vessels	2,836	2,662	2,823	-13	-0.5
Atlantic Coast	Offshore vessels	547	608	829	282	51
	Inshore vessels	31,779	36,016	36,056	4,277	13

* Vessels over 25 tons. For 1957, however, offshore vessels included vessels over 20 tons.

** Excludes carrying smacks and boats engaged in inland fisheries.

Source: D.B.S., *Fisheries Statistics of Canada.*

Table 5.

COMPOSITION OF INSHORE FLEET, ATLANTIC COAST, SELECTED YEARS 1957-1966

	1957 No.	1962 No.	1966 No.	Increase 1957-1966 No.	Per cent
Vessels					
10-24.9 tons	988*	1,411	1,784	796	80
Boats (under 10 tons)					
Powered (gasoline & diesel)	17,840	20,801	22,401	4,461	25
Non-powered**	12,951	13,804	11,971	-980	-8
TOTAL	31,779	36,016	36,056	4,277	13

* These are vessels from 10-20 tons, consequently the increase to 1966 is an over-estimate.

** Classified as sail and row boats in D.B.S. statistics.

Source: D.B.S., *Fisheries Statistics of Canada.*

The expansion in the offshore fleet on the Atlantic coast from 1962 to 1966 was the result of a substantial increase in the number of large vessels of 100 gross tons and over and a smaller increase in the intermediate-sized vessels (Table 6).[1] Comparisons of classification by length for fishing craft over 10 tons in D.B.S. *Fisheries Statistics of Canada* reveal that the majority of vessels of 100 gross tons or more are over 75 feet in length and those in the intermediate-sized vessel categories range from 50 to 75 feet.

From 1962 to 1966 the number of vessels over 100 tons in the offshore fleet increased by 162, or by 146 per cent. Within the intermediate-sized vessel categories the greatest increase was in the number of vessels from 50-99.9 tons which increased by 54 in number or 34 per cent in comparison with an increase of only five vessels or less than two per cent for vessels from 25-49.9 tons. The total increase for intermediate-sized vessels was only 12 per cent. The most significant structural change in the fleet, therefore, was an increased proportion of large vessels. This change occured in all the provincial fleets (Table 7). An indication of this is the increasing number of offshore vessels in the various size categories given. In 1962, Nova Scotia, Newfoundland and Quebec were the only provinces with vessels of 100 tons or more in their fleets; vessels in this size category were introduced in New Brunswick in 1963 and in Prince Edward Island in 1964.

Changes in the types of vessels and their operations are evident from the classification of vessels by type of gear used (Table 8).[2] These changes have been brought about by the exploitation of new fisheries resources, the development of new and improved methods for marketing fisheries products, increased competition from fishing fleets from other nations, and new fishing technology and equipment.

The main types of vessels in the fleet are trawlers, draggers, longliners, and Danish seiners. The intermediate vessels, especially the smaller vessels in this category, are the most highly diversified in their operations (Table 8). The large vessels are more specialized but have diversified their operations, particularly after the 1961 change in the subsidy and its regulations. In 1962, large vessel operations were confined mainly to otter trawling and longlining, but by 1966 they also engaged in scallop dragging and purse seining as a result of developments in the scallop and herring fisheries.[3]

Table 6

NUMBER OF OFFSHORE FISHING VESSELS BY GROSS TONS, ATLANTIC COAST, 1962-1966

	1962	1963	1964	1965	1966	Increase 1962-1966 No.	Increase 1962-1966 Per cent
Large vessels (100 tons & over)	111	179	195	237	273	162	146
Intermediate 50-99.9 tons	157	169	183	205	211	54	34
vessels 25-49.9 tons	340	359	339	338	345	5	1
TOTAL	608	707	717	780	829	221	39

Source: D.B.S. *Fisheries Statistics of Canada.*

[1] This period was chosen because the breakdown by vessel categories in Table 6 was not available for the period 1957-1966.

[2] The number of vessels by gear used does not correspond with the number of vessels in the offshore fleet because of double counting in some cases where vessels use more than one type of gear.

[3] Because of increased demand these two species began to be heavily exploited, scallops in the late nineteen-fifties and herring from the mid-sixties (see Table 12).

Table 7

PROVINCIAL DISTRIBUTION OF OFFSHORE VESSELS BY GROSS TONS, ATLANTIC COAST, 1962 AND 1966

Provinces	Gross Tons	1962 No.	1966 No.	Increase 1962-1966 No.
Newfoundland	100 tons & over	31	63	32
	50-99.9 tons	13	28	15
	25-49.9 tons	35	44	9
P.E.I.	100 tons & over	-	11	11
	50-99.9 tons	12	10	- 2
	25-49.9 tons	4	5	1
Nova Scotia	100 tons & over	77	164	67
	50-99.9 tons	84	94	10
	25-49.9 tons	114	128	14
New Brunswick	100 tons & over	-	15	15
	50-99.9 tons	31	44	13
	25-49.9 tons	133	116	-17
Quebec	100 tons & over	3	20	17
	50-99.9 tons	17	35	18
	25-49.9 tons	54	52	-2

Source: D.B.S., *Fisheries Statistics of Canada.*

Table 8

NUMBER OF VESSELS BY TYPE OF GEAR, OFFSHORE FLEET, ATLANTIC COAST, 1962 AND 1966

Type of Gear	Vessels 25-49.9 tons		Vessels 50-99.9 tons		Vessels, 100 Tons & Over	
	1962	1966	1962	1966	1962	1966
Otter trawl	124	125	75	106	75	166
Line trawl	93	91	52	59	7	25
Scallop drag	21	27	12	4	—	62
Danish seine	58	49	26	21	—	3
Purse Seine	22	30	2	15	—	13
Gill net	12	17	1	1	—	1
Other	64	50	52	50	4	9

Source: D.B.S., *Fisheries Statistics of Canada.*

The age structure of vessels in the offshore fleet on the Atlantic Coast is one indicator of the degree of modernization in this fleet. This structure in 1966 reveals that two-thirds of the vessels in the fleet were less than 10 years old and one-third over 10 years (Table 9).

The age distribution of vessels varied quite substantially, however, by size categories, with the larger-sized vessel categories having a greater proportion of newer vessels than the smaller ones. For example, two-thirds of the vessels of 100 tons or more were under 5 years old in comparison with one-third of the vessels for the intermediate-sized categories. The category 25 to 49.9 tons had a larger proportion of vessels 10 years old and over—around 42 per cent in comparison with 29 per cent for vessels from 50-99.9 tons and 22 per cent for vessels of 100 tons or more.

The offshore fleet on the Atlantic Coast therefore experienced extensive modernization. This is exemplified by the change in the age structure of the fleet, the growth in the proportion of larger vessels, and the changes in the types of vessels and diversity of their operations, which indicate increased use of new fishing technology and equipment.

2. FLEET EXPANSION AND LANDINGS, ATLANTIC COAST, 1957-1966

The volume of fish landings in round weight on the Atlantic Coast increased from 699,000 metric tons to nearly one million metric tons or by 43 per cent (Table 10). In terms of value, these landings increased from $50 million to $96 million or by about 94 per cent, indicating a rise in average unit values during the period. The increase in volume of landings was the result of a substantial expansion in offshore landings brought about by the expansion and modernization of the offshore fleet. Offshore landings more than doubled from 219,000 metric tons to 597,000 metric tons during the period, with much of this increase taking place in the last five years of the period, i.e. 1962-1966. In comparison, in spite of an increase in the number of inshore vessels and boats, inshore landings declined from 483,000 metric tons to 400,000 metric tons or by 10 per cent.

The changes in the relative importance of the inshore and offshore fisheries and their share of total landings are shown in Fig. 1. Before 1962, the inshore fishery, because of its relative importance, exerted the most telling influences on the annual pattern of total landings since the yearly patterns of inshore and total landings were quite similar. From 1962 onwards, the pattern of total landings began to be influenced more by offshore landings although it was not until 1966 that offshore landings for the first time exceeded inshore landings in the Atlantic Coast fisheries.

Intermediate-sized vessels make the most significant contribution to offshore landings, accounting for well over 65 per cent of the volume of offshore landings during the period 1960-1966 (Table 11).

Table 9

AGE STRUCTURE, OFFSHORE FLEET, BY TONNAGE CLASSIFICATION, ATLANTIC COAST, 1966

Age	Percentage Distribution			Total
	25-49.9 Tons Per cent	50-99.9 Tons Per cent	100 Tons & Over Per cent	Per cent
Under 5 years (1962-1966)	30	30	67	42
5 - 9 years (1957-1961)	28	41	11	25
10 - 14 years (1952-1956)	26	16	9	18
15 - 19 years (1947-1957)	9	4	5	7
20 years & over (pre-1947)	7	9	8	8
TOTAL	100	100	100	100

Table 10

FISHING LANDINGS, OFFSHORE AND INSHORE FLEETS, CANADIAN ATLANTIC COAST, 1957 - 1966

Years	Offshore Fleet (In metric tons - round weight) Q	Inshore Fleet (In metric tons - round weight) Q	Total Q	Total V $'000
1957	216,092	482,652	698,744	49,698
1958	210,043	424,260	634,303	49,818
1959	212,539	494,391	706,930	57,567
1960	218,731	503,829	722,560	58,443
1961	272,595	382,559	655,154	57,821
1962	293,794	451,039	744,833	66,503
1963	341,542	459,642	801,184	76,608
1964	398,072	429,156	827,228	84,117
1965	398,948	462,124	861,072	94,847
1966	596,932	399,994	996,926	96,313
Percentage increase 1957-1966	176	-17	43	94

Sources: ICNAF *Statistical Bulletins;* D.B.S. *Fisheries Statistics of Canada.*

Landings from the large trawlers of 100 gross tons and over, however, experienced the most rapid rate of growth. These landings, estimated to be about 44,000 metric tons in 1960, increased more than fourfold to 185,000 metric tons in 1966. In comparison, landings from intermediate-sized vessels doubled from 175,000 metric tons to 412,000 metric tons.

The expansion in the offshore fishery significantly affected the monthly pattern of landings during the period 1957-1966 (Fig. 2).

Inshore operations, because of the small vessels and boats used, are confined mainly to the summer months, with the result that about 80 per cent of total inshore landings are made from June to August.[1] Offshore operations, especially by the large vessels of 100 tons and over, can be carried on throughout the year. With the increasing importance of offshore landings from 1962 onwards, therefore, the flow of landings became more evenly distributed throughout the year. For example, in 1957, 75 per cent of total landings came in the five-month period from May to September in comparison with 63 per cent in 1966.

Fish Species Landed, Atlantic Coast 1957-1966.

The offshore and inshore fleets on the Atlantic Coast land a great variety of fish species (Table 12). The main species landed in terms of volume and value were groundfish. Pelagic and estuarial species, although second in terms of volume, were third in terms of value to molluscs and crustaceans which include high-valued species such as lobsters and scallops. During the period 1957-1966 the landings of pelagic and estuarial species increased in volume more significantly than groundfish landings. This resulted largely from the great expansion in herring landings, which doubled during the period. Most of this increase took place during the last five years and was brought about by increased fishing for herring for reduction purposes.

The species composition of landings changed significantly during the period; declines in many species were offset by increased landings of many others. The increased versatility of the offshore fleet no doubt contributed greatly to this changing composition. For example, cod landings, which are especially important in the inshore fishery, declined along with

[1] John Proskie, *The Future of Inshore Fishing*, Economic Services, Department of Fisheries of Canada, 1961, pp. 8-9.

those of other species such as haddock, hake, halibut and catfish. There were, however, great increases in species such as small flatfish, redfish, turbot and others, which are exploited mainly by offshore vessels.

Although groundfish landings increased by 17 per cent, Canada's share in groundfish landings on the Atlantic Coast declined in comparison with other countries (Table 13).

Table 11

ESTIMATED CONTRIBUTION OF THE INTERMEDIATE-SIZED AND LARGE VESSELS TO OFFSHORE LANDINGS, 1960-1966*

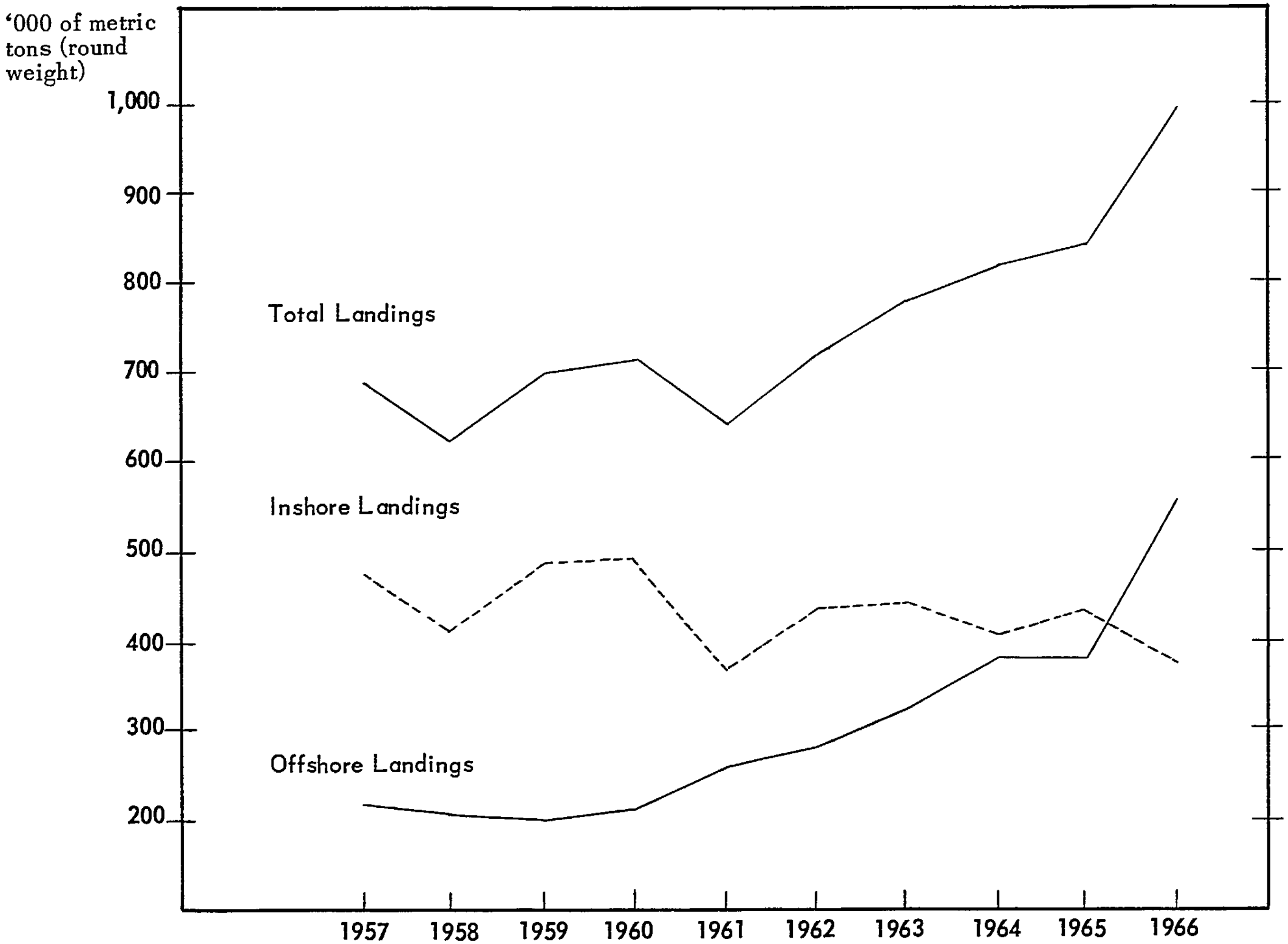
(Round weight)

Years	Intermediate Fleet	Per Cent of Total	Large Trawler Fleet	Per Cent of Total	Total Offshore Landings	Per Cent
	metric tons	%	metric tons	%	metric tons	%
1960	174,767	80	43,964	20	218,731	100
1961	212,990	75	59,605	25	272,595	100
1962	221,814	76	71,980	24	293,794	100
1963	259,571	76	81,971	24	341,542	100
1964	296,224	72	101,858	28	398,072	100
1965	268,699	68	129,249	32	398,948	100
1966	411,893	69	185,039	31	596,932	100

* Landings (round weight) are based on the percentages of landings of vessels of 70 feet length or more, the majority of which are 100 tons and over, to total landings in the Maritimes and Newfoundland. These percentages are then applied to total landings, round weight, for the Atlantic Coast to estimate landings for large trawlers. Intermediate landings are the residual obtained in deducting these landings from total offshore landings.

