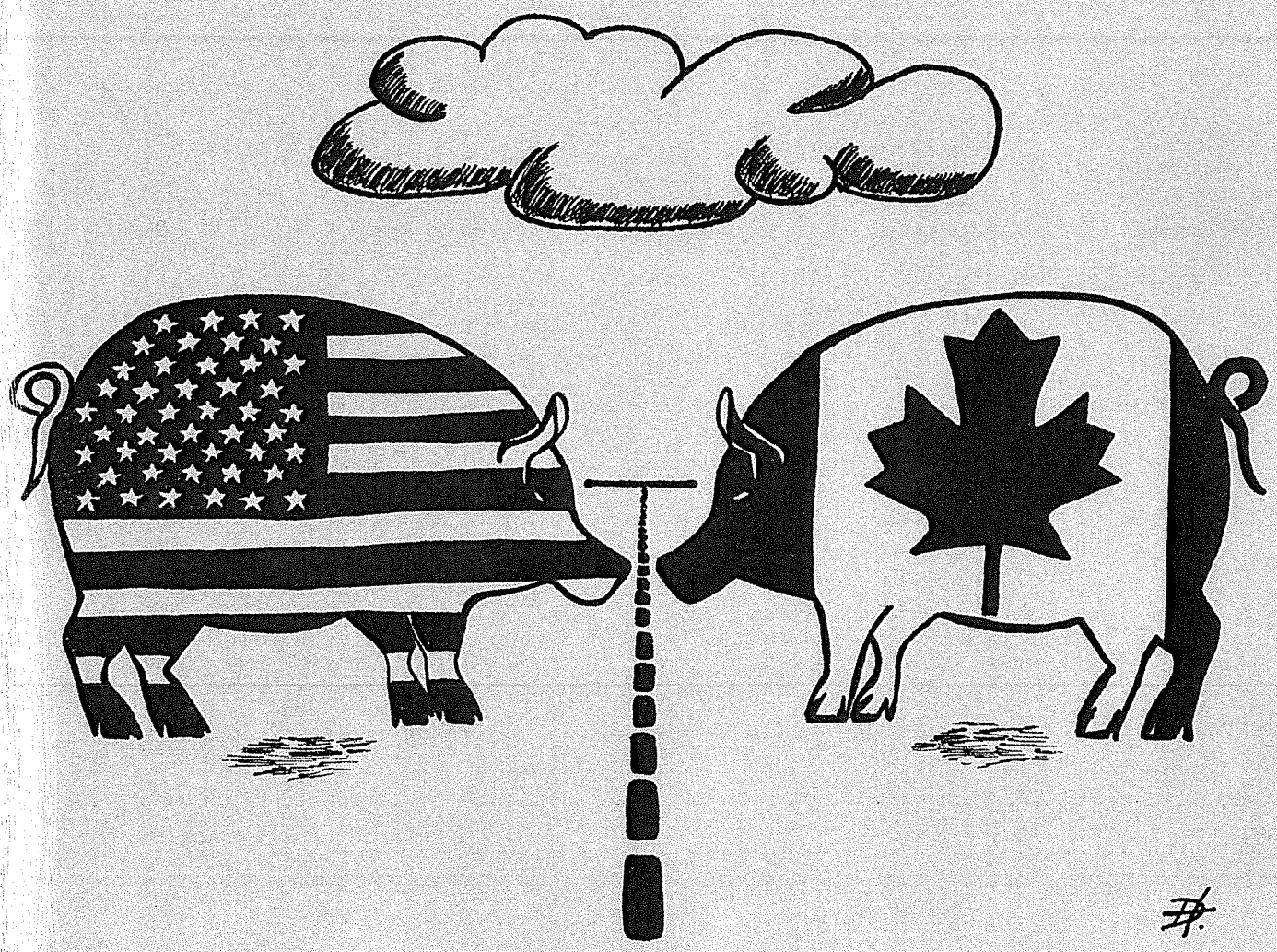
Western Economic Review

Fall 1985

INSTITUTE FOR SOCIAL AND ECONOMIC RESEARCH
Faculty of Arts
University of Manitoba

Volume 4 Number 3



The views expressed in the Western Economic Review are those of the authors, and do not necessarily represent the opinions or policies of their affiliation, the Institute for Social and Economic Research, or any of its sponsors, unless otherwise indicated.

Manuscripts

The Western Economic Review welcomes articles and papers on economic and social issues of interest to Canadians, especially those in western Canada. Submissions should not exceed 8000 words with a 100 word abstract, be typewritten (double spaced) and be provided in triplicate. Figures must be clear to enable convenient drafting and all data and secondary sources clearly identified. Manuscripts from industry and government are especially welcome. Submissions cannot be returned unless accompanied by return postage. All authors whose work appears in the Review will receive a one year complimentary subscription to the Western Economic Review.

Manuscripts should be submitted to:

The Editor
Western Economic Review
Institute for Social and Economic Research
300 Fletcher Argue Building
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

The Western Economic Review is published quarterly by the Institute for Social and Economic Research at the University of Manitoba. Annual subscription is $25.00 for four issues, and $45.00 for eight issues. Address subscription enquiries to:

Managing Editor
Western Economic Review
Institute for Social and Economic Research
300 Fletcher Argue Building
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

ISSN 0715-4577

Western Economic Review, Vol. 4, No. 3, Fall 1985 [ISSN 0715-4577]

Western Economic Review

Contents

Western Economic Review, Vol. 4, No. 3, Fall 1985 [ISSN 0715-4577]

Free Trade:

Prologue

David Freshwater,
Department of Agricultural Economics,
University of Manitoba.

With the growth of interest in reducing trade barriers between Canada and the United States the current "hog war" provides an example of an area where trade has traditionally been subject to relatively few restrictions but has recently become more controversial. The Western Economic Review asked J.C. Gilson, and C. Goodloe to prepare short reviews of the issues as they saw them in this conflict. Gilson and Goodloe are well placed to provide this perspective. Gilson is a professor of Agricultural Economics at the University of Manitoba and has undertaken considerable work on the pork industry in Canada as well as Canada's International Agricultural trade policy. Goodloe is an economist with the International Economics Division, Economic Research Service of the United States Department of Agriculture, responsible for analysis of Canadian - U.S. agriculture as it affects the United States.

As noted by both authors their papers were submitted prior to the final International Trade Commission ruling which was recently announced. The announcement that imports of live hogs were deemed to cause injury and would be dutiable at a rate of $3.21 per hundred weight while imports of processed pork was not injurious, caused somewhat of a shock. Prior rulings in this case had held that the live and processed pork should not be treated separately. Consequently, the decision to do so presented yet another new issue in an already complex case. The full impact of this decision remains to be seen, yet it is a major decision since it adds to the body of precedent which as noted in the papers is fully as important as the economic arguments in guiding ITC rulings.

The U.S. — Canadian Hog War

J. Clayton Gilson,
Department of Agricultural Economics,
University of Manitoba.

2.1 INTRODUCTION

On May 15, 1984, U.S. Senator Robert Dole, chairman of the Senate Committee on Finance, sent a letter to the chairman of the U.S. International Trade Commission requesting the International Trade Commission (ITC) to "conduct an investigation under Section 332 of the Tariff Act of 1930 on the competitive position of Canadian live swine and pork in the United States market."[1]

This letter fired the first official shot in an agricultural trade conflict that was to involve Senators, Congressmen, Diplomats, State Governors, provincial, state and federal politicians, trade officials and directors of provincial hog marketing boards in a controversy over domestic and trade policies relating to the hog/pork industries in both Canada and the United States.

The central issue in the conflict involved a charge by American pork producers that subsidized Canadian hog/pork exports to the United States caused serious, unfair and continuing injury to the American hog/pork industry. The remedy requested was a countervailing duty on Canadian hog/pork exports to the U.S., equivalent to the domestic subsidies paid on those products.

The U.S.- Canadian hog war, an important issue in itself, is also a prime example of the deeply-rooted, frequently controversial and complex problems which have emerged during recent years with respect to international agricultural trade relationships among most of the major agricultural trading nations of the world. The hog war illustrates the fundamental difficulties and ambiguities associated with any attempt to reconcile domestic agricultural policies with the general principles of multilateral, free trade supported under the General Agreement on Tariffs and Trade (GATT).

2.2 HOG/PORK TRADE BETWEEN CANADA AND THE U.S.A.

Canada and the U.S.A. have operated for many years within a relatively free trading framework for hogs and pork. Indeed, since 1980 (under the negotiated results of the Tokyo Round of GATT) Canada and the U.S.A. have adopted a zero bound duty for hogs as well as for fresh or frozen pork products.

The restraints on trade which do exist for these products are generally related to non-tariff barriers such as health and sanitary

regulations. The U.S.A. does limit imports from countries where there is a risk of rinderpest and foot-and-mouth disease. Canada has been declared free of these diseases. Currently, there is a controversy between the U.S.A. and Canada involving chloramphenicol, a therapeutic drug authorized for use in Canada by hog producers but banned in the U.S.A. by the U.S. Food and Drug Administration[2].

Canadian imports of live swine from the U.S.A. have been subjected to a set of Canadian regulations relating to Pseudorabies, a contagious disease found among swine and cattle in the U.S.A. The regulations which only permit imports from certified, disease-free herds and which, in addition, call for a lengthy quarantine period for those imports which are permitted, have had the general effect of stopping U.S. exports of live swine to Canada.

Between 1974 and 1978, the amount of pork imported into Canada from the U.S.A. exceeded by a wide margin the amount of Canadian pork exports to the U.S.A[3]. In 1977, for example, total pork imports from the U.S. to Canada amounted to 198 million pounds, compared with the reverse flow to the U.S.A. of only 20 million pounds. Between 1979 and 1984, by contrast, the amount of Canadian exports to the U.S.A. greatly exceeded pork imports (Table 1). In 1983 Canadian exports of pork to the U.S.A. represented only 1.8 percent of total U.S. pork consumption. By contrast, in 1977, U.S. pork exports to Canada represented nearly 17 percent of Canadian pork consumption or approximately 14.5 percent of Canadian pork production.

Approximately 14.6 percent of Canada's total pork production in 1983 was exported to the U.S.A. (Table 2). This figure was close to 20 percent during 1984 and higher still during the first half of 1985. It should be noted that Canadian live swine exports, relative to total Canadian pork exports to the U.S.A. have increased quite significantly since 1982 (Table 3).

2.3 CENTRAL ISSUES INVOLVED

The essence of the conflict may be found in the petition of the U.S. National Pork Producers Council to the U.S.-ITC in which it is alleged that:

> producers or exporters in Canada of live swine and fresh, chilled and frozen pork products directly and indirectly receive benefits which constitute subsidies within the meaning of section 701 of the Act, and that these imports materially injure or threaten material injury to a US industry[4].

The aggregate injury to U.S. pork producers for the first seven months of 1984 was estimated to range from a low of $224 million to a high of $555 million, with the most common injury figure cited being in the order of $377 million. The more specific measure of the estimated injury is reflected in the preliminary countervailing duty imposed on April 3, 1985, at 5.3 cents per pound for pork and 3.76 cents per pound for live hogs. It should be noted that the countervailing duties imposed on Canadian hog/pork exports to the U.S.A. were judged to be equivalent to the federal and provincial subsidies paid to hog/pork producers in Canada.

In several submissions prepared on the case, Canadian hog/pork producers argued repeatedly that many other factors besides the alleged subsidy payments have influenced the

TABLE 1

Pork: U.S. Production, Imports for Consumption, Exports of Domestic Merchandise, and Apparent Consumption, 1979-83, and January-June 1983, and January-August 1984

Period	Production	Imports	Exports	Apparent Consumption‡1	Imports as a Share of Consumption	U.S. Imports From Canada		Exports as a Share of Production	U.S. Exports to Canada	
						Quantity	Percent of Total U.S. Consumption		Quantity	Percent of Total Canadian Consumption
	Million Pounds				Percent	Million Pounds		Percent	Million Pounds	
1979	15,450	499	291	15,353	3.3	108	0.7	1.9	68	4.4
1980	16,616	550	252	16,574	3.3	203	1.2	1.5	42	2.4
1981	15,872	541	307	15,927	3.4	201	1.3	1.9	39	2.3
1982	14,229	612	214	14,425	4.2	280	1.9	1.5	25	1.7
1983	15,199	702	219	15,369	4.6	275	1.8	1.4	27	1.7
January - August										
1983‡3	9,717	466	144	10,039	4.6	187	1.9	1.5	17	1.6
1984	9,671	625	122	10,174	6.1	240	2.4	1.3	14	1.4

Source: Production and apparent consumption, compiled from official statistics of the U.S. Department of Agriculture, Imports and Exports, compiled from official statistics of the U.S. Department of Commerce.

Note: This table was taken from U.S. International Trade Commission, USITC Publication 1615, Washington, D.C., November, 1984, p. 146.

‡1 Does not include changes in inventory.
‡2 Not available (sic).
‡3 Estimated by staff of USITC.

TABLE 2

Pork: Canadian Production, Imports, Exports, Apparent Consumption, Ratio of Exports to Production, and Ratio of Imports to Consumption, 1979-1983.

Year	Production	Imports	Exports	Apparent Consumption‡1	Exports as a Share of Production	Exports to U.S.		Imports as a Share Apparent Consumption	Imports from U.S.	
						Quantity	Share of Production		Quantity	Share of Consumption
	Million Pounds				Percent	Million Pounds	Percent	Percent	Million Pounds	Percent
1979	1,653	74	175	1,552	10.6	108	6.5	4.8	68	4.4
1980	1,933	43	260	1,716	13.5	203	10.5	2.5	42	2.4
1981	1,916	44	248	1,718	12.9	201	10.5	2.6	39	2.3
1982	1,836	31	359	1,514	19.6	280	15.2	2.0	25	1.7
1983	1,878	42	346	1,572	18.4	275	14.6	2.7	27	1.7

Source: Production, imports, exports, and apparent consumption, compiled from official statistics of the U.S. Department of Agriculture; exports to the United States and imports from the United States, compiled from official statistics of the U.S. Department of Commerce.

Note: This table was taken from U.S. International Trade Commission, USITC Publication 1615, Washington, D.C., November, 1984, p. 167.

‡1 Does not include changes in inventories.

TABLE 3

Pork and Live Swine: Canadian Exports, by Product Types, 1979-1983 and January-April 1984

Product Type	1979	1980	1981	1982	1983	January-April 1984
	(In Thousands of Canadian Dollars)					
Fresh or Frozen Pork[1]	244,593	303,766	383,563	522,177	456,683	157,460
Live Swine[2]	18,588	28,887	21,975	52,415	69,682	55,788
Prepared or Preserved Pork[3]	13,382	12,060	14,927	18,500	19,054	6,131
Canned Hams[4]	467	1,917	3,993	4,505	2,233	85
TOTAL	277,030	346,630	424,458	597,597	547,652	219,464

Source: Compiled from official statistics of Statistics Canada.

Note: This table was taken from the U.S. International Trade Commission, USITC Publication 1615, Washington, D.C., November, 1984, p. 169.

[1] Canadian commodities Nos. 13-23, 13-24, 13-29, 15-09, 15-18 and 15-24.
[2] Canadian commodities Nos. 3-49.
[3] Canadian commodities Nos. 13-24, 13-29, 15-09, 15-18 and 15-24.
[4] Canadian commodities Nos. 17-24 and 17-29.

increased exports of Canadian hogs and pork to the U.S.A. The factors cited have included the following:

a. a decline in U.S. swine production;
b. rationalization of the U.S. meat packing industry;
c. proximity of Canadian hog/pork production to U.S. meat packers and consumer markets;
d. leaner, more desirable, Canadian hog/pork products;
e. temporary Canadian labour problems; and
f. canadian - U.S. exchange rates, which have increasingly favoured Canadian exports to the U.S.A.

The Canadian hog/pork producers have estimated the loss to Canadian producers as a result of the countervailing duties imposed on April 3, 1985, to be as follows:

a. Immediate loss for the period April 3 to December 31, 1985 to be approximately $187 million;
b. A projected annual loss of between $300 million to $500 million in the longer-run as a result of an estimated 25 to 35 percent

drop in production from 1985 level; and

c. A substantial overall "multiplier" loss to the Canadian economy as a result of the losses and reduction in production in the hog/pork industry.

The consequences of the countervailing duties imposed on the Canadian hog/pork exports have been exacerbated by the decision of five states (Iowa, Nebraska, South Dakota, Wisconsin and Minnesota) to effectively block shipments of Canadian hog/pork exports on the ground that the Canadian products contain chloramphenicol, an antibiotic drug permitted in Canada but prohibited for use on livestock in the U.S.A.

2.4 LEGISLATIVE AND POLITICAL CONSIDERATIONS

To properly understand the nature of the Canadian-U.S. hog war, and the decisions taken with respect to that war, one must recognize the existing legislative and political decision-making framework in both countries.

2.4.1 The U.S. Countervailing Duty Investigations

The U.S. countervailing duty investigations of the Canadian hog/pork exports to the U.S.A. were initiated and carried out under the provisions of subtitle A of title VII of the U.S. Tariff Act of 1930, as added by the Trade Agreements Act of 1979.

Title VII provides, inter-alia, for the following:

> ...countervailing duties (C.D.) are imposed when the Department of Commerce determines that a country under the agreement on subsidies and countervailing measures or person or organization of that country is providing a subsidy with respect to a class or kind of merchandise imported into the United States, and the USITC determines that an industry in the U.S. is materially injured or threatened with material injury, or that the establishment of an industry is materially retarded, by reason of imports of that merchandise. Material injury is defined to be harm which is not inconsequential, immaterial or unimportant[5].

It should be noted that the current legislation relating to countervailing duty investigations in the U.S.A. reflects the general objectives and provisions of the "Agreement on Interpretation and Application of Articles VI, XVI and XXIII of the General Agreement on Tariffs and Trade," which was adopted during the Tokyo Round of the GATT multilateral trade negotiations, 1973-1979. The essence of the "Agreement" was incorporated into U.S. legislation under the U.S. Trade Agreements Act of 1979[6].

Only very general guidance is provided under the GATT "Agreement" with respect to the definition and measurement of "subsidies" and "material injury." Under the U.S. legislation, the definition and measurement of "subsidies" and "material injury" are what the U.S. Department of Commerce and the ITC determine them to be. It is true that the countervailing duty investigations with respect to the hog war were conducted in public and that the Canadian respondents were given several opportunities to contest the data used and the interpretations made, but in the final analysis, the

final determination was made by the U.S. Department of Commerce and the ITC under the provisions of U.S. domestic legislation.

2.4.2 Federal and Provincial Hog/Pork Subsidy Programs

The U.S. countervailing duty investigations of the hog/pork industry cannot be assessed in isolation from the federal and provincial domestic policies relating to the hog/pork industry in Canada.

The major federal policy for the period under review involved the Agricultural Stabilization Act which was first introduced in 1958 and amended in 1975. Under the 1975 amendment to the Act, the prescribed price support for hogs was set at 90 percent of the previous five-year average price which was, in turn, adjusted by an index reflecting changes in production costs. Payments are made to hog producers if the average market price for a given year falls below the prescribed price.

The 1975 amendment to the Agricultural Stabilization Act also permitted provinces to "top load" the federal program. As a result of this amendment, several provinces also developed their own respective price and income support programs for hog producers, in addition to the federal program.

While not a part of the amended Agricultural Stabilization Act, it should also be noted that several of the provinces have also provided a form of "bottom-loading" to hog producers in the form of various types of production grants and subsidies.

Subsequent to the 1975 amendment to the Act, the federal government, in its attempt to maintain some form of national consistency and uniformity in the hog stabilization policy, made a decision to deduct the amount of any provincial stabilization payment from the federal stabilization payment before it reimbursed each producer.

In 1984 the federal government in recognition of the U.S. countervailing duty investigations, decided to raise the prescribed price support from 90 to 95 percent of the previous five-year average price but it confined payment under the plan to the domestically consumed portion (estimated to be 80 percent) of the total Canadian hog production.

While it is not surprising that the U.S. Department of Commerce counted the benefits received under the federal and provincial price stabilization programs in its calculations of the total subsidy received by Canadian producers, it was not anticipated that the subsidy calculations would also include a number of "other" public programs. These "other programs" included such items as low interest loans to pork producers, government grants to pork processing plants, government support of the record of production performance program and the federal carcass grading programs. Several of these programs have been in existence for a long period of time.

The net subsidies calculated (for the preliminary determination of the U.S. Commerce Department) for each of these items were determined on a dressed weight basis, as listed in the box following.

As mentioned previously, these preliminary countervailing duties amounted to 5.3 cents per pound for dressed weight pork and 3.8 cents per pound of live weight hogs.

After further analysis, the U.S. Department of Commerce increased the countervailing duties in its final determination on June 10, 1985 to 5.523 cents per pound dressed weight and 4.39 cents per pound live weight.

Benefits received under the federal Agricultural Stabilization Act	= 2.6 cents per pound
Benefits received under the provincial hog stabilization programs	= 2.5 cents per pound
Record of performance program	= 0.1 cents per pound
Hog carcass settlement system	= 0.1 cents per pound
Newfoundland low interest loans to hog producers	= 0.002 cents per pound
Quebec grants to hog producers	= 0.005 cents per pound

2.5 CANADIAN OPTIONS AND POSSIBLE RESPONSES

At the time of writing, the final determination by the ITC had not been made on the question of material injury, or the threat of material injury, to the U.S. hog/pork industry as a result of the subsidized Canadian hog/pork exports to the U.S. This decision was set for July 25, 1985. Furthermore, by mid-July, the ban placed on the imports of Canadian hogs and pork by the five states (because of antibiotic drug chloramphenicol) was still in effect, although some of the states involved indicated that they planned to relax or remove the ban. It should be noted that the Canadian government had made a decision in June, 1985, to withdraw the use of the antibiotic drug, chloramphenicol.

Assuming that the July 25 decision by the USITC is one which affirms material injury or the threat of material injury, the countervailing duties announced by the U.S. Department of Commerce on June 10, 1985, will remain in effect for an indefinite period.

It should be noted, however, that "Commerce may revoke a countervailing duty order, but only if Commerce or the ITC decide the original grounds for the order no longer exist..[7].

It is obvious that the countervailing duties can continue for as long as they are needed. The critical question is the one deciding when, and under what circumstances, the need no longer exists.

Under the circumstances, what options are open to Canadian hog/pork producers and what is likely to take place during the foreseeable future? Given the highly protectionist mood of the U.S. Congress, what adjustments could Canada make that would permit the continued and unimpeded export of hogs and pork to the U.S.A.?

One conclusion seems immediately clear: As long as the countervailing duties are used to offset Canadian domestic subsidies, it makes no apparent sense to continue the subsidies; the benefits of the subsidies accrue, in effect, to the U.S.A., not to Canadian hog producers. It would make more sense, accordingly, for Canada to impose a surtax (equal to the subsidy) on hog/pork exports to the U.S.A. In

this way, at least, the proceeds of the surtax would remain in Canada.

One option that has been seriously considered for some time in Canada and which has recently been made possible in the form of enabling legislation (Bill C-25, which was enacted on June 27, 1985), relates to the attempt by the federal government to consolidate the patchwork of existing federal and provincial programs into one coherent, national program that would be more consistent with the general principles underlying the GATT code on subsidies and countervailing duties. There is no assurance, of course, that all of the provinces would be willing to scrap their existing programs (both "top" and "bottom" loading programs) in favour of a national program consistent with the provisions set out in the recently enacted federal legislation. Even if such a nationally uniform stabilization program was adopted by the federal and provincial governments, there is no guarantee that such a program would be acceptable under the present provisions of the U.S. countervailing duty legislation.

Another option which is being debated by some of the provinces at the present time would have the effect of withdrawing Canada from the hog/pork export business. This option would involve the development of a national supply management program based on the assumption of national self-sufficiency. There are several serious disadvantages associated with this option: a serious contraction in the present Canadian hog/pork industry; a long and bitter struggle among the provinces over fair shares of the national quota; prohibition against imports of pork products and the trade consequences which would result; the need to seek special exemption under the provisions of Article XI, of the GATT.

Still a further alternative would be one which called for an immediate cease-fire arrangement on the U.S.-Canadian hog war while the more fundamental issues are dealt with in the broader context of a new round of GATT multilateral trade negotiations. In the long-run, this option appears to offer the best opportunity for constructive action, not only between the two major trading partners, Canada and the U.S.A., but it would also permit the development of more constructive domestic policies for the hog/pork industry in Canada.

One of the most important items on the agenda of the next round of multilateral trade negotiations, should be that relating to domestic subsidies. It is far from clear what a domestic subsidy is, when and under what circumstances a domestic subsidy is or is not countervailable, and how material injury or the threat of material injury resulting from the domestic subsidy is to be measured and assessed.

The GATT "Agreement" on subsidies and countervailing duties adopted by the contracting parties at the conclusion of the Tokyo Round of the GATT acknowledges the difficulties associated with domestic subsidies and countervailing duties. The Agreement observes that:

> Signatories recognize that subsidies other than export subsidies are widely used as important instruments for the promotion of social and economic policy objectives and do not intend to restrict the right of signatories to use such subsidies to achieve these and other important policy objectives which they consider desirable[8].

The "Agreement" provides little guidance on the types of subsidies which should be of purely domestic concern and those which should be

subject to international negotiation and disciplinary action. The Agreement states simply that, "subsidies other than export subsidies... may cause... injury to a domestic industry of another signatory... Signatories shall therefore seek to avoid causing such effects through the use of subsidies."[9] If one examines the legislative history related to the development of the federal and provincial hog stabilization policies in Canada, it will be recognized that these programs were designed to cope with serious regional and domestic problems within Canada. There was no deliberate or conscious attempt to use the stabilization programs as a form of unfair trade practice in gaining entry to other national markets. If these domestic programs are in violation of acceptable agricultural trading policies and practices, Canada, as one of the important signatoires of the GATT, has a right to expect more explicit guidelines from the major agricultural trading nations as to what is mutually acceptable and appropriate. It follows, as well, that Canada has the right to expect that other nations with whom she trades, also align their domestic agricultural policies with acceptable multilateral trade practices.

