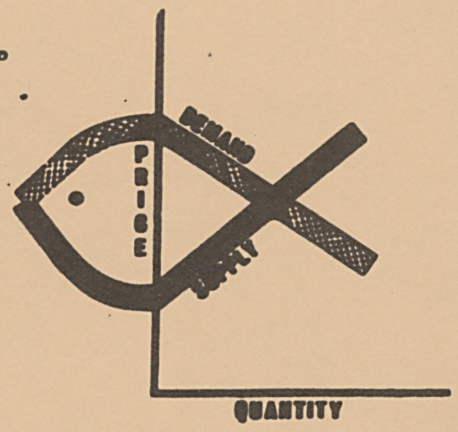

An Investigation into International Trade in Frozen Groundfish and Flatfish Fillets, Blocks, and Portions

by

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Introduction

This investigation is concerned with the determinants of the price and quantity of imports into the United States of frozen groundfish and flatfish fillets, blocks, and slabs. The analysis attempts to answer a series of questions: To what extent does there exist a homogeneous world market for the commodity (frozen groundfish and flatfish fillets, blocks, and slabs)? To what extent does the U.S. import market reflect the world market? To what extent does Canadian export volume and price reflect the world market, and to what extent are they determined in the U.S. import market? To what extent have government subsidies to the Canadian fisheries influenced the volume and price of Canadian exports and U.S. imports from Canada?

These questions and the answers to them are limited by readily available time series data. This paper serves as a foundation for a more intensive analysis of the sources of competitiveness among foreign suppliers and U.S. fishermen. This paper provides an overview of the world market for frozen groundfish and flatfish fillets, blocks, and slabs. More specifically it provides some indication of the relative importance of each major supplier in the U.S. market and in addition provides some insight into several supply forces in Canada which have been hypothesized to influence Canadian exports to the United States.

The product group, fillets, blocks, and slabs, is a mixture of processed and semi-processed products. Frozen fillets are, for the most part, wrapped for retail sale. Frozen blocks and slabs are fillets and pieces

frozen together, usually in 16 pound square or rectangular blocks, and then further processed to fish sticks and portions in the consuming country. Because of this processing element, trade flows between countries are influenced not only by raw material (fish) production or catch, but also the processing capacity of the exporting country and the further processing capacity of the importing country.

Frozen fish blocks first became an article of commerce in 1953. Prior to that time frozen fillets dominated the groundfish trade. This shift in product form was due to technological innovation in the development of a process for quick freezing of individual fillets into blocks of uniform size. Associated with this was an increasing demand for frozen breaded fish sticks and portions.

Another development which shaped the pattern of trade in frozen groundfish was the development of large trawlers and especially freezer trawlers. Groundfish are caught throughout much of the North Atlantic but the greatest concentration of fishing activity takes place off the coast of New England and Canada. Iceland was well endowed with groundfish, especially cod, in waters contiguous with that island. Although there have been groundfish resources in the North Sea not very distant from Norway, Denmark and other North European nations the increase in harvesting capacity has been in long range trawlers to fish the seas around Iceland, and the Northwest Atlantic.

International trade flows in frozen groundfish can be tied to numerous factors. Resource availability traditionally was the primary consideration. Technology of harvesting and processing is the second most important factor. Prior to improvements in freezing techniques on vessel and shore there was an active international fishery in the North Atlantic which preserved fish by salting. International trade in salt fish has greatly diminished and is now primarily restricted to flows between several producing countries and the less developed nations. A third factor has been the opportunity cost of labor in national and regional economics. A fourth factor has been the dependence of several nations on the fishing sector for export earnings.

Groundfish production is not a result of a single concious decision. The present harvesting for international trade can be traced historically. In centuries past when the world was essentially agrarian, those populations in coastal areas could maintain a level of living comparable to much of the rest of the population. In other words, the opportunity cost for fishermen was not very high. As the economic structure of the rest of Europe and North America advanced many coastal areas remained dependent upon the harvesting of fish. There was some migration out of these areas, but many found sufficient psychic reward in remaining. As the economy of the remainder of each nation progressed these coastal areas were considered backward or depressed. National governments took actions to raise the level of productivity and incomes of individuals in these areas. Canada and Norway have greatly increased the level of subsidies

going to their fishing industries. In Iceland fish harvesting, processing, and supporting industries account for nearly 90 percent of GNP.

Using what information is readily available concerning major groundfish producing and harvesting ratios we can construct an idealized model of production, consumption, and trading. Returns to labor and capital in the groundfish industry are, in general, lower than they could find in alternative employment given regional mobility of factors. Certain rigidities such as national aid policies toward backward areas and industries, resistance by workers to retraining or breaking from familiar occupations, rigidities in the transfer of managerial talents, and national restrictions on the transfer of capital, have probably resulted in a higher level of production and international trade than would otherwise have been.

Before proceeding with the statistical analysis a review of trends and past performance of trade and production by the leading exporting nations will set the stage.

Catch of Groundfish and Flatfish

FAO reports catch of the species of concern in this investigation under two major categories: Flounders, halibuts, soles, etc.; and cods, hakes, haddocks, etc. These two categories include many species which do not enter the market for frozen fillets, blocks, and slabs and consequently overstate the harvest of the groundfish and flatfish species of concern

in this investigation. However, this data does provide some indication of trends in production of the "raw material" among those countries accounting for most of the world's trade in frozen groundfish and flatfish fillets, blocks, and slabs.