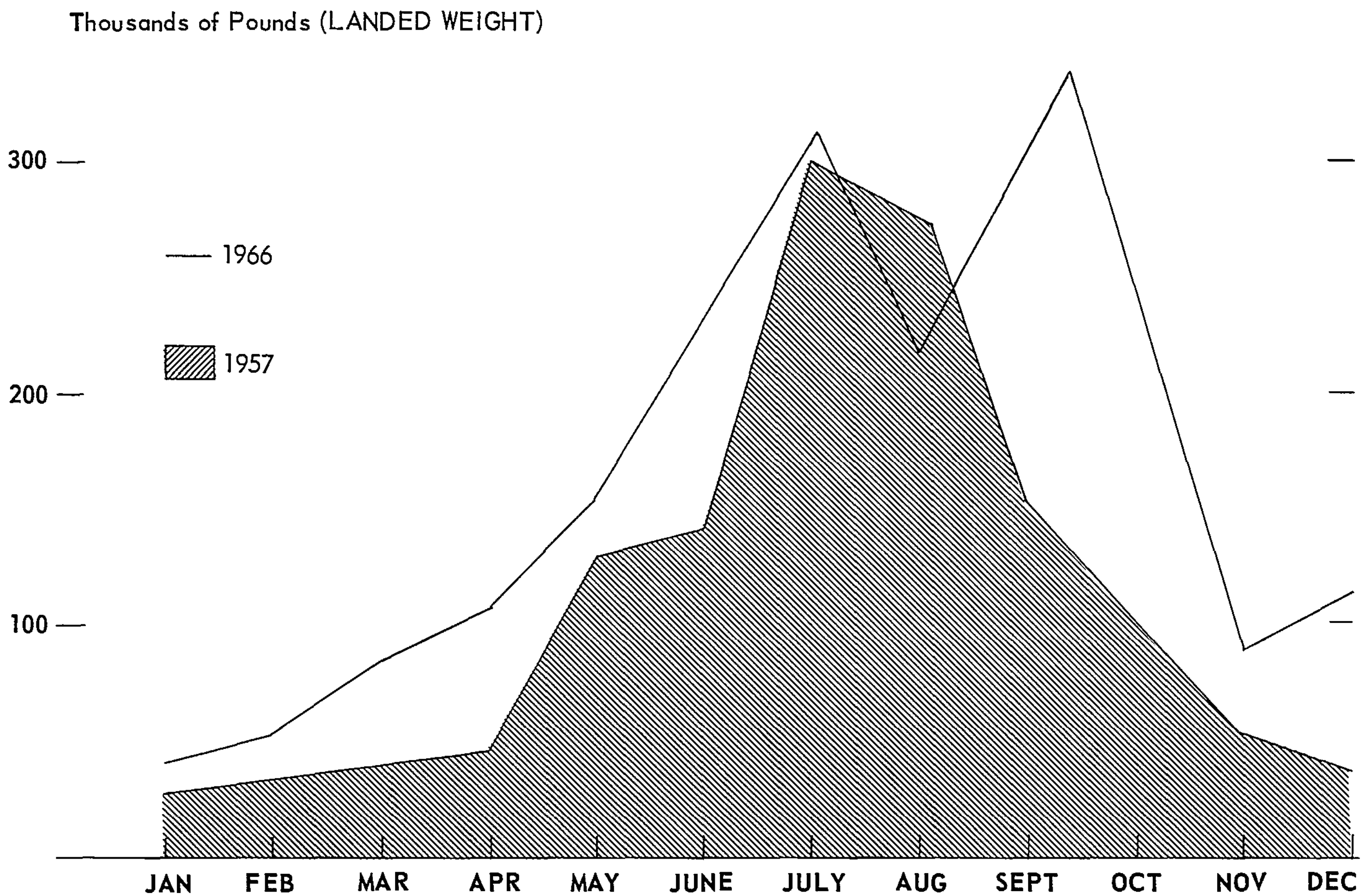
Source: International Commission for the North Atlantic Fisheries, *Statistical Bulletins*.

FIG. 1. ANNUAL LANDINGS, ATLANTIC COAST, 1957-1966.



SOURCE: ICNAF, Statistical Bulletins.

FIG. 2. MONTHLY PATTERN OF LANDINGS, ATLANTIC COAST, 1957 and 1966



SOURCE: D.B.S., Monthly Review of Canadian Fisheries Statistics.

TABLE 12

LANDINGS, QUANTITY AND VALUE OF MAIN SPECIES, CANADIAN ATLANTIC COAST, SELECTED YEARS, 1957-1966

	1957		1962		1966	
	(Short tons and thousands of dollars)					
	Q	V	Q	V	Q	V
Groundfish (Total)	493,103	26,148	481,550	32,887	600,890	51,348
Catfish	2,695	151	1,667	102	2,292	154
Cod	320,917	15,057	292,693	18,904	281,539	25,099
Flounders & Soles	43,274	2,641	51,088	3,245	116,479	7,764
Haddock	65,819	4,210	57,510	4,869	56,409	8,036
Hake	10,561	412	9,414	452	8,366	546
Halibut	3,779	1,751	3,052	1,776	2,298	1,721
Pollock	18,425	708	30,405	1,656	17,289	1,382
Redfish	23,180	1,032	30,557	1,585	91,540	5,083
Turbot	653	83	666	78	15,379	974
Other	3,800	103	4,498	220	9,299	589
Pelagic & Estuarial (Total)	147,540	6,536	148,419	8,251	317,669	13,874
Alewives	5,793	169	5,313	177	4,096	146
Capelin	13,593	159	5,063	81	5,487	97
Herring	111,157	2,515	123,251	3,430	284,947	6,217
Mackerel	9,845	724	8,084	653	12,867	900
Salmon	1,517	1,071	1,888	1,752	2,581	2,536
Swordfish	2,590	1,341	1,747	1,580	3,701	3,214
Other	3,045	557	3,073	578	3,990	764
Molluscs & Crustaceans (Total)	32,416	16,549	34,407	24,875	38,218	30,637
Lobsters	22,219	14,501	23,226	19,781	18,670	22,038
Oysters	1,835	308	1,629	146	1,760	559
Scallops	1,664	1,285	6,741	4,524	9,124	7,446
Other	6,698	455	2,811	424	8,664	594

Source: D.B.S., *Fisheries Statistics of Canada*

Table 13

COMPARISON OF GROUNDFISH LANDINGS IN ICNAF AREA, SELECTED YEARS, 1957-1966

Year	(Metric tons, round weight) Canada	All Nations	Canada's Landings as a Percentage of the Total
1957	528,064	1,578,293	33.5
1962	510,190	1,932,437	26.4
1963	522,966	2,122,301	24.6
1964	537,737	2,261,122	23.8
1965	564,854	2,663,775	21.2
1966	617,709	2,420,070	27.5

Source: ICNAF *Statistical Bulletins.*

The decline in Canada's share of the total groundfish catch from 33.5 per cent in 1957 to 27.5 per cent in 1966, with a low of 21.2 per cent in 1965, has been attributed to the smaller total catches in the inshore groundfish fishery.[1] However, the rate of increase of offshore landings was not sufficient to compensate for the decline in inshore landings or to enable Canada to keep pace with the increase in international fishing effort, although the sharp increase in Canada's share in 1966 suggests that the offshore fishery was beginning to exert a telling effect.

Expansion in the offshore fleet therefore (1) increased the volume and importance of offshore landings in the Atlantic Coast fisheries so that these landings now make up a larger proportion of the Canadian Atlantic catch, (2) brought about a more even distribution of landings throughout the year, and (3) permitted the exploitation of hitherto not highly exploited species to compensate for declining species. These factors in turn influenced changes in other sectors of the Atlantic Coast fisheries.

[1] John Proskie, *Fishing Vessel Subsidy and Loan Programs in Canada,* Department of Fisheries of Canada, Ottawa, 1967, pp. 14.

CHAPTER III

THE EFFECTS OF FLEET EXPANSION ON THE ATLANTIC COAST FISHING INDUSTRY, 1962-1966

The expansion in the Canadian Atlantic offshore fishing fleet and the increase in landings which resulted from it brought about improved employment opportunities in the fisheries and higher incomes to fishermen. It also resulted in infrastructural changes in the secondary or manufacturing sector of the fishing industry, with both backward and forward linkage effects.[1].

1. FLEET EXPANSION AND EMPLOYMENT, ATLANTIC COAST

There is a considerable over-supply of labour in the primary fisheries on the Atlantic Coast, stemming from problems of regional growth and development. The fisheries, particularly the inshore fisheries, have served as outlets for excess labour which could not be absorbed by other industries. Ease of entry into the inshore fisheries and the lack of adequate alternative employment opportunities have resulted in an over-abundance of labour inputs and decreasing returns because of lower total landings. This is not the case with the offshore fisheries where expansion of employment is more difficult, requiring heavy capital outlays in vessel and equipment, but where the more capital-intensive method of production results in greater landings per fisherman.

The rational development of Canada's Atlantic Coast fisheries should therefore attempt to reduce the number of fishermen in the inshore fisheries, which in the economic sense are over-exploited, and increase the number in the offshore fisheries where the economic prospects are better. The effects of fleet expansion and modernization on employment therefore need to be analysed, taking these two aspects into consideration.

The Number and Classification of Fishermen, Atlantic Coast

The number of fishermen on the Atlantic Coast fluctuated between 45 thousand and 49 thousand during the period 1957-1966 (Table 14). There were declining trends in the number of fishermen in all the provinces with the exception of Newfoundland in which the increase was from 16 thousand to a peak of 23 thousand in 1964, and Prince Edward Island, where the number remained relatively stable, around three thousand during the period. A factor contributing to the increase or decline in the number of fishermen in the respective provinces was the expansion or reduction of their inshore fleets, but this is not the most significant factor, since only in New Brunswick and Quebec did the number of vessels in the inshore fleet actually decline during the period.

There were changes in the numbers of full-time fishermen who engaged in the fishery for over 10 months of the year and part-time and occasional workers who fished for less than 10 months. Because of the time spent fishing, there is a high correlation between the numbers of full-time and offshore fishermen and between part-time and inshore fishermen. From 1962 to 1966 full-time fishermen increased from 4,674 to 5,428, or from 10 to 12 per cent of the total number of fishermen, while part-time and occasional declined slightly from 41,023 to 40,490 (Table 15). The increase in full-time fishermen was brought about by increased numbers of these fishermen in Nova Scotia, Newfoundland, and Prince Edward Island as a result primarily of the expansion in their offshore fleets. The decline in New Brunswick and Quebec, despite the expansion in their respective offshore fleets, is attributed to the fact that offshore vessels

---

[1] These terms are used by A.O. Hirschman in *The Strategy of Economic Development*, New Haven, Yale University Press, 1965. Backward linkage effects refer to the production of inputs for the fishing industry such as the provision of infrastructural services. Forward linkage effects refer to the use of the output of the fishery as an input in other activities such as manufacturing activities.

Table 14

EMPLOYMENT IN PRIMARY FISHERIES BY PROVINCE, ATLANTIC COAST, SELECTED YEARS, 1947-1966*

Years	Nfld.	P.E.I.	N.S.	N.B.	Que.	Total Atlantic Provinces
1947	n.a.	3,307	14,475	11,073	8,094	
1952	n.a.	2,665	15,248	10,109	4,973	
1957	16,469	3,000	15,265	7,815	5,578	48,127
1958	18,364	3,209	13,747	6,060	6,213	47,593
1959	18,340	3,260	13,012	6,211	5,387	46,300
1960	18,291	3,274	12,780	6,012	4,989	45,346
1961	18,756	3,464	12,578	6,083	3,771	44,652
1962	19,817	3,367	12,711	6,016	3,786	45,697
1963	21,407	3,372	13,467	5,833	3,674	47,753
1964	22,615	3,329	13,333	5,790	3,512	48,579
1965	21,701	3,566	14,049	6,102	3,917	49,335
1966	20,286	3,220	13,067	5,642	3,703	45,918

*Includes duplication up to 1957.

Source: D.B.S., *Fisheries Statistics of Canada.*

on the North Shore of New Brunswick and in Quebec are ice-bound for most of the winter and so operate for less than 10 months during the year.[1]

The Effects of Fleet Expansion on Employment and Training Facilities

Fleet expansion on the Atlantic Coast increased job opportunities much faster than the fisheries labour force on this coast during the period 1962-1966. Job opportunities increased by about three thousand, although the number of fishermen remained relatively stable (Table 16).

The excess of the fishery labour force over job opportunities available does not indicate high levels of unemployment since there is a high turn-over of employment in the fisheries and, as will be shown later, there is a problem of obtaining sufficient labour for the large trawler fleet. The decrease in this excess from nearly five thousand to two thousand fishermen during the period therefore signifies a relative decline in the fisheries labour force which is indicative of increasing alternative employment opportunities, a characteristic of economic growth and development, in the Atlantic region.

The offshore fleet contributed most to the increase in employment opportunities in the Atlantic Coast fisheries during the period 1962-1966, since there was only a relatively small increase in the inshore fisheries. Within the offshore fleet, employment opportunities for large vessels of 100 tons and over increased by nearly two thousand places in comparison with just over three hundred for intermediate-sized vessels. Because of this, employment opportunities in intermediate-sized vessels decreased from 63 per cent to 43 per cent of the total available in the offshore fleet from 1962 to 1966.

The expansion in employment opportunities during the period 1962-1966 resulted in labour problems in the offshore fleet particularly for the larger company-owned vessels. The labour force engaged on vessels of 100 tons and over in 1966 was probably less than three thousand because many of these vessels had difficulty finding crews and were undermanned;[2]

---

[1] Some of the larger vessels, however, move to Newfoundland and Nova Scotia ports in the winter months and are therefore able to operate on a year-round basis.

[2] John Proskie, *Atlantic Coast Survey of Offshore Fishermen*, First Progress Report, Department of Fisheries, Ottawa, 1967.

Table 15

NUMBERS BY CLASSIFICATION OF FISHERMEN, ATLANTIC PROVINCES, 1962-1966

		1962	1963	1964	1965	1966	Increase or Decrease 1962-1966
NFLD.	Full time*	639	769	845	922	926	287
	Part time & occasional	19,178	20,638	21,770	20,779	19,360	182
	TOTAL	19,817	21,407	22,615	21,701	20,286	369
P.E.I.	Full time	–	2	1	42	38	38
	Part time & occasional	3,367	3,370	3,328	3,524	3,182	-185
	TOTAL	3,367	3,372	3,329	3,566	3,220	-147
N.S.	Full time	3,424	3,734	4,051	4,474	4,107	683
	Part time & occasional	9,287	9,733	9,318	9,575	8,960	-327
	TOTAL	12,711	13,467	13,333	14,049	13,067	356
N.B.	Full time	455	367	324	302	357	- 98
	Part time & occasional	5,561	5,466	5,366	5,800	5,285	-276
	TOTAL	6,016	5,833	5,790	6,102	5,642	-374
Que.	Full time	156	5	–	–	–	-156
	Part time & occasional	3,630	3,669	3,512	3,917	3,703	73
	TOTAL	3,786	3,674	3,512	3,917	3,703	- 73
Atlantic Provinces	Full time	4,674	4,877	5,221	5,740	5,428	754
	Part time & occasional	41,023	42,876	43,358	43,595	40,490	-533
	TOTAL	45,697	47,753	48,579	49,335	45,918	221

*These statistics are estimated from the number of offshore fishermen and the number of inshore fishermen operating in areas where fishing is carried out for over 10 months of the year. In official D.B.S. statistics the criteria are: for full-time fishermen, those who fish for over 10 months of the year, and for part-time and occasional fishermen, those who fish from 5 to 10 months and under 5 months, respectively. In Newfoundland fishing seems to have been interpreted as activity involving actual fishing and the maintenance of fishing boat and equipment. The term "full-time" in Newfoundland therefore applies to fishermen who are completely dependent on fishing for a livelihood. Because of this, official statistics list the number of full-time fishermen in Newfoundland as over 12 thousand a year during the period 1962-1966.

Source: D.B.S., *Fisheries Statistics of Canada.*

the large vessels required more highly skilled manpower than the smaller ones and this was in relatively short supply. Also, the intermediate-sized vessels are mainly fishermen-owned and are often manned by relatives and friends.