Another issue which deserves intensive study during the next round of the multilateral trade negotiations relates to the methods and procedures used to investigate domestic agricultural policies which are presumed to cause material injury or threaten to cause material injury to agricultural industries in other countries. At the present time, the GATT code on subsidies and countervailing duties provides for two approaches or avenues for such action: a country may launch its own investigations and unilaterally impose its own countervailing duties under provisions of its own domestic legislation, albeit this domestic legislation may reflect the principles of the GATT code; or, a country may file a complaint with GATT in which it seeks "modification of the foreign subsidy or a right to retaliate against its adverse effects[10].

In the U.S.-Canadian hog war, it was the first approach which was used, i.e., the investigations of the Canadian domestic policies, the determination of material injury and the imposition of countervailing duties were imposed under the procedures and provisions of U.S. domestic legislation. It must be acknowledged that most countries, the U.S.A. and Canada included, have been extremely reluctant to surrender national sovereignty or control over their domestic agricultural policies. However, if the adjudication procedures are not only to be fair but seen to be fair, it seems reasonable that some form of third-party intervention should be used in bilateral domestic policy/trade disputes.

Some critics have suggested that the procedures used in disputes, such as the U.S.-Canadian hog war, are "not a progressive step toward a more efficient, equitable and open trading order."[11]

In the case of the U.S.-Canadian hog war, it must be kept in mind that several other countries, besides Canada and the U.S.A., have been involved, directly and indirectly, in the hog/pork domestic policy/trade issue. Both Canada and the U.S.A., for example, have had conflicts with the domestic and trade policies of the EC relating to pork.

It has to be acknowledged that the GATT has not been very effective, to date at least, in providing for the investigation and resolution of domestic policy/trade disputes. The evidence during the past five

years suggests, however, that some form of effective, international dispute settlement machinery is desperately needed if long-run, destructive consequences are not to result.

NOTES

J.C. Gilson is a Professor in the Department of Agricultural Economics and Farm Management, University of Manitoba.

[1] U.S. International Trade Commission, Conditions of Competition Between the U.S. and Canadian Live Swine and Pork Industries, USITC Publication 1615, Washington, D.C., November, 1984, p. 64.

[2] U.S.-ITC, ibid., p. 9.

[3] J.C. Gilson, The Pork Industry in Manitoba, Manitoba Department of Agriculture, July, 1979, p. 93.

[4] Department of Commerce, International Trade Administration document, C-122-404, Washington, D.C., 1984, p. 3.

[5] USITC, Summary of Statutory Provisions Related to Import Relief, USITC publication 1057, April, 1980, p. 1.

[6] For more details see GATT, Agreement on Interpretation and Application of Articles VI, XVI, and XXIII of the General Agreement on Tariffs and Trade, Geneva, 1979.

[7] J. Quinn and P. Slayton (editors), Non-Tariff Barriers After the Tokyo Round, The Institute for Research in Public Policy, Montreal, 1982, p. 1.

[8] GATT "Agreement," op. cit., p.__.

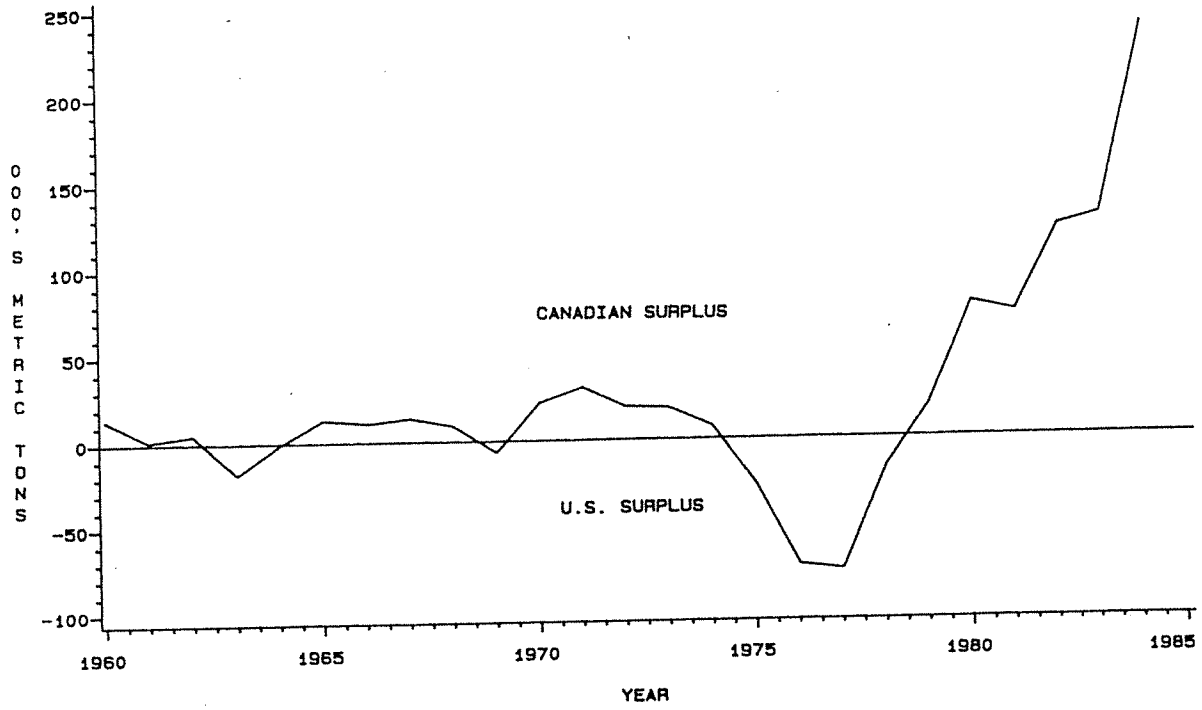
[9] GATT "Agreement," ibid., p. __.

[10] J. Quinn and P. Slayton, ibid., p. 121.

[11] J. Quinn and P. Slayton, ibid., p. 121.

Figure 1

U.S.-Canadian Net Pork Trade



Data from Statistics Canada, includes pork and live hogs in pork equivalent.

the United States. The great difference in the size of the two countries' hog sectors - U.S. hog slaughter in 1984 was about six times greater than Canadian slaughter - ensures that this situation will continue.

3.3 BACKGROUND PRIOR TO THE CVD CASE

U.S. pork producers began expressing their concern about Canadian live hog exports in late 1983. The complaints became more vociferous in early 1984, as live hog exports increased to a monthly average of about 100,000 from about 37,000 in 1983. In May 1984, the Agriculture Committee of the U.S. House of Representatives held hearings in which U.S. producers and government officials testified on the impact of Canadian exports on the U.S. hog industry. The Senate Agriculture Committee held similar hearings in August.

In June, at the request of the Senate Finance Committee, the International Trade Commission (ITC) began an investigation into competitive conditions in the U.S. and Canadian pork industries. The investigation, conducted under the auspices of Section 332 of the Tariff Act of 1930, was of a fact-finding nature and not related to the CVD case. However, prior to the release of the study, the National

Pork Producers Council (NPPC) filed a petition with the ITC and the Department of Commerce requesting a CVD investigation. The NPPC represented both hog producers and packers of unprocessed pork products.

3.4 THE CVD PROCESS

Under U.S. law, private industry - a manufacturer, producer, wholesaler, union, trade association, etc., - may file CVD petitions alleging injury from imports that receive foreign subsidies. CVD cases are authorized by the Tariff Act of 1930, as amended by additional legislation in 1974, 1979 and 1984. A CVD case is basically a four-part process involving the International Trade Administration (ITA) of the Department of Commerce and the ITC. The ITA is responsible for determining the existence and level of subsidization, while the ITC examines claims of material injury. Figure 2 shows the timetable for a CVD investigation, with the appropriate dates by which decisions have to be made, inserted for the Canadian pork case.

3.4.1 Material Injury Test

After the NPPC filed their petition with the ITA and the ITC, the ITA first had to judge the sufficiency of the petition - that is, did the petition provide evidence of foreign subsidies and material injury to the domestic industry. The sufficiency test was met, and the case proceeded to the ITC. A negative decision would have ended the investigation.

The ITC had 45 days to determine whether there was "reasonable indication or threat thereof" of injury to the domestic industry due to imports. The material injury test became mandatory for U.S. CVD cases under a 1979 act, if the case involves a government that is signatory to the GATT Code on Subsidies and Countervailing Duties, which Canada is. However, the ITC was not required to prove material injury at this point in the process.

Following an affirmative ruling by the ITC, the ITA had 40 days (85 days from the date of filing) to determine whether Canadian pork and hog imports benefited from a net subsidy. The ITA eventually took advantage of a 65-day extension that was available for "extraordinarily complicated cases."

3.4.2 Definition and Determination of Subsidy

U.S. legislation defines subsidy as the government provision to industry (public or private) of:

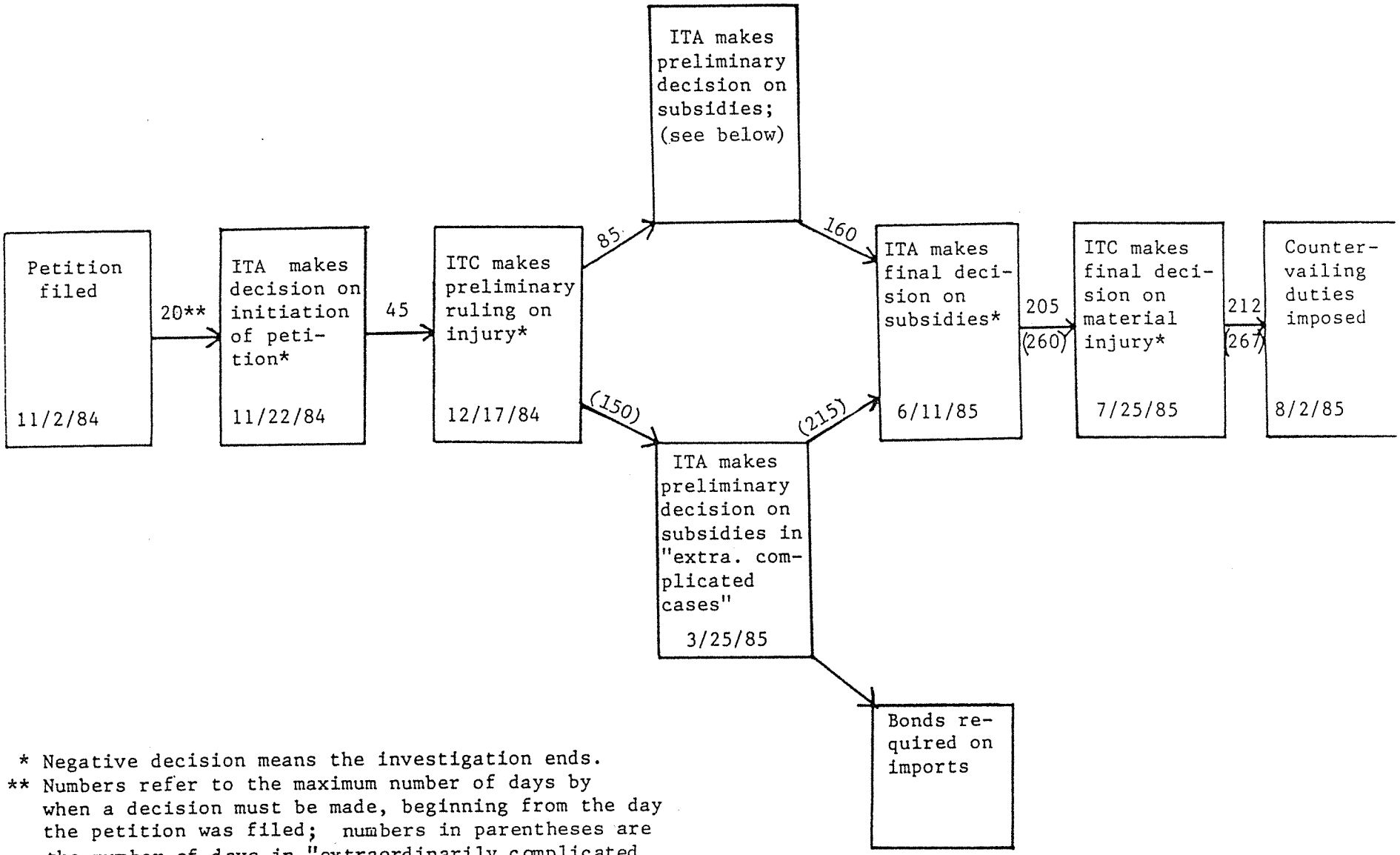
a. non-commercial capital, loans or loan guarantees;
b. non-commercial or preferential rates or prices for goods or services;
c. grants or forgiveness of funds to cover operating losses; or
d. the assumption of any production-related costs.

Items such as export taxes are deducted from the calculated subsidy to provide a net figure.

The ITA has developed certain principles and methods for determining the value of a subsidy, which are explained in a document referred to as the "Subsidies Appendix." The appendix provides a detailed explanation of the methods used to calculate the subsidy element of government grants, loans and loan guarantees, and equity. The methodologies were developed in the early 1980s out of several cases involving steel imports.

Figure 2

TIMETABLE FOR COUNTERVAILING DUTY INVESTIGATION
FOR LIVE SWINE AND PORK FROM CANADA



* Negative decision means the investigation ends.
** Numbers refer to the maximum number of days by when a decision must be made, beginning from the day the petition was filed; numbers in parentheses are the number of days in "extraordinarily complicated cases."

3.4.3 Preliminary Decision of Subsidies

The period for the investigation for the preliminary determination was April 1, 1983 - March 31, 1984 (Canada's 1984 fiscal year). The ITA listed the programs found to constitute subsidies: the Agricultural Stabilization Act; the Record of Performance program; the Hog Carcass Settlement Program; and 11 provincial programs, mostly stabilization programs, operating in all ten provinces.

The affirmative ruling resulted in the requirement that bonds or deposits be placed on imports. The bonding rate was set at Can. $0.053/lb. (dressed weight) and Can. $0.0376/lb. (live weight). Funds collected are placed in an escrow account pending the final outcome of the investigation. The funds are returned to the importer if the case is terminated at any point by a negative decision.

The Subsidies Appendix combines legislative mandates, legal logic, and economic concepts in its treatment of subsidization. The ITA must make decisions in the absence of clear legislative guidance, and relies as much on precedent from previous cases as on economic theory as to what constitutes a subsidy. Much of what is contained in the Subsidies Appendix is not pertinent to the pork case, and there was not necessarily a direct connection between the definitions of a subsidy and the explanation given by the ITA for calling various Canadian programs subsidies. However, a number of general concepts were applied.

One important concept concerned payments made to producers under the various federal and provincial programs. Because these programs provide funds to producers of selected products in specific amounts and rates, they were determined to be countervailable. Another important issue concerned how to allocate benefits over time, a subject the Subsidies Appendix treats extensively. These calculations differed by program, depending on whether benefits were in the form of direct payments or subsidized interest rates. The ITA cited two CVD cases with Brazil concerning "oil tubular goods" and "certain cast iron pipe fittings" in determining how to allocate ASA benefits over time.

At several points in the preliminary determination, the ITA refers to the special problems of agricultural cases. A major issue before the ITA concerned whether live hogs and the finished product - pork meat - were like products and, therefore, whether hog producers and pork packers could be considered a single industry. The ITA determined that live hogs and pork meat are not two separate products, but rather constitute a single, continuous line of production. Pork meat is not transformed into a different article during its various stages of production. The raw material - the live hog - is used to produce one finished product - pork meat. Thus, the ITA determined that growers and packers could be considered as one industry, and that a subsidy to any one segment of the pork industry is applicable to the output of the industry.

3.4.4 Final Ruling on Subsidies

The ITA made their final affirmative determination on June 11, following a verification period with relevant Canadian officials. The ITA removed the Hog Carcass Settlement program and three provincial programs from the list of programs constituting subsidies, but added about a dozen other provincial programs. The result was that the

bonding rate was adjusted to Can. $0.05523/lb. (dressed weight) and Can. $0.0439/lb. (live weight).

The ITA again rejected Canadian arguments that live hogs are an input into pork meat, citing two reasons:

1. The level of value-added, and
2. the role of the producer.

The ITA does not consider something an "input" into another product when there is a low level of value-added at a given stage of processing. According to the ITC Section 332 study, the value-added to live hogs at the packing stage is only ten percent. The ITA cited previous cases involving agricultural products - lamb meat, frozen concentrated orange juice, sugar, red raspberries, and table wine - as supporting their decision that producers and packers constitute one industry.

The other factor given concerned the ability of a hog producer to circumvent countervailing duties. If duties were placed only on live hogs, producers would simply sell all their hogs to a packer, and all exports would come to the United States in the form of pork.

3.4.5 Final Ruling on Injury

The last step in the process is a final ruling by the ITC on injury to the domestic industry. In making this decision, the ITC considers the volume of imports and their impact on U.S. producers and prices. Two special rules apply to agricultural products. The ITC is supposed to consider any increased burden on government income or price support programs. In addition, the ITC is not supposed to rule out injury simply because current market prices are at or above the government support price. However, neither of these considerations applies to the hog case.

The ITC's ruling is due July 25 (the decision will be made while this article is being printed). Of particular interest in this case will be how the ITC evaluates the impact of the volume of Canadian imports on U.S. prices, since Canadian imports account for such a small share of U.S. production and consumption.

If the ITC finds injury, permanent duties will go on within seven days. The duties, including the bonding deposits in the escrow account, are turned over to the U.S. Treasury. The duties will remain in effect for a year, after which the ITC will review updated information on subsidies. The review will occur each twelve-month period thereafter.

3.5 THE REACTION OF U.S. PRODUCERS

Why did U.S. hog producers decide to undertake the lengthy, costly, and uncertain route of a CVD case against Canadian imports? The past experience of CVD cases in agriculture has not been encouraging. For example, Maine potato farmers were unsuccessful in their anti-dumping case against potato imports from eastern Canada. In addition, western lumber interests were not granted a favourable ruling in their CVD case against Canadian wood product imports. A cursory look at data on pork imports and exports suggest that Canadian producers had more to complain about in the late 1970s than U.S. producers do now. But several factors combined to encourage U.S. producers to initiate the CVD case.

3.5.1 Financial Stress on Midwestern Farms

The direct impetus for the case stemmed, of course, from poor financial conditions for hog producers. Hog feeding budgets show that U.S. hog producers have had only one year of favourable returns out of the past five, although 1982 was a good year for hog farmers because of higher hog prices and lower feed costs. In addition, many producers incurred debt in the late 1970s to expand or build new hog facilities. The large debt and low returns resulted in financial stress for many producers.

As a result of low returns, U.S. hog inventories have fallen steadily since 1980, except for a slight upturn in 1983 following higher prices in 1982. As inventories declined, there was a general expectation among U.S. producers that prices should respond accordingly, but costs remained above returns. Hog prices remained weak even as herds were being reduced, and farmers began looking for reasons why.

One very obvious and direct reason was identified - live hog imports from Canada. Although Canadian pork exports to the U.S. had grown significantly in the early 1980s, while U.S. exports to Canada had declined just as rapidly, the influx of live hogs was even more dramatic and visible to producers - to the point of seeing truckloads of Canadian hogs unloaded at slaughter houses. The gradual widening in the balance of pork trade with Canada became a source of concern as farmers remembered as normal the atypical 1975-78 period, when Canada was a net pork importer.

The movement of live hogs from Canada has been concentrated in the midwest, where the bulk of U.S. hogs are slaughtered. Canadian hogs are entering primarily through Michigan, Minnesota and North Dakota, and many are slaughtered in Iowa.

The poor financial picture in the hog sector mirrors the general financial problems in the midwest, about which farmers have been urging their Congressmen to do something. With the geographic concentration of live hog imports, the situation soon took on a regional political dimension and was brought to the attention of several midwestern legislators. Producers received early support from several members of Congress as witnessed by the hearings held by both the House and Senate. (A tightly contested Senate race in Iowa in the fall of 1984 may have been influential in inducing activity at a political level.)

Hog producers wanted to take some step to alleviate their financial distress. There was a feeling perhaps that there was nothing to lose with a CVD case, and a successful CVD case would bring quick relief in the form of higher prices.

3.5.2 U.S. Farmers and Foreign Agriculture

U.S. farmers in general have become increasingly aware of the impact of foreign policies and subsidies on U.S. agricultural exports - for example, the impact of EC export restitutions on U.S. grain exports. There has been increasing talk among U.S. producers and agribusiness about "leveling the playing field"; that is, countering what is perceived as unfair trading practices by foreign governments.

The philosophical outlook of U.S. livestock producers may have been a factor as well. Hog producers receive no direct government support such as grain or dairy farmers receive, and view themselves as independent, market-oriented producers. As Canadian hogs began coming across

the border in record numbers, U.S. producers began hearing about "subsidies" that their counterparts to the north were receiving. Even though the level of understanding of the exact nature or impact of Canadian programs may have been low, these government payments were perceived to be unfair and contributing to the large imports, and thus, lower prices.

The NPPC's petition represented both producers and packers, a seemingly incongruous position. An increased supply of lower-priced Canadian hogs would appear to benefit packers. But packers have also faced tough financial times in the 1980s. Perhaps they wanted to show their solidarity with the producers in protesting foreign subsidies and imports disrupting U.S. agriculture.

3.6 IMPACT OF THE CVD CASE

U.S. hog prices remained weak for the first two months after the temporary bonding requirements were imposed, suggesting that the impact on U.S. prices was less significant in the short-run than producers anticipated. Live hogs continued to come across the border in large numbers. The action by several midwestern states to ban hog imports over the chloramphenicol issue may have arisen out of frustration that the temporary bonding deposits did not produce an immediate increase in prices or a reduction in the number of hog imports. (U.S. hog prices did rally to near $50/cwt in June, and live hog imports have dropped off slightly in July.)

Several factors have been at work in recent years to depress U.S. hog prices. The combination of high debt and low prices forced many producers to reduce their breeding herd, and the resulting increase in marketings may have been higher than many in the industry expected. Demand for red meat in general has not been buoyant, and supplies of both red meat and poultry have been large. Large stocks of frozen pork may have also depressed prices.

The U.S.'s growing trade deficit in pork has also contributed to lower prices. While U.S. producers focused their attention on Canada, imports of pork from Denmark have been increasing at a rapid rate. The steady increase in the value of the U.S. dollar against Canadian and EC currencies has encouraged surplus pork production to flow into the United States.

Although at the time of writing the CVD case has not been decided, U.S. producers have been successful in three out of four steps. Whatever the reasons for depressed hog prices, a successful completion of the case will likely make all U.S. farmers more confident in identifying and pursuing foreign subsidization and dumping. This would not be welcome news for Canadian or other foreign producers. The ITC is already undertaking a 332 investigation into the EC pork industry at the request of the NPPC and the Senate Finance Committee.

If more CVD or anti-dumping cases involving agricultural products are investigated, a body of legal opinion will be developed to deal with the "special problems" of agriculture - government support to the sector; differentiation between primary producers and processors; calculation of the subsidy element of government payments, etc. As other agricultural cases come before the ITC and ITA, it will be interesting for economists to see how the concepts of subsidy and injury are treated by a process that is mandated by government legislation and relies on legal precedent for much of its decision-making authority.

NOTES

Carol Goodloe is an Economic Analyst with the International Economics Division, Economic Research Service, United States Department of Agriculture. The views in this paper are those of the author and should not be interpreted as being official USDA policy.

[1] Pork refers to both pork meat and the pork equivalent of live hogs on a carcass basis.

Canada — U.S. Free Trade — Implications for the Western Canadian Livestock Industry

William A. Kerr,
Department of Economics,
University of Calgary.

Susan E. Cullen,
Department of Economics,
University of Calgary.

Free trade with the United States has surfaced as a major economic and political issue in Canada in recent months. Agriculture has traditionally been a "stumbling block" for free-trade agreements. The expected impact of free trade on western Canada's large livestock and meat processing industry are assessed. The primary concerns of the industry are identified and major institutional constraints to free trade discussed. The most important impediments to trade liberalization will not be the removal of tariff and non-tariff barriers but rather Canadian domestic agricultural institutions.

4.1 INTRODUCTION

For Canadians, free trade with the United States has been a major economic and political issue since before the inception of the federation. Free trade, or reciprocity as it used to be called, was attempted as early as 1854 with a treaty which provided for free interchange of a long list of natural products including grain, animals, flour, cheese, butter and meat. Although the treaty lasted only until 1866 the concept of free trade has surfaced repeatedly on the political scene. At least two federal elections, 1891 and 1911, were fought on the issue[1]. Over the last year free trade has again arisen as a major political issue in Canada. The concept has also received at least tacit support from philosophically sympathetic members of the Reagan administration.

The current resurgence of free trade as a serious issue in Canadian politics can probably be attributed to a "new" government's attempt to find a solution to the sluggish performance of the Canadian economy[2]. Given that since the mid-1970s the management of the economy by fiscal and subsequently monetary policy failed to produce sustained growth[3], policy makers have begun to explore other alternatives[4]. Of course arguments proposing free trade as an "engine for growth" are as old as the original reciprocity

debates. Proponents argue that the large U.S. market will provide the means by which Canadian industry can escape the constraints on growth imposed by Canada's small population and formidable geography. Protectionists fear that existing Canadian industries will be ruined by an influx of "cheap" goods from large American companies which are geared for markets in excess of 200 million. Of course both types of adjustments will be manifest and the debate is really over the relative importance of the two effects and the configuration of the Canadian economy after the major adjustments. The debate is clouded by vested interests and the lack of a clearly outlined government proposal for addressing the problems associated with adjustment. Empirical studies suggest there will be clear winners and losers as a result of a movement toward free trade[5].