Groundfish and flatfish are harvested in the North Atlantic by the United States, Canada, Greenland, Iceland, Norway, Denmark, West Germany, Poland, Russia and to a lesser extend by other European nations and Japan. North Eastern Pacific groundfish are harvested by the U.S., Canada, Japan, and to a lesser extent several other nations. Because groundfish from the Pacific are not significant in the United States fish stick market our analysis is confined to trade in North Atlantic frozen groundfish.

Catch in the two categories reported by FAO for Canada, Iceland, Denmark, Norway, West Germany and the United States are shown in figure 1. U.S. catch rose irratically in the early 1950's from 522 million pounds in 1950 to a peak of 665 million pounds in 1956 and generally declined thereafter to a low of 486 million pounds in 1967. In contrast, Canadian catch increased over the period nearly 130 percent. Most of this increase occurred between 1952 and 1954 when catch rose 100 percent from 528 million pounds to 1,085 million pounds, but the upward trend continued over the period. Except for a sharp increase in catch between 1951 and 1952, Icelandic catch varied at around 700 to 800 million pounds, declining to 638 million pounds in 1967. Denmark, Norway, and West Germany each experienced large increases in catch over this period. Eighty-five percent of the growth in Danish catch occurred after 1960.

Together, these six countries produced about 35 percent of the world's 1950 catch of flounder and cod. By 1967, this share had declined to 25 percent. Denmark was the only country with an increased share of the world catch. The Canadian share was nearly constant, while the other countries each experienced a decline. Most of the increase in the rest of the world catch was in the U.S.S.R. which does not engage in trade with the free world for this product.