The expansion in the offshore fleet also induced an expansion in training facilities on the Atlantic Coast. Fisheries schools and training centres such as the Caraquet School of Fisheries in New Brunswick, the College of Fisheries in St. John's, Newfoundland, and the Fisheries Training Centre, Pictou, Nova Scotia, from the early 1960s offered year-round training in fisheries, particularly for offshore fishermen.[1] Besides these schools, training courses in various aspects of fisheries are provided in vocational schools.

[1] Courses were offered by these institutions on a part-time basis previous to this.

Table 16

ESTIMATED INCREASE IN EMPLOYMENT OPPORTUNITIES, PRIMARY FISHERIES, ATLANTIC COAST, 1962-1966*

	1962		1966		
	No. of Positions	Per Cent of Total for Offshore Fleet	No. of Positions	Per Cent of Total for Offshore Fleet	No. of New Positions
Offshore Fleet (Vessels)					(No.)
100 tons & over	1,332	37	3,276	56	1,944
50 - 99.9 tons	942	26	1,266	21	324
25 - 49.9 tons	1,360	37	1,380	23	20
Total offshore fleet	3,634	100	5,922	100	2,288
Inshore Fleet					
Vessels (10-24.5 tons)	2,822		3,568		746
Boats under 10 tons	34,605		34,272		-333
Total inshore fleet	37,427		37,840		413
(1) Total employment opportunities	41,061		43,762		2,701
(2) Total number of fishermen	45,697		45,918		
(3) The difference between (2) & (1)	4,636		2,156		

* Based on an average of 12 men for vessels of 100 tons and over, 6 for vessels from 50-99.9 tons, 4 for vessels from 25-49.9 tons, 2 for vessels from 10-24.9 tons, and one for each boat under 10 tons.

Despite the expansion in training facilities, the levels of training for fishermen are low. It has been found, for example, from sample surveys that the percentages of fishermen in the large vessels of 100 tons and over, with some training courses to their credit, in 1966/67 were as follows:[1]

Province	Fishermen with Training Courses as a Percentage of Sample
Newfoundland	16
Nova Scotia	17
New Brunswick	40
Quebec	59
Total	24

Approximately 76 per cent of the fishermen in the large vessels on the Atlantic coast lacked formal training. On a provincial basis, Quebec and New Brunswick have a much higher percentage of fishermen with some training than Nova Scotia and Newfoundland. Since the larger vessels covered in the survey require the highest levels of skills, it can be expected that the percentages of fishermen with some training in intermediate-sized vessels would be even lower.

One of the main factors responsible for the lack of training of fishermen has been their low level of formal education. About 70 per cent of the fishermen in large vessels of the offshore fleet have not attended high school.[2] Despite this, more fishermen could

[1] John Proskie, *Survey of the Labour Force in the Offshore Fishing Fleet of the Atlantic Coast 1966-1967*, Third Progress Report, Department of Fisheries of Canada, Ottawa, May, 1967.

[2] Ibid.

have been trained, especially in Nova Scotia and Newfoundland. This is based on the assumption that the education level of fishermen in Nova Scotia is not lower than in New Brunswick or Quebec, yet the proportion of trained fishermen in these latter provinces is twice as large. However, the recent rapid development of offshore fishing in New Brunswick and Quebec necessitated special efforts to provide trained men for crews through formal training courses.

Fishermen's Incomes

Fishermen's incomes depend on a variety of factors such as species fished, size of vessel or boat, fishing equipment and methods utilized, and the intensity of effort in fishing operations. Because of these factors, there are considerable disparities in incomes from fishing, particularly in the comparison of inshore with offshore operations. This is exemplified by estimates of the per capita values of offshore and inshore landings for the period 1962-1966 (Table 17).

The per capita values of landings for the offshore and inshore fishermen do not represent their average incomes since to determine net incomes fishing costs and returns to the vessel owners for capital and management would have to be deducted–but they give some idea of productivity trends in the two fisheries sectors. Whereas the average gross value of production per fishermen in the inshore fisheries tended to remain stable at a low level or even to decline in real terms, there were substantial increases in the average gross catch return per offshore fisherman during the five-year period.

Estimates of average net incomes of Atlantic inshore fishermen have been consistently around or below $1,000 a year.[1] John Proskie's vessel *Costs and Earnings ...* studies provide the best source of information on the incomes of offshore fishermen. The range of fishermen's earnings in offshore vessels was quite wide on some types of vessels according to the type of skill and responsibility required (Table 18). In 1966 the average incomes by crew categories ranged from over $14,000 a season for a captain to just over $4,000 for a deck-hand in the large 135 ft. steel trawlers, in comparison with incomes of around $3,000 a season for smaller vessels, in which there was very

Table 17

ESTIMATED VALUE OF LANDINGS AND LANDINGS PER FISHERMAN, OFFSHORE AND INSHORE*, ATLANTIC COAST FISHERIES, 1962-1966

YEAR	TOTAL LANDINGS			PER CAPITA LANDINGS		
	Offshore	Inshore ('000 dollars)	Total	Offshore	Inshore (dollars)	Total
1962	25,521	41,023	66,503	4,800	1,100	1,500
1963	28,017	42,876	76,608	5,700	1,100	1,600
1964	36,016	43,358	84,117	6,900	1,100	1,700
1965	35,372	43,595	94,847	6,200	1,400	1,900
1966	56,882	40,470	96,308	10,500	1,000	2,100

* The values of offshore and inshore landings were estimated on the basis of the value of main species landed (groundfish and other) by the offshore and inshore fleets respectively. Full-time fishermen were considered to be offshore fishermen and part-time and occasional fishermen were classified as inshore fishermen (see Tables 10 and 15).

---

[1]See Parzival Copes, *The Role of the Fishing Industry in the Economic Development of Newfoundland*, p. 12, paper presented at the Natural Resources Public Policy Seminar at the University of Washington, Seattle, Nov. 19, 1969; Marcel Daneau, *Situation economique de la peche cotiere du Quebec;* Department of Fisheries of Canada; *An Economic Appraisal of the Operations of the Fishermen's Indemnity Plan*, 1953-1965, Economics Service, Department of Fisheries, p. 11.

little difference between incomes of captains and deckhands. Since these are average figures, it can be assumed that higher incomes by various crew categories and vessels are obtained in the more efficient vessels. The data indicate that incomes from offshore fishing can be quite high, depending on the size and technical sophistication of vessels and, no doubt, on the management skills of the operators. As a result, the changes in the structure of the offshore fleet towards the use of larger vessels during the period 1962-1966 also changed the income structure of offshore fishermen, with many receiving larger incomes than formerly.

Nevertheless, the average earnings of a deckhand have varied widely by region as well as by type of fishing vessel, and fishermen on the larger vessels, which presumably represent a greater average amount of capital investment per crew member, were not always the highest earners (Table 19). This has been responsible to some extent for the manning problems of some larger vessels. Many offshore fishermen are more attracted to smaller vessels which engage in certain fisheries, such as the herring or scallop fisheries, where the prospective earnings are greater than those for many larger and older vessels fishing mainly for groundfish species.

Table 18

AVERAGE NET RETURNS, BY CREW CATEGORY, FOR SELECTED VESSELS, 1966

Province	Nova Scotia		P.E.I.	N.B.	Quebec	
Type of Vessel	Trawler	Dragger	Dragger	Danish Seiner	Dragger	
	steel side	wooden	wooden	wooden	steel	wooden
L.O.A.	135	57	65	48	82	60
Crew Category		Average Net Earnings per Man, per Season				
	$	$	$	$	$	$
Captain	14,242	7,259	4,188	2,615	5,448	3,335
First Mate	8,338	–	2,987	–	–	–
Second Mate	4,664	–	–	–	–	–
Boatswain	4,925	–	–	–	–	–
First Engineer	7,270	–	2,730	–	–	–
Second Engineer	6,112	–	–	–	–	–
Cook	5,447	–	2,851	–	3,666	–
Checker	–	–	–	–	–	–
Chief Fish-hold	4,538	–	–	–	–	–
Fish-hold	4,332	–	–	–	–	–
First-Icer	4,632**	–	2,434	–	–	–
Second Icer	4,523	–	–	–	–	–
Shucker	–	–	–	–	–	–
Third-hand	4,530	–	–	–	–	–
Deck-hand	4,353*	6,759	2,375	2,087	3,349	3,335

* An average of those participating in refit and those not participating in refit.
** Checker, icer and boatswain.

Source: John Proskie, *Costs & Earnings of Selected Fishing Enterprises* (Preliminary Reports), 1966.

Table 19

AVERAGE ANNUAL EARNINGS OF A DECKHAND ON SELECTED TYPES OF FISHING VESSELS IN THE ATLANTIC PROVINCES, 1967 and 1965-1967.**

Province	Vessel Type and Size	Annual Crew Share to a Deckhand: Average 1967	Annual Crew Share to a Deckhand: 3-Yr. Average 1965-67
		$	$
Quebec	Draggers, 60-ft. wooden	2,385	2,913
	Draggers, 65-ft. wooden	3,536	3,353
	Draggers, 82-ft. steel	2,940	3,056
New Brunswick (North Shore)	Danish seiners, 48-ft.	2,149	2,094
	Draggers, 65-ft.	2,976	3,086
	Draggers, 86-ft.	3,354	3,821
	Herring seiners, 81-ft.	7,741	–
Nova Scotia	Longliners, 87-ft.	7,808	6,275
	Scallop draggers, 96-ft.	3,696	3,962
	Stern draggers, 56-ft.	3,686	4,534
	Herring seiners, 67-ft.	4,165	–
	Herring seiners, 101-ft.	6,261	7,521*
	Side trawlers, steel, 120-ft.	3,605	4,029
	Side trawlers, steel, 141-ft.	4,289	4,701*
	Stern trawlers, steel, 130-ft.	3,506	–
	Stern trawlers, steel, 154-ft.	5,094	–
Prince Edward Island	Side draggers, wooden, 60-ft.	1,146	–
	Side draggers, wooden, 65-ft.	2,034	–
	Side draggers, steel, 93-ft.	2,016	–
	Stern draggers, steel, 94-ft.	1,681	–
Newfoundland	Longliners, 38-ft.	1,356	–
	Side trawlers, steel, 120-ft.	3,784	–
	Side trawlers, steel, 129-ft.	3,486	–
	Stern trawlers, steel, 148-ft.	3,990	–

* Two-year average.
** Data from John Proskie, *Costs and Earnings of Selected Fishing Enterprises*, 1967 (a volume for each province).

The expansion of the offshore fleet therefore exerted significant influences on employment in the Atlantic Coast fisheries. This expansion increased employment opportunities in offshore fishing where incomes are highest and have been increasing. The increases in employment opportunities, however, brought about manning difficulties for the larger vessels in the fleet; the demand for manpower for these vessels exceeded the supply of labour available. The factors responsible for this are probably more sociological and psychological than economic. In fact, from the incomes obtained in offshore fishing, it seems that fishermen, taking their level of education into consideration, obtain incomes which are equal to or even higher than those available to them in alternative employments. Nor does lack of training facilities explain the shortage of labour, since many of the skills required, other than those of a sophisticated technical nature, can be obtained on the job. Findings of an offshore labour force survey support the conclusion that unpleasant working conditions, hard work and long hours at sea, involving absence from home for days at a time, are largely responsible for this manpower shortage.[1]

2. EFFECTS OF FLEET EXPANSION ON THE FISHING INDUSTRY

The expansion of the fishing fleet on the Atlantic Coast affected the whole structure of the fishing industry. Apart from the primary fisheries sector, changes were realized in the secondary manufacturing or processing sector and in the infrastructural or service sectors. Changes in secondary manufacturing were brought about by the increased volume of landings and the changes in the monthly distribution of these landings.[2] Infrastructural changes, such as improvements in harbour facilities and other services, were brought about by the physical expansion of the fleet itself.

Infrastructural Changes 1957-1966

There were many infrastructural changes in the primary sector of Canada's East Coast fishing industry because of the fleet expansion experienced during the period 1957-1966. These changes involved improvements in harbour facilities, navigational aids, weather and meteorological services, and other facilities and services which cater to fishing vessels. Many of these changes, however, are of benefit to shipping generally. As a result, it is difficult to assess the amount of public expenditures on these facilities which can be allocated specifically to the fishing industry. This analysis will concentrate on one aspect, harbour improvements, and will endeavour to estimate the magnitude of public expenditures involved during the period.

Offshore vessels utilize many ports on the Atlantic coast. The main considerations for the suitability of these ports are: (a) strategic location near main fishing grounds, and (b) adequate port accommodation and handling facilities, which increase the efficiency of vessel operations by reducing handling costs and permitting rapid turn-around in fishing operations.

In 1966 offshore vessels landed their catch in 145 ports on the Atlantic coast, 57 of which can be considered important offshore ports, i.e., ports with landings of 5 million pounds[3] or more (Table 20). The locations of these ports are shown in Fig. 3.

Although not all offshore vessels land their catch in their respective provinces, the port-vessel ratio is indicative of vessel concentration. This ratio was 1 port to 14 vessels in Prince Edward Island, 1:8 in New Brunswick, and 1:5 in Nova Scotia, Newfoundland and Quebec. There is therefore a greater degree of vessel concentration in Prince Edward Island and

Table 20

OFFSHORE VESSEL PORTS, ATLANTIC COAST, 1966

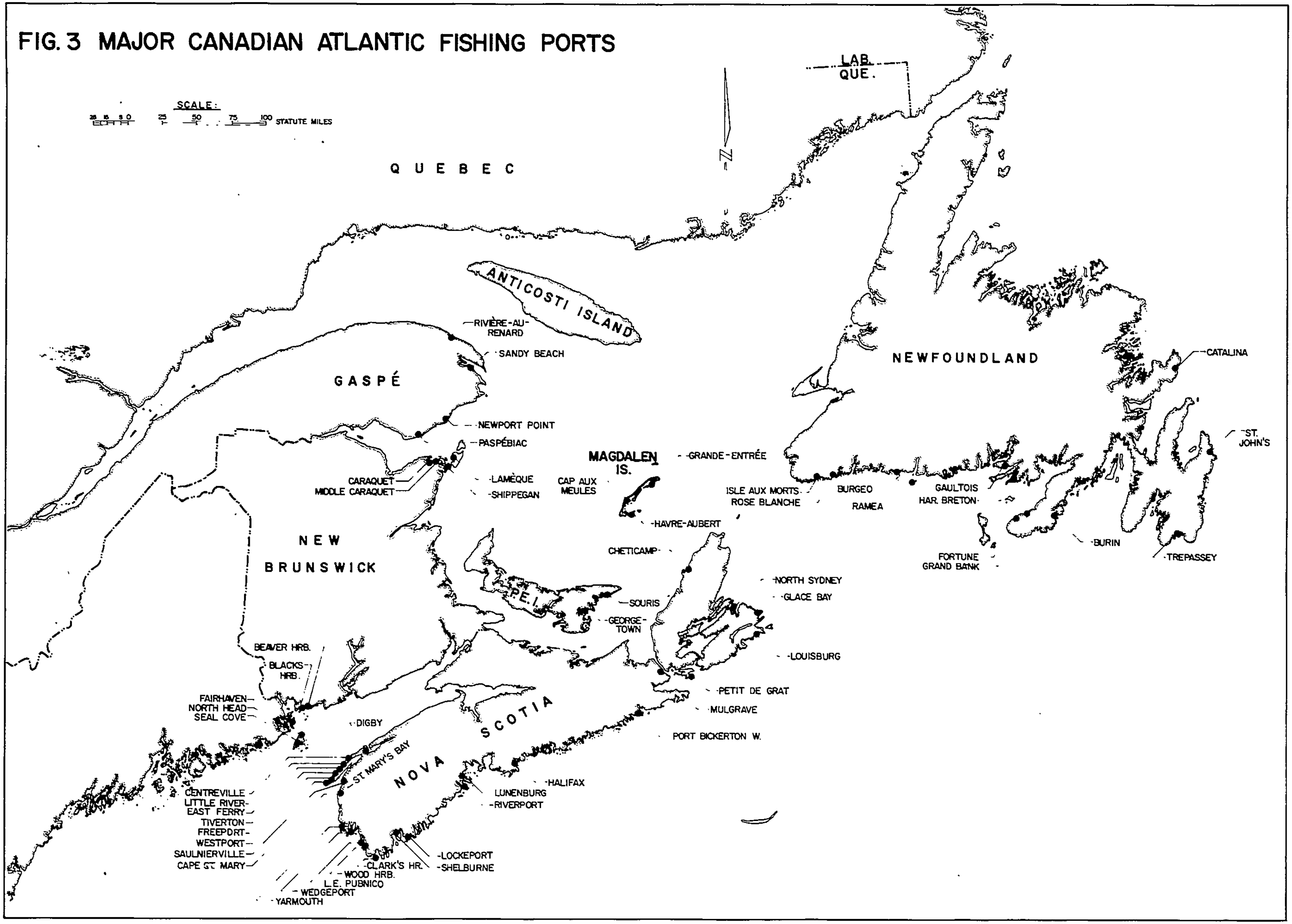
Province	No. of Ports	Important Offshore Ports	No. of Vessels	Port/Vessel Ratio
Newfoundland	28	12	135	1:5
Prince Edward Island	2	2	26	1:14
Nova Scotia	74	27	386	1:5
New Brunswick	20	9	175	1:8
Quebec	24	7	107	1:5
Atlantic Coast Total	145	57	829	1:6

[1] John Proskie, *Atlantic Coast Survey of Offshore Fishermen*, First Progress Report.