The existing studies have been conducted at very high degrees of aggregation. As discussions with the U.S. on free trade are slated to begin in the fall of 1985[6] it is necessary that each sector and individual industry must be examined in an attempt to assess the expected effects of free trade. There are two reasons for this. The first and most obvious is to prepare the industries for the adjustment which will arise from a movement to free trade. The second reason is to identify what safeguards must be negotiated to ensure a "workable free trade" if there is an agreement. For example, it is of no use to negotiate the reduction of tariffs if there are no safeguards built in to prevent the institution of non-tariff barriers in their place.

Both the size and resources of negotiating teams are typically limited. Even if an industry decides to oppose free trade it must commit the resources to preparing information for, and channels of access to, the negotiating table. It may still be faced with free trade negotiations instigated in spite of its opposition. There is a large list of specific concerns which must be addressed within any free trade agreement - some are strictly in the field of trade such as the timing of tariff reductions and mechanisms to prevent the use of non-tariff barriers. Others have to do with what may have been largely domestic concerns under the status quo but will become of increased concern to the U.S. in a free trade scenario. Marketing boards, subsidy programs and certain domestic regualtions are of immense importance.

Before proceeding, however, one must determine the form which trade liberalization is likely to take. Canadians have tended to favour a sector-by-sector approach to free trade[7]. A series of agreements along the lines of The U.S.-Canadian Automotive Agreement of 1965 (the autopact) was envisioned. Canadians perceived that the easy sectors would be negotiated first while less easily integrable sectors would be negotiated later, if at all. Agriculture was generally perceived to be in the latter classification[8].

Over the last year, however, there has been increasing evidence that the U.S. is not willing to accept the sector by sector strategy but rather wishes a comprehensive free trade agreement. There are probably two major reasons for this[9]. First, there is considerable dissatisfaction in the U.S. with the existing autopact and it can no longer be seen as a viable model. Secondly, the U.S. simply does not want to expend the resources and effort it would take to negotiate sector by sector. They are unwilling to spend years at the bargaining table. The U.S. wishes an across-the-board deal - the so-called

comprehensive free trade agreement. Such an agreement would allow for the exemption of specific industries. It would appear that Canadian politicians have begun to move towards the comprehensive agreement position in the last six months[10]. The Quebec Summit also gave tacit endorsement of this position. This would appear to be the most likely form of agreement at present[11].

The agriculture sector, including the western Canadian livestock industry, was relatively complacent about the issue of free trade, assuming that their industry would be one of those which would not be negotiated in the first round of sector negotiations. The change from a perception of future sectoral negotiations to that of a comprehensive agreement with a relatively short timetable has considerable ramifications for the Canadian livestock sector. It is no longer a wait-and-see game. This paper attempts to assess the effects of free trade on the industry and to indicate the areas of industry concern which Canadian negotiators should be cognizant of when they negotiate.

In part 2 we briefly discuss the importance of the livestock industry to western Canada and indicate existing trade patterns. In part 3 we will examine current western Canadian livestock institutions in light of this environment and attempt to identify the major difficulties for a free trade scenario while part 4 will provide a brief summary of the important issues which the western livestock industry must address *ex ante* to any free trade agreement.

4.2 THE CONTRIBUTION OF THE LIVESTOCK INDUSTRY TO THE WESTERN CANADIAN ECONOMY

The livestock industry, both at the farm and processing level, makes a significant contribution to the economy of western Canada. Farm cash receipts from livestock sales account for one quarter of all farm receipts in the west and are valued at approximately $3 billion. The meat processing industry contributes over 20 percent of all value-added from manufacturing, some $300 to $400 million annually. It provides approximately 11,000 jobs making the industry the largest industrial employer and the leading manufacturing industry on the prairies[12]. The linkages to the rest of the economy are significant[13].

As a result of the economic downturn in western Canada, over the last four years the industry has been going through a period of rationalization. This has meant increased bankruptcies at the farm level and plant shutdowns in the processing industry. At present the industry exhibits excess capacity at both the producer and processor level. As little growth can be expected from the domestic market[14], expanded external markets present the only alternative to further rationalization for some commodities. Governments at all levels have been committing increased resources to expanding export potential[15].

In 1984 the value of net livestock exports from western Canada to the United States approached $366 million. This represents a positive net balance of 527 percent and it has been growing over time. Market potential for beef and pork has been identified in the U.S., primarily on the West Coast[16]. The majority of existing exports are in the form of low value-added live animals, but the percentage of meat exports has

been increasing from less than 20 percent in 1980 to more than 30 percent in 1984. Thus the livestock industry exhibits a healthy trade balance with the U.S. The effects of free trade may be extremely important for the industry and the prairie region.

4.3 INSTITUTIONAL CONCERNS

The idea of "free trade" has been around for a long time, however, achieving it has been virtually impossible. One usually thinks of zero-tariffs as being free trade, but in reality, there are many more barriers to "complete-free-trade." Here, "complete-free-trade" will mean no barriers to trade, while "free trade" will mean simply no tariffs. In fact, tarrifs are probably the impediment to trade easiest to deal with in a comprehensive free trade agreement with the U.S. By far the most complex aspects in achieving complete-free-trade are the non-tariff and the institutional barriers to trade. It is the "silent barriers" which require the most time and effort to reduce. This section will attempt to determine the effects on the livestock industry in western Canada of complete-free-trade with the United States and indicate what barriers must first be removed for this goal to be achieved.

4.3.1 Tariffs

Tariffs represent the most obvious barrier to trade and their removal is essential for any free trade agreement. With regard to the beef industry, most of the trade involves live animals and currently both the U.S. and Canada have a minimal tariff on cattle. Thus a free trade situation (with regard to tariffs) is basically a reality. For other beef products, the trend in both countries is to increase the tariff with the increasing degree of value-added. For example, the tariff on canned or processed beef is higher than on "boxed beef" or carcasses. Both countries desire to capture value-added for their own economy as this would mean increased employment and revenue. Given that both countries have such tariff schedules the net effect on the distribution of value-added is not clear. As the trade balance in processed product is positive for Canada currently and the tariffs are approximately equal, the initial removal of the tariffs is unlikely to bring significant changes. The location of new facilities is less clear. This will depend upon the relative future value of the two currencies, relative wage rates and transportation costs. New expenditures on plant and equipment will also depend on the perception of the processing industry as to the permanence of the agreememnt. Plants geared to the large U.S. market are unlikely to be constructed in Canada if abrogation of the agreement is probable and market access to the U.S. again restricted.

The tariff situation in the hog and pork industry is much the same as for the beef and cattle industry. However, recently the United States has added a countervailing tariff on all pork products and live hogs as a retaliatory measure against the subsidized Canadian pork and hog industry. As some provincial governments provide subsidies, U.S. producers feel their industry is being "dumped" upon. Thus, according to GATT regulations, a countervailing tariff was in order. Until this measure was in place, the tariffs on both sides of the border were minimal and relatively equal.

The sheep and lamb industry also

required at present.

For any complete-free-trade agreement to be effective for livestock commodities, some provision would have to be included in the agreement to prevent the abuse of such regulations. Two options are available: (1) tightening up the regulations, and (2) some form of arbitration procedures. Of the two, the latter is probably the most feasible. For example, the U.S. import regulations on cattle and beef comprise some twelve pages of regulations. Attempting to clarify and closely define all of the terms would be virtually impossible and each definition would have to await interpretation by the courts. The establishment of some extra judicial board or tribunal with the ability to act quickly and assess punative damages would appear preferable. The livestock industry should make the establishment of such a mechanism a prerequisite to any agreement. The special perishable nature of the product makes such a provision a requirement to any workable free trade.

4.3.3 Canadian Institutions

Canadian institutions are those which help support incomes, enhance the position of Canadian producers or facilitate marketing practices through programs which are not direct subsidies. These can include everything from our grading system to marketing boards. They have primarily a domestic orientation under the status quo but could be considered trade barriers under a complete-free-trade scenario.

In the beef-cattle industry, it is the grading system which can cause problems for Canadian exporters. The Canadian and American grading systems for beef are not the same. The American system requires beef with a larger fat content. This is partially due to the differences in the tastes between the Canadians and Americans. However, recently the Americans appear to want leaner beef, but due to lobbying by various groups in the U.S., the grading system in the U.S. has not been altered to conform to changing tastes. This has resulted in more in-house or non-government grading[18]. For complete-free-trade to be achieved, a common grading system would be an idea for consideration. A common grading system would make it less confusing for farmers in both countries as it appears that some consumers in both countries are looking for the same degree of lean in their beef. Currently, Canadian product cannot receive USDA grade designation. As a result, there is some resistance to Canadian product in the U.S. by firms in the retail or restaurant trade which have promoted their operation as serving only "U.S. prime beef."

The poultry industry probably has the largest barrier to complete-free-trade with regards to Canadian institutions: the supply management marketing board system. At the present time, both the chicken and turkey industries have federal marketing agencies. This means they have the power to restrict domestic supply through the use of quota allocation to each province, as well as having influence through the Department of External Affairs on the setting of quotas on imports. As was mentioned earlier, the supply management system creates artificially high prices for Canadian consumers of chicken and turkey[19]. Complete-free-trade in the poultry industry would be devastating for Canadian producers. The marketing board system was established in an attempt to satisfy the Canadian goal of "maintaining the family farm." The marketing board structure is,

however, not compatible with the existence of complete-free-trade. Certainly the chicken and poultry industries would ask for an exemption under any free trade agreement. U.S. producers would certainly resist this. In addition it should be remembered that price reductions *are* expected by Canadian consumers as a result of free trade. It is essential that the poultry industry develop its position regarding the appropriate adjustment mechanism or compensation required in the event that its lobbying efforts for an exemption fail.

4.3.4 *Canadian Subsidies*

Another barrier to complete-free-trade is Canadian agricultural subsidies. There are basically two types of subsidies: top-loading and bottom-loading. Both are highly visible. The recent hog case illustrates their vulnerability to countervail. The top-loading subsidies are those which are direct price subsidies (price supports, deficiency payments, *etc.*), and the bottom-loading subsidies are those which are subsidies on inputs (transportation, storage facilities, *etc.*). The most important effect of subsidies, with regard to trade, is that they lead to charges of dumping. In Canada, each province can have its own subsidy programs for its farmers. This creates many problems for a complete-free-trade agreement as Canada must first get some agreement from the provinces to limit their activities in these areas. The constitutional precedents in this area are not clear. For the West, given that there is an agreement in principle by all four Premiers to foster free trade, such co-ordination may not be too difficult. Securing such an agreement from Quebec which has expended considerable resources to create self-sufficiency in pork, and to a lesser extent beef, may be extremely difficult.

There are two main transportation subsidies and both are of the bottom-loading type. They are the Feed Freight Assistance Program and the Crows Nest Pass Rate. The Americans perceive these subsidies as being unfair[20]. The recent experience with the Crows Nest negotiations suggest that any changes to the grain transportation structure will produce heated and bitter debates.

Clearly the harmonization of Canadian subsidy programs with the requirements of complete-free-trade will demand considerable *ex ante* discussion with the provinces and producer organizations. The alternative is likely to be increased and continuing countervailing duties and years of constitutional court battles over the issue of subsidies in a free trade context. These will be very costly to both the industry and governments.

Free trade is far more complex than the removal of tariffs. It will require the harmonization of Canadian domestic policy as well as policies of the two nations.

Cattle and sheep are probably the easiest industries to institute complete-free-trade as they are where the least number of complications arise. A mechanism to reduce abuses of non-tariff barriers would be required. In beef the major problem that would require work would be, perhaps, a common grading system. As consumer tastes seem to be converging, this could probably be done fairly easily. Complete-free-trade in the beef industry would most likely not alter the present structure of the industry.

In the sheep-lamb industry it would also be relatively easy to have complete-free-trade between the U.S. and Canada. Production and trade on both sides of the border is

quite small and there are no significant non-tariff barriers, Canadian institutions or subsidies. It is unlikely that the structure of the sheep-lamb industry would change with complete-free-trade between the U.S. and Canada.

The pork and poultry industries would require significant changes before a complete-free-trade agreement could be negotiated. The current subsidy programs represent the most obvious barriers to trade in the pork industry. The poultry industry would require the most changes in order to achieve complete-free-trade. The present supply management system would need to be disbanded or completely revamped as there would no longer be a global quota to keep out poultry imports into Canada. The consequences of complete-free-trade in the short-run would be devasting to the Canadian poultry industry. However it is quite possible that some Canadian poultry producers could become internationally competitive in the long-run. Of course, it is also possible that an exception could be obtained.

4.4 SUMMARY AND CONCLUSIONS

It would appear that there may be considerable gains for the western region from enhanced trade in livestock and livestock commodities. There will be, however, both winners and losers. A number of extremely hard decisions must be made by the industry in the immediate future. Consensus will be extremely difficult to obtain.

A summary of the major concerns of each livestock commodity within a free trade scenario is presented in Table 1. These are ranked according to their importance for each commodity. As each of the commodities has different primary concerns it will be very difficult for the industry to present a united position to the government or eventually at the negotiating table. This results primarily from the way agricultural policy in Canada has evolved on a commodity-by-commodity and province-by-province basis. The greater the degree of government interference in the market the more important policy institutions become as problems which must be addressed in free trade. It may be that the years of market interference in the agriculture sector will finally "come home to roost." Domestic policies may prevent increased access to U.S. markets. The expected growth which would result from improved U.S. market access is the very reason the Canadian government is pursuing enhanced if not complete-free-trade.

It would appear that reduction of tariffs will be the least difficult aspect of implementing complete-free-trade. Non-tariff barriers are more important and need to be formally addressed in any agreement. Probably the most appropriate means is the establishment of some quick, effective arbitration mechanism. The problems of tariff and non-tariff barriers are insignificant compared to the difficulties which may arise from the harmonization of Canadian institutions and subsidy programs with the realities of an open market.

Provincial rights, institutions such as the Crow Rate, Feed Freight Assistance and the Canadian Wheat Board, grading standards and health regulations, and even the underpinning of much of Canadian farm policy, the maintenance of the family farm, will all have to be examined within the context of free trade. It is likely that all of this may have to be done within a very short time frame. There is some fear that bureaucratic inertia may prevent the movement to any agreement.

According to English (1985),

> There is a tendency for most bureaucrats to be risk averters, i.e., not to support proposals that involve substantial change, and particularly not those that substitute international market discipline for domestic regulation and incentive systems that are subject to continuing bureaucratic discretion.

Although English was making reference directly to government bureaucrats, the same perspective can be attributed to officials of many agricultural organizations whether they be producer bodies, marketing boards or broad based interest groups. The fear may be that inaction itself may lead to the worst possible outcomes - either that the sector will be ill-prepared at the negotiating table or that no agreement will be reached and markets for western livestock will disappear in a wave of U.S. protectionism.

TABLE 1

Importance of Trade Barriers for Livestock Commodities

Concern \ Commodity	Cattle / Beef	Hogs / Pork	Sheep / Lamb	Chicken	Turkeys
1. Tariffs	Minimal D	Minimal D	Minimal C	Minimal C	Minimal C
2. Non-Tariff Barriers	Health Regulations Health Inspection Procedures Border Inspection Procedures Country of Origin Labeling U.S. Quota A	Health Regulations Health Inspection Procedures Border Inspection Procedures Packaging Regulations B	Health Inspection Procedures A	Canadian Import Quota Health Regulations Health Inspection Procedures Border Inspection Procedures Packaging Regulations B	Canadian Import Quota Health Regulations Health Inspection Procedures Border Inspection Procedures Packaging Regulations B
3. Canadian Institutions	Grading B	Marketing Agencies C	Carcass Size B	Marketing Boards A	Marketing Boards A
4. Canadian Subsidies	Potential rather than actual at the moment C	Current top loading provincial programs A	Minimal D	Minimal D	Minimal D

A = Most Important D = Least Important

NOTES

[1] Reisman, 1984.

[2] The last liberal administration was also seriously studying the free trade alternative (Senate Committee on Foreign Affairs, 1982) (External Affairs, 1983). It was not until the advent of the Conservative administration that the topic gained its current prominence.

[3] Reeves and Kerr, 1985.

[4] Not only free trade but other avenues such as domestic deregulation, formal encouragement of foreign investment and entrepreneurial immigration.

[5] Harris, 1983 and Tremblay, 1985.

[6] At the so-called "Shamrock Summit" in Quebec in mid March (see The Quebec Summit, 1985) the two countries pledged to begin negotiations by mid September, 1985.

[7] Fry, 1985.

[8] For example, the Senate Committee on Foreign Affairs dismissed agriculture in one line, "Exceptions to free trade agreements and escape or safeguard clauses are normal features in free trade treaties. The most notable exception in a Canada-U.S. agreement would be agriculture." (Senate Committee on Foreign Affairs, 1982.)

[9] Fry, 1985.

[10] Horseman, 1985; Western Canadian Trade Objectives for the Next Decade, 1985; External Affairs, 1985.

[11] For a more complete discussion of the current developments in Canada-U.S. trade and the likelihood of a comprehensive agreement see Kerr and Cullen, 1985.

[12] Kerr and Ulmer, 1984.

[13] Kwaczek, Mansell and Kerr, 1984.

[14] Kerr, 1985b.

[15] Economic Council of Canada, 1984.

[16] Gillis, et al., 1985 and Kerr, 1985a.

[17] Kerr and Ulmer, 1984.

[18] Kerr and Ulr, 1984.

[19] Veeman, 1972; Veeman and Veeman, 1980; Kerr and Douglas, 1985.

[20] National Commission in Agricultural Trade and Export Policy, 1985.

BIBLIOGRAPHY

Economic Council of Canada. Western Transition. Minister of Supply and Services, Ottawa. 1984.

English, H. E. "'National Policy' and Trade." International Perspective. March/April, 1984.

External Affairs. Canadian Trade Policy for the 1980s. A discussion paper, Minister of Supply and Services, Ottawa. 1983.

External Affairs. Competitiveness and Security: Directions for Canada's International Relations. Ottawa. 1985.

Fry, Earl H. Sectoral Free Trade. Conference on Legal Aspects of Sectoral Integration Between the United States and Canada. Cleveland, Ohio. April 19-21, 1985.

Gillis, K.G., C.D. White, S.M. Ulmer, W.A. Kerr and A.S. Kwaczek. "The Prospects for the Export of Primal Beef Cuts to California." Canadian Journal of Agricultural Economics. Vol. 33, No. 2. July, 1985.

Harris, R.G. Applied General Equilibrium Analysis of Small Open Economics With Scale Economies and Imperfect Competition. Queen's University, discussion paper No. 254. 1983.

Horsman, J. Notes for an Address-Access U.S.A. Financial Post Conference, Toronto. April 25, 1985.

Kerr, W.A. "The Changing Economics of the Western Livestock Industry." Canadian Public Policy. Vol. 9, Supplement. 1985a.

Kerr, W.A. "The Livestock Industry and Canadian Economic Developement." Canadian Journal of Agricultural Economics. Vol. 32. July, 1985b.

Kerr, W.A. and S.E. Cullen. A Western Canadian Perspective on U.S. Canadian Free Trade in Livestock and Meat Products. Paper presented at the joint meeting of the Western Agricultural Economics Association and the Canadian Agricultural Economics and Farm Management Society, University of Saskatchewan, Saskatoon. July 7-9, 1985.

Kerr, W.A., and M. Douglas. Increasing Balkanization in the Agricultural Sector: The Canadian Chicken Marketing Agency Versus Alberta. Department of Economics, The University of Calgary, discussion paper No. 89. June, 1985.

Kerr, W.A., and S.M. Ulmer. The Importance of Livestock and Meat Processing Industries to Western Growth. Economic Council of Canada, discussion paper No. 225. 1984.

Kwaczek, A.S., R.L. Mansell, and W.A. Kerr. "An Econometric Model of the Alberta Agricultural Sector." Western Economic Review. Vol. 3, No. 4. December, 1984.

National Commission on Agricultural Trade and Export Policy. Interim Report to the President and the Congress. Washington, D.C. March, 1985.

"The Quebec Summit, Declaration by the Prime Minister of Canada and the President of the United States of America, Regarding Trade in Goods and Services." March 18, 1985.

Reeves, M.A., and W.A. Kerr. "Some Regional Implications of the Increasing Emphasis on Monetary Policy." The Canadian Journal of Regional Science. Vol. 8, No. 1. Spring, 1985.

Reisman, Simon. Canada-United States Free Trade. Speech to the Conference on Legal Aspects of Sectoral Integration Between the United States and Canada. Cleveland, Ohio. April 19-21, 1985.

Senate Committee on Foreign Affairs. Canada-United States Relations Volume III, Canada's Trade Relations with the United States. Minister of Supply and Services Canada, Ottawa. 1982.

Tremblay, Rodrigue. "The Regional Impact in Canada of Free Trade." The Canadian Journal of Regional Science. Vol. 8, No. 1. Spring, 1985.

Veeman, Michael M. "Social Costs of Supply-Restricting Marketing Boards." Canadian Journal of Agricultural Economics. Vol. 30. March 30, 1982.

Veeman, M.M., and T.S. Veeman. Marketing Boards in Western Canada. Canada West Foundation, 1980.

Western Canadian Trade Objectives for the Next Decade. Paper for the Western Premiers' Conference - 1985. Grande Prairie, Alberta. May 13-15, 1985.

Student Prize Essay:

The Georgia Strait Recreational Fishery: Past, Present and Future

James H. Gable,
Institute for Fisheries Analysis,
Simon Fraser University.

This paper addresses the sportfishing issue in Georgia Strait and discusses the need for policy reform to enable fishery managers to reverse the trend of decline observed in Chinook and Coho stocks which are intercepted in Georgia Strait fisheries. Section one provides a brief introduction into the paper. Until the 1960s the federal government did not actively manage the marine sport fishery; however, current government policy recognizes the need for improved management of the sport fishery. In Section 2 the effect of the Georgia Strait fisheries on Fraser River Chinook and Coho stocks is discussed. An overview of historical regulations in the sport fishery is presented, an evaluation is made of their effectiveness and the need for improvements in management techniques is argued for. Section 3 is a review of the general theory of recreational fisheries analysis including optimization and valuation criteria. Section 4 deals with future management of the west coast sport fishery, including techniques available to improve recreational fishery management. In Section 5 the paper concludes with a recommendation for a course of management action.

Western Economic Review, Vol. 4, No. 3, Fall 1985 [ISSN 0715-4577]

5.1 INTRODUCTION

The Chinook and Coho fishery in Georgia Strait includes three distinct groups: commercial, native and sport. This combination of fisheries involves 400,000 participants in the harvesting sector alone, thus making the fishery one of the most complex to manage in North America[1]. The problems now facing the Pacific fisheries, addressed by the Commission on Pacific Fisheries Policy[2] include overfishing and conflicts among users. These problems exist in the Georgia Strait fishery and the need for policy reform outlined by Pearse certainly extends to the valuable sport fishery in the Gulf of Georgia.

5.2 HISTORY OF MARINE SPORT FISHERY MANAGEMENT IN BRITISH COLUMBIA

The federal government manages Pacific salmon in British Columbia. Under the 1867 British North America Act the federal parliament has legislative responsibilities for sea coast and inland fisheries. Although the provincial government has the authority to regulate some aspects of fishing activities indirectly via its constitutional jurisdiction over property and civil rights, intergovernmental arrangements give the national government complete management control over salmon[3].

In an article on marine recreational fisheries in Canada, Stern (1977, p. 192) points out that from 1898 to the 1960s the national government virtually abdicated its role in managing marine sport fisheries. The rapid growth of the Georgia Strait sport fishery during the 1960s concerned fishery managers and caused a rethinking of government policy on the recreational fishing issue. Regulations, pertaining to possession limits, were first introduced in 1950 but were still few in number at the time of the first Canadian symposium on the economics of sport fish, held in 1965. The symposium gave formal recognition to the growing importance of the marine sport fishery in British Columbia.

The tidal sport catch has continued to increase since the mid-1960s, with the average catch of sport caught Chinook in the Georgia Strait - Fraser River region rising from 24 percent (1962-1966) to 55 percent (1972-1976) of the total area catch (Figure 1a and Figure 1b). The large increase in sport catch of Chinook and Coho has come at the expense of both commercial user groups and spawning escapements. Vastly improved sport fishing technology plus increased leisure time and disposable income have resulted in the growing sport catches[4].

There is concern over wild Chinook stocks in British Columbia. This is evidenced by the specific regulations in the new West Coast Fish Treaty aimed at protecting coastal Chinook stocks. Increasing demand for salmon in the Georgia Strait sport fishery has operated to create an intense competition for Chinook and Coho stocks. Fishery managers can no longer ignore the marine sport fishery. Regulation of the tidal sport fishermen is necessary to conserve salmon stocks and to allocate available catch among competing user groups.

5.3 CURRENT FEDERAL GOVERNMENT SPORT FISHERY POLICY

In recognition of the emerging status of tidal water sport fishing, the Department of Fisheries and Oceans (DFO) has formulated a policy on marine recreational fishing. The object of the policy is to "...

develop a continuous and dependable supply of diverse recreational fishing opportunities according to the wants and needs of the public and in so doing to increase the economic output from the resource and ensure a stable and viable support industry."[5] While on the surface this is a commendable policy, it does overlook some of the pressing concerns facing the declining Chinook stocks and the competition to harvest the available salmon. Pearse (1982, p. 190) criticizes the past policy of DFO regarding the recreational fishery: "This rather vague and reluctant attitude is inadequate in view of the present numbers of sport fishermen, the importance of sport fishing and its heavy demands on certain stocks." The new government policy statement is less vague than the 1981 policy criticized by Pearse, but it is questionable whether its objective is possible under DFO's prerequisite objective of resource conservation, especially considering the demands voiced by competing user groups.