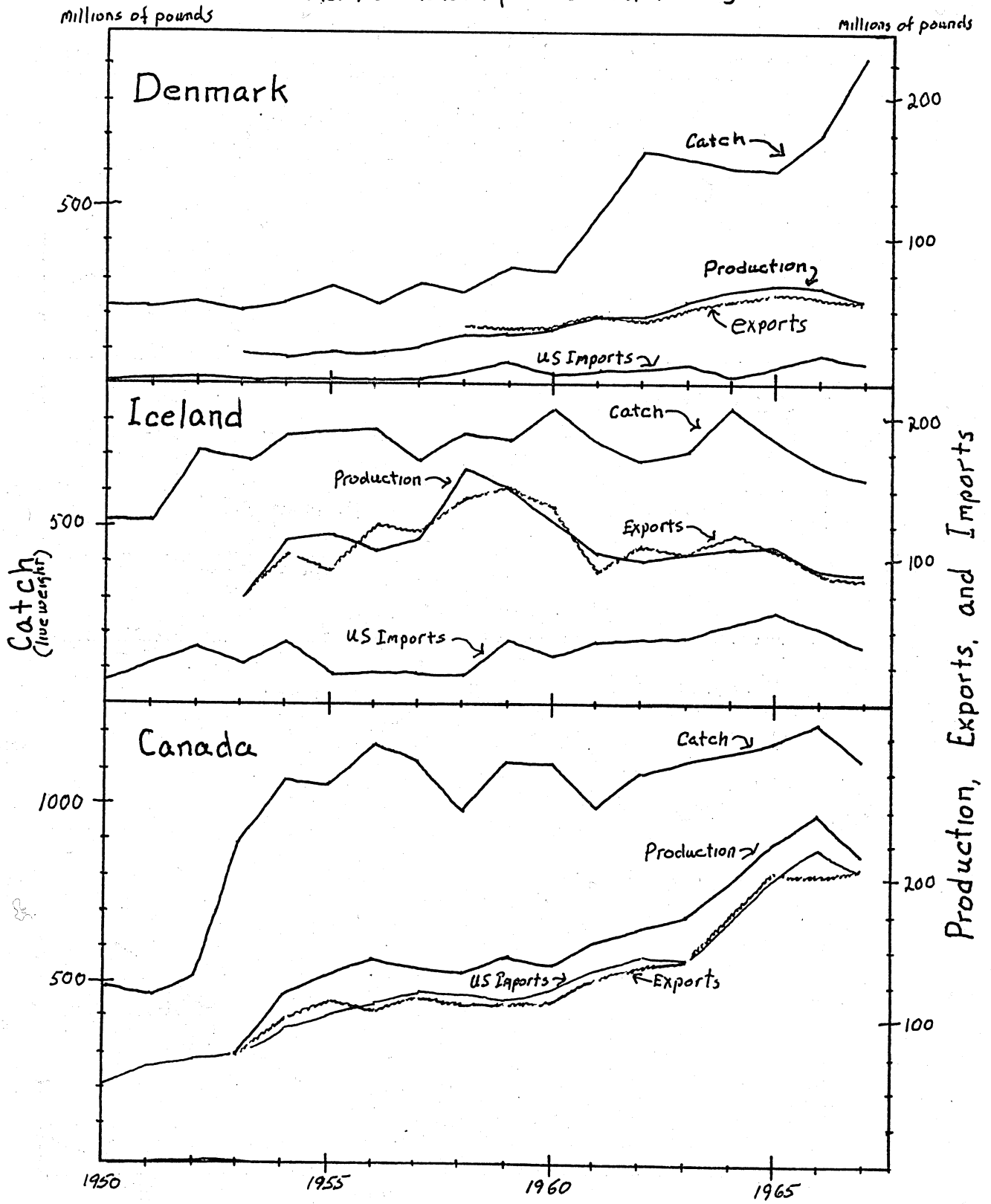
Exports

FAO statistics of world trade in frozen groundfish and flatfish fillets and blocks are complicated by discontinuities, revisions, and reporting gaps. However, considering world catch data and processing data from FAO along with U.S. import statistics, it is reasonable to assume that since 1961 very close to 100 percent (98 or 99 percent) of world trade in this commodity is accounted for. The major deficiencies are the lack of complete time series for Denmark and Germany.

In 1967 Canada accounted for 38 percent of world exports, Norway accounted for 22 percent, Iceland for 16 percent, and Denmark and West Germany for approximately 10 percent each. Poland accounted for only 2 percent of world trade, but was considered a strong competitor by the Canadians. Together with Greenland, these countries account for nearly all exports.

World trade more than doubled from 1953 to 1967, and there were some significant shifts in the relative contributions of each exporter (see figure 1). Although Canadian exports nearly tripled from 1953 to 1967,

Figure 1--Catch of Groundfish and Flatfish Production, Exports and U.S. Imports of Frozen Groundfish and Flatfish. Blocks, Slabs and Fillets



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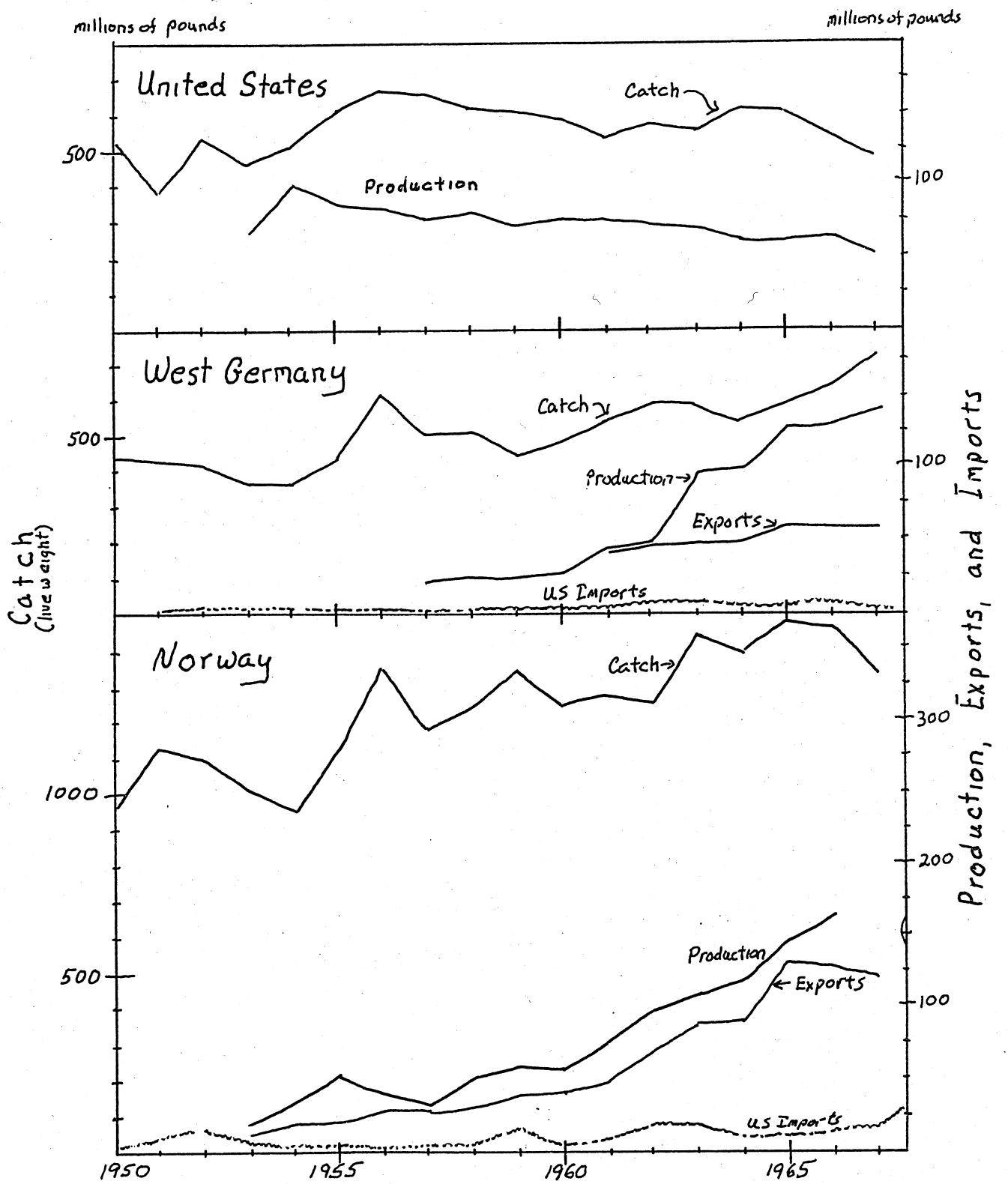


Canada's share of world trade declined from 48 percent in 1953 to 36 percent in 1961 and 38 percent in 1967. During the same period Norwegian exports rose from 7 percent of world trade to 22 percent by increasing from 11 million pounds to 124 million pounds. Danish and West German exports rose more modestly since they were first reported in 1958. Iceland, which exported nearly as much as Canada in 1953, outpaced Canada through 1960, but declined thereafter to a low of 90 million pounds in 1967. Iceland's share of world trade fell from 46 percent in 1953 to 41 percent in 1960 and 16 percent in 1967.