[2] The chain of cause and effect quite often ran the opposite way.

[3] Five million pounds is an arbitrary measure of the minimum volume required to provision a fish processing plant designed to serve the offshore fishery.

FIG. 3 MAJOR CANADIAN ATLANTIC FISHING PORTS



New Brunswick than in the other provinces. Although ports vary quite significantly in size and are widely scattered, there is need for greater concentration of landings if substantial economies, particularly at the secondary stage of production, are to be realized.

Offshore vessels use different ports to land their catch because of changes in fishing grounds or because of weather conditions or breakdowns during the course of their operations. However, the larger vessels over 100 gross tons use fewer ports than the intermediate-sized vessels, being usually restricted by their large size and company ownership to the larger and better-equipped ports (Table 21).

The expenditures made for harbour construction and improvements on the Atlantic Coast have been quite extensive, averaging nearly $14 million a year for the period 1957-1966 (Table 22).

Expenditures on offshore fishing ports averaged $5 million a year, of which nearly $4 million was expended on important offshore ports. This implies that in 10 years over $50 million was expended on ports which catered to offshore fishing vessels. If we assume that one-third of these expenditures can be attributed to the fishing industry since use by fishing vessels may constitute a small proportion of the total shipping use in some of the larger ports, then more than $15 million was expended on harbour improvements because of the expansion in the fishing fleet.

Changes in Secondary Manufacturing, 1957-1965.

The number of fish processing establishments declined from 366 in 1957 to 301 by 1965, with a low of 289 plants in 1962 (Table 23). On a provincial basis, Newfoundland was the only province where there was an actual increase in the number of plants (Table 24). The value of output in plant production

Table 21

PERCENTAGES OF VESSELS BY SIZE CATEGORIES, BY NUMBER OF PORTS USED, MARITIMES & QUEBEC, 1966

Vessel Sizes	One Port Per cent	Two Ports Per cent	Three Ports Per cent	More than Three Ports Per cent
100 tons & over	45	32	16	7
50 - 99.9 tons	31	31	10	28
25 - 49.9 tons	46	27	12	15

Table 22

AVERAGE ANNUAL EXPENDITURES BY THE DEPARTMENT OF PUBLIC WORKS ON THE CONSTRUCTION, ACQUISITION, MAJOR REPAIRS AND IMPROVEMENTS OF, AND PLANS AND SITES FOR, HARBOUR AND RIVER WORKS, 1957-1966

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Total
			(thousands of dollars)			
Provincial total*	3,835	723	2,698	2,386	3,972	13,614
Offshore ports**	2,611	54	1,078	643	884	5,270
Important offshore ports***	2,150	54	700	371	395	3,670

* At all ports in the province without regard to use of port or facilities.
** Ports where offshore landings by vessels of 25 tons and over were made in 1966.
*** Where landings exceeded five million pounds.

Source: Department of Finance, *Public Accounts of Canada.*

Table 23

THE NUMBER, EMPLOYMENT, WAGE EXPENDITURES AND OUTPUT OF FISH PRODUCTS ESTABLISHMENTS*, ATLANTIC COAST, 1957-1965

	1957	1958	1959	1960	1961	1962	1963	1964	1965	% increase
No. of establishments	366	382	356	343	294	288	295	297	301	−19
Employment	9,918	10,293	10,044	10,832	10,746	9,519	10,005	10,206	10,628	11
Salaries & wages $'000	16,956	17,285	17,732	20,577	20,189	18,495	20,668	22,557	27,527	62
Average wage $	1,710	1,679	1,765	1,900	1,879	1,939	2,056	2,210	2,590	51
Value of shipment of goods $'000	77,099	83,707	79,242	91,829	96,839	108,660	120,763	140,449	165,882	115

* Includes fish manufacturing activity only.

Source: D.B.S., *Fish Products Industry*.

Table 24

PROVINCIAL DISTRIBUTION OF THE NUMBER OF FISH PLANTS, ATLANTIC COAST

	1957	1958	1959	1960	1961	1962	1963	1964	1965	Increase or decrease in number of Plants
Newfoundland	36	36	37	38	31	36	41	45	51	15
P.E.I.	22	21	19	16	18	17	15	17	17	− 5
N.S.	120	134	138	131	122	124	120	115	116	− 4
N.B.	122	126	93	89	67	65	68	70	72	−50
Que.	66	65	69	69	56	46	51	50	45	−21

Source: D.B.S., *Fish Products Industry*.

increased from $77 million to $166 million or by 115 per cent during the period. Employment in these plants increased from just under 10 thousand to 11 thousand[1] or by 11 per cent, resulting in an increase in average incomes of 51 per cent, from $1,710 to $2,590.

There has been a significant trend towards larger plants on the Atlantic Coast, which suggests that extensive modernization in manufacturing activity in the fisheries has been taking place. Plants valued at over $100,000 increased from 48 to nearly 60 per cent of the total number of plants and their production from about 95 per cent to 97 per cent of the value of total output between 1961 and 1965 (Table 25).

The greatest increase was realized by large plants valued at over one million dollars, whose output increased from 50 to 70 per cent of the total value of output during the period.

The expansion in the number of plants from 1961 to 1965 and the changes in the size structure based on the value of these plants indicate that great increases in processing capacity were realized during the period. The increases have been more than adequate to accommodate the increased landings from the offshore fleet, since the majority of plants operate well under full capacity. In 1966 and 1967 for example, it was estimated that plants in the Maritimes "operated at about 51 per cent of one eight-hour shift capacity annually".[2]

Fleet expansion therefore induced considerable changes in the Atlantic Coast fishing industry. This expansion, through forward linkage effects, resulted in great expansion in secondary manufacturing activity. It also, through backward linkage effects, influenced developments in the infrastructural sectors of the industry. This analysis concentrated mainly on one aspect of this, port facilities, since the development of these facilities involved government expenditures. But other industries such as the shipbuilding industry and service industries (maintenance, etc.) were greatly affected. It is difficult to measure all of these influences but their effects no doubt played an important part in the economic development of the Atlantic provinces.

Table 25

SIZE GROUPS BY VALUE OF SHIPMENT OF GOODS OF OWN MANUFACTURE, FISH PROCESSING ESTABLISHMENTS, ATLANTIC COAST, 1961-1965

SIZE GROUP	NUMBER OF ESTABLISHMENTS				VALUE OF SHIPMENT OF GOODS OF OWN MANUFACTURE			
	1961		1965		1961		1965	
	No.	Per Cent	No.	Per Cent	$'000	Per Cent	$'000	Per Cent
Under $10,000	43	15	30	10	230	0	164	0
$10,000 - $49,999	72	24	54	18	1,890	2	1,467	1
$50,000 - $99,999	39	13	41	14	2,764	3	3,192	2
$100,000 - $499,999	86	30	93	31	21,278	22	22,087	13
$500,000 - $999,999	30	10	33	11	21,186	21	22,894	14
$1,000,000 & over	24	8	50	16	50,835	52	116,078	70
TOTAL	294	100	301	100	98,183	100	165,882	100

Source: D.B.S. Foods, Beverages & Textiles Section, Manufacturing and Primary Industries Division.

[1] There was also an expansion in monthly peak periods of employment in secondary manufacturing as a result of changes in in the monthly distribution of landings brought about by the expansion in the offshore fleet.

[2] Unpublished Departmental report, *Notes and Statistics Pertaining to Plant Capacity and Numbers of Processing Establishments - Maritime Provinces 1964-1967,* Economic Services Branch, Department of Fisheries, Halifax, 1967., p. 6.

CHAPTER IV

THE FISHING VESSEL SUBSIDY PROGRAM, 1947-1966

In the previous chapter the expansion and modernization of the fishing fleet and their influence on the structure of the fishing industry on Canada's Atlantic Coast were analyzed. Emphasis was placed on the contribution of the intermediate-sized vessels in the fleet since these have been, until the last few years, the main vessels eligible for subsidy under the Department of Fisheries program. In this chapter, the growth of this program and its role in the expansion and modernization of the Atlantic Coast fishing fleet will be analyzed.

1. THE FISHING VESSEL SUBSIDY PROGRAM: ITS GROWTH AND COST

As shown in Tables 1 and 2, 1,604 vessels were built under the Fisheries program from its introduction in 1947 to the end of the fiscal year 1968/69, at a cost to the federal government of about $16.5 million. This analysis will, however, be concerned mainly with the period 1947-1966 when slightly less than one thousand vessels were built at a cost to the program of nearly $9 million. The largest number of vessels were built in Nova Scotia—nearly four hundred, with subsidies totalling nearly $5 million. In comparison, the number of vessels built and subsidies paid in other provinces were as follows: 175 in Newfoundland for $1 million; 174 in New Brunswick for $1.4 million; 160 in Quebec for $1.5 million; and 44 in Prince Edward Island for $252,000.

The average subsidy per vessel paid by the program increased from $5,786 in 1947/48 to $11,557 in 1966/67 with a peak of $15,402 in 1965/66 (Table 26). For the whole period the subsidy per vessel averaged $9,473. There are considerable inter-provincial differences however. Highest subsidies per vessel were paid in Nova Scotia where they averaged $12,134 for the period, followed by an average of $9,460 in Quebec, $7,995 in New Brunswick, $5,916 in Newfoundland, and $5,738 in Prince Edward Island. These reflect differences in the sizes of vessels subsidized and in vessel construction costs in these various provinces.[1] A significant aspect also is the sharp decline in average subsidies in some provinces from 1964/65, which resulted from changes in the regulations of the program making vessels down to 35 feet minimum length eligible for coverage.

The number of vessels subsidized annually by the Fisheries program increased from seven in 1947/48 to 186 in 1966/67 (Table 2). The result of this increase was that in 1966 vessels subsidized by this program accounted for over 75 per cent of the number of vessels in the intermediate segment of the offshore fleet and 9 per cent of the large vessels of 100 gross tons and over (Table 27). In comparison, 59 per cent of the vessels of 100 tons and over were subsidized by the Department of Industry program, indicating that this program, after its introduction in 1961, contributed significantly to the expansion of the large steel trawler segment of the offshore fleet. The Atlantic Coast offshore fleet is therefore a very highly subsidized one: nearly three-quarters of all the vessels in this fleet in 1966 were built with the aid of subsidies from the two federal government programs.

The growth in the number of vessels subsidized by the Fisheries program during the period 1947/48—1966/1967 was influenced by a number of factors. The most important of these factors were (1) the operations of the provincial loan boards, (2) the extension of the subsidy program to cover a larger variety of sizes and types of vessels, (3) economic returns from intermediate-sized vessels, and (4) the need for replacement of vessels in the fleet. The first two factors are concerned essentially with methods of financing since they constitute, along with fishermen's savings, the main sources of capital for investment in vessel construction.

---

[1]For example, in Newfoundland, unlike the other provinces, many intermediate-sized vessels were not built in shipyards. In such cases the fisherman supplied his own labour and vessel costs were therefore much lower than in the other provinces where vessels were mainly shipyard-built.

Table 26

AVERAGE SUBSIDY PER VESSEL BY PROVINCE

Year	Que.	N.B.	N.S.	P.E.I.	Nfld.	Total
	$	$	$	$	$	$
1947-48		5,786.3				5,786.3
1948-49		6,174.0				6,174.0
1949-50		6,310.7				6,310.7
1950-51		6,451.3	4,421.0			5,436.2
1951-52		7,118.0	5,504.8	7,439.0		6,149.7
1952-53	6,486	4,209.5	7,789.5	4,748.7		6,402.3
1953-54	4,313	4,922.7	8,187.5	8,170.8	6,827.0	6,731.6
1954-55	6,292.8	7,158.5	6,674.2	8,257.5	5,860.6	6,501.4
1955-56	6,963.3	6,793.4	7,793.4	8,312.0	6,941.0	7,391.7
1956-57	5,800.9	8,659.1	8,462.8	–	5,176.0	7,796.7
1957-58	8,074.5	7,935.0	8,843.7	–	6,459.0	8,512.8
1958-59	4,364.4	8,844.0	10,932.5	11,403.0	–	7,284.0
1959-60	5,324.2	6,895.9	8,010.2	12,979.3	5,668.8	6,500.2
1960-61	6,472.4	9,208.3	7,355.2	9,845.2	3,834.0	7,058.9
1961-62	–	6,475.5	10,795.4	14,365.5	3,675.4	6,568.0
1962-63	12,440.6	8,698.2	11,975.6	–	7,279.4	10,638.3
1963-64	17,427.8	11,469.3	10,735.9	–	10,712.5	13,157.9
1964-65	13,538.5	8,359.2	11,940.6	2,828.0	5,175.5	8,333.3
1965-66	18,338.2	29,673.0	17,934.8	1,122.2	4,958.7	15,401.9
1966-67	21,274.8	2,599.7	14,998.1	1,346.3	7,959.1	11,557.5
	9,460.5	7,995.3	12,133.8	5,738.5	5,916.0	9,472.8

TABLE 27

SUBSIDIZED VESSELS, OFFSHORE FLEET, ATLANTIC COAST, 1966

Vessel Sizes	Subsidized Vessels				Total Number of Vessels in Operation
	Dept. of Fisheries Program		Dept. of Industry Program		
	No.	% of Total	No.	% of Total	
25 – 49.9 Tons	264	76	–	0	345
50 – 99.9 Tons	162	77	–	0	211
100 Tons & over	24	9	161	59	273
Total	450	54	161	19	829

2. THE PROVINCIAL LOAN BOARDS

The operations of the provincial loan boards[1] affected the growth of the Fisheries subsidy program since these boards were the main source of capital for financing vessel construction and were responsible also for approving the number and types of vessels eligible for federal subsidy under the Fisheries program. The number of vessels subsidized by each province therefore depended on provincial policies towards fleet expansion, the funds available from the loan boards for this purpose,[2] and fishermen's capital or credit – a requirement for obtaining provincial loans was that fishermen had to provide initially part of the construction costs of vessels from their own savings or funds borrowed from dealers, relatives, etc. Fishermen building their own boats could, however, contribute their own labour in lieu of down payment. The Fisheries program can therefore be considered a a complementary program to provincial loan operations.

The respective contributions of the provincial loan boards, the Department of Fisheries subsidy, and cash from fishermen in financing the construction of 50-60 ft. draggers and longliners on the Atlantic coast from 1947 to 1964 are set out in Table 28.

The FLB and other loans contributed over 60 per cent of the capital costs for the more costly draggers and from 40 to 60 per cent of the capital costs for longliners. The Department of Fisheries subsidy, in comparison, contributed from 14 to 26 per cent of the capital costs of draggers and from 20 to 25 per cent for longliners. The contribution of the fishermen themselves was generally lower for both of these vessel types than the contributions from the subsidy program and from the loan boards.

3. THE EXTENSION OF THE SUBSIDY PROGRAM: SIZES AND TYPES OF VESSELS BUILT.

As pointed out in Chapter I, the Fisheries subsidy program was amended considerably during the period 1947-1966. These amendments affected the sizes and types of vessels eligible for subsidy and the amount of subsidy on these vessels. At the outset only draggers and longliners of 55-65 feet overall length were eligible, with a subsidy of $165 per gross ton. Since then, length restrictions have been changed, type restrictions removed, and subsidy payments increased. These changes have exerted some influence on the growth of the subsidized fleet, shown particularly by the rapid rate of growth in the last years of the period in both the number and tonnage of vessels (Fig. 4). They have also resulted in changing the structure of this fleet by affecting the sizes and types of vessels subsidized.