5.4 THE EFFECT OF THE GEORGIA STRAIT FISHERY ON FRASER RIVER CHINOOK AND COHO STOCKS

The management of Chinook and Coho salmon is complicated by the presence of large numbers of wild and enhanced stocks, originating all along the Pacific coast from California to Alaska. These stocks have highly variable migration paths and run timings. This gives rise to typical mixed stock management problems as discussed by Ricker (1958), Larkin (1973) and many others. In Georgia Strait, Chinook stocks return to 75 rivers, Coho return to over 120 rivers, and the presence of at least 20 Canadian and United States hatchery stocks further compound management problems in the area[6].

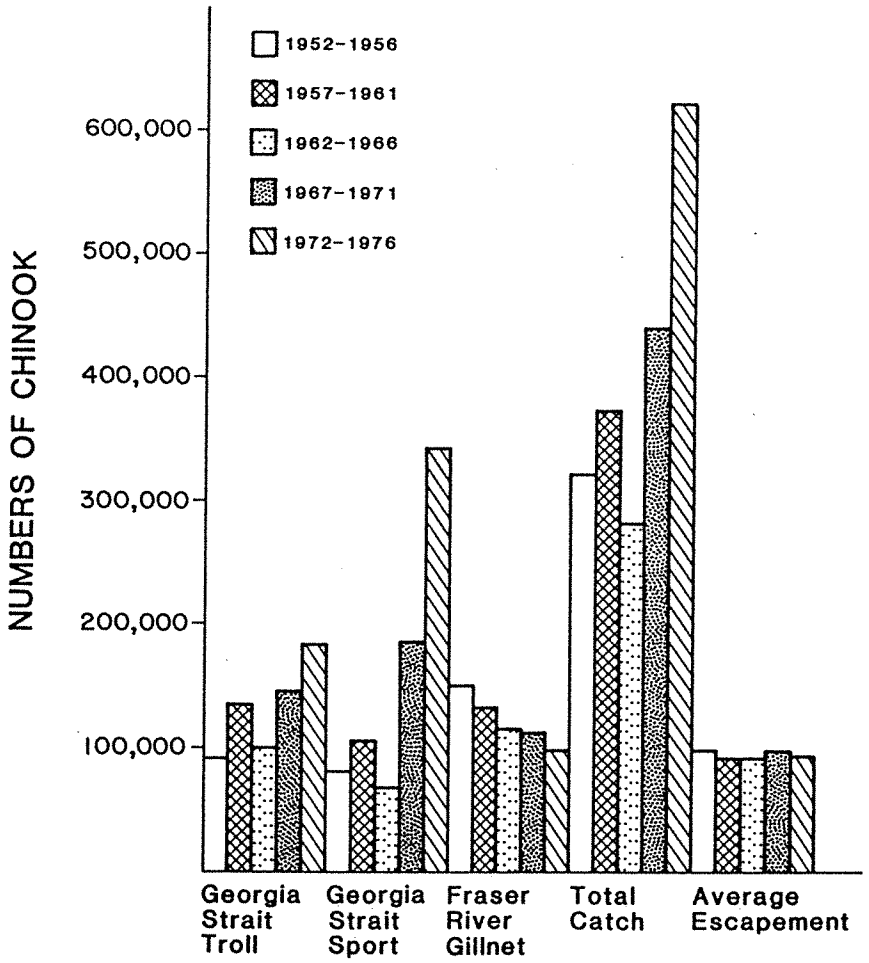
Total returns of Chinook to the mouth of the Fraser River (escapement plus terminal catch) have declined sharply since the early 1970s (Figure 2). Fraser, et al., (1982, p. 70) speculate that the Gulf of Georgia sport and commercial troll fisheries are largely responsible. Terminal Coho abundances show a similar decline since the early 1970s (Figure 3). It is estimated that the escapement of wild Chinook to Georgia Strait rivers has declined by more than 50 percent over the last decade. Immediate conservation action is needed to rebuild these wild stocks.

During periods of intensive use the recreational sport fishery in Georgia Strait may have a daily fleet size exceeding 10,000 vessels, far more than the commercial troll fleet. It is estimated that prior to 1960 the troll catch of Chinook and Coho exceeded the sport fishery catch. In the 1980s this has been reversed. Over the last five years commercial trollers have landed an average of 211,000 Chinook and 123,000 Coho. The sport fleet during the same period averaged 288,000 Chinook and 554,000 Coho[7]. Hence, the tidal sport fishery in recent years has accounted for over 50 percent of the Chinook catch and 80 percent of the Coho catch in Georgia Strait.

Recoveries from coded wire tagging indicate that Chinook from rivers and streams in southern Georgia Strait, most notably late summer and fall stocks from the Fraser River, are major contributors to sport and troll fisheries in Georgia Strait[8]. Fraser, et al. (1982) also conclude that most early timed Chinook returns to the Fraser system are intercepted in outside fisheries. Since Chinook stocks are vulnerable to specific fisheries, depending upon their marine rearing

Figure 1a

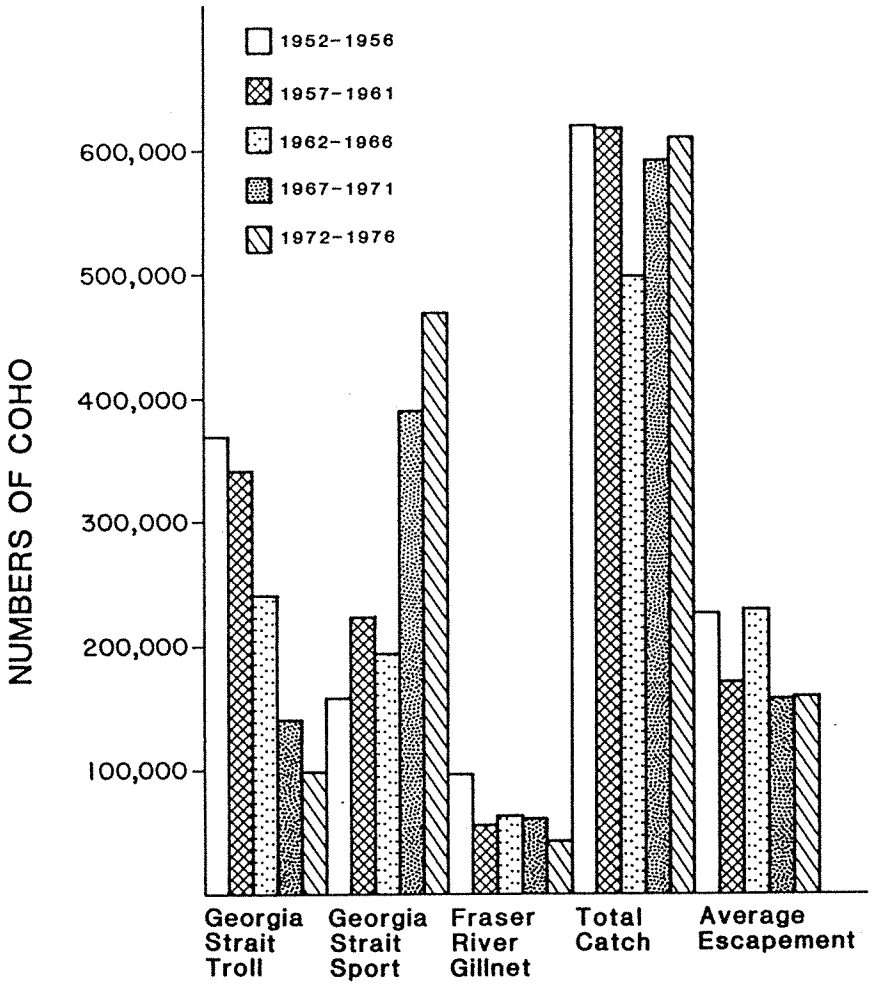
Annual Chinook Catch and "Index" Escapement for Georgia Strait
(Adapted from Argue, et al., 1983)



Little effort was put into spawning enumeration work during the 1950s and 1960s. Consequently, numbers reported for this time period are considered to underestimate the true values.

Figure 1b

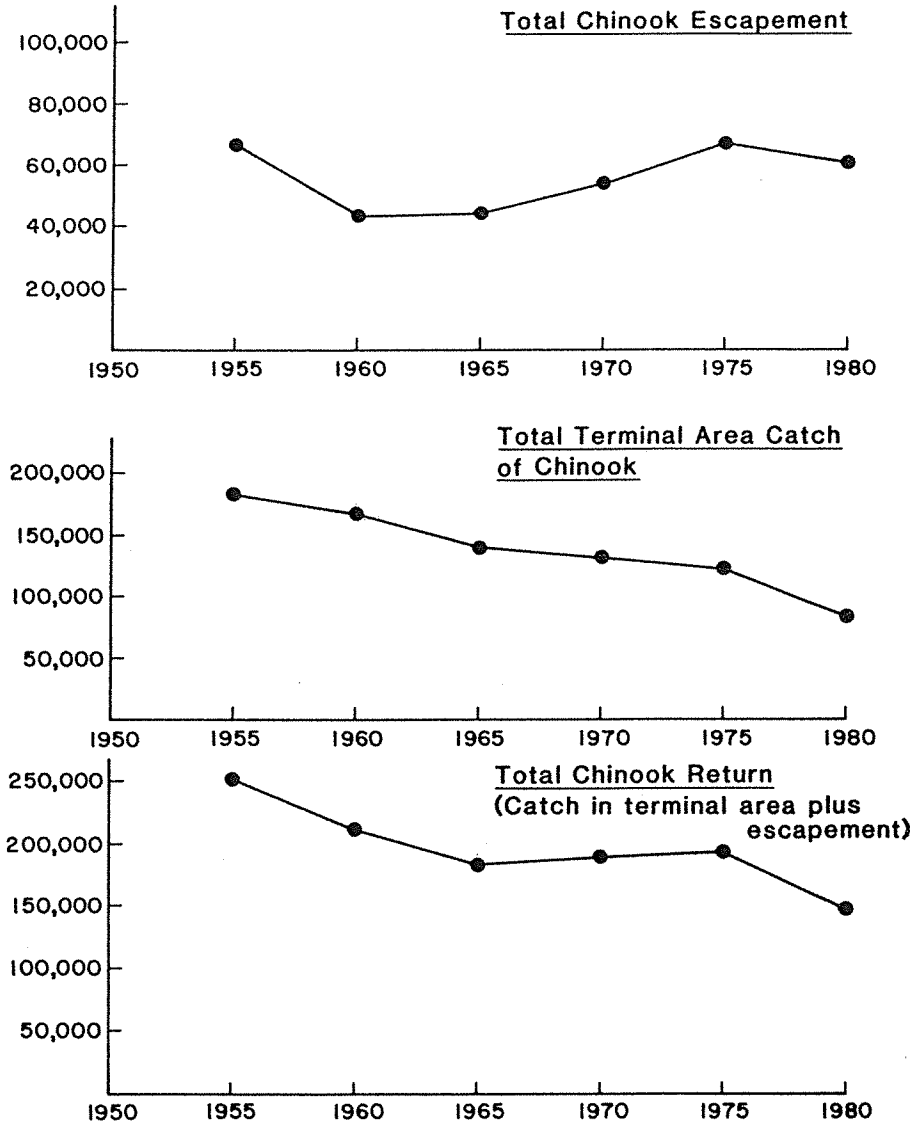
Annual Coho Catch and "Index" Escapement for Georgia Strait
(Adapted from Argue, et al., 1983)



Little effort was put into spawning enumeration work during the 1950s and 1960s. Consequently, numbers reported for this time period are considered to underestimate the true values.

Figure 2

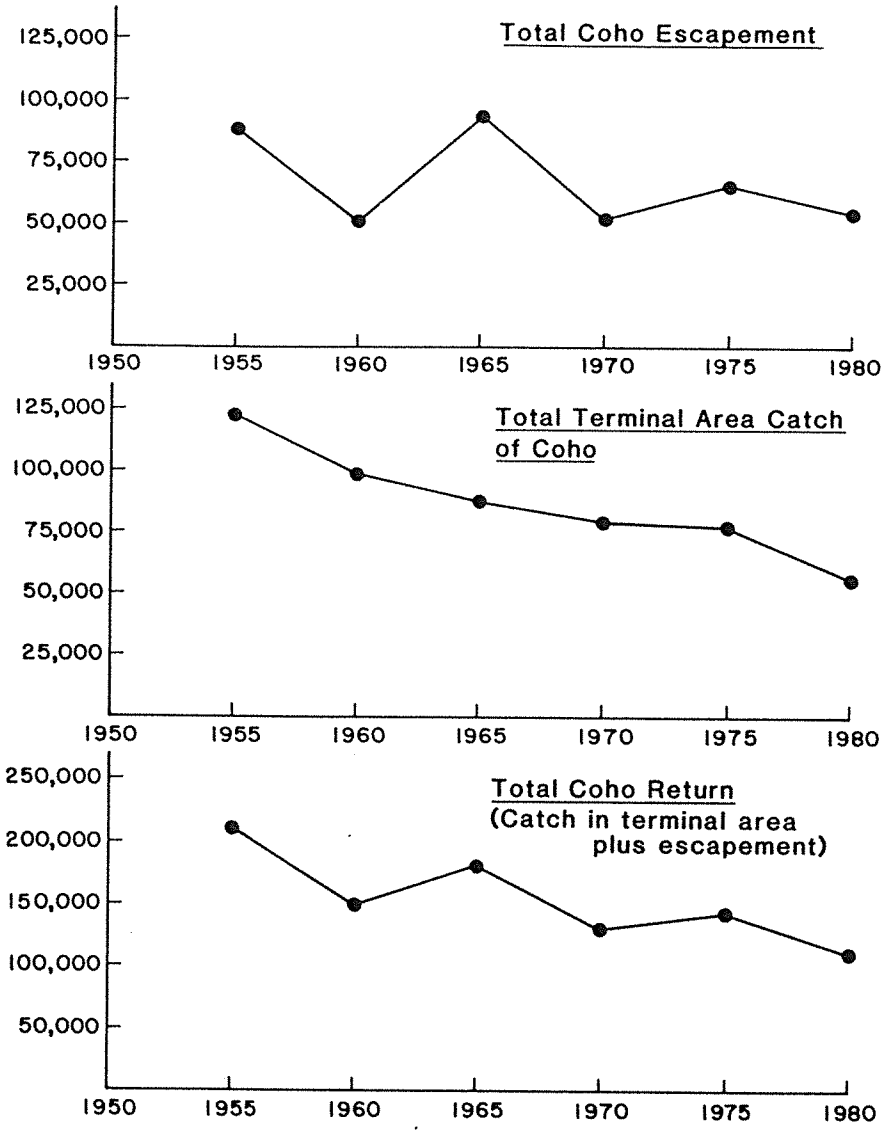
Total Return of Chinook to the Fraser River (1951-1980, 5-Year Averages)
(From Fraser, et al., 1982)



Little effort was put into spawning enumeration work for Chinook during the 1950s and 1960s. Consequently, numbers reported for this time period are considered to underestimate true escapement values.

Figure 3

Total Return of Coho to the Fraser River (1951-1980, 5-Year Averages)
(From Fraser, et al., 1982)



Little effort was put into spawning enumeration work for Coho during the 1950s and 1960s. Consequently, numbers reported for this time period are considered to underestimate true escapement values.

and migration behaviour, conservation efforts to protect specific stocks must be initiated in primary interception areas. The burden of conservation must be shared by Georgia Strait fisheries, not shunted to outside fisheries, since the inside strait is a rearing site for many Fraser River Chinook stocks.

5.5 PAST REGULATIONS IN THE GEORGIA STRAIT SPORT FISHERY

The tidal water sport fishery in British Columbia has a twelve month season, except at the mouths of some rivers where fall closures have been established to assist in the conservation of Chinook salmon[9]. With the exception of these limited closures, regulations have been primarily aimed at reallocating Chinook and Coho catch among competing user groups in Georgia Strait, and to increase yield per recruit[10].

Daily sport bag limits were first introduced to the marine recreational fishery in British Columbia in 1950. Daily quotas of 10 grilse (> 8 inches and < 3 pounds in round weight) or 5 salmon and 5 grilse were established. A 3-day possession limit was also imposed. In 1955 the daily quota was reduced to 8 salmon, of which 4 could be adults. In 1960 the daily possession limit was cut back to 2 days and a minimum capture size of twelve inches imposed. In 1962 the daily possession limit was again reduced, this time to 4 salmon per day[11].

Prior to the 1981 fishing season, DFO implemented regulations that were specifically designed to aid in the conservation of Chinook stocks. Controversy surrounded the actions, which included the licensing of tidal water sport fishermen[12]. This controversy has been amplified from 1981 to the present time with the introduction of further regulations to ease exploitation rates on inside stocks. These regulations can be synopsized: "in 1981... an area licence for trollers (they had to choose each year to troll either in Georgia Strait or in outside waters), a reduction in the daily sport bag limit during winter months from four salmon to two Chinook and two salmon other than Chinook, a season bag limit of 30 Chinook, and an 18 inch minimum size limit on sport caught Chinook. Continuing concern for Georgia Strait Chinook stocks resulted in implementation of a 21 inch size limit for troll caught Chinook (1983), and a two-thirds reduction in the troll season for Chinook (1984)."[13]

The regulations were designed to reduce the combined commercial and sport hook and lure catch to 220,000 Chinook in 1984. However, preliminary data suggest a sport catch of 396,000 Chinook and a commercial troll catch of 94,000. The result of the cut-back in the troll fishery was a reallocation to the sport user groups[14].

Under the terms of the new Canada/United States salmon treaty a 275,000 catch ceiling on Chinook in Georgia Strait will be imposed. The proposed sport regulations for 1985 will limit sport fishermen to 2 Chinook per day and 20 per year. Even without the commercial troll harvest there are serious questions about the ability of these regulations to limit sport catch. Hilborn (1984, p. 24) speculates that the proposed sport regulations will affect less than 5 percent of anglers. This being the case, it seems likely that the 275,000 catch ceiling on Chinook could be exceeded by sport fishermen alone. A forced closure of the sport fishery, to avoid treaty violation, will have serious regional economic effects if it occurs during the peak tourism period.

5.6 THE NEED FOR IMPROVED MANAGEMENT OF THE SPORT FISHERY

With the growth of marine sportfishing in British Columbia over the last two decades, and the documentation of the large salmon catches associated with this growth, it is evident that the traditional biologically based management techniques used in the past may now be inadequate. Argue, et al., (1983, p. 2) state that the Georgia Strait sport fishery involves over 100,000 boats and 345,000 fishermen, making it one of the largest sport fisheries in the world. The federal government hopes to increase the growth in angling participation to five percent per annum from a projected three percent per annum[15]. This is bound to increase the conflicts between sport and commercial user groups and place additional stresses on escapement levels of Chinook and Coho stocks.

Perhaps it is time to apply an economic management strategy to sport fishing, or a combination of biological and economic measures, in order to maximize the social and economic welfare obtained from the resource. In order for government to define goals to achieve a socially optimum allocation of fish there is an a priori need for managers to understand the theory of recreational fishery management. Tuomi (1975, p. 4) points out that fisheries managers cannot view the sport fishery as an extension or variation of commercial fisheries management. The end product of recreational fishing is the fishing trip, not fish as in the commercial sector.

If the goal is to maximize social benefits associated with the sport fishery we must consider interaction effects with the coexisting commercial fishery. Copes and Knetsch (1981) discuss the potential for linking recreational and commercial fisheries management together to achieve an optimal allocation between user groups. The authors point out that to integrate commercial and recreational fisheries, managers must relate both to common denominators. This means the complex relationship between the value of a sport fishing day and the number of fish caught must be established. The traditional economic approach is to quantify the value of successive additions to a particular good (in this case increased allocation of fish to the sport fishery) by developing a demand curve for the good. The costs of providing additional fish must also be determined. These include management costs, enhancement costs and opportunity costs of foregone commercial harvest.

For the government to succeed in optimizing salmon resource use it must determine a preferred catch allocation for the various users. This preferred allocation will be where marginal social cost equals demand in each respective fishery. (This implies we have a demand curve relationship in each fishery to be used as a basis for common comparisons.)

Preliminary data collected by DFO (although incomplete) indicate that the marginal value of one additional fish to the sport fishery is significantly higher than an additional fish to the commercial fishery. Estimates of the net industry value for commercial caught fish in 1982 (marginal value) are $18.11 for Chinook and $9.34 for Coho. These values compare to the 1982 marginal value of a salmon (Chinook or Coho) caught in the sport fishery of $22.60 to $28.25 per salmon (DFO 1984A, p. 5) (see Appendix 1). It is possible that an economically optimal solution is the elimination of the commercial Chinook fishery in

Georgia Strait.

Pearse (1982, p. 190) stresses the need for the development of a reliable information system to assist managers in formulating effective management decisions. This need includes studies on the relationship between quantity of fish and value of a fishing day in the recreational sport fishery. Variables important to this relation include the size, quantity and species of fish caught as well as the effect of crowding on overall value.

The government policy of open access in the sport fishery is based on the premise of the citizens' right to access the resource. However, this open access philosophy has profound implications in future resource valuation. Copes and Knetsch (1981, p. 563) state that:

> Usage levels will relate to the aggregate net value of a sport fishery in three significant ways. The higher the level of participation in the fishery, the greater the number of person-days of enjoyment taken, which will add to the aggregate net value of the fishery. On the other hand, the higher the number of participants, the greater the degree of crowding at the recreational site, which will tend to diminish the net value of each person-day of sport fishing. Also, the greater the extent of participation, the heavier the pressure on the fish stock and the lower the catch per person-day, which again will tend to diminish the net value of each person-day of fishing.

Given the declining trends in Fraser River Chinook stocks this last point may be of critical importance.

Various approaches can be taken to further regulate the sport fishery. Options include: increased severity of biological regulations, either through lowering of individual catch ceilings, or reducing efficiencies by gear restrictions or area closures; limiting participation of the fishery through economic regulations, via a more expensive licensing scheme and/or by imposing a fee per fish caught; combining some form of biological and economic regulation management plan. The implications of each scheme are discussed later in the paper.

5.7 RECREATIONAL FISHERIES MANAGEMENT: WHAT ARE THE IMPORTANT CONSIDERATIONS?

Much has been written on the management of marine recreational fisheries. Most articles have viewed sportfishing from an outdoor recreation perspective[16], although more recently there have been attempts to integrate recreational and commercial fisheries management objectives[17].

Irrespective of the approach taken, it is important to realize that differences do exist between inputs to and outputs from commercial and recreational fisheries. In commercial fisheries the end product is fish for consumers. In recreational fisheries the end product is fishing, which includes the catching of fish plus related outdoor experiences. The individual is simultaneously a producer and a consumer with utility, or satisfaction, depending both on user-days and fish caught.

While the demand for sportfishing has been increasing, there has been an overall decrease in the availability of high quality fishing. Factors contributing to this decline include increased fishing pressure and loss of prime fresh water habitat. Enhancement, in the form of

hatcheries and habitat restoration programs, is now frequently adopted by DFO to aid in the recovery of depressed stocks. The high cost associated with the current production and administration of salmon make it essential for resource planners and managers to calculate the economic benefits associated with fish production (DFO 1983, p. 5). As mentioned previously, not only must the value of a user day[18] be known, but also how this value changes with the increase in the density of fishermen and the number, size and species of fish caught.

5.7.1 The Valuation of Marine Recreational Fishing

The question of the monetary value of a marine recreational fishery is a controversial issue. Much of the disputation surrounding the issue stems from uncertainty over what is the appropriate measure of value. To be of use to decision-makers concerned with allocating salmon between competing user groups, sport fishing values should be comparable to values generated for the commercial fisheries.

Recreational fishing, aside from a minimal entry fee in the form of a licence, does not have a registered value in the market place. Under a policy of zero pricing it is necessary to calculate through indirect means the theoretical value of the "good" or fishing day[19] This is the direct or primary benefit which accrues to the angler (minus licence fees) and is the consumer surplus generated by sportfishing. Consumer surplus is relevant only when the anglers are residents of Canada. Consumer surplus enjoyed by non-residents is not a primary benefit. Licence fees are also included as primary benefits to the national government.

There is a second category of benefits attributable to recreational fishing: the net economic gain Canada derives from non-resident anglers' spending on goods and services associated with sport fishing. This is the net value to Canadians of the money spent by non-resident fishermen, which would not be spent in Canada if no sport fishing opportunities existed for non-residents[20].

Using the two kinds of values described above, namely the direct or primary benefit captured by the angler (consumer surplus) and the state (licence revenues), and the net value of tourist spending on goods and services associated with sport fishing, the federal government has attempted to calculate the total benefits derived from tidal water sport fishing in British Columbia. The total benefit of the fishery to Canadians was estimated to be between $29 million and $36 million in 1982 based on a value of $20-$25 per user-day combined with $1.76 million collected for sport licence fees. The total tourist benefits generated by non-resident anglers was estimated at $2 million based on analysis of a survey of visiting anglers which indicated the approximate net value of expenditures of anglers from outside Canada. Hence the total value of the 1982 tidal sport fishery sums to between $31 million and $38 million[21]. (DFO, 1984A, p. 3-4).

Much of the confusion over the value of tidal water fishing stems from the misuse of secondary benefits in calculating economic gains to Canadians. Expenditures by residents for goods and services associated with tidal water fishing are considered a secondary benefit. While these expenditures may be important on a regional basis, particularly when expenditures would be made outside of the region in the

absence of sport fishing opportunities, they are not net additions to the national economy since the money would be spent on other goods and services if not on those associated with sport fishing. Knetsch and Davis (1966, p. 128) point out that public good externalities arising from (gross) recreational expenditures are gross overstatements of the real values derived from the production of the recreational services.

To summarize[22] this argument, two points should be stressed:

1. the most relevant economic measure of the value of a user-day is the willingness to pay by fishermen for a day of fishing;
2. willingness to pay values are comparable to net economic values established for other commodities[23].