Processing of Fillets, Blocks, and Slabs

Production of frozen groundfish and flatfish fillets, blocks, and slabs by the seven leading exporting nations and the United States has tripled since 1953. Production was stable from 1954 to 1956, rose in 1957 and 1958, stabilized through 1962, then rose rapidly until 1965. Canada is the largest producer, producing about 30 percent of the total for the above eight nations. Norway produces about 20 percent of the total. West Germany has been producing between 16 and 20 percent. Greenland, the United States, and Poland each produce less than 10 percent of the total. Iceland produces just greater than 10 percent. During the late 1950's Iceland was producing close to one-third of the total. Not only has Icelandic production fallen relatively, but it has also fallen in absolute terms.

U.S. Imports

In 1967 the U.S. imported 320 million pounds, or 58 percent of the more than 550 million pounds of frozen groundfish and flatfish fillets, blocks,

and slabs involved in world trade. Imports rose from 78 million pounds in 1950 to 434 million pounds in 1968. Over 96 percent of imports are from Canada, Iceland, Norway, Denmark, Greenland, West Germany, and Poland. Canada has been the largest supplier. In the 1950's over 70 percent of U.S. imports were from Canada. After 1960 there was an acceleration in imports. During this time Canada's share of the U.S. import market slipped to near 60 percent. In 1968 Canada, although increasing exports to the U.S. over 1967, suffered a decline (down to 56 percent) in relative market share at the hands of Iceland, Norway, Denmark, and Poland. Each of these countries doubled or nearly doubled their exports to the U.S. from 1967 to 1968.

Tests for a Single World Market

A question posed earlier is: To what extent is there a unified world market for the commodity, frozen groundfish and flatfish fillets, blocks, and slabs? If the commodity is the same or undifferentiated by source, and if there is an open world market with no monopoly or monopsony control then we would expect a single world price after accounting for differentials in transportation costs. To test the extent to which average export prices are the same among the major exporting nations, and the extent to which average U.S. import prices are the same among the major exporting nations, a correlation matrix of import and export prices was generated.

The use of simple correlation coefficients is not in itself an absolute measure or proof of the sameness of markets or products. Even setting arbitrary correlation provides only a false sense of precision. A

correlation coefficient of .90 or greater is taken to mean that the prices were determined in the same market. A correlation coefficient of .80 or greater but less than .90 is taken to mean that there is only slight differentiation of markets or products. A correlation coefficient of .70 or greater but less than .80 is taken to mean essentially separate markets but strong interaction between markets. A correlation coefficient of less than .70 is taken to mean separate markets the degree of interaction decreasing with the degree of correlation.

Separate markets may exist, for what appears to be a homogeneous product, for many reasons. Distance and transportation costs provides natural segregation of markets. Differences in the level of quality or the consistency of quality may differentiate what would seem to be the same product. Volume, and consistency of volume, may differentiate suppliers. In addition there are a number of institutional factors to be considered. One factor is the degree of financial involvement of U.S. processing firms with foreign producers. It has been estimated by Canadian economists that approximately 70 percent of Canadian output of groundfish and flatfish blocks and slabs are from plants owned by, or financially dependent upon U.S. corporations. Iceland provides an example of vertical integration, by an exporter, to processing and distribution in the consuming country. The major Icelandic producing association has established a subsidiary in the U.S. to process blocks and slabs into sticks and portions.

Figure 2 -- Correlation matrix of export and import prices for frozen groundfish and flatfish, fillets, blocks and slabs

	EXPORT PRICE TO WORLD						IMPORT PRICE U. S.							
	Canada	Iceland	Norway	Denmark	West Germany	Total	Canada	Iceland	Norway	Denmark	Greenland	West Germany	Total	
EXPORT PRICE TO WORLD	1.00	.73	.63	.75	.59	.80	.74	.58	.62	.64	.19	.87	.71	Canada
		1.00	.85	.84	.83	.99	.93	.90	.75	.89	.50	.86	.94	Iceland
			1.00	.69	.73	.86	.69	.69	.56	.66	.39	.74	.70	Norway
				1.00	.83	.87	.83	.72	.78	.75	.34	.93	.84	Denmark
					1.00	.84	.80	.80	.79	.71	.21	.75	.81	West Germany
						1.00	.93	.89	.77	.87	.47	.89	.94	Total
IMPORT PRICE U. S.							1.00	.88	.84	.94	.44	.82	.99	Canada
								1.00	.79	.82	.53	.72	.91	Iceland
									1.00	.85	.33	.76	.84	Norway
										1.00	.51	.75	.95	Denmark
											1.00	.31	.46	Greenland
												1.00	.83	West Germany
													1.00	Total

From the correlation matrix a number of observations on the homogeneity of markets are possible. Canadian export price is less related to the average world price than is the price of any of the other four countries (Iceland, Norway, Denmark, and West Germany). Norway's export price was related less to the export price of West Germany and Denmark than it was to the export price of Iceland.