Of the total 1,604 vessels built under the Fisheries program from its introduction in 1947 to March 31, 1969, 670 or 42 per cent were within the intermediate-size category, 63 or 4 per cent were large wooden vessels of 100 gross tons and over, and 871 or 54 per cent were small inshore vessels, i.e., vessels under 25 tons (Table 29). In other words, only 46 per cent of the vessels built under this program during the period were offshore vessels. Of the 871 inshore vessels, 676 or 77 per cent were added in the last three years and 751 or 86 per cent in the last four years.

Only small numbers of these inshore craft were subsidized under the Department of Fisheries program when the minimum length of vessels eligible was 45 feet. The inclusion in the program in 1964 of "experimental" vessels down to 35 feet minimum length opened the floodgates, however; the term "experimental" was liberally interpreted in practice and the provincial boards responsible for administering the program lost control. However, the main criticism would be levelled against the federal government authorities for introducing the amendment without due regard to its probable consequences and its incompatibility with the basic objectives of the Department's subsidy program.

On a provincial basis, 122 vessels under 25 tons were subsidized under the program in Newfoundland, 121 in Nova Scotia, 49 in Quebec, 27 in New Brunswick, and 19 in Prince Edward Island (Table 30). The growth in the number of these vessels in Nova Scotia can only be considered phenomenal since only one was subsidized in that province before 1965/66. Newfoundland and Quebec have had a small boat subsidy in

---

[1] Includes the Quebec "Credit Maritime", the loan agency of the Quebec Department of Industry and Commerce.

[2] The loan boards operate under a revolving fund account so that loan repayments increase amounts available for new loans.

TABLE 28

SUMMARY OF AVERAGE ORIGINAL CAPITAL COST AND METHOD OF FINANCING 50-60 FT. DRAGGERS AND LONGLINERS, ATLANTIC COAST, SELECTED YEARS, 1947-1964.

Type of Boat and Year Built	Average Per Boat					Percentage Distribution			
	Original Cost	Cash Down by Fishermen	Boat Construction Assistance Fed.	Boat Construction Assistance Prov.	FLB & Other Loans	Cash Down by Fishermen	Boat Construction Assistance Fed.	Boat Construction Assistance Prov.	FLB & Other Loans
	$	$	$	$	$				
Draggers (50-60 ft.)									
1947	23,139	2,400	5,937		14,802	10.4	25.7		63.9
1956	49,414	9,415	7,709		32,390	19.1	15.6		65.3
1957	53,404	8,256	8,339	1,268	35,541	15.4	15.6	2.4	66.6
1959	55,634	9,225	8,790		37,619	16.6	15.8		67.6
1960	59,304	13,749	8,206		37,349	23.2	13.8		63.0
1961	60,223	5,064	10,280		44,879	8.4	17.1		74.5
1962	62,808	7,651	12,817		42,340	12.2	20.4		67.4
1963	53,987	7,542	11,044		35,401	14.0	20.4		65.6
1964	69,934	6,072	12,148		51,714	8.7	17.4		73.9
Longliners (50-60 ft.)									
1956	31,394	10,505	7,978		12,911	33.5	25.4		41.1
1957	33,838	7,815	8,568		17,455	23.1	25.3		51.6
1958	36,918	6,996	8,911	1,600	19,411	19.0	24.1	4.3	52.6
1959	37,693	7,335	8,798		21,560	19.5	23.3		57.2
1960	40,150	7,618	8,198		24,334	19.0	20.4		60.6

Source: John Proskie, *Costs and Earnings of Selected Enterprises, Atlantic Provinces, 1964*, Vol. 14, Part 2, Table 6.

FIGURE 4
ANNUAL NUMBER AND GROSS TONNAGE OF FISHING VESSELS
CONSTRUCTED UNDER SUBSIDY, DEPARTMENT OF FISHERIES 1947-48 TO 1966-67.

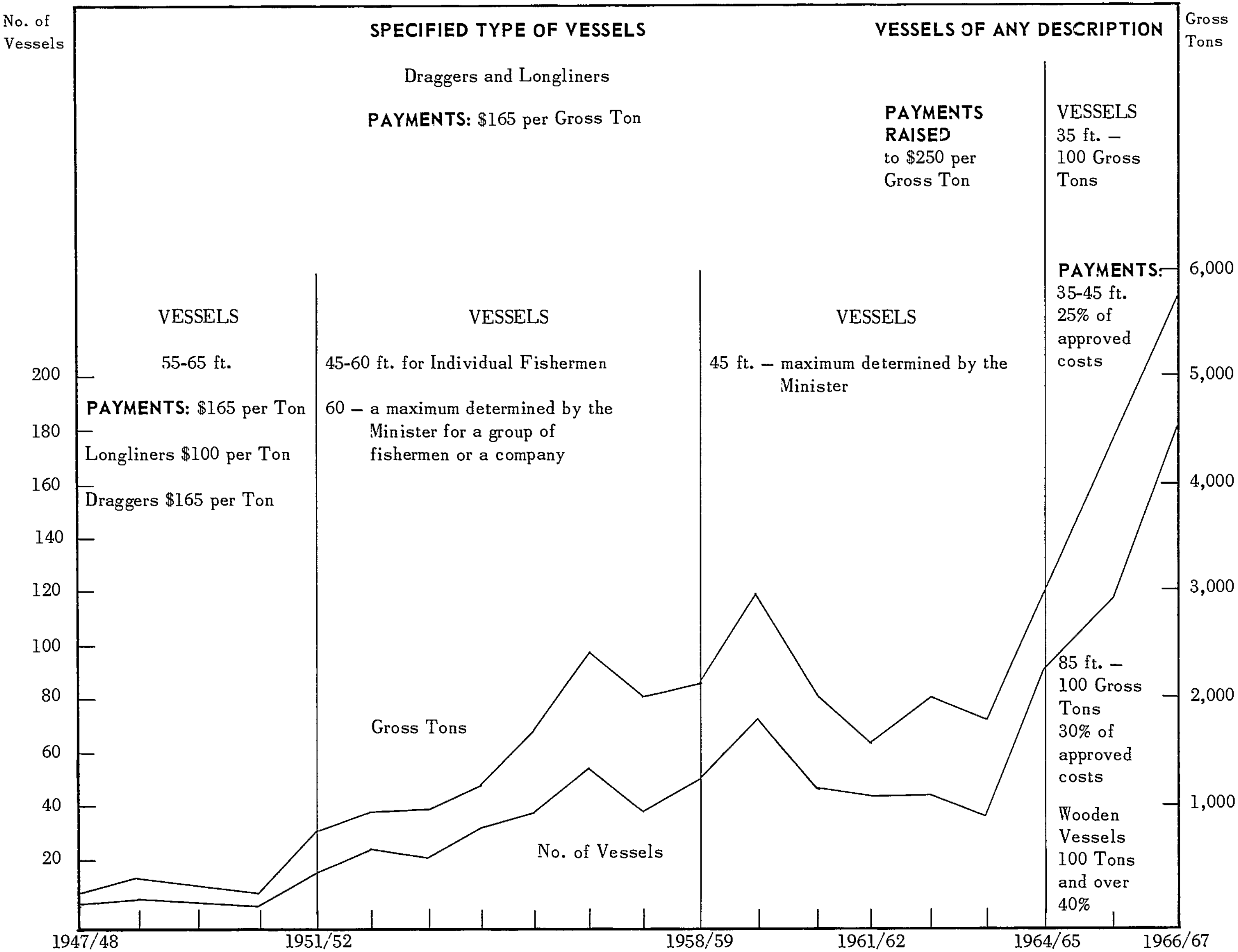


TABLE 29
VESSEL CONSTRUCTION ASSISTANCE PROGRAM, DEPARTMENT OF FISHERIES AND FORESTRY NUMBER OF VESSELS BUILT BY TONNAGE

	Inshore Under 24.9 Tons	25-49.9 Tons	Offshore 50-99.9 Tons	100 Tons & Over
1947-48	–	7	–	–
1948-49	–	8	–	–
1949-50	–	7	–	–
1950-51	–	6	–	–
1951-52	–	16	1	–
1952-53	1	21	1	–
1953-54	–	19	3	–
1954-55	–	30	4	–
1955-56	1	25	9	–
1956-57	4	20	26	–
1957-58	–	12	27	–
1958-59	16	11	20	1
1959-60	19	31	23	–
1960-61	9	24	16	–
1961-62	15	20	11	–
1962-63	5	26	16	–
1963-64	5	18	15	–
1964-65	45	33	18	–
1965-66	75	16	14	10
1966-67	142	21	9	14
1967-68	453	21	31	30
1968-69	81	20	14	8
TOTALS	**871**	**412**	**258**	**63**

effect prior to 1964, but all five provinces made use of the federal subsidy to increase greatly the constru-tion of boats in the under 25 tons category.

The changing structure of the subsidized fleet shown in Fig. 5 indicates that the subsidy program became in effect a program of assistance for small vessels. This is a far cry from the original objectives of this program.

The types of vessels subsidized by the fisheries program were also affected by amendments to the regulations pertaining to vessel types. Up to 1961 the vessels built were mainly longliners and draggers (Table 31). After 1961, when the eligibility require-ments were changed to cover all types, multi-purpose vessels and seiners were introduced. It is apparent that multi-purpose vessels were mainly small inshore vessels. Although extension of eligibility to all vessel types was justifiable for encouraging inno-vation and experimentation, its conjuncture with the amendment in 1964 reducing size limits to 35 feet greatly facilitated the construction of small inshore vessels.

4. RETURN ON CAPITAL INVESTED IN FISHING VESSELS, AND EFFECTS OF THE SUBSIDY ON THIS RETURN

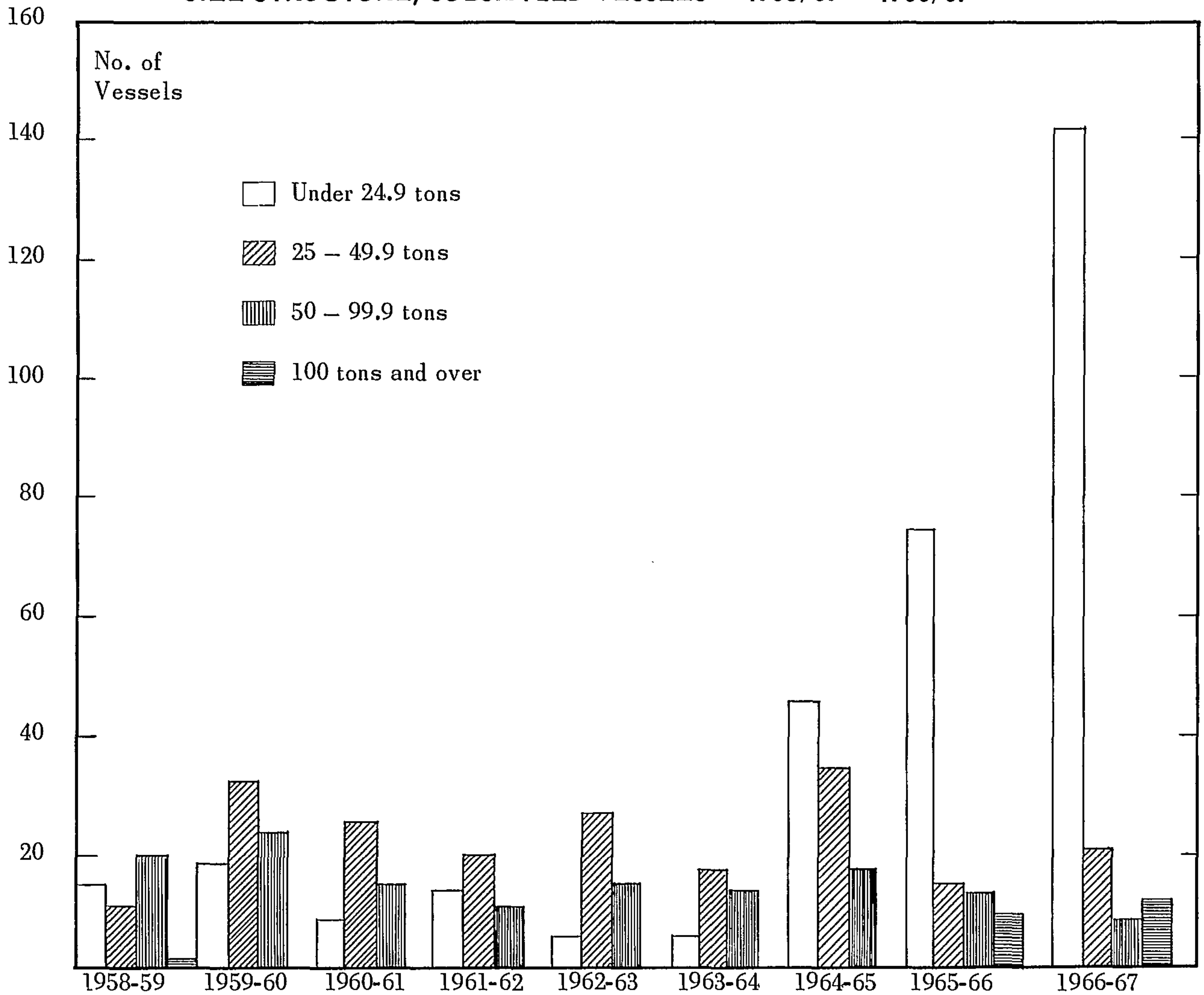
The vessel and crew shares of catch receipts, net of operating expenses, are determined by the lay or share arrangement which varies considerably according to the type of vessel or fishery and from one locality

TABLE 30

VESSEL CONSTRUCTION ASSISTANCE PROGRAM, DEPARTMENT OF FISHERIES AND FORESTRY
NUMBER OF VESSELS BUILT WITH SUBSIDY BY GROSS TONNAGE SIZE CATEGORY, BY PROVINCE, 1947-1966

	NFLD.				P.E.I.				N.S.				N.B.				QUE.			
	Under 24.9	25-49.9	50-99.9	100 & Over	Under 24.9	25-49.9	50-99.9	100 & Over	Under 24.9	25-49.9	50-99.9	100 & Over	Under 24.9	25-49.9	50-99.9	100 & Over	Under 24.9	25-49.9	50-99.9	100 & Over
1947-48	–	–	–	–	–	–	–	–	–	–	–	–	–	7	–	–	–	–	–	–
1948-49	–	–	–	–	–	–	–	–	–	–	–	–	–	8	–	–	–	–	–	–
1949-50	–	–	–	–	–	–	–	–	–	–	–	–	–	7	–	–	–	–	–	–
1950-51	–	–	–	–	–	–	–	–	–	3	–	–	–	3	–	–	–	–	–	–
1951-52	–	–	–	–	–	4	–	–	–	11	–	–	–	1	1	–	–	–	–	–
1952-53	–	–	–	–	–	3	–	–	–	12	1	–	1	5	–	–	–	1	–	–
1953-54	–	1	–	–	–	2	2	–	–	7	1	–	–	7	–	–	–	2	–	–
1954-55	–	13	1	–	–	–	2	–	–	5	1	–	–	8	–	–	–	4	–	–
1955-56	1	2	3	–	–	–	2	–	–	12	4	–	–	5	–	–	–	6	–	–
1956-57	–	2	–	–	–	–	–	–	–	9	15	–	–	3	10	–	4	6	1	–
1957-58	–	3	1	–	–	–	–	–	–	6	25	–	–	2	–	–	–	1	1	–
1958-59	–	–	–	–	–	–	1	–	–	3	12	1	–	–	6	–	16	8	1	–
1959-60	2	3	1	–	–	–	3	–	–	9	8	–	–	10	6	–	17	9	5	–
1960-61	2	3	–	–	1	–	4	–	–	10	6	–	–	1	3	–	6	10	3	–
1961-62	13	1	4	–	–	–	2	–	–	6	3	–	2	13	2	–	–	–	–	–
1962-63	4	1	–	–	–	–	–	–	1	6	7	–	–	14	–	–	–	5	9	–
1963-64	4	–	–	–	–	–	–	–	–	12	2	–	1	4	2	–	–	2	11	–
1964-65	42	6	–	–	1	–	–	–	–	14	11	–	2	6	1	–	–	7	6	–
1965-66	23	1	–	–	6	–	–	–	43	7	8	8	1	3	4	2	2	5	2	–
1966-67	30	7	–	1	11	–	–	–	77	8	7	12	20	1	2	–	4	5	–	1
1967-68	110	9	2	2	154	–	–	–	68	5	19	20	114	2	9	6	7	5	1	2
1968-69	38	10	1	0	8	–	–	–	4	4	6	3	31	6	5	2	–	–	2	3
TOTALS	**269**	**62**	**13**	**3**	**181**	**9**	**16**	**–**	**193**	**149**	**136**	**44**	**172**	**116**	**51**	**10**	**56**	**76**	**42**	**6**

FIGURE 5
SIZE STRUCTURE, SUBSIDIZED VESSELS – 1958/69 – 1966/67



to another. From the vessel owner's standpoint, labour is a highly variable element among the operating costs that, deducted from the catch returns, determine the yield of the enterprise on the capital invested. From the social standpoint, the productivity of the investment in vessel and equipment must be judged, not only by its yield on the investment, but by its contribution to the crew's net income, over and above what they might have earned in another employment.