5.7.2 Willingness to Pay Valuations, Strengths and Weaknesses

The use of willingness to pay in the valuation of recreational fisheries serves two primary functions: it establishes the relationship between the aggregate components of the demand function and net benefits, plus it permits the use of the principles of welfare economics. If the net benefits of a particular allocation decision are positive, the amount the users are willing to pay for a given catch of Chinook or Coho salmon exceeds the social cost of providing the resource. Taking this line of reasoning to the conclusion espoused in welfare economics, the users can then pay off (in theory) all who suffer in any way from the resource allocation decision. This includes commercial user groups who want the salmon for their own use[24].

There are two basic methods commonly used to determine willingness to pay values: the travel cost method and the survey technique. The travel cost method is not appropriate to use for the Georgia Strait fishery. This is due to the large number of access sites and heavy concentration of users around the Vancouver area. Both factors make it difficult to arrive at accurate travel cost demand curves. This leaves the survey technique the most appropriate for the Georgia Strait fishery. Knetsch and Davis (1966, p. 131-132) state that reasonable values can be generated. The authors stress that the less hypothetical the questions the more stable and reliable the results. Also, the consumer should be a current user of the resource. This generates a value of effective demand as opposed to option or potential demand.

There are two types of values which can be generated under the heading of willingness to pay. The difference revolves around the issue or rights. McConnell and Norton (1976, p. 15) define the two values:

1. "equivalent variation - the maximum sum of money an individual would pay for the right to use a resource if he did not already have it; and
2. compensating variation - the minimum sum of money the consumer would have to be paid to relinquish the right to use a resource he already has."

A common feeling is that compensating variation is the appropriate measure when access rights to a resource are lost, and equivalent variation when new access rights to a resource are demanded. The case of a recreational fishery lobbying for increased allocation at the expense of a commercial fishery does not

fall directly into either category. It will be argued later that equivalent variation is the appropriate measure for a number of reasons.

The differences between these two values can be very large. Knetsch (personal communication) is aware of studies where the willingness to sell versus willingness to pay ratio ranges from 2 to 20. One possible reason for the observed difference is that income constraints are present for equivalent variation and not for compensating variation[25]. Additional biases may be present, which also help to explain the observed differences. If a respondent speculates that he may actually have to pay under an equivalent variation scenario, his response may undervalue his actual willingness to pay. Contrarily, if a respondent perceives that he may actually be compensated under a compensating variation option he might overstate the true value of the resource (Russell, 1982, p. 560). Russell concludes that survey responses to compensating variation responses are likely to be worthless in benefit estimation and so recommends equivalent variation as a more reliable indicator of true value. It should be noted that another possibility of bias exists under an equivalent variation survey. If a respondent does not believe that he will have to pay for access to a resource, the temptation exists to overstate the true value thereby maximizing potential allocative benefits if resource allocation between competing user groups is to be based on maximizing primary benefits to society. A final note of caution is sounded by McConnell (1980, p. 390) who states that when dealing with congested sites the consumer surplus of a given trip to a specific site decreases as the number of people using the site increases. Hence, willingness to pay values must be continually revalued if the density of resource users changes, or if the quantity and/or size of fish being caught change.

From a theoretical perspective one can conclude that equivalent variation is the appropriate measure to use in allocating scarce fishery resources. Firstly, additional allocations to the recreational fishermen are coming at the expense of the commercial sector. The increase in allocation is not based on historical catch share but on increasing demand. Secondly, to maintain historical catch levels the federal government is spending large sums of money on enhancement programs. The traditional argument of the fish being "there for the catching" without cost no longer holds. It does not seem logical that fishermen should be compensated for lack of access to fish which would not be produced except for expensive government enhancement programs.

5.8 OPTIONS AVAILABLE FOR IMPROVING FUTURE MANAGEMENT OF THE GEORGIA STRAIT SPORT FISHERY

An extension of the traditional North American management philosophy towards recreational sport fisheries is offered by Bryan (1982, p. 22):

> Ultimately 'good management' can be defined as giving people what they want to the extent the ecosystem can support it, substituting settings and activities for those who will tolerate it when there is a resource shortage, and offering a logical and consistent management rationale that the public can appreciate and understand - regardless of whether they get what they want.

While the need to sensitize public resource users to management objectives aimed at sharing and protecting the resource is evident, there are inadequacies in the statement. Bryan's approach to recreational fisheries management does not stress the need to evaluate the "best use" of the resource. For instance, there are externalities associated with crowding and overuse of recreational fishing grounds. These diseconomies may result in a suboptimal use of the salmon resource.

Government policy has not attempted to maximize returns from sportfishing, allowing the benefits to accrue to anglers, with general taxpayers funding management costs. Pearse (1982, p. 191) explains that this can be justified on sociopolitical grounds, but I question whether this will result in equitable use of the resource in the future. With free access granted to sportfishermen future demand will continue to increase. The question becomes, who will benefit from resource allocation decisions and who will pay the associated costs?

Given the current Chinook catch ceiling imposed on the Georgia Strait fishery, and the trend of increasing sport catch over time, it is likely that future supply will fail to satisfy demand in the inside sport fishery. A likely scenario will be the sportfishing lobbyists attempting to raise the catch ceiling on Chinook above 275,000. The government may attempt to meet these demands through the construction of new enhancement facilities. Two points should be considered by managers when contemplating future enhancement: increased harvest pressures on enhanced stocks can stress comigrating wild stocks (the very stocks managers are now concerned about), and there is potential for inequitable distribution of the benefits arising from expensive enhancement facilities. The implications of the latter point will briefly be discussed.

In the British Columbia tidal water sport fishery approximately 25 percent of the fishermen catch 75 percent of the fish, and 10 percent take roughly one-half of the catch (Figure 4). These few fishermen would reap the benefits of the capital expenditures required to increase Chinook production. Hilborn (1984, p. 24) found that the sportfishermen who lead the strong opposition against severe regulatory restrictions are most likely to be impacted by imposition of catch quotas. Government policy-makers must override the demands of lobbyists and institute some fundamental changes in future management policies.

Two aspects of the Georgia Strait sport fishery which managers will have to deal with in the future are the questions of access and equitable distribution of catch. The issue of access involves two basic choices: continuing to allow a greater number of people to participate, which would reduce the quality of the fishing experience for each due to congestion and reduced catches per unit of fishing effort; controlling the total pressure on stocks by limiting the number of fishermen, resulting in a smaller number enjoying a more valuable fishing opportunity (Pearse 1982, p. 192). These issues can be addressed through the application of biological regulations, economic regulations or a combination of both.

5.8.1 Biological Regulation of the Georgia Strait Sport Fishery

Fisheries resources in Canada have been widely regarded as a public good, a heritage which has incorporated the tenets of

non-exclusion and non-payment[26], with the exception of nominal licence fees brought in with the 1981 licensing schemes. The sport fishing licence by itself is not an effective harvest control mechanism since it is not area specific and does not permit managers to monitor or restrict in-season catch. Hence, managers may augment the licence with management tools such as gear, area, time, and bag limit restrictions to control catch levels (Loftus 1980, p. 5), or by increasing the minimum size of legal capture.

Gear restrictions can be used to reduce the efficiency of sport fishermen in catching fish. Regulations could include limiting the use of downriggers, banning the use of live bait for mooching, outlawing barbed hooks and many others. Area closures could prohibit access to nursery areas and to areas where migrating adult stocks are highly vulnerable to interception. Time closures have already been proposed, such as a six month winter closure throughout the Georgia Strait area. Finally, more stringent bag limits could be established. Severe restrictions of one Chinook per day and five per year may be required to significantly reduce sport harvest of Chinook. To date, attempts to bring in severe cut-backs in catch have been strongly opposed by the sportfishing lobby (Hilborn 1984, p. 24).

Through a combination of some of the regulatory mechanisms discussed above it is likely that catch levels in the sport fishery could be reduced to conform with the new treaty requirements. However, there are some serious problems with this approach. It does not address the negative effects of crowding on the value of a sportfishing user-day. If the number of participants are allowed to increase indefinitely, the social value of the fishery may decline. Severe restrictions may also reduce the willingness to pay by outlawing preferred methods of angling or prohibiting access to the "highest value" fishing areas.

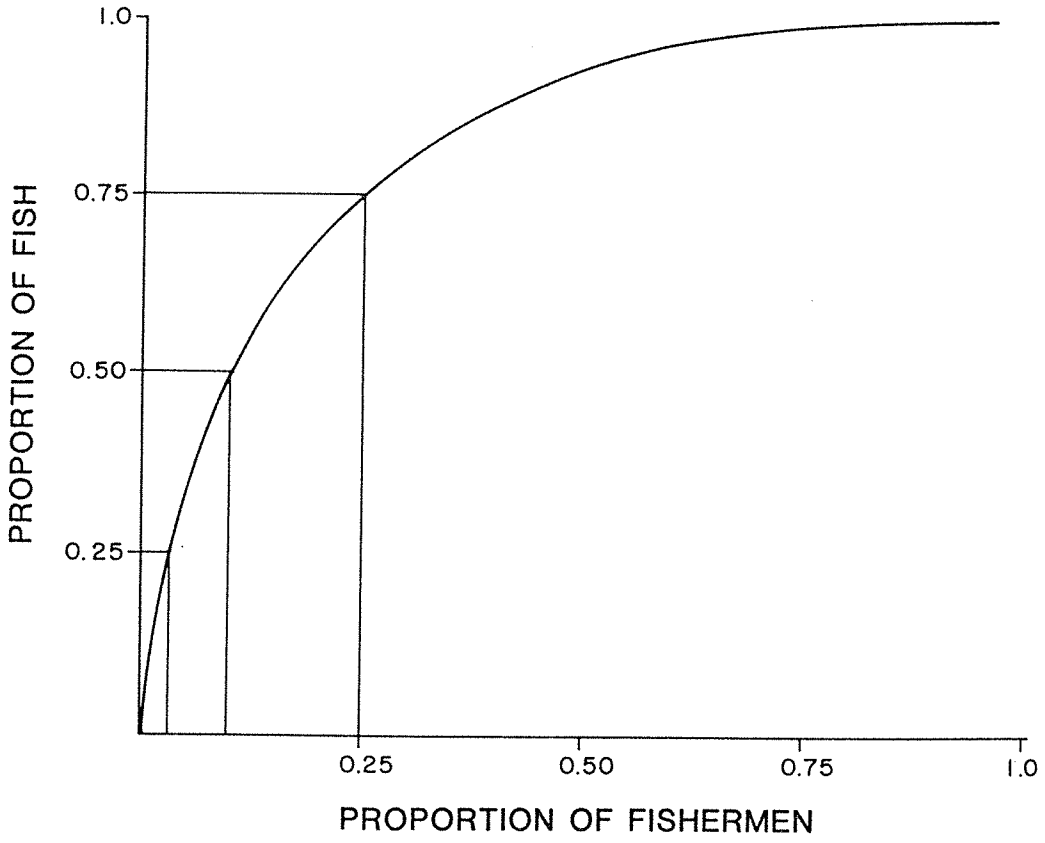
In conclusion, the goal of maximizing the social benefits associated with sportfishing may not be met through a heavily regulated, open access fishery. Copes (1972) discusses the need for rationalized management in the commercial fishing sector to improve benefits to society from the resource. Similar attempts should be made to optimize the sport fishery. While consumer demand curves can be generated using willingness to pay surveys, and optimal allocation determined, information gathered using indirect valuation techniques has the potential for large biases. There is another problem with the virtually free access currently enjoyed by tidal water fishermen. DFO enhancement funds going to increase Chinook and Coho production are benefiting sportfishermen. One of the conditions initially attached to salmonid enhancement funding was that the cost of the program was to be recovered from the direct beneficiaries (Loftus 1980, p. iii). It is doubtful that this directive is being achieved with current revenues obtained from marine fishing licences.

5.8.2 Economic Regulation of the Georgia Strait Sport Fishery

It is no longer the case that fisheries resources can be considered a "free gift of nature." The administrative costs of regulating fisheries has become a major expense. Foregone opportunity costs in maintaining freshwater habitats are significant; enhancement costs involved in stream rehabilitation and hatchery production are high.

Figure 4

Catch Distribution in the British Columbia Sport Fishery
(From Hilborn, 1984)



Further "expenses" are involved in offering free, unlimited access into the tidal sport fishery, such as externalities associated with crowding and overexploitation of the resource. A price system could provide a valuable tool in assisting managers to allocate fish stocks in an economically expedient fashion. Cauvin (1980, p. 1326) states that:

> the importance of pricing fisheries resources is twofold. First, it provides a price control on the demand for fisheries resources and makes the recreational fisherman aware of the costs of providing recreational benefits... Second, by pricing the provision of recreational resources at their economic cost, the recreational fishermen, in expressing his evaluation of the benefits he receives... provides signals of whether the provision of recreational benefits should be expanded or contracted.

There are three problems that have prevented the large scale institution of pricing systems in North American sport fisheries: the strong public sentiment regarding an inherent right to free access to

sport fisheries; a fear that removal of non-priced fisheries resources would restrict access to the fisheries to the wealthy; the difficulty of instituting an equitable pricing system without dissipating all the benefits via transaction costs, namely the costs of fee collection and enforcement.

There are a variety of economic measures which could be applied to the tidal water sport fishery to curb access and to help improve the equity of catch distribution among sport fishermen. Quantifying the effect the economic measures will have on the above is difficult since no current data exist outside of willingness to pay values, which are subject to many biases as previously discussed. Hence, the price elasticity of demand for sportfishing would have to be established from data obtained through the implementation procedures.

The most frequently proposed measures for pricing tidal water sport fisheries include angler licences, punchcards, fish tags and boat licences. Angler licences already exist in the Georgia Strait sport fishery. They provide valuable information on the number and geographic distribution of anglers, and they permit survey sampling to ascertain detailed catch and effort patterns of individual anglers. This information is a prerequisite to sound management of the Georgia Strait fishery.

Licences at their current price do not regulate access into the fishery, nor do they influence user group catch distributions. However, licences could be raised to capture a larger share of the consumer surplus associated with sportfishing and perform a regulatory function at the same time. For instance, if licence fees were raised to $20 per year it would cause anglers with low marginal values for fishing to discontinue sport fishing in tidal waters. Licences would still not be effective harvest control mechanisms without additional regulatory aids since they do not impose catch limits, nor do they allow for species specific management.

The personal licence can be used in conjunction with a punchcard or tag system to expand management control over the sport fishery. Under the proposed 1985 regulations for the British Columbia tidal water sport fishery the licence/punchcard will entitle an angler to an annual catch of 20 Chinook salmon. This system has the potential to combine both economic and biological regulatory systems, although unless licence fees are raised they will not deter entry into the fishery.

The major advantage of having punchcards, in addition to licences, is that they impose a catch ceiling on Chinook. They also provide the fishery manager with more accurate information on the number, species, date and area of catch, than do methods which rely on angler memory (Loftus 1980, p. 10). There are three major disadvantages: few fishermen catch 20 Chinook per year, hence it will have only limited impact on total catch; it is discriminatory since an angler catching 20 Chinook pays the same fee as a fisherman who fails to catch a Chinook; it is difficult to verify that landed salmon are "punched" on the card.

Pearse (1982, p. 194) points out that a licence/tag[27] combination is a better means of regulating catch than the licence/punchcard system. Fish tags are both more flexible (in terms of regulating catch), and being visible, they promote better compliance. The tags provide all sportfishermen with an equal opportunity to catch salmon, and ensure that individual fishermen will pay in proportion to their extractive use of the resource. The

tags can be applied as a purely economic regulatory tool, allowing individual fishermen to purchase tags until the marginal costs and benefits associated with the angling opportunities balance. Conversely, a licence tag system can be combined with biological control mechanisms to give resource managers additional control over access to the salmon. Loftus (1980, p. 8) suggests that if the price of a licence recovered the general sport fishery management costs, while the salmon tags captured the incremental costs associated with fish harvest and enhancement, the system would be reasonably equitable.

The major disadvantages associated with fish tags are the potential for relatively large transaction costs associated with the administration of their production and sale, and the policing of angler compliance with their proper use. Pearse (1982, p. 194) outlines a scheme requiring minimal administrative infrastructure. The plan includes interlicence transferability of tags which he claims is a major cost reducing feature.

Boat licences would require anglers to obtain a licence for their vessel to allow them to fish in tidal waters. The annual fee could be determined by the length of the vessel, whether it is privately owned, chartered or rented (Loftus 1980, p. 10). High fee schedules could be set for non-resident anglers. This system could be used to generate revenue to defer management and enhancement costs and to limit access to the fishery. However, it would not be as equitable as a licence/tag system in distributing incremental harvest costs, and it could not be used to impose catch ceilings as both the punchcard and tag systems allow.

5.9 RECOMMENDED POLICY FOR MANAGEMENT OF THE GEORGIA STRAIT SPORT FISHERY

With the 275,000 catch limit of Chinook in Georgia Strait, there is a pressing need for fishery managers to confront the allocation issue between commercial trollers and sport fishermen and to update the regulation of the sport fishery. The 1984 preliminary Chinook catch estimates are 94,000 for commercial trollers and 396,000 for sportfishermen. 1984 appears to have been an exceptional year for Chinook salmon survival, hence the large catch. Even so, there is a distinct possibility that future Georgia Strait catches will exceed the 275,000 catch limitation now in place. It is imperative that regulations are drafted before the start of the 1985 season to ensure compliance with the new West Coast Fish Treaty.

Commercial/sport allocation of Chinook salmon is a contentious issue. Due to the longstanding tradition of non-priced tidal water sport fisheries in British Columbia, no market data are available to accurately assess the marginal value of sport-caught Chinook. Estimates are further complicated by the need to relate user-day values (indirectly valued) to incremental changes in availability of Chinook salmon. Demand curve data for the 1982 sport fishery were compiled by DFO. While the accuracy of the data is questionable, they do indicate a higher marginal value of sport caught salmon versus commercially caught salmon (DFO 1984A, p. 5). Given that the demand for Chinook in the 1984 sport fishery was not saturated at a seasonal catch level exceeding the 1985 catch ceiling, and that the marginal value of sport caught fish appears to exceed the marginal value in the commercial sector, there is justification for allocating the entire

Georgia Strait catch quota of Chinook to the sport fishery. This would maximize the net primary benefits of the resource to Canadians. However, while fishing for other salmon species, commercial trollers will incidentally hook some Chinook salmon. Argue et al. (1983, p. 41) state that the survivalship of salmon released after capture in a commercial troll fishery may be as low as 50 percent. Since a large percentage of incidentally caught Chinook salmon die after release, the benefits of landing the fish will likely exceed the potential future benefits obtained by releasing the fish, even though the marginal values of fish to the commercial sector are lower than those to the sport fishery. The problem of "shaker" mortality in the commercial troll fleet can be alleviated by allocating only 250,000 Chinook to the sport fishery and the remaining 25,000 to the Georgia Strait commercial troll fishery, to be taken in the form of incidental catch. The incentive of troll fishermen to target on Chinook stocks can be curbed by introducing area closures if the daily catch of Chinook exceeds some specified number.

Many people have expressed the opinion that those benefiting in a resource allocation decision should compensate the losers. In this case commercial trollers could be compensated for loss of access to Chinook stocks. A reasonable amount of the payment would be the net present value of the future stream of Chinook catches foregone by the trollers. Commercial trollers should also receive priority in any buy-back plan instituted by the government. This would allow the sport allocation of Coho salmon to increase in the future, thereby giving fishery managers increased flexibility in regulating the resource.

Many inside troll fishermen live in small coastal communities. There is concern that by prohibiting the trollers from fishing Chinook stocks, severe economic impacts will be felt by the fishermen and their home communities. These impacts can be mitigated through payment, as mentioned above. Other forms of tradeoff can also occur, such as allowing the trollers increased fishing time on Sockeye and pink salmon stocks. It should also be remembered that inside troll fishermen have the opportunity to apply for an outside licence which would allow them to access stocks off the west coast of Vancouver Island.

In the event of the government deciding to buy-out the inside troll fleet, as part of the commercial fishery rationalization program advocated by Pearse, would coastal fishing communities suffer? The answer would appear to be no, since these communities are adjacent to prime fishing grounds and already support recreational fisheries. The increased numbers of Chinook and Coho salmon available to the sport fishery will likely have long-term benefits for regional tourism. Since there are large gross expenditures associated with recreational sport fisheries, local communities should not suffer adverse affects from a buy-back of the inside troll fleet. This is corroborated by information collected by DFO on jobs created in the commercial versus sport fishing industries.

> The commercial industry, which accounts for 92 percent of the salmon catch, accounts for 84 percent of the primary and secondary employment impact of the salmon fishery, or an impact of 582 jobs per million salmon caught in 1982. The sport fishery, which accounts for four[28] percent of the salmon catch, accounts for 13

percent of the employment impacts of the salmon fishery or an impact of 2,150 jobs per million salmon based on 800,000 salmon caught in 1982 (DFO 1984A, p. 6).

Regulation of the Georgia Strait sport fishery must be improved. A primary reason is that under the current regulatory system sport harvest is not being controlled in a way which will ensure compliance with the new treaty requirements. A secondary reason is that there is currently no reliable estimate of the true value of the recreational sport fishery in Georgia Strait. Due to the severe limitations and potential biases existing in willingness to pay valuations, as outlined previously, it is difficult to determine the optimal allocation of fish to the sport fishery. Related to this is the problem of sportfishermen not paying for benefits derived from the salmonid enhancement program. If future harvest levels of Chinook and Coho salmon are allowed to increase, a result of larger stocks of salmon being generated through enhancement projects, sportfishermen should be expected to pay for their share of the benefits.

A combination of a licence/tag system for the sport fishery, with tags being required for both Chinook and Coho salmon, would be an effective management tool. It would allow managers to set optimal season catch quotas (250,000 for Chinook and a level for Coho which managers feel allows for adequate escapement), and also allow for the establishment of a market system to achieve these quotas. Coho should be included since recent information suggests that many Coho stocks, like Chinook, are in urgent need of conservation (Pearse 1982, p. 193).

Regulations aimed at limiting daily effort (two Chinook and a maximum of four salmon per day with a two-day possession limit) and restricting minimum capture size (18 inches) should be retained. It is important to limit daily effort to ensure that annual catch ceilings are not surpassed during the summer tourist season when large gross expenditures, important to regional economics, are made. However, the licence/tag system is not amenable to individual catch quotas on an annual basis. The market price for licences and tags is used to attempt to limit annual catch of the sport fleet. Individual fishermen may purchase tags until the marginal benefits associated with catching fish equal the marginal cost of purchasing additional tags.

There are two reasons for imposing a user-pays management plan on the Georgia Strait sport fishery: to reduce harvest pressures on Chinook and Coho stocks and to maximize the net social benefits accruing from the resource. Under an open access sport fishery user demand will be high and large amounts of potential consumer surplus will be lost due to the external diseconomics of crowding and overharvest (see Figure 5). Copes and Knetsch (1981, p. 565) point out that by restricting access to a sport fishery, via fee collection or some other method, the public management authority can maximize social benefits from the fishery (see Figure 6).

To assist managers in meeting the objectives outlined by Copes and Knetsch (1981), a two-price system for licences and tags should be adopted, with higher prices charged to non-residents for both licences and tags. The reason for the two-price system is to allow consumer surplus to accrue to resident fishermen, but to capture the surplus from non-resident anglers. Charterboat owners, although commercial entrepreneurs, should not be singled

Figure 5

Recreational Fishery Benefits Under an Open Access Management Plan
(From Copes and Knetsch, 1981)

In Figure 5 it is assumed that the regulatory agency does not collect revenue from the users and therefore manages the Fishery at a loss due to the presence of social maintenance costs (CDBO). While sports fishermen do capture benefits in the form of consumer surplus, the diagram shows there are mutually imposed losses due to crowding and reduced catch per unit of fishing effort expended by fishermen. Hence, potential consumer surplus to the fishermen (ABO) is reduced by the social cost of crowding (CED).