In the U.S. import market Canadian and Danish import prices have been closely correlated. Canadian and Icelandic prices have been slightly less correlated. Import prices of Norway and West Germany are only slightly less correlated with the prices of other suppliers. Greenland is the only nation whose import price in the U.S. has a definite low correlation with the import prices from other countries.

Because of the differences among countries in the correlation of export prices compared to import prices we could make several conclusions. The U.S. market appears to be somewhat different from the rest of the world. European producers are more related with respect to export price in the world market than they are with respect to import price in the United States. A possible explanation, which could be investigated, is that the West European market (the world's second largest market area for blocks, slabs, and fillets) is more purely competitive than the U.S. market. On the other hand, higher price correlation could also be evidence of some degree of collusion. It would be impossible to conclude one or the other possibilities without further information. The correlations show Canada to have more impact on U.S. markets than on world

markets. This should be expected since Canada for much of the period since 1953 has accounted for over 60 percent of U.S. imports and only slightly over one-third of world exports.

Correlation of export prices with import prices supplies further information to judge the homogeneity of markets. The correlation coefficient between average price of U.S. imports and average price of world exports is .94. This could be taken as support for the single market hypothesis. Interestingly none of the correlations for import versus export price associated with individual countries is greater than .90. Icelandic export prices and U.S. import prices for Iceland show the greatest degree of similarity. The correlation coefficients for the other countries are .75 or less. These relatively low coefficients associated with a relatively high coefficient for aggregate import and export price may reflect a series of imperfections in the world market which tend to average out in the aggregate.

Factors Affecting Imports from Canada

It was demonstrated previously that the correlations between Canadian export prices and the export prices of other countries were considerably lower than the correlations between Canadian import price in the U.S. and those of other nations. Also, although Canada's share of the U.S. market has been slightly greater than 60 percent, the correlation between Canadian import price and aggregate average import price is .99. On the basis of this evidence it can be concluded that Canada has been a dominating factor in the U.S. market.

Canada's overwhelming reliance on the U.S. import market can be partially dismissed as due to the proximity and size of the market. A complete market model for Canadian produced frozen groundfish and flatfish, fillets, blocks, and slabs would account for major determinants of demand in the U.S. and major determinants of supply in Canada. In the usual economic model there is a set of identified simultaneous relationships which accounts for price and trade flows. This present investigation can only be considered a first step development of a trade model. As was stated in the introduction, it is really a collection of hypotheses about certain variables which are thought to be related to eachother. The results of the following least square estimates have to be interpreted in light of the deficiencies in structural specification.

The regression analysis was designed to provide some tentative measures of the relationships between: (1) Volume of imports, price, income, price of competitors, subsidies to the Canadian fishery, changes in productivity of the Canadian fishing fleet, and increases in the proportion of fish stick and portion production to all retail forms of frozen groundfish and flatfish, (2) Import price from Canada and the same factors in (1), (3) Catch per million dollars of fleet and subsidies. Only those relationships which are statistically significant or which have some overriding theoretical significance are discussed.

Imports from Canada have been highly correlated with price of Canadian imports and U.S. personal disposable income. The relation between income

and imports was found to be considerably more significant than that between price and imports. For every one billion dollars increase in U.S. personal disposable income there has tended to be an associated .38 million pound increase in imports from Canada

(1) $Mc = -76.3 + \underset{1.11}{3.22}\ Pmc + \underset{5.49}{.38}\ PDI$

$R^2 = .96$, standard error of estimate (SEE) = 9.5,

durbin watson = 1.22 d.f. = 12

Mc = U.S. imports from Canada

Pmc = Price of U.S. imports from Canada

PDI = U.S. personal disposable income

Note: Numbers under the coefficients are t values.

The only other source of imports which has been significantly related to price or income is Greenland.

(2) $Mg = -18.5 + \underset{1.22}{0.13}\ Pmg + \underset{8.79}{.58}\ PDI$

$R^2 = .91$, SEE = 2.0, durbin watson = 1.58, d.f. = 12

Aggregate imports have been closely associated with total personal disposable income.

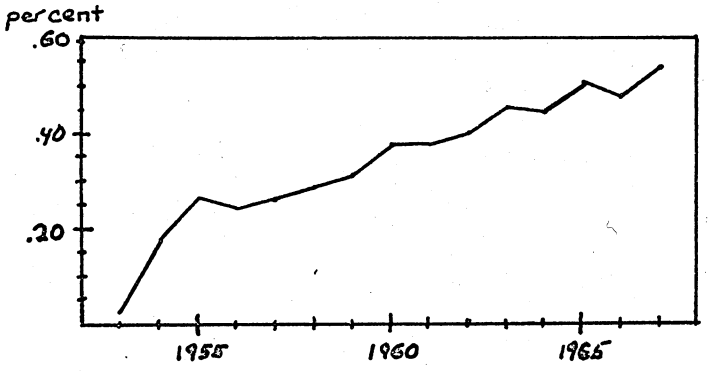
(3) $Mt = -171.9 + \underset{1.13}{6.66}\ Pmt + \underset{4.77}{.64}\ PDI$

$R^2 = .96$, SEE = 16.8, durbin watson = 2.07, d.f. = 12

During the period since the early 1950's consumer preferences have undergone a transformation which has had a profound influence on the product form of fish at the retail level. The increase in fish stick and portion production relative to other retail forms has been great. We will call

the percent of total retail form of groundfish and flatfish constituted by fish sticks and portions the "fish stick ratio." A significant relation between imports and the fish stick ratio was found for every country.