Vessel and crew returns alike depend on many factors such as the availability and proximity of fish stocks, operating skills of captain and crew, species-mix and price of fish landed, operating costs, and fishing effort or time spent actually fishing. The profitability of vessels of any given type or size varies widely from one to another, from year to year, and from one region to another, reflecting differences in fishing and management skills, in natural conditions such as weather and the availability or concentration of fish, and differences in the vessels' suitability for local or regional fishing conditions. Sometimes the processor may direct fishing effort towards species required by the market in terms of a balanced product mix, although this selectivity may result in a lower total catch value for the vessel.

TABLE 31
VESSEL CONSTRUCTION ASSISTANCE PROGRAM, DEPARTMENT OF FISHERIES AND FORESTRY
NUMBER OF VESSELS BUILT WITH SUBSIDY, BY TYPE, 1947-1969

YEAR	Type of Vessels														
	DRAGGERS				LONGLINERS				SEINERS				MULTIPURPOSE		
	30-50ft	50-70ft	80-110ft	Total	30-50ft	50-70ft	80-110ft	Total	30-50ft	50-70ft	80-120 ft.	Total	30-50ft	50-70ft	Total
1947-48	–	7	–	7	–	–	–	–	–	–	–	–	–	–	–
1948-49	–	8	–	8	–	–	–	–	–	–	–	–	–	–	–
1949-50	–	7	–	7	–	–	–	–	–	–	–	–	–	–	–
1950-51	–	4	–	4	–	2	–	2	–	–	–	–	–	–	–
1951-52	1	6	–	7	–	10	–	10	–	–	–	–	–	–	–
1952-53	9	4	–	13	–	11	–	11	–	–	–	–	–	–	–
1953-54	7	8	–	15	1	4	–	5	–	–	–	–	–	–	–
1954-55	1	15	–	16	4	17	–	21	–	–	–	–	–	–	–
1955-56	–	14	–	14	3	14	–	17	–	–	–	–	–	1	1
1956-57	–	30	–	30	2	15	–	17	–	–	–	–	4	–	4
1957-58	–	8	–	8	2	29	–	31	–	–	–	–	–	–	–
1958-59	–	16	1	17	17	14	–	31	–	–	–	–	–	–	–
1959-60	1	22	–	23	33	17	–	50	–	–	–	–	–	–	–
1960-61	5	21	–	26	15	8	–	23	–	–	–	–	–	–	–
1961-62	5	5	–	10	27	9	–	36	–	–	–	–	–	–	–
1962-63	1	19	–	20	8	5	–	13	1	5	–	6	8	–	8
1963-64	3	21	–	24	9	1	–	10	–	4	–	4	–	–	–
1964-65	7	26	–	33	42	15	–	57	–	4	–	4	2	–	2
1965-66	3	16	9	28	27	8	1	36	–	5	–	5	46	–	46
1966-67	7	10	8	25	32	17	6	55	3	2	–	5	100	1	101
1967-68	5	15	14	34	94	37	6	137	5	20	7	32	331	1	332
1968-69	–	9	6	15	27	27	–	54	1	4	2	7	44	3	47
TOTALS	**55**	**291**	**38**	**384**	**343**	**260**	**13**	**616**	**10**	**44**	**9**	**63**	**535**	**6**	**541**

The Department of Fisheries' *Costs and Earnings* studies indicate that, on the average, the larger steel trawlers or draggers in the sample were less profitable than the intermediate-sized offshore fishing vessels (Table 32). The economic performance of intermediate-sized vessels in the *Cost and Earnings* studies provides a good indication of the economic performance of subsidized vessels, because most of the vessels included in the studies were subsidized.

Some idea of the difference in average rates of return on total investment on an annual basis can be obtained from rates of return on 60-foot draggers in Prince Edward Island and Quebec during the period 1953-1963 (Table 33).

Average rates of return on these 60-foot vessels were not very high, having been above 6 per cent only three times in Prince Edward Island and twice in Quebec during the twelve years covered by the period. These returns are not representative of average returns in other areas and from other types of vessels. The deviation of returns from the average shows, however, that some of these vessels are capable of realizing very high returns indeed, probably as a result of efficient management.

The average rates of return on total or gross investment are the main criteria for assessing the economic performance of vessels. Fishermen and fishing companies are more concerned, however, with returns on investment actually made by them since this is a significant factor in their decision to invest in new vessels. This actual or net investment, being less than the total investment after deduction of the amount of subsidy, yielded a higher rate of return to the owner, as shown in Table 34.

Average rates of return, both gross and net, in 1966 were particularly high for some types of vessels since net profits in 1966 in most cases were higher than long term average net profits. These rates are therefore biased upwards but give a good idea of the effects of the subsidy on the returns realized by fishermen and fishing companies on their actual investment. Subsidy payments increased the rates of return on these actual investments considerably — in many cases far above probable alternative rates of return in other industries.

It should be pointed out, however, that from the economic standpoint, returns on gross investment are more important criteria than returns on net investment by fishermen and fishing companies, being better guides toward the best allocation of society's investment resources among the fisheries and other industries for the maximization of returns to the economy. It follows that subsidy payments may lead to a misallocation of these resources by encouraging a higher level of investment than is economically justified, at the expense of alternative more productive avenues for this investment.

Returns on fishing vessels depend essentially on fishing effort. This effort, based on the number of days at sea, seems far from being maximized in the intermediate-sized fleet since the majority of vessel types spent less than 150 days at sea during 1966 (Table 35). Only two vessel types, 86-foot longliners in Nova Scotia and the 65-foot draggers in P.E.I., exceeded or achieved this. There is a relationship between vessel sizes and sustained fishing effort which depends on two factors, seaworthiness and equipment. Larger vessels generally are capable of more sustained fishing effort than smaller ones, being able to operate in rougher weather. It seems that vessels under 60 feet on the Atlantic Coast must operate nearer to shore or in sheltered waters where, incidentally, storms and ice conditions may limit or prevent fishing during the winter season.

The economic performance of subsidized intermediate-sized vessels is difficult to assess since this depends on a variety of factors including vessel size, areas fished, the species-mix, and effort expended. Adequate returns from the standpoint of both gross and net investment can be realized by these vessels if they are managed efficiently. Subject to some qualification, the likelihood of larger vessels realizing better returns on a sustained basis is greater than for smaller vessels because they are capable of greater fishing effort under the conditions experienced in offshore fishing.[1] By encouraging vessels under 50-60 feet in length, although some of these vessels may be well suited to certain local fishing conditions

[1] Larger vessels cost more, and higher productivity -- from a longer fishing season, more actual fishing time per trip or per week, or for whatever reason -- is necessary to cover the higher capital costs.

TABLE 32
RETURN ON INVESTMENT BEFORE TAXES, BY AREA AND TYPE OF VESSEL, 89 FISHING ENTERPRISES, 1965, ATLANTIC PROVINCES*

Area and Type of Vessel	Average LOA	Boats in Sample	Average Rate of Return on Total Assets	Average Rate of Return on Private Net Worth	Average Rate of Return on Government Subsidy and Private Net Worth	Profit and Interest on Total Assets
	ft.	no.	%	%	%	%
NOVA SCOTIA						
Danish seiners	60	4	6.78	10.91	7.76	7.26
Longliners	86	5	10.81	48.36	18.92	13.21
Draggers						
Wooden stern	57	4	6.66	16.80	10.92	8.19
Wooden scallop	96	4	12.11	29.60	15.91	13.16
Trawlers						
Wooden side	115	3	7.89	8.51	8.14	7.89
Steel side	120	3	0.93	1.84	0.93	0.93
Steel side	132	4	-23.78	-25.20	-25.20	-23.78
NEW BRUNSWICK						
North Shore						
Danish seiners	48	6	11.91	51.28	22.32	13.89
Draggers						
Wooden side	65	10	2.40	9.19	5.88	4.63
Wooden side	86	4	5.34	64.10	12.32	5.88
PRINCE EDWARD ISLAND						
Draggers						
Wooden side	60	6	2.39	5.09	3.71	3.83
Wooden side	65	7	0.56	3.11	1.56	3.10
Steel stern	93	4	-3.12	-36.41	-5.66	-1.29
QUEBEC						
Draggers						
Wooden side	60	14	1.58	5.86	3.75	1.63
Wooden side	55	6	2.68	18.42	8.07	2.77
Steel side	82	5	-0.28	-4.33	-0.56	-0.28

* Table 37, page 29, in John Proskie, *Costs and Earnings of Selected Fishing Enterprises, Atlantic Provinces, 1965*, Department of Fisheries, Ottawa, 1968.

Table 33

TRENDS IN AVERAGE PERCENTAGE RATE OF RETURN ON TOTAL INVESTMENT FOR 60-FOOT DRAGGERS, PRINCE EDWARD ISLAND AND QUEBEC, 1953-1964*

Year	Prince Edward Island			Quebec		
	Average Rate of Return	Range		Average Rate of Return	Range	
		Lowest	Highest		Lowest	Highest
	%	%	%	%	%	%
1953	3.9	- 1.2	10.8	2.6	- 0.1	3.6
1954	7.7	0.9	25.3	2.1	- 0.8	3.6
1955	5.2	0.3	17.2	9.0	6.2	14.0
1956	7.1	0.8	16.0	6.8	0.1	10.8
1957	3.8	1.0	7.0	2.8	- 3.7	6.7
1958	6.4	1.1	10.3	4.4	0.7	10.9
1959	2.8	- 3.8	11.0	5.7	- 0.5	21.7
1960	-1.3	-15.5	9.5	0.2	- 8.4	13.7
1961	-1.1	-18.0	9.0	3.2	- 7.9	13.6
1962	-2.2	-19.0	8.0	3.6	- 9.0	11.0
1963	-1.4	-21.8	9.5	2.8	- 5.6	11.2
1964	-4.6	-15.6	7.6	-0.2	-15.0	5.5

* Includes all the 60-foot vessels in the P.E.I. fleet and most of these vessels in the Quebec fleet.

Source: John Proskie, *Costs and Earnings...*, 1964. Tables 29 & 30.

Table 34

RATES OF RETURN, GROSS AND NET INVESTMENT, SELECTED VESSELS, 1966

Type of Vessels	L.O.A.	Area	Average Net Profit	Long Terms* Average Net Profit	Average Rate of Return, Gross Investment	Average Rate of Return on Net Investment
	38	Nfld.	$	$	%	%
Longliners	38 **	Nfld.	949	n.a.	7.9	14.2
"	86	N.S.	18,138	16,171	13.6	21.2
Danish Seiners	48	N.B.	1,068	1,321	5.7	7.8
Stern Draggers	57	N.S.	18,151	9,001	31.4	44.6
Draggers	60	P.E.I.	847	1,002	1.8	3.5
"	60	Que.	3,698	1,715	5.4	6.5
"	65	P.E.I.	845	- 869	1.2	1.6
"	65	N.B.	4,483	2,097	5.6	6.7
"	65	Que.	3,511	860	3.9	4.8

* Based on averages over various periods of years.

** These are inshore vessels but are included since they are eligible for subsidy.

Source: John Proskie, preliminary provincial reports, *Cost & Earnings*, 1966.

Table 35

FISHING EFFORT AND LANDINGS, SELECTED VESSELS, ATLANTIC COAST 1966

Type of Vessels	L.O.A.	Area	Days at sea	Landings lb.	Landed Value $	Net Profit $
Longliners	38	Nfld.	77	168,456	6,300	942
"	86	N.S.	221	681,765	118,650	18,138
Danish Seiners	48	N.B.	85	350,882	13,847	1,068
Stern Draggers	57	N.S.	92	1,058,720	59,485	18,151
Draggers	60	P.E.I.	92	450,099	14,857	847
"	60	Que.	130	741,732	25,441	3,698
"	65	P.E.I.	170	1,081,204	36,096	845
"	65	N.B.	117	1,075,218	39,138	4,483
"	65	Que.	127	1,057,903	33,247	3,511

Source: John Proskie, preliminary provincial reports, *Costs and Earnings...*, 1966.

(i.e., more efficient for a particular area than larger vessels), the subsidy program contributed to the construction of relatively inefficient vessels in the intermediate fleet. The majority of these vessels were built, however, to replace aged and obsolete vessels and in consequence, probably constituted an improvement in efficiency.

Replacement Needs of Intermediate Fleet

Replacement needs for vessels are a function of the sizes and ages of vessels in the fleet since these needs result from vessels being lost at sea or the withdrawal of outmoded vessels from the fisheries. Replacement needs in the intermediate-sized fleet on the Atlantic coast have therefore been greatest for vessels in the 25-49.9 tons category because this category contains the smallest and oldest vessels in the fleet (Table 36).

Of the 186 vessels built under the subsidy program from 1962-1966, 127 or nearly 68 per cent were used for replacement purposes, indicating that only 32 per cent contributed to fleet expansion. This expansion was confined mainly to larger intermediate vessels; the level of replacement for vessels in the 25-49.9 ton category was nearly 100 per cent in comparison with only 25 per cent for vessels from 50 to 99.9 tons. Replacement levels in this latter category, however, are likely to increase with age of the fleet.

The subsidy program from 1962-1966 therefore contributed more to meeting replacement needs for the intermediate-sized vessels than to the expansion of this fleet in terms of the number of vessels. Although it seems that many fishermen tend to replace lost or outmoded vessels by new and more efficient vessels of a similar size, some have been replacing them by larger vessels, which is indicated by the net increase for vessels in the 50-99.9 ton category. The subsidy program has been beneficial, presumably, on both counts, but particularly insofar as it has strengthened the latter trend.

Table 36

ESTIMATED NUMBER OF VESSELS SUBSIDIZED FOR REPLACEMENT PURPOSES, INTERMEDIATE FLEET, 1962-1966

Vessel Sizes	Vessels built under the Subsidy Program 1962-1966	Net Increase in the Number of Vessels	Vessels Replaced	
			No.	Per Cent of Subsidized Vessels
50 - 99.9 Tons	72	54	18	25
25 - 49.9 Tons	114	5	109	96
Total	186	59	127	68

CHAPTER V

APPRAISAL OF THE VESSEL CONSTRUCTION SUBSIDY PROGRAM

In this chapter the Department of Fisheries subsidy program is judged on the basis of (1) how effective the program was in fulfilling its basic aims and objectives and (2) whether these objectives were compatible with what should be the rationale for fisheries development on the Atlantic Coast – this rationale being essentially the encouragement of capital and labour to move into offshore fishing operations where their prospective yield is much greater than in the average inshore fishing enterprise.

1. THE CONTRIBUTION OF THE SUBSIDY TO VESSEL FINANCING

The subsidy program made a significant though not the most important contribution to financing the expansion of medium or intermediate-sized vessels in the Atlantic Coast fleet. The provincial governments, through the operations of the provincial loan boards, made a far greater contribution because (a) they provided more capital for vessel construction through loans and grants to fishermen and (b) they controlled the operations of the subsidy program since they were responsible for approving or rejecting applications from fishermen for subsidies as well as loans. As a rough estimate, capital from provincial sources accounted for approximately 60 per cent of total capital investment in vessel construction in comparison with approximately 20 per cent from the Fisheries program. The fishermen, or the fish buyers who often provided them with capital or credit advances, were required to provide the remaining 20 per cent.