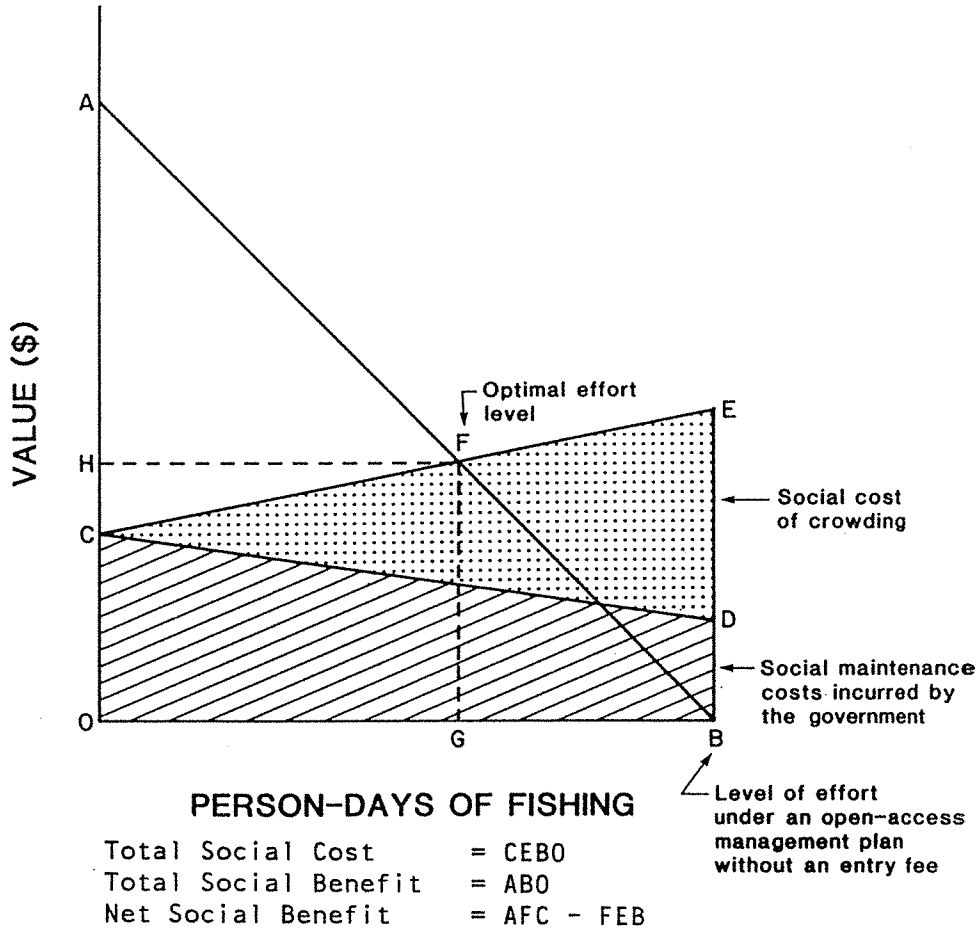
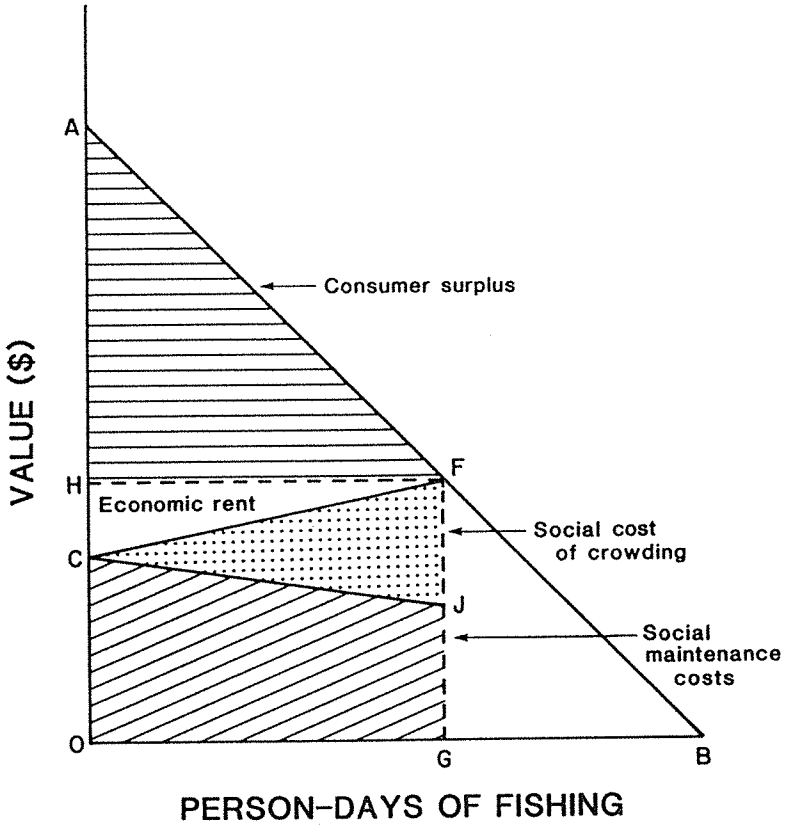


Figure 6

Recreational Fishery Benefits Under a Government Management Plan Aimed at Maximizing Net Social Benefits
(Adapted from Copes and Knetsch, 1981)

In Figure 6 it is assumed that the demand curve (AB) of sports fishermen is known, and when an access fee (FG) is charged by the regulatory agency the person-days of fishing are reduced from (OB) to (OG) thereby maximizing net social benefits. The fee allows for a total revenue (HFGO) to be collected, and subtracting public expenses (CJGO) the agency is left with an economic rent of (HFJC). In addition, benefits accruing to society include a significant amount of consumer surplus calculated by subtracting the social cost of crowding and stock reduction (CFJ) from the area (AFH).



Total Social Cost = CFGO
Total Social Benefit = AFGO
Net Social Benefit = AFC Where: AFH-CFJ = Consumer Surplus
HFCJ = Economic Rent

out for specific regulation. As long as customers on charter vessels are properly licensed and abide by all regulations, the government will receive the appropriate value for fish caught on the charter.

DFO should set licence fees at levels which cover the administrative costs associated with sport fishery management, including transfer costs arising from the administration of the salmon tag program. Tag fees for Chinook and Coho[29] should cover the marginal costs of enhancement and stock rehabilitation associated with sport fishery removals. Revenues could also be used to compensate commercial trollers for opportunity costs associated with exclusion from the Chinook fishery.

One problem with setting licence and tag fees based on the above criteria is the lack of data to assess costs. If resident licence fees were set at $20 this should leave a significant consumer surplus even for occassional fishermen (based on DFO 1982 estimates which place average willingness to pay estimates at between $20 to $25 per day). Similarly, it is hard to establish a payment schedule for tags. If the objective is to encourage catch up to the quota levels, over the 12 month season, a valuable piece of information would be the price elasticity of demand for both Chinook and Coho. This information may be forthcoming after the licence/tag program is in operation for a few years.

If we assume that 250,000 tidal water licences would be sold at $20 per licence (down from approximately 300,000 in 1982 (DFO 1984A, p.1)), and catches of 250,000 Chinook at $4 per tag and 500,000 Coho at $2 per tag were made, the revenue to the government would be $7 million. Research is needed to determine if this would achieve the objectives of covering the administrative and enhancement costs attributable to the fishery.

The value of the sport fishery will of course be much higher than $7 million. There is the additional revenue collected from higher non-resident licence fees, the net profits associated with tourist expenditures and any consumer surplus retained by Canadian fishermen. This consumer surplus will be a significant amount for ardent fishermen who place a high value on the resource. Finally, there is the net profit from the expenditures made by resident fishermen who, if they could not fish, might spend their money out of the country on "exotic" vacations.

Simple plastic tags, as recommended by Pearse (1982, p. 194) should be used. Separate tags will be required for Chinook and Coho if lower tag fees for Coho are implemented as suggested. Tags should be transferable between licences to simplify the administrative complexities of the plan.

Regulations should require that tags be applied immediately after a fish is landed, with fines imposed if violations are observed. The level of the fines should serve as a compelling deterrent to fishermen who might be inclined to "cheat" the system. One of the strengths of the tag system is the ease with which catch can be monitored for the presence of tags, but without the imposition of fines on offenders there is no incentive for individuals to comply with tagging requirements. Finally, upgraded surveillance and monitoring at landing sites would be required to improve data collection and enforce compliance with regulations.

Ideally, the sport fishery will remain open 12 months per year, thus minimizing economic impacts on resort owners who remain open during winter months. However, if summer

catches are excessive winter closures may be necessary. A decision in future years would have to be made to either increase the licence/tag fee structure or to impose more severe regulatory effort controls, such as a reduction in the daily catch quota, or to live with the winter closures.

Attempts to legislate changes in sport fishery regulations will be criticized as being an unfair burden on fishermen from low income groups. Perhaps the question should be rephrased: who benefits from providing access to tidal water fisheries for nominal fees? Cauvin (1980, p. 1324) refers to research by Tucker (1973), who found that average sport fishermen belong to the middle-to-high income groups. Even with a large increase in licence fees to $20 and individually priced tags, the annual fee to a sportfisherman is not unreasonable considering the expenditures required to participate in the westcoast salmon fishery. Travel costs, equipment and/or rental expenses preclude low income groups from salt water fishing trips even under a non-priced system.

5.10 CONCLUSION

In conclusion, the problems associated with unlimited access to the fishery and achieving a more equitable distribution of the resource, and associated costs and benefits, are addressed by using a licence/tag entry system for the recreational fishery. Therefore, the positive aspects outweigh the disbenefits. Market pricing is a necessary, if painful, step towards protecting both the resource and the sport fishery from the external diseconomics associated with overuse.

NOTES

[1] Argue et al., 1983, p. 2.

[2] Pearse, 1982.

[3] Pearse, 1982, p. 228.

[4] Argue et al., 1983, p. 15.

[5] DFO, 1984A, p. 2.

[6] Argue, et al., 1983, p. 13.

[7] DFO, 1984B, p. 9. Landings referenced from this report are preliminary figures subject to change.

[8] Fraser, et al., 1982, p. 49.

[9] Argue, et al., 1983, p. 11.

[10] DFO, 1984B, p. 11.

[11] Argue, et al., 1982, p. 11.

[12] The tidal water sport licence includes a punchcard restricting the seasonal catch of Chinook salmon to 30. The current licence fee is $5.00 for residents of Canada and is $15.00 for non-residents.

[13] DFO, 1984B, p. 11.

[14] DFO, 1984B, p. 11.

[15] DFO, 1984A, p. 2.

[16] Brown, et al., 1964; Gordon, et al., 1973; McConnell and Norton 1976; and Cauvin, 1980.

[17] Rothschild, et al., 1977; McConnell and Sutinen, 1979; Copes and Knetsch, 1981; and DFO 1983.

[18] Value of a user-day as it is referred to here is synonomous with willingness to pay values.

[19] Pearse and Bowden, 1971, p. 26.

[20] Pearse and Bowden, 1971, p. 24.

[21] These figures are rough approximations since the detailed information needed to accurately value recreational fishing is absent.

[22] While there are other methods for estimating recreation benefits not discussed here, I consider willingness to pay the most appropriate measure of non-priced resources. Refer to Knetsch and Davis (1966), Clawson and Knetsch (1966), and McConnell and Norton (1976) for more complete discussions.

[23] Knetsch and Davis, 1966, p. 126.

[24] McConnell and Norton, 1976, p. 14.

[25] McConnell and Norton, 1976, p. 15.

[26] There are notable exceptions to this in New Brunswick and Quebec (Tuomi, 1981, p. 3).

[27] The licence allows an angler to fish but separate tags must be purchased for each salmon caught. Immediately upon landing a salmon a tag must be applied.

[28] Since the recreational fishery comprises a relatively minor component of total salmon landings in British Columbia, restricting access of commercial trollers to Georgia Strait Chinook stocks should not have a

significant impact on the price or quantity of fish available to consumers wanting to purchase fresh salmon.

[29] Lower fees and a higher total allowable catch could be established for Coho.

BIBLIOGRAPHY

Anderson, L.G. "Estimating the Benefits of Recreation Under Conditions of Congestion: Comments and Extension." Journal of Environmental Economical Management. Vol. 7, 1976. pp. 401-406.

Argue, A.W., R. Hilborn, R.M. Peterman, M.J. Staley, and C.J. Walters. "Strait of Georgia Chinook and Coho Fishery." Canadian Bulletin of Fish and Aquatic Sciences. Vol. 211, 1983. (91 pages).

Brown, W.G., A. Singh and E.N. Castle. "An Economic Evaluation of the Oregon Salmon and Steelhead Sport Fishery." Agriculture Experimental Station, Oregon State University, Corvallis. Technical Bulletin 78, 1964. (47 pages).

Bryan, H. "A Social Science Perspective for Managing Recreational Conflict," pp. 15-22 in R.H. Stroud (ed.) Marine Recreational Fisheries. Sport Fishing Institute, Washington. 1982.

Cauvin, D. "The Valuation of Recreational Fisheries. Canadian Journal of Fishing and Aquatic Sciences. Vol. 37, 1980. pp. 1321-1327.

Clawson, M. and J.L. Knetsch. Economics of Outdoor Recreation. John Hopkins University, Baltimore, Maryland, U.S.A. 1966. (328 pages).

Copes, P. "Factor Rents, Sole Ownership and the Optimum Level of Fisheries Exploitation." The Manchester School, Vol. 40, 1972. pp. 145-163.

Copes, P. and J.L. Knetsch. "Recreational Fisheries Analysis: Management Modes and Benefit Implications." Canadian Journal of Fishing and Aquatic Sciences. Vol 38, 1981. pp. 559-570.

Department of Fisheries and Oceans. "An Introduction to the Economics of Recreational Fisheries Management." Economics Co-ordinating Committee, Pacific and Freshwater Fisheries, DFO, 1983. p. 34.

Department of Fisheries and Oceans. "Recreational Fishery Initiatives," Unpublished Manuscript, DFO, 1984A. (6 pages).

Department of Fisheries and Oceans. DFO, Untitled, Unpublished Data Report. 1984B. (11 pages).

Fraser, F.J., P.J. Starr and A.Y. Fedorenko. "A Review of the Chinook and Coho Salmon of the Fraser River." Canadian Tech. Rep. Fishery and Aquatic Science, Vol. 1126. 1982. (130 pages).

Gordon, D., D.W. Chapman and T.C. Bjornn. "Economic Evaluation of Sport Fisheries - What Do They Mean?" Trans. American Fishing Society, Vol. 102. 1973. pp. 293-311.

Hilborn, R. "Fleet Dynamics and Individual Variation: Why Some People Catch More Fish Than Others." 1985 Stevenson Lecture, Report No. 15, 1984. p. 35.

Knetsch, J.L. and R.K. Davis. "Comparisons of Methods for Recreation Evaluation." in A.V. Kneese and S.C. Smith (eds.) Water Research. John Hopkins University, Baltimore, Maryland, U.S.A., 1966.

Larkin, P.A. "Some Observations on Models of Stock and Recruitment Relationships for Fishes." in B.B. Parish (ed.) Fish Stocks and Recruitment. Rapp. P-V Revn. Cons. Int. Explor. Mer., 1973.

Loftus, P.F. "The Impact of Cost Recovery Mechanisms on BC's Tidal Water Sport Fisheries." Unpublished M.A. Thesis, Simon Fraser University, April, 1980. (50 pages).

McConnell, K.E. "Valuing Congested Recreation Sites." Journal of Environmental and Economical Management, Vol. 7, 1980. pp. 389-394.

McConnell, K.E. and V.J. Norton. "An Economic Evaluation of Marine Recreational Fishing." in H. Clepper (ed.) Marine Recreational Fisheries. Sport Fishing Institute, Washington. 1976.

McConnell, K.E. and J.G. Sutinen. "Bioeconomic Models of Marine Recreational Fishing." Journal of Environmental and Economical Management. Vol. 6, 1979. pp. 127-139.

Masse, B. and M. James. "Comparison of Economic Values: Commercial and Sport Fisheries." Unpublished Manuscript, DFO, 1982. (12 pages).

Meyer, P.A. "Publicly Vested Values for Fish and Wildlife: Criteria in Economic Welfare and Interface with the Law." Land Economics. Vol. 55, 1979. pp. 223-235.

Morse, N.H. and A.G. DeWolf. "Options for the Management of the Atlantic Salmon Fisheries of the Saint John River, New Brunswick." Fish. and Marine Serv. Tech. Rep. 819, 1979. (57 pages).

Pearse, P. "Turning the Tide. A New Policy for Canada's Pacific Fisheries." The Commission on Pacific Fisheries Policy, Final Report, 1982. (292 pages).

Pearse-Bowden Economic Consultants. "The Value of Non-Resident Sport Fishing in British Columbia." B.C. Fish and Wildlife Branch, Victoria, B.C. 1970. (65 pages).

_____, "The Value of Fresh Water Sport Fishing in British Columbia." B.C. Fish and Wildlife Branch, Victoria, B.C. 1971. (60 pages).

Ricker, W.E. "Maximum Sustained Yields from Fluctuating Environments and Mixed Stocks." Journal of Fisheries Res. Board Canada. Vol. 15, No. 3, 1958. pp. 991-1066.

Rothschild, B.J., J.M. Gates and A.M. Carlson. "Management of Marine Recreational Fisheries." pp. 149-172, in H. Clepper (ed.) Marine Recreational Fisheries. Sport Fishing Institute, Washington. 1977.

Russell, C.S. "Publicly Vested Values for Fish and Wildlife: Comment. Land Economics. Vol. 58, pp. 559,562.

Stern, J.B. "Extended Jurisdiction and Marine Recreational Fisheries: A Canadian Perspective." pp. 191-196, in H. Clepper (ed.) Marine Recreational Fisheries. Sport Fishing Institute, Washington. 1977.

Stevens, J.B. "Measurement of Economic Values in Sport Fishing: An Economist's Views on Validity, Usefulness, and Propriety." Trans. Am. Fish. Society. Vol. 98, 1969. pp. 352-357.

Tucker, T.L. "Outdoor Recreation Efficiently Supplied Through Pricing." Canadian Forest Service, Great Lakes Forest Research Center, Sault Ste. Marie, Ontario. 1973.

Tuomi, A.L.W. "Fisheries Management Goals, Problems and Options." Paper presented at Expert Consultation on the Economic Evaluation of Sport and Commercial Fisheries in Europe, Gothenburg, September 22-24, 1975. Canada Department of Environment, Recreational Fisheries, Ottawa. 1975.

Tuomi, A.L.W. "Rationalized Theory for the Economic Management of Sport/Commercial Fisheries." Unpublished Manuscript, Economic Policy Branch, DFO, Ottawa. 1981. (30 pages).

APPENDIX 1

Information contained in the report (DFO 1984A) is an initial attempt by DFO to assess the data required to more effectively manage the marine recreational fishery and to assist in decisions regarding allocation of catch among competing user groups. It is pointed out in the report that information gathered from the Tidal Diary questionnaire, and on a number of willingness to pay surveys of tidal waters sportfishermen in British Columbia and elsewhere, is used to estimate total benefits of B.C. tidal water sportfishing. The basic data is used to estimate the marginal values of fish to the sport fishery by correlating sportfishing days (dependent variable) and a number of independent variables, including sport catch, to calculate the increase in angler days for each additional fish caught. Multiplying this increase in angler days by the value of an angler day (based on willingness to pay surveys) the marginal value of a sport caught salmon is calculated.

To calculate the marginal values of commercially caught salmon (variables include the landed value, wholesale value estimates and the costs at the primary and processing levels) the S.E.P. evaluation model is used. It is assumed that the marginal catching and processing costs approximate average costs and hence, net industry value per fish is used as the marginal value.

The marginal values generated in this report are intended only as working guidelines. Research continues in order to more accurately quantify the marginal values in each resource sector.

Energy Issues:

Natural Gas: Canadian Adaptation to North American Market Instability

Larry R. Pratt,
Department of Political Science,
University of Alberta.

6.1 INTRODUCTION

This paper is a study in the transnational management of industrial instability. Through an examination of Canada's export trade in natural gas with the United States, we wish to explore the effects of deregulation and changing market conditions in the American gas industry on upstream Canadian producers, pipeline companies and provincial governments. What interventions have the Canadian government and the producing provinces undertaken in response to market instability in the U.S., and how well have they understood the sources of this instability? For several years, Canadian gas producers and politicians have comforted one another with anodyne reassurances that the U.S. has merely been experiencing a temporary gas surplus or "bubble," and this is why Canadian exports fell to less than half of authorized levels after 1981. But the truth is that the American gas surplus is not the real issue. The fundamental fact about the American gas industry is that it is now undergoing an apparently irreversible transformation in structure: "a movement from administrative regulation to a competitive marketplace," to quote the enthusiastic chairman of the U.S. Federal Energy Regulation Commission[1]. This process of deregulation and increasing competition in the gas industry - an industry traditionally characterized by monopoly, close regulation and controlled prices - was initiated under President Carter and it has been advanced by the Reagan administration. While complete deregulation of natural gas markets in the United States is still some years away, the Americans are apparently moving from a system of monopolistic regulated stability to a far more competitive, market-oriented structure and the effects of this are already being felt in the U.S. from the burner-tip to the wellhead. The effects are also being felt in Canada where gas exporters and regulatory authorities have been understandably reluctant to modify long-standing practices of risk-minimization (such as "take or pay" agreements, explained below). Yet, unless Canadians wish to shut-in their gas and lose markets, they have little choice but to adapt to market instability in the U.S. Indeed, we will argue that, despite the formidable barriers to

pennies per thousand cubic feet, transported at an unknown cost by the pipelines, and sold in local markets for considerably more than the purchase cost. Local utilities which had long used relatively expensive "town gas" (gas manufactured from coal, oil or synthetic feedstocks) fought the introduction of natural gas into their markets, while other communities sought to gain control over the rates charged by the new pipelines[7]. But the early court decisions ruled that state authorities lacked jurisdiction over inter-state commerce and thus over the inter-state pipeline monopolies. Under these rulings, no one possessed regulatory authority over the gas industry at either the production or receiving ends in cases where the industry was engaged in inter-state commerce. In this early example of a deregulated natural gas industry, then, we can see that the major result of a lack of governmental control was not open competition but unbridled monoply.

> As monopolists, the interstates were able to charge the local distributors relatively high wholesale prices, while paying much lower prices to producers who had no other outlets for their gas[8].

The reverse of governmental regulation of the natural gas industry, the experience of the 1930s would tend to suggest, is not necessarily a more efficient, competitive industry.

Regulation of the American petroleum industry came about in the early 1930s after profits plunged in response to a crisis of over-production. The state of oil conservation commissions were empowered to regulate production and the Roosevelt administration introduced legislation to prevent the interstate shipment of oil produced in excess of allowed state production. The cartelization of the U.S. oil industry was carried out with the strong backing of the major petroleum companies, and the evidence is compelling that the system of output restrictions was designed to conserve business profits rather than natural resources[9]. Regulation of the natural gas industry commenced in 1938 with passage of the Natural Gas Act, adopted unanimously by Congress after a massive investigation by the Federal Trade Commission of price-fixing charges against the transmission pipelines. The investigation revealed, among other dubious practices, that about 45 large holding companies controlled 65 percent of manufactured gas and 30 percent of the natural gas produced in the U.S. The Natural Gas Act vested the Federal Power Commission with the authority to control the traffic in inter-state gas, but the NGA did not extend federal control back to production and gathering: thus, federal regulatory authorities had no control over wellhead pricing. The view of the F.P.C. was that functions such as conservation and prorationing, state transmission, and the determination of wellhead prices properly belonged to state regulatory bodies. The result of the F.P.C.'s interpretation of the 1938 legislation was that the U.S. natural gas market was thereafter divided into an intrastate system, in which prices for gas produced and consumed in the same state were not regulated, and an inter-state market, in which prices were regulated. The perverse effects of this bifurcation of the national gas market, which gave producers an obvious incentive to withhold supplies from the inter-state system until shortages forced the price up, only became intolerable with the energy crises of the 1970s.

As the American intrastate/inter-state gas market expanded after 1938, the industry itself devised a number of contractual solutions to market instability and to problems such as monopsony market power. These provisions have, until recently, been a feature of most U.S. and Canadian gas contracts (including export contracts), and three will be briefly mentioned. First, there are take-or-pay provisions which have been included in long-term contracts to ensure the producer some minimum guarantee of stable revenue. Take-or-pay requires purchasers to take a specified volume of gas over a period of years and, if unable to do so, to pay for the gas in any event. As one study remarks: "Without take-or-pay provisions, producers would be fully exposed to the volatility of the market and possibly risk being shut-in completely."[10] Perhaps, but as we shall see, producers are nevertheless losing their protection and take-or-pay provisions are today becoming anachronistic. Second, the industry has devised contingency clauses, in particular "most favoured nation" provisions which tend to weaken any monopsony or monopoly power exercised by a buyer or seller. Under most favoured nation arrangements in the U.S., the buyer is obligated to pay to the seller the equivalent of any higher price that the buyer is paying another seller in the same region; or the buyer may have to pay the equivalent of any higher price that a third party is paying another producer. The obvious effect of such contractual provisions is to undermine the monopsonistic advantage of the transmission pipelines discussed earlier and to strengthen natural gas deregulation. And third, there are so-called market-out or buyer-out clauses in many gas contracts which operate to the advantage of the major transmission pipelines. Under certain conditions, the market-out clauses allow the pipeline to offer the producers a lower price which, if not accepted, relieves the buyer from his contractual obligations. The principal stipulation is that the gas is deemed to be unmarketable at the higher price. In the early 1980s market-out clauses were exercised by the big American interstate pipelines to drive the price of so-called high cost gas from about $7.00 per thousand cubic feet (mcf) to around $4.50/mcf[11]. Which of these solutions to market instability will prevail in contract negotiations clearly depends upon the bargaining power that is available to producers, pipelines and distributors. The fundamental issue is: who bears the risk?

In the years following the Second World War the natural gas industry in the U.S. expanded rapidly, as a $50 billion transmission system connecting the gas-producing states of the South-West, Gulf Coast, and Appalachia to the metropolitan consuming areas was constructed. Natural gas came to be extensively used for residential and commercial heating and for a variety of industrial purposes, especially as boiler fuel. Gas was cheap, available in large volumes, and environmentally superior as a fuel. But the expansion of the industry and the growth of the inter-state market brought renewed charges from consumers of monopolistic pricing and demands for a comprehensive system of regulating the gas industry. In a landmark 1954 decision, Phillips Petroleum Co. v. Wisconsin, the Supreme Court ruled that the Federal Power Commission could regulate the wellhead price of gas sold to the interstate pipelines, but the ruling was interpreted by the FPC as leaving intrastate gas free of controls. The FPC thus

continued the tradition of a two tier gas market: an inter-state market in which prices were determined on an average cost basis; and an intrastate market in which prices were unregulated. Congress attempted to overturn this obtuse decision by deregulating all natural gas, but President Eisenhower - who supported deregulation, was forced to veto the bill because of the over-zealous and highly publicized activities of what he called an "arrogant" gas lobby[12]. (Actually, the gas lobby's only mistake was that it was caught in the common-place act of bribing a politician).

As might be anticipated, the longer-term consequence of this distorted regulatory system was to create a shortage of natural gas. Intrastate prices rose faster than regulated inter-state prices and producers naturally began to dedicate the bulk of their new reserves to the unregulated market. In the early 1970s, the F.P.C. attempted to raise inter-state gas prices to unregulated intrastate levels, but the intrastate market continued to capture the bulk of new supplies. In 1976 the regulated wellhead price of natural gas in inter-state commerce was only 25 percent of the btu equivalent value of imported crude oil. Natural gas was naturally a very attractive substitute fuel for industry and utilities, and demand grew rapidly. Federal gas pricing policy, in short, encouraged consumption of the resource while discouraging the allocation of new reserves to the nation-wide market or the replacement of production with new supplies. Matters came to a head during the bitterly cold winter of 1976-77 which resulted in serious gas shortages in the northern consuming states. A state of emergency was declared in a number of states, Canada was called upon to deliver increased short-term gas exports, and the Carter administration prepared a new energy plan to deal with rising oil imports and the chaos in natual gas markets. The era of regulated stability was coming to a close.