Figure 3
Fish Stick Ratio



For every one percent increase in fish stick production relative to production of all retail forms there has tended to be 4.7 million pound increase in imports from all sources and a 2.8 million pound increase in imports from Canada.

(4) $Mt = \underset{7.13}{51.1 + 4.72\ FSR}$

$R^2 = .80$ SEE = 34.5 durbin watson = 1.20, d.f. = 13

FSR = Fish stick ratio

(5) $Mc = \underset{7.57}{43.7 + 2.77\ FSR}$

$R^2 = .81$, SEE = 19.1, durbin watson = .92, d.f. = 13

The charge of unfair competition by foreign suppliers receiving subsidies is frequently made by the U.S. fishing industry and by politicians. The fisheries of Norway are heavily subsidized. The fisheries of Iceland are under close government control. The Canadian Atlantic fisheries have received rapidly increasing subsidies during the period since 1953.

Figure 4
Subsidies to Can. Atl. Fishery

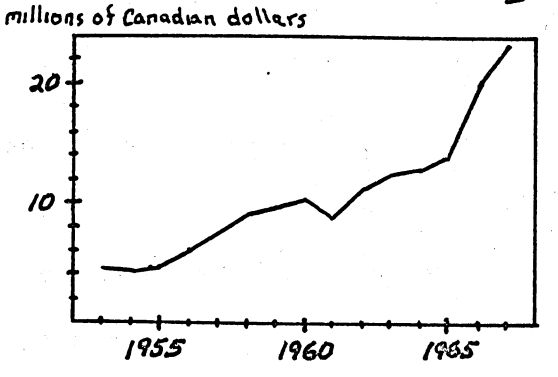
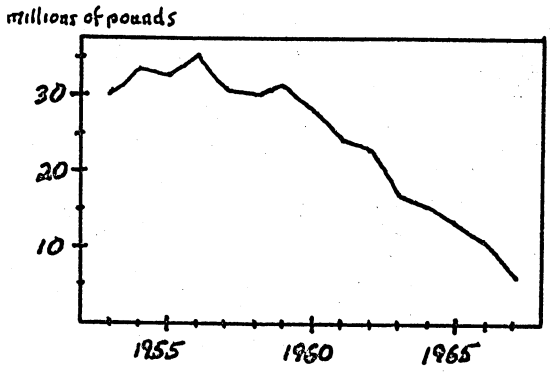


Figure 5
Catch ÷ Value of Fleet



One justification for subsidies by the Canadian government has been the expected increase in productivity of the fishing industry. A regression of catch per million dollars of vessel on Canadian subsidies indicates that productivity has tended to fall as subsidies have increased. We should be careful in concluding that subsidies have caused productivity to fall. These results, however, may imply decreasing marginal returns to increased capacity.

$$(6)\quad Cc/Fc = 40.1 \underset{-8.19}{-1.51}\ Sc$$

$R^2 = .84$, SEE 3.8, durbin watson = 0.91, d.f. = 13

Although there is some evidence that Canadian subsidies have not increased productivity, subsidies do have a statistically significant relation to U.S. imports from Canada.

$$(7)\quad Mc = 63.8 \underset{8.18}{+7.09}\ Sc$$

$R^2 = .84$, SEE = 17.9, durbin watson = 1.15, d.f. = 13

The results of price regressions were generally unacceptable. Further work on specification of a market model would be necessary to adequately isolate the structural relationship of the variables affecting price.

Conclusion

The pattern of cross correlations among import prices and export prices, between and within the major exporting countries, of frozen groundfish and flatfish fillets, blocks, and slabs indicates that there are significant differences between the U.S. market and the market of the rest of the world (primarily Western Europe). The analysis also suggests that there are forces at work between Canada and the U.S. that are not evidenced elsewhere.

Increasing U.S. imports were seen to be closely related to the trend of a greater portion of the supply of groundfish and flatfish going into fish sticks and portions (heat and serve items). Canadian subsidies to the Atlantic fishing industry have not been able to stem a rapidly decreasing productivity of capital since 1956. There is evidence that Canadian subsidies are associated with Canada's ability to expand exports to the U.S. In view of the decreasing productivity of capital it is reasonable to conclude that Canadian exports to the U.S. are higher than they would have been in the absence of government subsidies.

All conclusions must be taken as quite tantative in view of the most certain specification problems in this analysis. Such problems could be overcome only with the availability of a number of important economic variables.