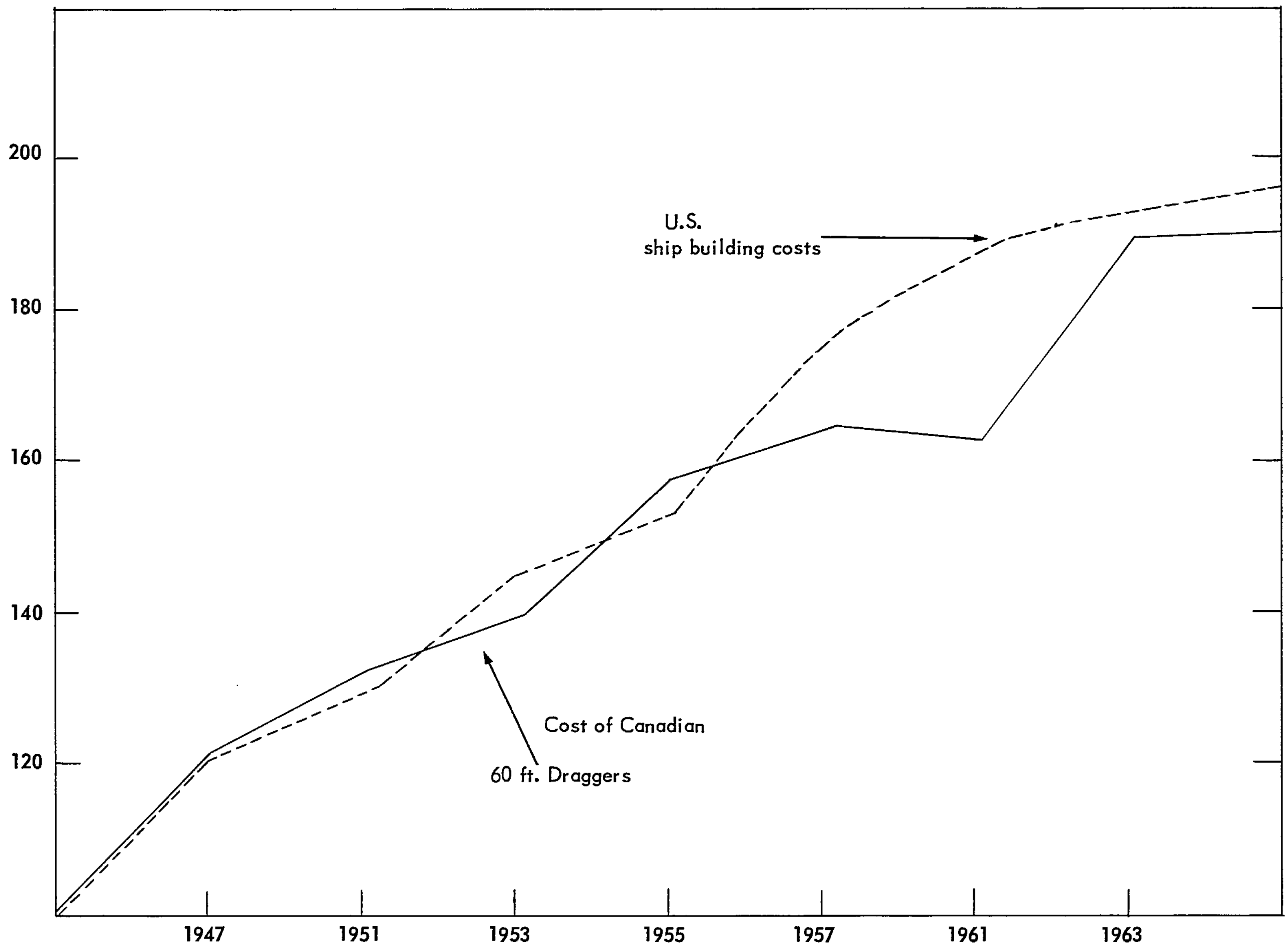
In spite of the relatively small contribution of the subsidy program to the financing of vessel construction, it was an important factor in this construction since it was an outright grant to fishermen while capital obtained from the provincial loan boards was mainly in the form of loans.[1] As a grant it (1) alleviated the financial burden to the fisherman, (2) improved his chances of obtaining provincial loans because it reduced *pari passu* the amount of the loan required, and (3) improved accordingly the prospective rate of return on his investment. It is likely that, without a subsidy, the trend towards larger vessels in the intermediate fleet would not have been as pronounced, because the subsidy was a telling factor in the fisherman's decision on the size of the vessel and the equipment to be installed.

No precise estimate can be made of the effect of the program in stimulating the growth of the Atlantic fishing fleet, because of a paucity of data, particularly data on vessel construction costs. The comparison of an index of construction costs for 60-foot draggers on the Atlantic Coast with an index of shipbuilding costs in the United States from 1947 to 1963 (Fig. 6) indicates that the construction costs of these vessels increased only slightly less rapidly than general shipbuilding costs in the United States. The comison cannot be regarded as being highly significant since the data on 60-foot vessels are by no means representative of construction costs for all intermediate vessels; neither, for that matter, is the index of shipbuilding costs in the United States necessarily representative of the trend in shipbuilding costs in Canada.[2] It is probable, however, that Canadian builders of wooden vessels had a considerable cost advantage over United States shipyards. The effect of the subsidy in reducing costs would be greatest for boats built by fishermen themselves; the net capital investment required, in addition to their own labour, would be relatively small – for the hull, at least.

[1] These loans offered fairly generous terms. Enforcement of repayments varied however from province to province.Some provincial loan boards seized vessels for non-payment of loans by fishermen, others exercised only some "moral suasion" For example, the Newfoundland Provincial Loan Board policy is strictly one of "moral suasion" since the fishing vessel is considered often to be, especially in isolated communities, the fisherman's only means of livelihood.

[2] Costs of steel vessels on the basis of length overall did not differ greatly in the mid-sixties. See Jan-Olaf Traung and O. Gulbrandsen, "New Thinking on the Use of Materials in the Construction of Fishing Vessels", Chart 4, *Conference on Fishing Vessel Construction Materials, 1968,* Department of Fisheries of Canada, Ottawa.

FIG. 6. INDEX OF UNITED STATES' SHIPBUILDING COSTS AND OF COSTS OF CANADIAN ATLANTIC 50-60 FT. DRAGGERS, 1947 - 1963



Sources: (1) Office of Ship Construction, Maritime Administration & U.S. Department of Commerce.
(2) John Proskie, *Cost and Earnings*, 1964.

The subsidy programs may have had some reciprocal effect in raising shipyard prices, but this also would be difficult to document. Such a tendency would be reinforced if the subsidy were much in excess of the amount required to enable the Canadian shipyard to compete against foreign bids. There is some evidence that the 50 per cent rate of subsidy on steel trawlers and the 40 per cent rate on wooden vessels were in excess of this requirement. Costs have been rising in European shipyards, moreover, and while steel trawler prices on a tonnage basis have been maintained by strong demand above those of other steel vessels, it is possible that a gradual lowering of the Department of Industry trawler subsidy from the current 35 per cent rate towards the level applicable to other eligible ships will be sufficient to keep Canadian yards in competition.

2. THEORETICAL AND ACTUAL RESULTS OF THE PROGRAM

A principal theoretical argument against a vessel construction subsidy in a free enterprise system is that it distorts the pattern of capital investment in production in a direction away from the maximum potential marginal economic yield. The maximum production of wealth in a competitive economy is fostered by promoting the freedom of productive resources, including capital and labour, to flow into the highest value-producing uses, until the marginal return to capital (and likewise for labour) is equal in all uses. At this point, no gain is to be made by society from a further shifting in capital or other productive resources, apart from the continuing adjustment necessary to maintain approximate equality of returns at the margin of use. The publicly-owned or social capital represented by the subsidy does not constitute a cost of production to the fishing enterprise operator, consequently the subsidy tends to promote over-investment in the favoured industry; i.e. the marginal return to capital in this industry will be lower than that which would have been obtainable in alternative uses, and the total value of production in the economy is lower than that which could have been achieved with a better combination of resource inputs in production. Evidence that some over-investment in Canadian fishing capacity did, in fact, occur is examined later in this chapter.

Theory is, however, seldom capable of precise application in the real world, in which the ideal situation of pure competition rarely, if ever, exists. Capital and labour are not perfectly mobile and there is not complete knowledge of employment opportunities for either of these factors of production. Fishermen in possession of, or capable of acquiring, adequate skills to operate a larger fishing vessel and new and different gear have often lacked the capital necessary to equip themselves with a more efficient vessel. The federal and provincial subsidy and loan programs have provided many fishermen with access to the necessary capital, and the records show many subsequent instances of successful fishing operations, with the owners obtaining a satisfactory yield on the total invested capital while progressively improving their fishing enterprise management skills. The commitment of public funds to a subsidy program is justified if, and to the extent that, it brought about a more fruitful combination of capital, labour and management inputs applied to a natural resource, the fish stocks, thus producing a higher yield to society than would have been likely to result from another investment application.[1]

Another aspect of a construction subsidy program which deserves some attention is the desire for prestige or "keeping up with the Joneses". This presumably is a human attribute common to many fishermen and even plant managers. Reduction through subsidy of the initial cost of a vessel may encourage some to invest in a new, improved type of vessel, involving a much higher cost without a corresponding increase in fishing capacity, or to add electronic or other "frills", for example, which the operator of the vessel is unable to use productively. This is known to have occurred in some instances under the Fisheries program, but it is possible that the Maritime Commission-Department of Industry subsidy program for large vessels was more subject to this kind of influence, lacking as it did, the control of provincial loan board and federal Department of Fisheries scrutiny and approval; the primary purpose of the

[1] The eventual sharing of the yield from the capital investment, by the vessel owner, the crew, and the public exchequer, is quite another problem. It is possible that a flourishing industry, with the multiplied effects on incomes and consequently on government tax receipts, might repay to the government treasury more than the subsidies expended.

Industry program was assistance to the Canadian shipbuilding industry and no close examination of the suitability or potential profitability of a fishing trawler could be expected. Certainly, deckhands' shares on many of the larger vessels have fallen short of those for intermediate-sized vessels built under the Fisheries program, but this by itself is inconclusive evidence. Fishing companies taking advantage of the subsidy for fleet renewal and expansion might be expected to choose the types of vessel most suitable for their requirements, taking into consideration manning problems as well as the volume and variety of fish supply required.

The subsidy program fell prey to one of the major short-comings of a subsidy which is "though almost always introduced provisionally, it tends by a kind of chain reaction to be unreserved and even increased or extended".[1] This was brought about by changes in the subsidy regulations which expanded the program and moved it away from its basic objective, the encouragement of the construction of larger draggers and longliners well within the intermediate-sized vessel categories in terms of both length and tonnage. This basic objective has been justified by (1) the need to expand Canada's offshore fleet in view of increasing foreign competition, (2) the relative efficiency of intermediate-sized vessels, and (3) the fact that since these vessels were primarily fishermen-owned, fishermen were enabled to acquire more efficient vessels and gear.

The first of these justifications has little weight in economic terms. The primary objective of the Canadian industry is presumably to exploit profitably the available fish stocks, not to compete in subsidized fishing operations with foreign fishing fleets regardless of costs and of the prospect of selling the catch at prices that will cover those costs. The second and third justifications are valid, as proved by the fact that many fishermen who acquired vessels under the program have achieved financial success. Although it is difficult to assess the economic performance of vessels, which depends on a variety of factors such as size, areas fished, management, etc., it has been found that intermediate-sized vessels are capable of realizing adequate returns on investment if properly handled and managed. From recent statistics on returns to large trawlers of 100 gross tons and over it seems that intermediate-sized vessels rank as the most efficient vessels in the offshore fleet on the Atlantic Coast. Larger vessels, however, within the intermediate-sized categories are generally more efficient for offshore operations than smaller ones because they are more seaworthy and thus able to log more time at sea and more fishing time per year. It is thought that in the exposed fisheries off the coasts of Nova Scotia and Newfoundland, vessels of 60 feet or more in length are required if they are to be as safe and efficient as vessels of 50-foot length in the more sheltered fisheries in the other Atlantic provinces. The subsidy program at the outset, by covering vessels from 55 to 65 feet, therefore promoted a desirable size of vessel.

By changing its regulations and reducing size limits of vessels eligible for subsidies to 45 feet and finally in 1964 to 35 feet, the program began to favour smaller, less productive vessels. Because of this, from 1964 the program began to contribute increasingly to the expansion of the inshore fleet. The decrease in the minimum eligible size seems to have been the result of provincial governments' efforts to obtain federal grants for "experimental" types of vessels to provide inshore fishermen with better craft in terms of local or regional requirements. For example, the introduction of a 35-foot minimum length was due primarily to the Newfoundland government's interest in the 38-foot longliner, which was considered to be not only an efficient fishing craft for inshore operations but one which could serve as a natural stepping-stone for fishermen from inshore to offshore operations. This brings out some of the difficulties of instituting a uniform program to cater to the needs of the Atlantic Coast fisheries where fishing conditions and needs differ significantly from one particular area or province to another.

By encouraging an increase in the number of inshore vessels the subsidy program contributed to the perpetuation and exacerbation of problems in the inshore fisheries. This is considered to be the major short-coming of the program. Average returns to inshore fishermen are low and have been falling behind those of offshore fishermen in recent years (Chapter III, Table 18). The subsidy program, insofar

[1] "Financial Support to the Fishing Industry", *OECD Observer*, No. 12, October, 1964.

as it has facilitated the movement of inshore fishermen to offshore fishing by the use of larger vessels, has been beneficial. Unfortunately in our study we have not been able to measure this movement in quantitative terms. It can only be deduced that had there been no lowering of size limits, more fishermen might have obtained larger vessels, with the result that the growth in the number of intermediate-sized vessels since 1964 would have been greater than that which actually took place.

The rapid expansion of the two federal subsidy programs after 1964 can be explained in part by the need to replace a great many obsolete or obsolescent vessels in the fishing fleets, and this was done all the more rapidly after it was generally accepted that the stern trawler offered better crew working conditions than the side trawler and the capability of fishing in rougher weather. The commissioning of new fishing vessels hastened the obsolescence of the old, for which the manning problem, in particular, was intensified.

It is evident that the Department of Fisheries program failed in some degree to reduce or restrict the amount of capital investment in the Canadian Atlantic inshore fisheries, while it did encourage the expansion and modernization of the offshore fleet. The question remains to be answered, whether the total investment in expansion encouraged by vessel construction subsidies, was in fact carried beyond the point of highest marginal return so that, in the later stages of expansion, investment in some alternative form of productive activity would have yielded higher returns to the regional or national economy. This is a complex problem not susceptible of precise answers; capital is only part of an input combination or package of productive resources and its yield is thus jointly determined with the other factors involved, such as labour and management. It may be very difficult to measure the actual employment and income generating effects of a given investment in the fisheries, much less to estimate the potential effects in alternative marginal applications. There may be, accordingly, wide differences among local, regional, and national viewpoints as to the productivity of a given capital investment -- depending also upon the priority rating of objectives.

The percentage return on capital invested is a useful criterion of the productivity of investment, as a first step in appraisal. The *Costs and Earnings* studies revealed that many vessels, including some of the newest stern trawlers, failed to yield a satisfactory return to their owners on the capital invested.[1] However, the return to the vessel is jointly determined, given the existing state of fish stocks, by overhead and operating costs including the crew share as determined by the lay arrangements, by fishing and management skills (which affect the volume of catch and level of operating costs), and by the prices received for the species landed. Investment in the vessel may have increased the earnings of crew members, improved their working conditions, and improved the raw material supply situation of the processing plant -- none of which benefits need be revealed by the rate of return on investment. Company fishing fleet managers faced with vessel-manning difficulties or with an irregular or inadequate raw material supply might place a high value on the second or third-mentioned benefits.

Low vessel returns may result from lower port prices and low ex-plant prices in some locations poorly situated with respect to markets; low prices may also reflect a lower-valued plant product mix (e.g., more cured or frozen products and less fresh fish items) or buyer-control in the principal markets. In some fishing centres, there may be price leadership by large, vertically-integrated companies, for whom it might be good business practice to keep raw material costs low,[2] even if this meant a nominal loss on their own capital investment in fishing vessels — a loss that might be made good in their processing and sales margins.[3] However, the financial performance

[1] For example, Table 32, Chap. IV.

[2] Under crew share arrangements, labour costs on company vessels are subject to control through the ex-vessel price of the catch; price determines the full cost of the raw material, of course, in plant purchases from independent vessels.