The Natural Gas Policy Act (NGPA), which was passed in October, 1978, was part of President Carter's National Energy Plan, the main objective of which was to reduce U.S. imports of oil and energy demand in general. The Plan was a demand-side energy policy, with heavy emphasis on the use of conservation and taxes to discourage consumption. However, the Plan acknowledged that federal regulation of oil and gas prices was encouraging excess consumption and argued that "the true value of a depleting resource is the cost of replacing it."[13] But Carter also worried that full decontrol of oil and gas prices could have severe adverse effects on the economy and would yield large windfall gains to producers, and he therefore opted for a phased deregulation of oil prices. Deregulation of gas however was a far more complicated affair, involving much conflict among the leading private and public interests with a stake in the issue. The natural gas legislation, which finally emerged from Congress in 1978 in almost unrecognizable form (remarked Carter's Energy Secretary, James Schlesinger, during the 1978 congressional debate, ("I understand now what hell is. Hell is endless and eternal sessions of the natural gas conference"), did attempt to reduce and eventually eliminate the two-tier intrastate/inter-state segregation of the gas market, and gradually to deregulate by 1985 about 60 percent of all gas supplies. For the longer-run, the intention was to provide for the full decontrol of U.S. wellhead prices; and the Federal Energy Regulatory Commission (FERC), which is the

successor agency to the old Federal Power Commission, was given adequate powers to begin to introduce competition into the gas industry. But the Natural Gas Policy Act is an extraordinarily complex of legislation and it clearly reflects the many fragmented and often frequently conflicting producing and using interests that make up the industry and who fiercely lobbied Congress during passage of the law. No less than 24 different types of gas production were identified: some regulated, some partially deregulated and some fully deregulated. To oversimplify, incentives were introduced to increase supply: newly discovered gas was allowed increasing prices until complete decontrol in 1985. So-called high-cost gas produced from deep wells, coal or offshore was decontrolled immediately. But, as a way of protecting consumers, "old" gas already discovered or in production remained subject to price controls, and price controls were for the first time imposed on intrastate gas to limit the ability of intrastate users to bid new supplies away from inter-state users. Full deregulation of gas prices will not occur until the exhaustion of all old gas supplies; nevertheless, the price of close to 60 percent of American natural gas was decontrolled by January 1, 1985. The NGPA abolished most of the distortions caused by the intrastate/inter-state division of the market, but at the cost of introducing some new distortions. Both the exploration for and production of natural gas fields are influenced by the prices that regulation permits. By giving preferential treatment to new natural gas fields and high-cost gas, the legislation encouraged these activities over the development of existing, lower-cost reserves. Thus the NGPA may have been partly responsible for producers selling higher-cost gas before lower-cost gas, the opposite of behaviour found in unregulated markets[14].

American wellhead gas prices ranged in early 1985 from about U.S. $2.40/mcf to nearly U.S. $6.00/mcf for high-cost gas, but Professor Adelman has put the market-clearing wellhead price somewhere in the neighbourhood of U.S. $3.00 per mcf. "That is the maximum allowed on certain favoured types of 'new gas,' and supply exceeds demand at that price."[15] Deregulation led to an initial sharp increase in the average wellhead price of 165 percent, from $0.91/mcf in 1978 to $2.41/mcf in 1982. Some of this clearly reflected a shift from inexpensive old gas to newer, more costly sources: new gas categories are now the largest source of supply and represent a proportionately larger share of the overall cost of gas supplies. Prices in some categories have however declined and the average U.S. price remained substantially below the imported prices of Mexican and Canadian gas, which were linked to world oil prices. American gas prices have been held down since 1982 by a persistent surplus or deliverability "bubble," averaging between two trillion cubic feet and four tcf per year (the U.S. consumes between 18 and 20 tcf per year), and as additional categories of natural gas have been decontrolled prices have tended to decline somewhat. The structure of the industry is changing as well. Prodded by FERC and the Reagan administration's commitment to deregulation, the industry has begun to reduce or eliminate contractual trading arrangements which had offered risk-protection to producers, such as take-or-pay or minimum bill provisions. Short-term contracts are replacing long-term agreements, a spot market for gas sales has emerged, and pipelines have exercised their

market-out clauses or have unilaterally abrogated legal contracts. The net effect of these changes, as Dr. Phil Prince of the Royal Bank of Canada has noted, has been to transfer the risks upstream to producers who once demanded deregulation, and are "now clamouring to have the option to stay regulated":

> When the NGPA reversed the directon of real price changes and successfully generated a strong supply response, distributors were eventually trapped as demand also responded to higher prices. Distributors watched markets erode, even as producers argued for, and got, higher prices from pipelines, who were buffered against shocks from the market.
>
> At this point, a large part of market-related risk had been shifted one step upstream. Soon the reality of declining sales was forced upon pipelines, and, although contracts had begun to reflect the changing environment by including market-out clauses, these were not a widespread feature of existing contracts. We saw, instead, a disturbing rash of abrogation of contract. . . It may be that the revealed unreliability of legal agreements will have a significant effect on future arrangements in the industry. In any case, a substantial amount of market risk had been successfully shifted all the way upstream, to the producer[16].

We shall see that deregulation has also permitted gas purchasers to shift market risks to Canadian producers and taxpayers, thereby exposing Canadian gas exporters to the unfamiliar rigours of a competitve environment. And what is perhaps more interesting from the standpoint of Canadian-American relations, U.S. regulatory decisions are working their way upstream from the American pipeline systems to the Canadian producers and exporters, and are thus having significant transnational effects on the Canadian natural gas industry and Canadian energy policy.

Canada's ability to compete for gas markets in the U.S. in the coming years will depend first upon future American consumption of natural gas, and second, the productive capacity of the lower 48 states to supply U.S. demand from domestic sources (since it is clearly much cheaper for the United States to import supplemental gas from Canada and/or Mexico than to bring Alaskan gas to the lower 48, we make the assumption that Alaskan gas will not be a desirable option for the forseeable future). Historically, Canada has held about five percent of the American market; but optimists in the Canadian gas industry have predicted that Canada will be supplying 12 to 15 percent of U.S. gas demand in a decade[17]. Exporters take the view that the American natural gas surplus, which was originally forecast to last 18 months and is now in its fifth year, will disappear in a year or so, and that: "The opportunities will be very good for Canadian exports in the future as U.S. requirements increase."[18] These statements, which are probably intended to promote additional gas export approvals from the Canadian government, ought to be viewed with skepticism. American consumption of gas is unlikely to grow and could well decline, and there is no convincing basis for the thesis that lower 48 productive capacity will decline rapidly in coming decades.

The Americans are not running out of gas. This suggests that any supplemental requirements from Canada may be modest and that Calgary's bullish expectations are somewhat exaggerated. We offer some evidence for these views, but it must be noted that it has been taken from a number of sources and compressed, and that the art of energy forecasting, as any Canadian should know by now, is a very uncertain affair. There is, after all, no royal road to science.

To begin, the demand for natural gas in the United States declined through much of the 1970s and stabilized at the end of the decade. With the onset of the recession and the increase in gas prices after initial deregulation, natural gas sales dropped from 20 trillion cubic feet per year in 1981 to 18 tcf in 1982, and smaller declines were recorded in 1983 and 1984. Reductions have been particularly sharp in the industrial sector, and natural gas could lose a greater share of this market if residual fuel oil prices continue to fall.

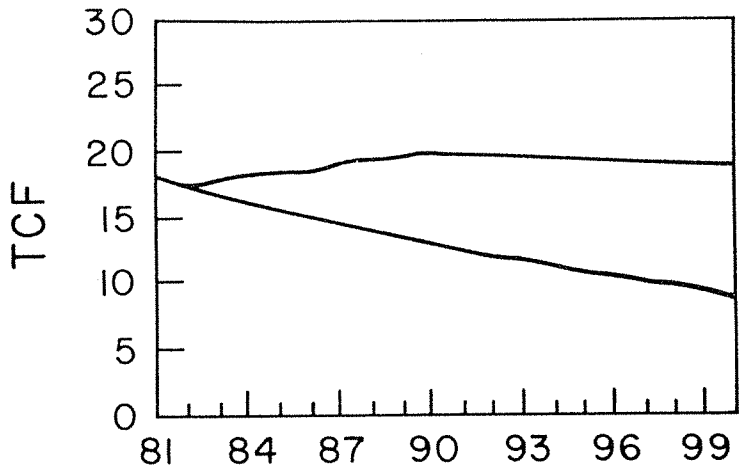
> The prevalence of dual-burning facilities and the shifting price of competing fuels are anticipated to increase the industrial market share held by fuel oil at the expense of natural gas[19].

Natural gas used for electricity generation is being backed out by coal, and conservation and new energy-efficient technology are reducing energy demand in the residential and commercial sectors. On the other hand, tighter environmental regulations on the use of hydrocarbons such as coal would expand the need for natural gas, as would the penetration of gas into other markets such as transportation. But the soft world oil market and the ready availability of inexpensive residual fuels seem likely to act as a damper on natural gas sales. The Royal Bank's projections, shown in Figure 1, reveal a broad range of estimates; but the average of the surveyed projections yields estimates of about 19 tcf in 1990 and 21 tcf in 2000, which are very close to present consumption. Any projection is subject to much uncertainty, but our view is that U.S. requirements for natural gas may be flat at best and could well decline.

It is on the supply side where there is much disagreement and uncertainty: Canadian exporters, as noted above, are banking on U.S. productive capacity declining rapidly so that in a few years Canadian gas will be needed in much larger quantities to supplement U.S. supply. How likely is this to occur? There are many uncertainties associated with the determination of natural gas supply. On the one hand, the United States has proved reserves of about 200 tcf, which represents a reserves life index of only 11 years (nine if we remove the Alaskan reserves), at current rates of annual use of 18-19 tcf. But this is a static view because it fails to take into account the rate at which potential gas reserves are being proven up in response to price decontrol and changing markets. As Alberta's experience in the late 1970s amply confirms, gas supply is highly responsive to price, and the concept of proved reserves is as much an economic as a geological or technical one: it refers to known reserves which are within economic and technical reach. In the years when the Americans were regulating inter-state gas and prices were low, the industry, not surprisingly, only replaced about 50 percent of the reserves it was producing. But since partial decontrol of gas prices commenced in the late 1970s, prices have increased significantly and the

Figure 1

Projections of Lower 48 States Consumption



Source: J.P. Prince (Royal Bank of Canada). "North American Natural Gas Trade." International Gas Study. Harvard University.

U.S. industry has been replacing close to 100 percent of production with reserve additions; and there are those companies who argue that if controls were removed from "old" gas, then an additional 54 tcf, or 25 percent of existing proved reserves, could be added to the U.S. inventory. There is, admittedly, more than a little vested interest behind such forecasts.

The U.S. Office of Technology Assessment examined the issue of American gas availability through the year 2000 and, as Figure 2 illustrates, the range of projections does not necessarily confirm Canadian expectations about declining U.S. productive capacity; but it does suggest a large area of uncertainty about America's ability to supply its requirements from domestic gas reserves. The O.T.A. examines the widely varying estimates of the ultimately recoverable natural gas in the United States and concluded cautiously that

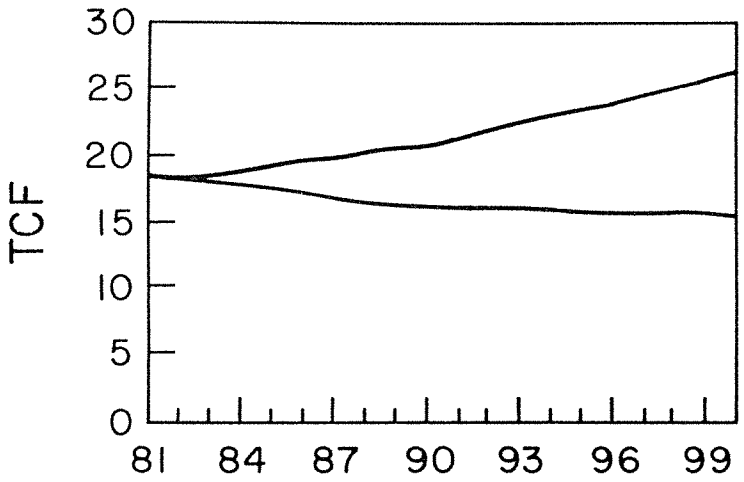
> there is no convincing basis for the common argument that the area of the lower 48 states is so intensively explored and its geology so well known that there is a substantial consensus on the magnitude of the resource base. Plausible estimates of the amount of remaining conventional natural gas in the lower 48 states that is recoverable under present and easily favourable technological conditions range from 400 to 900 tcf[20].

OTA puts plausible production by the year 2000 between nine and 19 tcf per year, while recent forecasts from oil companies and U.S. government agencies average 13 tcf by 2000 and thus fall within the OTA range.

The Office of Technology

Figure 2

Projections of Lower 48 States Production



Source: J.P. Prince (Royal Bank of Canada). "North American Natural Gas Trade." International Gas Study. Harvard University.

Assessment's study of U.S. natural gas availability, published in September 1983, concentrated on geological analysis but ignored the fundamental issue of finding and development costs. A companion study carried out by the Congressional Research Service combined resource capability and cost implications in a simulation exercise and reached some rather bleak conclusions. Even if the optimistic estimates of undiscovered gas reserves were generally correct, "it may not be possible to maintain current lower 48 states gas production to the end of the century." To do so would mean that new gas fields would have to be discovered at almost twice the rate achieved between 1945 and 1981, and this "does not appear to be happening." The Congressional Research Service study suggests that U.S. gas production will decrease by fully 32 percent, to about 12.5 trillion cubic feet per year in 2000, and that proved reserves will also decline by 44 percent as production intensifies. Moreover, the U.S. gas industry confronts a sharply rising cost curve, according to the C.R.S. analysis:

> Despite a decline in annual production, projected expenditures per unit of production increase by 41 percent between 1981 and 2000, while expenditures per unit of reserve additions increase by 85 percent. This implies that the national average price for natural gas if allowed to track cost would tend to increase by over three percent. per year in 1980 dollars despite falling output[21].

This implies that the primary constraints on U.S. gas supply in the coming years will be economic rather than physical in nature. Any

regulatory system that tried to hold average gas prices down would only accelerate depletion and widen the gap between U.S. requirements and lower 48 production. This gloomy, neo-Malthusian analysis holds out little hope for ameliorative action: real prices will increase, but "solely as a companion trend to the downward pathway projected for production."[22] Reflecting the bullish expectations of Canadian gas exporters, Canada's National Energy Board is predicting that U.S. requirements for supplemental (imported) gas will expand rapidly after 1986. Canada will almost treble its existing level of exports. U.S. demand for gas will be around 18 tcf in 1990, and:

> We do not expect reserves additions in the United States to keep pace with this level of demand during the next few years, with the result that the current deliverability surplus from the lower 48 states will become a shortfall by 1986. This, coupled with the effects of the current high rates of take from established reserves which will lead to a more rapid decline in future deliverability, point to a growing gap that the United States will have to fill from supplemental sources[23],

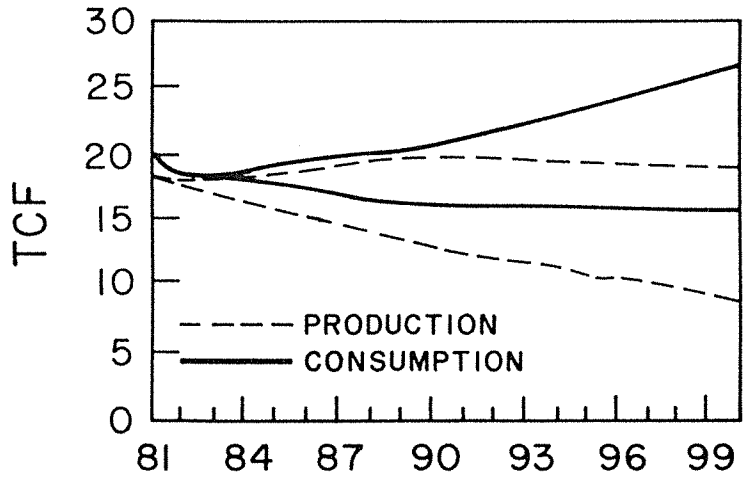
- mainly from Canada. No evidence in support of this "rapid decline" and "growing gap" is provided, and it is tempting to describe it as an article of faith.

The range of U.S. supply and demand projections (Figure 1 and Figure 2) is shown in Figure 3, and this illustrates a growing need for imports <u>if</u> consumption increases while lower 48 productive capacity also goes into a steep decline. Our view, however, is that U.S. demand for gas is unlikely to increase and could decline, and that there is no convincing evidence - economic or geological - to support the thesis of an imminent "rapid decline in future deliverability" in the lower 48 states. Some American studies have concluded that the so-called gas bubble, or deliverability surplus, could persist well into the 1990s; if so, Canadian exporters will have to be very competitive just to hold their small share (currently 5 percent) of the U.S. market.

If the American natural gas situation seems uncertain and confusing, this is partly because the industry is in the transitional stages of a very complex deregulation. Prices are being decontrolled and federal regulatory bodies are attempting to introduce some competition into an industry long characterized by regulated stability and monopoly; but Davis has suggested that new forms of marketing and contracting behaviour are now emerging that limit the risk and uncertainty to individual firms. The highly concentrated nature of the U.S. gas industry, especially in production and the transmission pipelines, seems likely to reduce the industrial risks and costs of deregulation. It seems that the dominant firms in the gas industry are already responding to deregulation through the following strategies: a search by the transmission companies for alternative upstream sources of gas; an increased readiness by producers to sell contracted-for gas to non-traditional customers through non-traditional channels (e.g., producers are circumventing the inter-state pipelines by building their own pipelines); and the emergence of new contractual solutions to instability and risk[24]. The ability of

Figure 3

Projections of Lower 48 States Production and Consumption



Source: J.P. Prince (Royal Bank of Canada). "North American Natural Gas Trade." International Gas Study. Harvard University.

powerful corporate groups, such as the major oil and gas producers or the big pipeline companies, to adapt their strategies to a new regulatory environment should not be underestimated; nor should one exaggerate the Reagan government's commitment to make a highly monopolistic and concentrated sector of American capitalism more competitive. "Deregulation" may be just another ruling illusion that masks the underlying structure of the American corporate economy.

6.3 CANADA'S ADAPTATION TO MARKET INSTABILITY

The type of market instability which we have described in the U.S. natural gas industry resulted in part from changing regulatory practices and the enactment of the Natural Gas Policy Act. It is one thing for such market instability to occur within the borders of a single state. "Here national law reigns unchallenged and the state can act as mediator in case of conflict."[25] In a national context, instability can be managed through state intervention and forms of risk-minimization. But the effects of gas deregulation and changing contractual relationships in the United States are working their way up the transnational chain of consumers, transmission companies and producers into Canadian jurisdiction: producers have lost take-or-pay protection, contracts have been abrogated, and American governnment bodies have imposed competition guidelines on Canadian exporters. The chain of traditional risk-minimizing arrangements in the Canadian-American gas trade has been weakened by U.S. policy, even where that policy has not specifically been directed at importers. J.D. Davis argues in his study, Blue Gold: The

Political Economy of Natural Gas, that when gas is moved via international trade, "risk minimization is at best inchoate." The sums of money required for transmission lines or LNG projects are immense, and the technological risks can be considerable as well:

> Algeria, for example, regarded by the major gas importers as perhaps the epitome of contract breakers, feels somewhat justifiably aggrieved owing to the sub-par performance of much of the LNG equipment installed on Algerian soil. A good deal of this equipment when installed was essentially 'state of the art,' and it is not too surprising that some of it has since had to be scrapped. However, what is logical in the eyes of the western firms installing the equipment is easily misperceived as thievery by the Algerians[26].

What is needed internationally, argues Davis, is the type of regime that is available only nationally, whereby parties to international gas deals can minimize risks and avoid the consequences of market instability. The risks at stake in the Canadian-U.S. gas trade are not as extensive as those which inhere in LNG projects, but the high costs and great distances involved in connecting western Canadian suppliers to U.S. consumers have meant that producers and transmission pipelines have borne substantial risks. It may be instructive, then, briefly to review the history of this trade, to analyze the debate over gas exports and the protection of Canadian requirements; and also to sketch the essentials of Alberta's gas export policy. We conclude with an analysis of Canada's response to recent shifts in American regulatory policies and changing market conditions.

In his distinguished history of Canadian fuel policies, John McDougall has remarked that federal decisions in the years from 1949 to 1958 - that is, the opening phase in the post-war expansion of the western oil and gas industries - revealed several consistent principles concerning oil and gas exports. Such exports were deemed necessary on three counts: first, they encouraged the growth of the industry in Canada and ensured continued exploration and development of energy resources; second, exports permitted the realization of scale economies and allowed pipelines to be built to distant Canadian markets at lower unit costs to Canadian consumers; and third, gas pipelines serving Canadian markets should be built through Canadian territory[27]. However, the early proposals to export natural gas generated heated opposition, first within Alberta and then in other parts of Canada, and this culminated in the TransCanada Pipelines uproar of 1956. For reasons that are neither altogether clear nor rational, Canadians seem to worry much more about the exportation of gas than other fuels, such as crude oil or electricity. The arguments over gas exports have turned on a number of issues, including pricing and security of supply, but a central issue has been the alleged costs inherent in exporting a valuable fuel such a natural gas to an industrial competitor. "I may have a bit of prejudice against the proposal to export gas," the president of the University of Alberta told a pipeline promoter in 1949, "because I have always felt that this resource represented for Alberta what hydro-electric power represented to the St. Lawrence Valley. On this view it would seem unwise to sacrifice for immediate gain

our long-range potentialities for industrial development."[28] These protectionist sentiments resurfaced in the mid-1970s when the Lougheed government sponsored the building of a world-scale petrochemical complex based on gas, and subsequently tried, and failed, to barter approval for new gas exports in return for a lowering of U.S. chemical and agricultural tariffs. The province of Ontario, which has gained access to Alberta gas in part because of the export component built into contracts, has argued that western Canadian gas exports to the U.S. should be restricted in the interest of the manufacturing complex of central Canada - not a proposition dear to the heart of most Westerners, yet one that continues to influence Canadian policy on natural gas. Central Canadians have come to view it as part of their birthright that they should not only have long-term access to western gas, but that they should also have it on more favourable terms than those offered to U.S. consumers. The nationalist position has been that low-cost, readily accessible gas reserves in western Canada should not be exported, leaving Canadians dependent on costly, future supplies.

By the late 1950s the major petroleum companies had proven up in Alberta some 500 billion cubic metres of established gas reserves, or the equivalent of 20 percent of current established reserves, and transmission systems were in place connecting the large producing fields to domestic and export markets. Westcoast Transmission completed construction of a gas pipeline to British Columbia and the Pacific Northwest in 1957; TransCanada Pipelines provided gas to the central Canadian market and selected export points by 1958; and pipelines to Montana and California were in place by 1961. In a sense, the export market was somewhat more competitive than the domestic gas market, where a single monopsonist, TransCanada Pipelines, has been the largest buyer of Alberta's gas. As in the United States, the monopsonistic structure of the gas industry has tended to force field prices down; and the fact that TCPL, like the American transmission companies, is not a common carrier but a privately-owned firm which only transports gas that it has purchased means, in effect, that Alberta producers cannot directly negotiate sales with distributors in central Canada. Movement to efficient price deregulation is impeded by the rigid structure of the gas transmission and distribution industry[29].

That the development of the Canadian natural gas industry has depended upon the U.S. market is not in dispute. Few would disagree with the thesis that some "export component" was needed to build natural gas pipelines such as TransCanada to service Canadian markets; without that component Alberta's gas would not have reached beyond the prairies. It is fair to ask however whether too much gas was exported and whether the price paid was adequate. Critics of the National Energy Board, which was established in 1959 for the purpose, among other things, of regulating gas exports, maintain that the N.E.B. developed an obsession with the need to export ever-increasing amounts of oil and natural gas - at the expense, perforce, of future Canadian consumers who would be forced to pay higher prices for replacement fuels. McDougall has charged that the board placed a higher priority "on a high rate of exports than it did on receiving the full value of Canadian natural gas, and that exporting gas at less than full value had a higher priority than holding established reserves for future or expanded

use."[30] The N.E.B.'s justification for its policy has been caustically summarized as follows:

> The Canadian oil and gas industry must grow; if it is to grow, it must not sit on unsold reserves of oil and natural gas; if it is not to sit on such unsold reserves, they must be exported, whether or not parts of Canada have or will have need of them: so runs the consistent (if at times only implicit) rationale for expanding Canadian oil and gas exports in preference to expanding (or prolonging) the Canadian consumption of Canadian fuels[31].