Exports of frozen groundfish and flatfish fillets and blocks by major exporting nations
(Millions of pounds and millions of dollars)

	Canada		Iceland		Norway		Denmark 1/		West Germany 2/		Poland 3/		TOTAL	
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
1953	77.4	15.0	74.3	9.8	11.2	1.7	-	-	-	-	-	-	162.9	26.5
1954	103.4	21.4	105.6	14.3	18.7	3.0	-	-	-	-	-	-	227.7	38.7
1955	116.2	23.0	93.4	12.2	20.7	3.7	-	-	-	-	-	-	230.3	38.9
1956	108.3	22.2	124.5	20.0	29.8	6.8	-	-	-	-	-	-	262.6	49.0
1957	116.2	24.8	122.5	19.5	26.0	4.4	-	-	-	-	-	-	264.7	48.7
1958	112.9	26.1	142.6	22.9	32.6	6.1	41.4	8.9	16.7	2.7	-	-	346.2	66.7
1959	112.0	26.8	154.1	25.4	38.6	7.2	38.1	8.5	-	-	-	-	342.8	67.9
1960	116.4	26.7	139.3	23.3	41.9	7.7	38.8	8.9	-	-	-	-	336.4	66.6
1961	129.4	28.8	92.8	16.5	47.4	9.4	47.6	10.9	42.2	7.2	-	-	359.4	72.8
1962	138.3	30.2	110.6	20.6	72.1	15.7	46.5	11.2	50.8	9.3	-	-	418.3	87.0
1963	144.9	31.6	105.6	20.8	88.8	18.8	54.0	13.7	49.7	9.2	-	-	443.0	94.1
1964	178.8	39.7	119.4	25.5	91.1	18.7	60.6	17.0	51.3	10.5	-	-	501.2	111.4
1965	205.1	49.8	108.2	26.7	131.6	30.4	63.7	20.9	62.0	14.1	12.1	0.7	582.7	142.6
1966	205.3	51.3	90.1	24.6	129.4	32.0	60.8	20.9	62.0	14.1	9.9	2.1	557.5	145.0
1967	208.2	48.7	89.7	20.5	124.1	28.0	58.9	17.4	60.3	14.2	11.0	2.5	552.2	131.3

1/ Prior to 1958 FAO does not distinguish between fresh and frozen fillet exports from Denmark

2/ Exports of groundfish and flatfish fillets or blocks not identified prior to 1958 or for 1959 and 1960

3/ Exports not reported prior to 1965

Source: Food and Agriculture Organization of the United States,
Yearbook of Fishery Statistics, Vol. 5, 8, 10, 13, 19, 23

Comparison of the Supply of Groundfish Blocks and Fillets with the Production of Fish Sticks and Portions, 1953-1967
(Millions of Pounds and Dollars)

Year	Supply of Groundfish Blocks and Fillets						Production of Fish Sticks and Portions 3/		Ratio of Sticks and Portions to Other Manufactured Forms	
	Domestic 1/		Imports 2/		Total					
	Q	V	Q	V	Q	V	Q	V	Q	V
1953	135.0	36.5	118.3	25.3	253.3	61.8	7.5*	4.2*	.03	.07
1954	144.4	36.4	147.8	29.9	292.2	66.3	50.0*	26.5*	.17	.40
1955	130.0	33.9	141.1	28.6	271.1	62.5	73.0	33.0	.27	.53
1956	130.7	34.4	148.5	29.8	279.2	64.2	67.5	29.4	.24	.46
1957	122.9	34.6	155.2	31.7	278.1	66.3	73.3	31.8	.26	.48
1958	124.8	37.5	161.4	34.8	286.2	72.3	82.8	35.0	.29	.48
1959	117.6	34.9	199.3	43.1	316.9	78.0	97.5	41.7	.31	.53
1960	124.5	37.0	176.5	39.0	301.0	76.0	114.5	46.2	.38	.61
1961	126.7	38.8	215.0	48.0	341.7	86.8	129.7	52.3	.38	.60
1962	133.9	42.9	241.8	52.9	375.7	95.8	150.9	58.2	.40	.61
1963	130.7	43.2	250.5	55.6	381.2	98.8	173.9	65.6	.46	.66
1964	125.3	42.1	270.4	64.7	395.7	106.8	179.9	66.5	.45	.62
1965	129.1	47.9	309.8	82.0	438.9	129.9	222.9	91.8	.51	.71
1966	127.6	51.0	352.7	94.4	480.3	145.4	229.0	93.8	.48	.65
1967	118.8	48.3	320.3	81.4	439.1	129.7	235.2	91.1	.54	.70

Note: Domestic supply of groundfish pertains to fresh and frozen fillets, while imports include frozen blocks as well as fillets.

* Fish sticks only

1/ Source: BCF, packaged fishery products, 1953-1967.

2/ Source: U.S. Bureau of Census, U.S. Import Statistics; Report FT 110 annuals 1953-1968, Washington, D.C.

3/ Source: BCF, fish sticks, fish portions, and breaded shrimp, 1968 and BCF Fishery Statistics of the U.S. 1953 and 1954.