[3] As an example of marketing difficulties faced by Canadian processors, however, it is noteworthy that the primary wholesale selling prices for fresh "Nova Scotia" cod fillets have been for years quoted at many cents below those for "domestic" cod fillets in the New York daily market news published by the U.S. Bureau of Commercial Fisheries -- a price distinction that probably does not obtain at the retail level. Of course, the ex-vessel price for cod at New York is much above that in Maritimes ports.

of fishing enterprises has to be judged within the existing constellation of ex-vessel fish prices, and in these circumstances, a considerable number of fishing enterprises have been able to operate successfully.

Until much more information becomes available, these considerations must remain largely theoretical. The recent slump in groundfish prices in North America and the financial difficulties of some Canadian processors indicate that there was, at least, a temporary over-supply of groundfish products and excess production capacity at both primary and secondary stages of production in the Canadian Atlantic provinces, as well as in other countries exporting to the United States market. The expansion of Atlantic Coast processing capacity was encouraged by provincial and federal government assistance in various forms, and plant expansion and fleet expansion were mutually reinforcing; new plant capacity needed the assurance of a large and continual supply of fish; loan and subsidy assistance for the construction of fishing vessels made these easier to obtain, while new processing capacity ensured a port market for the catch of the additional vessels. With the benefit of hindsight, we can conclude that the expansion in fishing fleet and plant capacity proceeded faster in some fisheries than was justified by the market, and in this expansion government policy – provincial and federal – played an important part.

In the short run, rationalization in the industry involves painful readjustment in writing-off uneconomic investments as well as flexibility for the conversion of some units to new or more promising fisheries. But for those enterprises able to survive, the long-term view is more optimistic; for some species, market prices have increased faster than the cost of fishing, and even if the demand for fish products in general increases no faster than the North American population, demand pressure on existing fish stocks can be expected to raise fish prices. Some addition to existing fishing capacity will be required, over and above replacement needs, to compensate for diminishing effort-yield as the fishing pressure on fish stocks increases. Likewise, existing processing capacity will be more fully utilized, except where it is uneconomic because of its location or for other reasons, and some additional capacity will be needed for the exploitation of newly-discovered or newly-marketable fish and shellfish stocks.

There is a tendency, nevertheless, for the history of excessive optimism to repeat itself and for plant and fleet expansion during a period of favourable markets to proceed far beyond the bounds suggested by existing knowledge, or lack of knowledge, of the potential yield of a fishery.[1] On the other hand, pessimism induced by temporarily low market prices or low catch levels may occasion a too hasty withdrawal from a fishery, involving heavy costs in terms of conversion of vessels and loss of fishing time. Usually, however, withdrawal is delayed on this account and may not take place as long as the vessel-owner can obtain some return over and above the operating costs of the vessel.

3. RECOMMENDATIONS

Some observations concerning future policy may be made, arising out of this study and, particularly, from comments received from provincial officials administering the vessel construction programs. It is apparent that --

(1) Fishermen-training programs in the various provinces need to be co-ordinated more closely with fleet expansion, to ease the vessel-manning difficulties now being experienced. Perhaps it is more important that prospective crew earnings should be high enough to entice men into the training courses and, likewise, into offshore fishing. The rapid expansion of the large vessel fleet was probably the chief cause of the skilled manpower scarcity, and the current slower rate of growth may improve the situation.

(2) The obvious benefits flowing from the Departmental vessel construction assistance program argue for its continuance. There is need for closer liaison among provincial and federal government authorities to improve control and harmonize objectives. Nevertheless, the present federal-provincial administrative cooperation should be continued: provincial departmental and loan board authorities have, for administrative decisions, the requisite and indispensable knowledge of local conditions in the fishery and of

[1] The current situation in the Atlantic crab fishery is a case in point.

individual fishermen, while the federal Department of Fisheries and Forestry, making use of biological, economic, and technical research branches, is in the best position to reconcile the interests of the fishing industry as a whole with provincial or local objectives and with the sometimes conflicting objectives of other federal government departments.

The fishing vessel construction assistance program needs to be selective, to assist the fishermen who are most likely to operate the new vessels successfully, and to assist in the design and construction or conversion of vessels to suit local or regional fishing conditions and the requirements of the market. For example, the trend is towards more engine horsepower, to achieve the most effective trawling speed, to permit the use of larger nets, and to reduce unproductive cruising time, especially when fish are less plentiful or less concentrated. This implies an emphasis on replacement or conversion of obsolescent engines or vessels or perhaps their transfer into uses less demanding than trawling, such as, for example, seining or crab-fishing.

(3) Research into costs and earnings of fishing enterprises and technological research need to be continued and expanded, to provide a basis for determination of the most economically efficient types of vessels and gear. Subsidized shipbuilders should be required to provide much more information about labour and material costs in ship construction, particularly for hull and superstructure -- engine and gear prices are internationally competitive quotations and easily ascertained. This is needed to determine what the true capital costs of any type of fishing should be, and what amount of subsidy, if any, is indicated.

An increased flow of information is needed also to resolve the broader problems of fisheries administration -- the regulation of competition between commercial and sport fisheries, competitive uses of water resources, limitation of entry of manpower and/or capital into a particular fishery as a means to increase its economic yield. All of these require analysis of benefits and costs, and the proper starting place is examination of the costs and earnings of commercial fishing enterprises, if government policy is to be informed and progressive.

BIBLIOGRAPHY

1. Bates, Stewart. Report on the Canadian Atlantic sea fishery. Halifax, The King's Printer, 1944.

2. Copes, Parzival. The role of the fishing industry in the economic development of Newfoundland. Natural Resources Public Policy Seminar, University of Washington, Seattle, 1969.

3. Canadian Fisheries Manual-1945. Montreal, The Inland Press.

4. Daneau, Marcel. Situation economique de la peche cotiere du Quebec. Ottawa, Department of Fisheries of Canada, Economic Services.

5. Department of Fisheries of Canada. An economic appraisal of the fishermen's indemnity plan 1953-1965 (unpublished). Ottawa, Economic Services, 1965.

6. Department of Fisheries of Canada. Notes and statistics pertaining to plant capacity and numbers of processing establishments (unpublished). Halifax, Economic Services Branch, 1967.

7. Dominion Bureau of Statistics. The fish products industry. Ottawa, The Queen's Printer.

8. Dominion Bureau of Statistics. Fisheries statistics of Canada (annual). Ottawa, The Queen's Printer.

9. Dominion Bureau of Statistics. Monthly review of Canadian fisheries statistics. Ottawa, The Queen's Printer.

10. Gordon, H. Scott. "The trawler controversy." Halifax, The Dalhousie Review.

11. Grant, Ruth F. The Canadian Atlantic Fishery. Toronto, The Ryerson Press, 1934.

12. Hirschman, A.O. The strategy of economic development. New Haven, Yale University Press, 1965.

13. International Commission for the Northwest Atlantic Fisheries. Statistical bulletins. Dartmouth, N.S.

14. Nova Scotia. Proceedings of Nova Scotia fisheries conference. Halifax, The King's Printer, 1938.

15. Organization for Economic Cooperation and Development. "Financial support to the fishing industry." OECD Observer, No. 12, Paris, October, 1964.

16. Proskie, John. Atlantic Coast survey of offshore fishermen, First progress report. Department of Fisheries, Economic Services, Ottawa, 1967.

17. Proskie, John. Survey of the labour force in the offshore fishing fleet of the Atlantic Coast 1966-1967. Third progress report. Department of Fisheries of Canada, Economic Services, Ottawa, 1968.

18. Proskie, John. Costs and earnings of selected fishing enterprises, Atlantic Provinces. Annual reviews and preliminary reports, by province. Department of Fisheries, Economic Services, Ottawa.

19. Proskie, John. The future of inshore fishing. Department of Fisheries, Economic Services, Ottawa, 1961.

20. Proskie, John. Fishing vessel subsidy and loan programs in Canada. Department of Fisheries of Canada, Economic Services, Ottawa, 1967.

21. Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands. Report. Ottawa, The King's Printer, 1928.

22. Rutherford, J.B., D.G. Wilder, and H.C. Frick. An economic appraisal of the Canadian lobster fishery. Fisheries Research Board of Canada bulletin no. 157. Ottawa, The Queen's Printer, 1967.

23. Traung, Jan-Olaf, and O. Gulbrandsen. "New thinking on the use of materials in the construction of fishing vessels", Conference on fishing vessel construction materials, 1968 (proceedings). Department of Fisheries of Canada, Ottawa.

24. United States Department of the Interior. Fishery market news report, New York. Bureau of Commercial Fisheries, Fish and Wildlife Service.

APPENDIX

SUMMARY OF LEGISLATION, FISHING VESSEL CONSTRUCTION ASSISTANCE

1. Assistance to West Coast fishing vessels of the packer-seiner type. P.C. 2798, April 10, 1942, provided $165/gross-ton to packer-seiners 72 to 78 feet overall, 90 to 110 gross tons, if construction was begun on or after March 15, 1942, and plans were approved by DOT; progress payments during construction up to 75 per cent of estimated gross tonnage, final payment upon registry; special depreciation allowance of 20% per annum to original owner; sale of vessel within 5 years only upon permission of the Minister of Fisheries. P.C. 3738, May 5, 1942, made eligible a packer-seiner of not less than 72 feet up to a maximum length as determined by the Minister of Fisheries.

2. P.C. 7569, August 26, 1942:

   (a) (i) $165.00 per ton, gross tonnage, for construction of draggers commenced after the first of July, 1942, of not less than 72' overall length to a maximum length to be determined by the Minister.

   (ii) For purposes of the Income War Tax Act and/or the Excess Profits Tax Act 1940, special allowance for depreciation at the rate of twenty per centum per annum in lieu of ordinary depreciation.

   (b) (i) Assistance toward conversion of schooners to draggers (not less than 72' overall length) by way of subsidy amounting to 66-2/3 per centum of the total cost of the conversion, with a maximum subsidy of $12,000.

   (ii) Special allowance for depreciation as in (a) (ii) above.

3. P.C. 3297, April 22, 1943:

   Amended relevant depreciation allowance sections of P.C. 7560. Substantially the amendment provided that the owner might take a depreciation allowance up to the whole cost of the depreciable asset, the amount to be taken in one year to be at his option, so that the total allowance might be taken in any group of years within the five year period beginning from the date of registration of the vessel.

4. P.C. 3979, June 1, 1944:

   Further amended P.C. 7560 by extending the special depreciation allowance provided in P.C. 3297 for draggers to the owners of schooners constructed for fishing purposes.

5. P.C. 3978, June 1, 1944:

   Under the War Measures Act, chapter 206 R.S.C. 1927, provided for:

   (a) grants to groups of fishermen of not less than four at $165.00 per ton, gross tonnage, for the construction of fishing vessels of the dragger or long-line type of not less than 55' overall length and not more than a maximum to be determined by the Minister.

   (b) Special depreciation allowance to the owners as in Section 2 above.

6. P.C. 1919, May 22, 1947:

   By virtue of the relevant Appropriations Act of 1947/48 and by Order-in-Council establishing regulations thereunder:

   (a) (1) Minister may make payments to fishermen's loan boards not exceeding $165.00 per ton, gross tonnage, for the construction of fishing vessels of the dragger or long-line type

   (i) owned by any group of four or more fishermen and measuring not less than 60' to a maximum overall length to be determine by the Minister.

   (2) By definition group of four or more fishermen included co-operatives and incorporated companies. In the case of the latter not less than fifty-one per cent of the shares in such company were to be purchased to be held by not less than four fishermen, members of the crew of the vessel.

   (b) The Minister before making the payments provided for, to enter into an agreement with the fishermen's loan board(s).

(c) The vessel to be actively engaged in fishing operations for five years, using an otter or other trawl of similar nature and in the case of long-liners, a power gurdy, during the fishing seasons of each of five years from the date of issue of a Steamship Inspection Certificate by the Board of Steamship Inspection.

(d) To qualify for a grant the plans of a vessel were to be approved by the Board of Steamship Inspection.

(e) Provision was made for reimbursement to Government the amount of the subsidy or any portion thereof paid a Board in respect of any vessel in the event of non-observance of any of the conditions of the agreement.

7. P.C. 2490, May 24, 1951, revised P.C. 1919/47 as follows:

(a) Reference to a provincial loan board was changed to "provincial government department or agency" authorized to provide assistance to fishermen by means of loans or otherwise.

(b) Provided for payments to the provincial department or agency of $165.00 per ton, gross tonnage, for vessels of the dragger and long-liner type;

(i) owned by one or more fishermen and measuring not less than 45' and not more than 60' overall length; or

(ii) owned by any group of four or more fishermen and measuring not less than 60' to a maximum overall length to be determined by the Miniter.

(c) The remaining conditions were substantially as in P.C. 1919.

8. P.C. 1146, August 14, 1958, replaced P.C. 2490, providing:

(a) (i) that the Minister may enter into an agreement with a provincial loan board providing for the payment to it of a contribution or contributions in respect of the construction of draggers or long-liners owned by one or more persons (as defined by the Interpretation Act) and having a minimum length of 45' and a maximum length to be determined by the Minister.

(ii) the contributions to be not exceeding $165.00 per ton, gross tonnage.

(b) The five year obligatory period of the Board dates from "a date fixed by the Minister".

(c) Other regulations remain substantially unchanged.

9. P.C. 636, May 12, 1960, amended P.C. 1146 by providing for the amendment of previous or subsequent agreements consistent with these regulations.

10. P.C. 1333, Sept. 19, 1961, replaced P.C. 1146. providing:

(a) Assistance in building of a vessel of any description used in commercial fishing.

(b) The reimbursement to the Minister by the Board in the event of non-observance of the conditions of the agreement shall be in an "amount as may be mutually agreed upon".

(c) The contributions are in the amount of $250 per ton, gross tonnage.

(d) Other conditions remain substantially as in the previous regulations.

11. P.C. 855, June 11, 1964 (replaced P.C. 1333, as of July 1, 1964):

(a) The amount of contributions is determined by "approved cost" which is cost of construction including such gear and equipment as is normally part of or attached to the vessel, rather than by gross tonnage.

(b) The minimum length for eligibility is 35 feet overall.

(c) The maximum size for eligibility is less than 100 gross tons.

(d) Contributions are as follows:

Vessels 35 feet to less than 55 feet - 25% of approved cost;

Vessels 55 feet to less than 100 gross tons - 30% of approved cost.

12. P.C. 1626, Oct. 22, 1964, amended P.C. 855 by specifying that (1) supporting evidence must be furnished to show application was made on or

after July 1, 1964, and that (2) the Board must certify that all vessels of 15 tons or under have been inspected and approved by the Board. (Vessels of over 15 tons subject to the same provisions as before.)

13. P.C. 153, Jan. 28, 1965, amended P.C. 855 by changing the size categories to which subsidy rates are applicable as follows:

    (a) Vessels 35 feet to less than 45 feet - 25% of the approved cost.

    (b) Vessels 45 feet to a maximum size of 100 gross tons - 30% of the approved cost.

14. P.C. 1199, June 30, 1965, amended P.C. 855 by relaxing the provision that each vessel engage in fishing for five years, from "the Board shall ensure" to "the Board shall endeavour to ensure - ", and introducing a new vessel size category and a new rate of contribution:

    Wooden vessels in excess of 100 gross tons - 40% of the approved cost.

15. P.C. 668, April 13, 1967 (under the Fisheries Development Act), revoked and replaced the regulations made by P.C. 855, setting forth some additional or amended provisions:

    (i) A partial contribution in the form of progress payments up to 60% of the subsidy may be made during construction of the vessel.

    (ii) An application for subsidy must be made on an approved form, and must be received by the Minister before construction is commenced if built according to plans and specifications approved by the Minister, or thirty days before construction is commenced if plans and specifications have not been approved.

    (iii) The board shall provide evidence of the contract between the vessel owner and the builder in respect of any fishing vessel for which a contribution is to be made by the Minister.

    (iv) The Board shall endeavour to ensure that the vessel shall be kept actively engaged in fishing operations for five years from the date of inspection, and the board shall, in the event of non-observance of any condition of the agreement, repay to the Minister such portion of the contribution as may be mutually agreed upon.

16. P.C. 198, February 1, 1968, provided new fishing vessel assistance regulations, under which "the Minister may enter into an agreement with a board to make contributions towards the cost of wooden fishing vessels in an amount not exceeding

    (a) thirty per cent of the approved cost of any wooden fishing vessel having a minimum length of forty-five feet and a maximum size of less than one hundred gross tons; on

    (b) forty per cent of the approved cost of any wooden fishing vessel having a minimum size of hundred gross tons".

Other regulations were substantially the same as those established under P.C. 668.