U.S. imports of frozen groundfish and flatfish fillets and blocks
(millions of pounds and millions of dollars)

	Canada		Iceland		Norway		Denmark		Greenland		West Germany		Poland		Rest of World		TOTAL	
	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
1950	56.4	11.4	15.8	2.2	3.3	.5	.5	.1	.4	*	*	*	0	0	1.6	.3	78.0	14.6
1951	70.2	15.2	27.6	5.0	8.9	1.7	1.8	.4	.3	*	.5	.1	0	0	2.2	1.6	111.6	23.0
1952	72.9	17.0	39.1	8.3	13.3	2.9	4.7	1.0	.6	.1	1.8	.2	0	0	8.1	2.0	140.5	31.4
1953	77.6	16.9	27.4	5.6	6.1	1.3	1.4	.3	.1	*	2.3	.4	0	0	3.4	.8	118.3	25.3
1954	91.1	19.4	42.1	8.0	5.5	.8	3.1	.5	.4	.1	4.5	.7	0	0	1.1	.4	147.8	29.9
1955	105.7	21.8	20.8	4.1	4.5	.8	4.1	.8	1.5	.3	2.4	.4	0	0	2.1	.5	141.1	28.6
1956	111.1	22.7	24.4	4.8	4.3	.7	3.6	.7	.3	.1	2.2	.4	0	0	2.6	.4	148.5	29.8
1957	118.7	24.6	22.8	4.8	4.9	.8	4.2	.8	.4	.1	1.3	.2	0	0	2.9	.4	155.2	31.7
1958	117.2	26.2	22.6	4.4	5.5	1.1	10.1	1.9	*	*	4.2	.8	0	0	1.8	.4	161.4	34.8
1959	114.7	26.1	43.3	8.6	17.8	3.6	17.2	3.5	1.4	.3	3.1	.6	0	0	1.8	.4	199.3	43.1
1960	122.7	27.2	32.4	7.5	5.6	1.0	7.1	1.4	3.9	.8	3.3	.6	0	0	1.5	.5	176.5	39.0
1961	138.1	31.2	44.7	10.3	9.8	2.1	10.7	2.2	3.8	.8	5.3	1.1	0	0	2.6	.3	215.0	48.0
1962	147.2	33.3	45.1	9.5	20.1	4.2	11.6	2.4	6.3	1.3	7.1	1.4	0	0	4.4	.9	241.8	52.9
1963	145.0	32.7	49.0	11.4	19.3	4.0	14.4	3.0	8.1	1.6	8.3	1.6	0	0	6.4	1.3	250.5	55.6
1964	175.6	43.3	57.0	13.4	10.8	2.3	6.4	1.5	6.7	1.4	6.2	1.2	0	0	7.8	1.7	270.4	64.7
1965	203.3	53.5	62.8	15.5	12.2	2.7	13.8	3.7	11.5	2.8	6.2	1.3	2.9	.6	9.0	1.9	309.8	82.0
1966	216.3	59.6	52.8	13.8	13.7	3.4	21.6	6.1	18.7	4.4	7.9	1.8	9.8	2.8	2.3	2.5	352.7	94.4
1967	204.9	53.5	41.1	11.2	18.1	4.3	14.4	3.4	16.2	3.2	5.1	1.0	8.9	2.2	11.6	2.4	320.3	81.4
1968	241.7	62.4	79.8	19.5	42.0	9.1	25.7	5.9	11.8	2.5	4.6	1.0	15.5	3.2	13.5	5.8	434.5	109.4

* Greater than zero but less than .05 million pounds or dollars

Source: U.S. Bureau of the Census, United States Import Statistics; Report FT 110 annuals 1950-1968, Washington, D. C.

Production of frozen groundifsh and flatfish fillets and blocks by major exporting nations
(millions of pounds)

	Canada	Greenland 1/	United States	Denmark	West Germany	Iceland	Norway	Poland	TOTAL
1953	077.84	-	067.47	20.95	-	071.22	018.96	-	256.44
1954	121.50	01.98	102.53	18.30	-	115.54	033.96	-	393.81
1955	131.86	03.09	086.66	23.50	-	117.53	053.80	-	416.53
1956	145.75	03.09	085.33	20.95	-	106.94	041.23	-	405.29
1957	141.34	02.65	076.95	25.14	023.59	122.82	032.19	07.94	432.62
1958	135.39	02.43	081.14	33.74	026.46	165.15	052.04	04.85	501.20
1959	146.85	03.97	073.65	34.62	026.46	149.72	057.55	03.09	495.03
1960	142.44	03.97	077.40	40.79	029.33	129.65	057.55	02.43	483.56
1961	158.10	04.85	074.53	47.19	044.32	106.94	076.07	05.51	517.51
1962	166.70	04.85	072.76	49.83	049.83	101.21	096.36	07.28	498.10
1963	173.75	05.95	071.44	58.21	098.34	104.74	108.04	14.11	632.81
1964	197.13	05.29	060.42	66.37	099.00	110.47	119.73	18.08	675.61
1965	227.11	10.80	060.86	72.32	130.54	108.27	146.19	23.15	778.35
1966	246.30	14.55	064.39	67.25	131.42	092.39	163.17	20.73	799.32
1967	218.74	13.45	052.04	59.98	141.34	092.17	2/	28.80	605.73

1/ Private firms are excluded up to 1962

2/ Not reported

Source: Food and Agriculture Organization "Yearbook of Fishery Statistics"
Volume Nos. 5, 11, 12, 21, 24, 25

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