The critics have shown in convincing detail that export agreements were approved by the N.E.B. and the Cabinet, despite evidence that the gas was significantly underpriced, and that the board often invoked the alleged "amity and comity" in Canadian-American relations to justify dubious subsidies to U.S. consumers. Underlying these decisions was a concept of continental resource sharing, outlined by Liberal leader Lester Pearson: "if defense is to be considered on a continental basis, then resources and materials for continental defense must also be based on a continental basis."[32]

Probably an excess of gas was exported at low prices. In partial defence of the N.E.B., however, it should be noted that the early export permits were given in the 1960s when there was a large glut of oil and gas resources both in western Canada and world-wide. Moreover, the argument that "Canadian consumption of Canadian fuels" (self-sufficiency) is somehow inherently superior to exports is at best debatable. Historically, Canada has exported a large proportion of the fuels it has produced while importing a large share of the fuels it has consumed; the cost advantages of participating in the North American energy market have outweighed the mainly psychic benefits of self-sufficiency[33]. Further, without exports and access to the U.S. market the Canadian gas industry would never have developed on a national basis and western Canadian natural gas would not have been economic in southern Ontario. As for the nationalist/conservationist argument that it is better to leave the resource in the ground for future generations of Canadians rather than to produce it now for export, this is true only under certain conditions and for certain groups of producers. If the value of the reserves in the ground in expected to appreciate because of anticipated scarcity and rising prices, then it may be desirable to postpone production; however, small producers requiring early cash flow will lobby vigorously against such a policy, and the government will soon discover that the restriction of exports is as much a political as an economic decision. From the standpoint of efficient resource management, it is not necessarily optimal to postpone the production of gas since the benefit of resource revenues earned from production today may be larger than that from future use, depending on the price of the resource over time. The Economic Council of Canada, like the natural gas industry, favours early as opposed to delayed production. The discount factor "accounts for the fact that reserves in the ground are assets that necessarily generate revenues slowly over time as they are exploited. A delay in production and thus in the realization of revenues therefore reduces the value of the reserves in the ground"; and, the Council avers,

reductions in the wellhead price of gas "do not necessarily translate into lower reserve prices, as would be the case for oil. If lower wellhead prices for gas result in expanding markets and shorter delay times between discovery and production, the value of the gas reserves in the ground could be sustained"[34]. Perhaps, but we are obliged to add that lower wellhead prices and expanded markets will also increase the rate of depletion and may not encourage exploration for additional gas reserves. Canada's gas surplus is large but not inexhaustible, and the cost of new reserve additions has also been rising sharply[35]. A national government that takes the longer view will exploit the export market to a degree; but it will also take steps to make the domestic gas market attractive to western producers, to encourage exploration for new reserves, and to ensure that long-run Canadian requirements are given priority over exports with respect to both supply and price. This admittedly is an ambitious agenda.

The protection of Canadian requirements largely depends upon the decisions of two regulatory bodies, neither of which is famous for its independence from the natural gas industry. Alberta's Energy Resources Conservation Board operates an "exportable surplus" policy whereby only gas surplus to contract commitments and forecast future requirements of the province will be approved for removal from the province. An exportable surplus is defined as an amount by which known reserves and trend gas additions exceed export commitments plus Alberta's forecast requirements over the next 25-year period. The Alberta cabinet must approve any out-of-province exports, and its criteria include the stipulation of "just and reasonable" prices: in the early 1970s, as part of its campaign to undercut the monopsonistic market power of TransCanada Pipelines, the Lougheed government withheld approval for a number of new natural gas contracts for delivery to Ontario utilities. Alberta's concerns over TransCanada's monopsony, its conflicts with Ontario, and its view of the export market are discussed below. Here we may simply note that the ERCB's mandate reflects a long-standing determination by successive Alberta governments to protect their jurisdiction and management powers with respect to resources and to ensure the availability of cheaply-priced gas to provincial residential and industrial users.

The federal National Energy Board can approve natural gas exports if satisfied that "the quantity of natural gas to be exported does not exceed the surplus remaining after due allowance for the reasonably foreseeable requirements for use in Canada"; the N.E.B. uses a number of surplus and deliverability tests, and these are periodically reviewed. A reserves formula - usually known as the "25A1" test - compares the established reserves base against 25 times the current year's Canadian demand; and a deliverability appraisal is the board's best estimate of supply and demand, taking into account deliverability from established reserves, future reserve additions and other factors. The gas producers have frequently complained that the 25A1 formula imposes significant costs on the industry. First, there are the capital and related costs of proving up reserves in excess of 25 x current consumption; and, second, having built up a surplus, "we now (1984) move to negotiated pricing, and find ourselves in an inferior bargaining position because the U.S. buyers are aware of the surplus."[36] But Alberta's gas surplus was accumulated in the late

1970s because of rising natural gas prices and a boom in exploration activity, not because of the NEB's policy; and if Canadian producers are in an inferior bargaining position, this is because natural gas today is a buyer's market. Furthermore, the Economic Council has noted that the 25A1 test provides Canadian users with much less protection than 25 years once the annual rate of decline in production and the annual growth rate in domestic use are considered. The Council suggests that the NEB's surplus test assures deliverability of gas to domestic consumers of only five to eight years[37]. This hardly seems an excessive cost of protection.

TABLE 1

Marketable Natural Gas Reserves and Potential as of December 31, 1982.

Conventional Areas	Remaining Established Reserves	Remaining Potential[1]
	(Trillions of Cubic Feet)	
British Columbia	9.2	
Alberta	65.8	
Saskatchewan	1.6	
Ontario and East	0.3	
Northwest Territories	0.4	
Total	77.3	170
Frontier		
Mackenzie Delta - Beaufort	5.3	76
Arctic Islands	11.4	92
West Coast Offshore		10
East Coast Offshore		94
Total	16.7	272
TOTAL CANADA	94.0	442
CURRENT PRODUCTION	2.6	

Source: Department of Energy, Mines and Resources

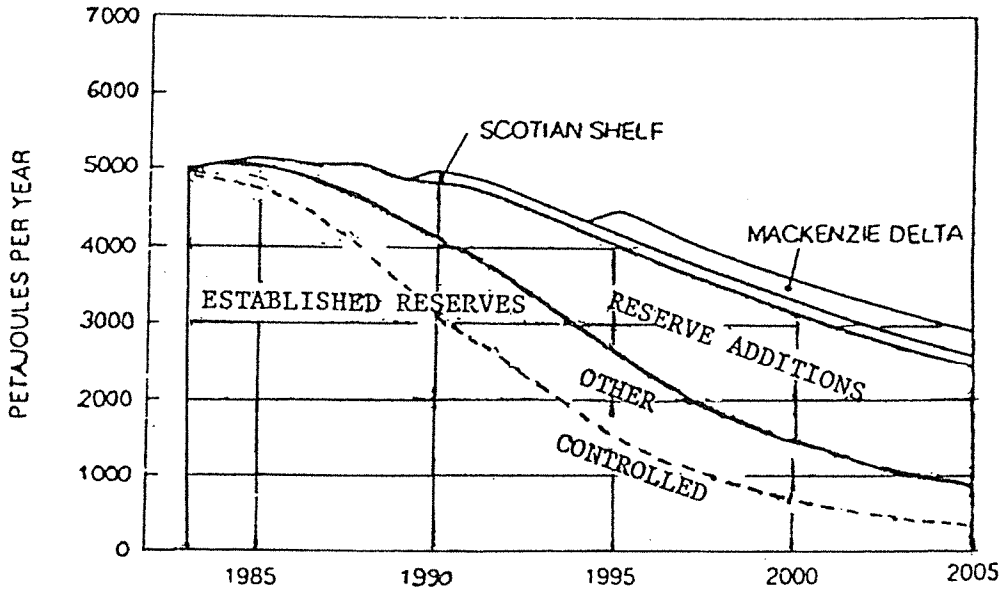
[1] Includes Established Remaining Reserves

In its report, Canadian Energy Supply and Demand, 1983-2005, (September, 1984) the National Energy Board argues that although there is a significant deliverability surplus in the western Canadian sedimentary basin, there are also some constraints on supply. The historical decline in reserves additions per unit of exploratory drilling suggests a trend pointing to an ultimate potential between 170 exajoules and 200 exajoules. The supply costs of reserve additions are also increasing. The N.E.B.'s forecast of our supply capability is shown in Figure 4, while the projections of natural gas supply and demand are matched in Figure 5, taken from an analysis by the Department of Energy, Mines and Resources. According to these charts, we will be out of the export business by the mid-1990s; but these forecasts are based on some debatable premises. The NEB is projecting rapid growth in domestic demand for natural gas, and it forcasts a sharp decline in supply from conventional producing areas in the 1990s. But if we examine our marketable gas reserves and potential, shown in Table 1, we can see that western Canada has sufficient remaining established reserves and potential reserves to supply domestic gas demand plus authorized exports well into the next century; and when we add to this a modest amount of frontier gas, it becomes clear that there is no real physical constraint on gas supply in the medium-term. Rising supply costs and technical risks may well be constraints, however, especially in the development of "tight" gas from low-permeability reservoirs and in the exploitation of frontier gas in the Artic and the East Coast offshore. Although significant discoveries of natural gas have been made in the frontier areas, the high costs of transporting these to southern markets and the technological and environmental risks have thus far rendered frontier gas uneconomic. The demise of the Arctic Pilot LNG Project, which was abandoned in 1983 because of lack of markets; the difficulties associated with the Western LNG project in B.C., which proposes to export some three trillion cubic feet of liquified natural gas to Japan; and the delays in developing Venture gas fields offshore Nova Scotia, underline the logistical problems and the significant commercial and technological risks associated with non-conventional gas export projects. New solutions, probably involving the state, will undoubtedly have to be found to share these risks and improve the viability of frontier gas if the supply constraints are to be overcome.

The N.E.B.'s projection of a rapid increase in domestic demand for natural gas assumes that this fuel will be able to penetrate eastern Canadian markets. But when we examine particular sectors, industrial, residential and commercial, it appears that natural gas will experience intense price competition in some sectors and may have difficulty expanding its share of the fuel market. To take just two examples, the oil refineries produce residual fuel oil as a by-product and will sell it at dirt-cheap prices to keep gas from encroaching on the fuel oil market; and in the residential sector, especially in Quebec, natural gas appears to be at a distinct price disadvantage relative to low-cost electricity. Gas producers could perhaps increase their share of the eastern Canadian market by cutting prices, as the province of Ontario and the Economic Council of Canada have advocated. Domestic gas price decontrol, argues the Economic

Figure 4

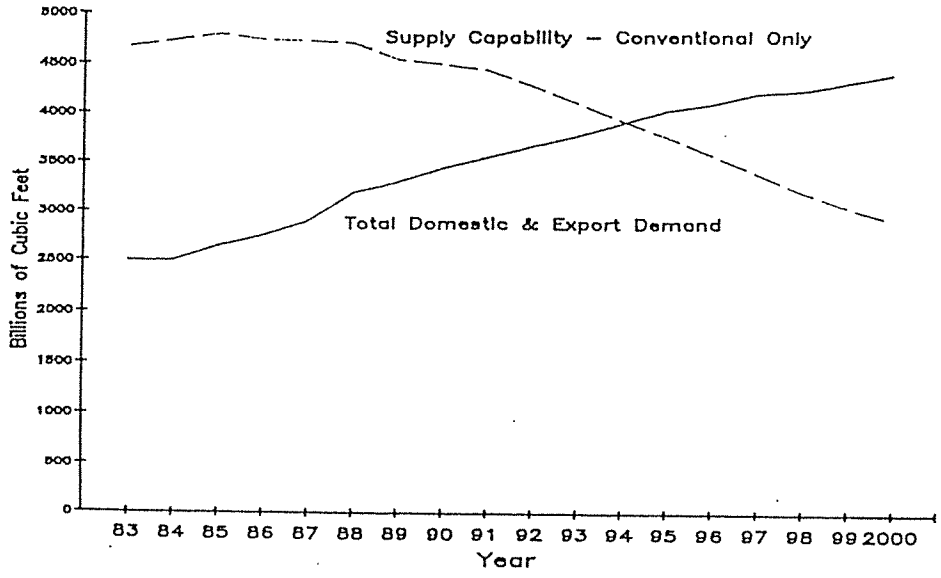
Deliverability - Supply Capability by Supply Source, Canada



Source: National Energy Board, Canadian Energy Supply and Demand, 1983-2005.

Figure 5

Natural Gas Supply and Demand
(Billions of Cubic Feet)



Source: EMR's Demand Data and NEB's Supply Capability Data
Department of Energy, Mines and Resources.

Council, would lower prices and restore a closer balance between supply and demand. Whether lower prices would also encourage the development of new reserve additions over the longer run seems much less likely. The Lougheed government and many gas producers argue that central Canadian consumers have for years enjoyed oil and gas prices substantially beneath market levels, and they resent Ontario's efforts futher to reduce producers' income and to link export prices directly to the price paid in Toronto. Alberta's economy remains mired in recession, and the province seems to be in no mood to reduce its revenues to accommodate Ontario's demands. "Alberta's energy does not exist for the purposes of keeping Ontario's manufacturing competitive," remarked a leading gas producer[38].

Alberta's quarrel with Ontario over natural gas policies - including export policy - is of longstanding duration. Since the 1950s Ontario has sought to secure for itself secure, long-term availability of gas supplies at cheaper-than-export prices: Ontario currently insists that domestic prices must be reduced so that its industries can be competitive with the United States, and it also requires that Canadian export prices be no lower than the Toronto city-gate price. The latter stipulation, which was adopted by the federal authorities in 1984, is a good deal more rigid than the traditional view of the National Energy Board that the export price should not be less than the price to Canadians "for similar deliveries in the same area." Ontario has seldom acknowledged the demonstrable fact that gas exports do significantly lower the cost of servicing Canadian consumers via the scale economies achieved in pipeline transmission: i.e., Ontario has been a major beneficiary of exports.

Alberta produces some 85-90 percent of Canada's gas supply and it has a strong stake in the growth of the North American market. The province does not see major new market opportunities in Canada, short of selling its gas at distress prices, and it has been engaged in a holding action since the early 1980s trying to protect its eroding position in the U.S. natural gas market. The U.S. gas deliverability surplus and the growing market instabilities described earlier have forced the producing provinces and Ottawa to overhaul their export pricing policy, and gas producers have been exposed to the harsh realities of deregulation - an experience which appears to have tempered their enthusiasm for the idea. Alberta's weakened bargaining power in dealing with the export market in the 80s has been in sharp contrast with its stance in the early and mid-1970s when it was in a strong position to back up gas producers by threatening to withhold supplies.

When the Lougheed government took office in 1971 it immediately began to tackle the issue of monopsony in the domestic gas market[39]. The National Energy Board had rejected some new export permits, and this closure of the export market left gas purchasing in Alberta mainly in the hands of TransCanada Pipelines. Field prices were determined to be well below commodity value, and the province moved to withhold new applications to remove gas from Alberta until prices increased. Alberta also amended arbitration legislation governing the redetermination of gas prices paid by pipelines to producers: the field price was now to reflect the commodity value, or the value of gas based on competing fuels. The management of Alberta Gas Trunk Line (Nova), which was created by the Manning government in 1954 to keep Trans-Canada and

federal jurisdiction out of the province, set up a new gas purchasing companay, Pan Alberta, to buy gas not already committed to contract and to offer it for sale at prices above those offered by TransCanada. Trunk Line's support for Lougheed's policy, which reflected the close interdependence of political and corporate elites in Alberta, put competitive pressure on gas prices, as did the sucessive boosts in world oil prices. Alberta's policies, which were vigorously opposed by Ontario utilities, manufacturers and politicians, culminated in 1975 in a major arbitration agreement which led to a federal-provincial agreement setting the interprovincial gas price at 85 percent of the btu equivalence of crude oil. Natural gas prices rose sharply from 1975 to 1980, intensifying exploration in western Canada and actually shifting the emphasis of exploration from oil to natural gas. Reserve additions increased at an annual rate of about 6 percent per year, lifting the ratio of conventional gas reserves to production to some 35 years. Alberta benefited from rising gas prices and the exploration boom, but the resulting surplus of natural gas and the weakening domestic and export markets undercut the province's bargaining power and its capacity to resist lobbying by its own producers.

Amidst the acrimonious energy conflicts of 1980-81, Ottawa and the producing provinces negotiated an agreement which established the Alberta border price as the reference point for natural gas pricing in eastern Canada. In effect, the federal government, which now wanted to encourage Canadian consumers to switch from oil to gas, agreed that the price in Toronto, including taxes and costs of transportation, should be set at 65 percent of the Toronto refinery acquisition cost of crude oil. However, the target of maintaining the Toronto city-gate price at 65 percent equivalence is only a <u>political</u> commitment by a now-departed government, whereas the Alberta border price agreement entails legal obligations by the two sides. Dr. Phil Prince argues that Alberta places a "high priority on maintaining some control over the border price" because of the strong link between the domestic and export markets:

> Export regulations, for example, have an indirect but significant effect on domestic prices. By limiting exports from Canada, the federal government restricts the demand faced by Alberta produces. This puts downward pressure on the producer's price. It can be argued that Alberta's control over the Border Price merely provides a domestic offset to the regulated constraint on exports. Alberta is not easily going to give up this balancing force, and so a general move to de-regulation in Canada is not as likely as some expect[40].

We may agree that "history has shown that it is difficult, if not impossible, for governments to prescribe market-clearing gas prices"[41] but "history" also shows that this industry's structure is characterized by rigid, highly monopolistic features. One cannot deregulate natural gas prices unless sellers and buyers can negotiate in an open market. This does not exist. There is a substantial degree of concentration among gas producers; and the only domestic buyers of Alberta's gas are transmission pipelines such as TransCanada and Westcoast Transmission (interestingly, one of the top three Canadian gas producers is

Petro-Canada, and it also has a controlling interest in Westcoast). Until these transmission pipelines are turned into common carriers, i.e., required to transport gas other than they own, price deregulation will remain a chimera.

Canada's belated adaptation to the changing gas export market began in 1983 when a large number of contracts were cut back by U.S. pipelines, largely on the grounds that Canadian gas was no longer price-competitive. Gas exports dropped from 75 to 40 percent of authorized volumes. Unquestionably, Canada's administered export pricing formula was rigid and incapable of adapting to rapidly changing market conditions in the U.S. The price was based on the so-called Duncan-Lalonde formula, which tied a uniform border price for Canadian gas exports to the imported cost of crude oil; in reality, this formula was unworkable and was not strictly adhered to, but in 1982 the export price was $4.94 (U.S.) - well above the market-clearing level. With the emergence of the U.S. deliverability surplus the recession, and a decline in American demand for gas, the Canadian pricing system was too inflexible to protect existing contracts. We would argue that the bargaining power of Canadian gas exporters was further undercut with the completion by 1982 of the two legs of the massive pre-build portion of the Alaska Highway pipeline. The National Energy Board and Canadian political authorities had negotiated agreements with Washington that would ensure the the prebuild, once completed, would be allowed to operate near capacity. In the U.S. Midwest the natural gas market was unable to absorb substantial additional imports brought on by the eastern leg of the prebuild; as a result, some existing Alberta sales to that region were displaced, and U.S. buyers were forced to incur take-or-pay obligations with Canadian suppliers. The prebuild, a project of highly dubious advantage to Canada, appears to entail an indefinite commitment of undervalued gas to California and the U.S. Midwest, with negligible prospect that the northern sections of the Alaska pipeline will ever be completed[42].

The correct marketing strategy to adapt in a situation such as that confronted by Alberta and the Canadian government in 1982-83 is to reduce prices to a competitive level while trying to win new sales to increase volume: one does not telegraph a weakened bargaining position to buyers by offering oneself as a "willing seller." Remarkably, however, the National Energy Board reacted to the loss of markets in the U.S. by adopting a "more flexible procedure" for determining the amount of surplus exportable gas: noting that changing market conditions in the U.S. had weakened demand for Canadian exports. Energy Minister Marc Lalonde praised the N.E.B.'s relaxation of the level of domestic protection[43] - a policy which could only undermine Canada's bargaining power. In early 1983, at a moment when gas exports were at only 43 percent of authorized levels, the N.E.B. approved for export an additional 11.5 tcf of Canadian gas! What seems to have happened is that the Canadian gas producers utilized the down-turn in the export market to pressure a pliant regulatory board into amending a surplus determination formula which they had long regarded as too restrictive. In so doing, they also nicely undercut their own bargaining leverage with U.S. purchasers.

The craven philosophy underlying these acts of impolicy was set out in a joint industry/Alberta discussion paper of September, 1982, which was endorsed by B.C. and the federal

government. The objective of the paper was to provide views as to how to "expand and secure our position as a long-term secure supplier to the United States market and to increase the level of sales under existing and future authorizations." Canada was fortunate to be located next to the nation that uses more natural gas than any other. If sales to the U.S. were to be increased, "Canada must demonstrate to the United States that it will continue to be a friendly, reliable source of long-term supply. Canadians should be seen as willing sellers, responsive to the concerns of its customers." The document went on to argue that "The optimum development of indigenous North American energy resources is vital to the security of the continent," language that was reminiscent of the glorious 1950s. How should Canada approach new exports to the U.S.? "Canadians must properly tailor every sales proposal in full understanding of the unique requirements of each buyer and recognize that contract terms must be flexible in the required take-or-pay provisions, duration of the license and other terms." Against all the evidence, however, the industry/Alberta paper insisted that the current export price of $4.94 (U.S.) was "generally competitive"; of course, it was not[44].

Are these the acts or language of a self-confident "principal power," capable of using its leverage over energy supplies to secure economic and diplomatic advantages? Not, it would seem, in a soft market. There is scant evidence that either the producing provinces or agencies of the national government were capable of defining, let alone advancing, interests broader than those of the gas producers and the export pipelines. The actions of the federal government - the relaxation of its surplus tests and the authorization of large new exports - undercut Canada's interests and weakened the bargaining position of Canadian exporters. The "willing seller" strategy, with its image of a friendly, reliable continental partner eager to tailor its contracts to suit U.S. requirements, was more the strategy of a supplicant rather than an independent state.

Inevitably, the adjustment to the realities of the U.S. gas pricing and marketing situation was made. Initially the Canadian government (acting on the advice of an intergovernmental task force of B.C., Alberta and federal representatives) introduced in July, 1983, a volume-based incentive pricing plan[45], but this made very little impact on sales. It was generally acknowledged among producers and the three governments that Canada would have to move to market-oriented export pricing - which would mean a significant reduction in prices - but there was less agreement as to when this should be done. The smaller, independent gas producers, some of whom were desperate for cash flow, wanted an early move to competitive pricing; while the major producers, who could afford a longer view, were in favour of waiting. The position of the export pipeline companies favoured early action. Alberta and B.C. were sympathetic to the independents, but the federal government - perhaps fearful of a reaction from Ontario voters in an election year - procrastinated. However, the federal-provincial task force did draw up the outlines of a market-oriented export policy which could be implemented in case the other shoe dropped in Washington. It did.

Political pressure began to build up in the U.S. in late 1983 in response to what were seen as overpriced Canadian gas contracts. Hostile legislation aimed at the

trans-border gas trade was introduced in Congress, and in February of 1984 the U.S. Energy Department's Economic Regulatory Administration published a set of import guidelines stressing the need to make sales sensitive to markets. Import agreements must be competitive over the term of the contract; the need for the imported gas would be decided on the basis of the marketability of the import; and imports must enhance the security of U.S. energy supply[46]. U.S. gas purchasers were also invited to assess their current contracts - in terms of price, volume and take-or-pay obligations - and to re-open negotiations with their suppliers. This non-too-subtle pressure was increased in the same month when a U.S. delegation headed by Rayburn Hanzlik, head of the Economic Regulatory Administration and the official in charge of U.S. import policy, headed to Ottawa to discuss development of the Sable Island Venture gas fields and access to the U.S. market. The Americans reportedly linked future approvals for any gas imports from Sable Island to Canadian willingness to abandon the controversial 25 percent Crown "back-in" on federal lands[47]. Even for Mr. Reagan's administration these were rather vulgar tactics, but the episode does illustrate the vulnerability that Canada accepts along with extensive trade dependence with a power such as the United States.

By the summer of 1984 the federal-provincial task force on gas pricing was warning that, "in the face of continued uncertainty over future Canadian export pricing policy, importers could further reduce 'takes' of Canadian gas" below the depressed 1983 levels. Producers were facing abrogated contracts, take-or-pay provisions were being revised, and increasing amounts of gas were being shut in. The task force advocated that "buyer-seller negotiated pricing should be implemented as a longer-term Canadian export pricing policy," and suggested that the export price should: be sufficient to recover costs; be no lower than the price to Canadians for similar deliveries in the same region; and should match the price of competing fuels in the U.S. market area[48]. The urgent tone of the task force's recommendation was heeded in Ottawa, in part because of the federal election campaign then underway, but especially because of a new U.S. regulatory ruling aimed at the elimination of anti-competitive forces in the gas industry. While not explicitly directed at Canadian exporters, the new ruling raised major questions concerning the fate of existing contracts, the viability of new export pipelines and the U.S. government's obligations to the prebuild portions of the Alaska pipeline. The federal government, alarmed by these implications, mounted a major lobbying effort in Washington and the evidence is compelling that the Canadian move to market-oriented export pricing was timed to have the maximum diplomatic effect.

The Federal Energy Regulatory Commission's Order 380, a complex, 60-page document issued on May 25, 1984, was technically addressed to the variable costs in "minimum commodity bill" obligations between pipelines and gas purchaser, but the broader intent was to promote competition all the way up the chain to producers. FERC said, "so long as minimum bills exist in their present form to force customer payment even when the gas is unmarketable, the pipeline and its producers can be indifferent to actual market demand. One effect of Order 380 is to weaken take-or-pay provisions in contracts and thereby to underemine the viability of long-term sales

agreements and new pipeline projects. FERC 380 was not explicitly directed at imports; but as Canadian ambassador Allan Gottlieb warned the State Department, "if implemented in its present form, the Order could have serious adverse effects on present and bilateral gas trade":

> These effects go right to the heart of the basis on which Canadian companies are able to supply gas to the export market: the assurance of revenue stream on which to finance the production and transport of surplus gas from the wellhead to the international border ... Moreover, as you know, in view of the special nature of the project, the Canadian government has already requested consultations on the implications of Order 380 on the Prebuild, under Article 8 of the Northern Pipeline Agreement[49].

Ottawa correctly perceived that whatever its rationale, FERC 380 shifted the market risk from the American consumer to the upstream Canadian producer: this jeopardized existing guarantees for producers; it threatened the financial viability of new export-dependent pipelines, such as the one proposed to move Sable Island gas to the U.S. Northeast; and it appeared to renege on American commitments to support the prebuild. A Canadian delegation, led by Geoffrey Edge, chairman of the National Energy Board, descended on Washington in June, 1984, and lobbied the Department of State and Energy in an attempt to gain redress from FERC's ruling. Edge was particularly concerned to stress the "special problems" of the prebuild and the need for the U.S. to protect its own long-term security of supply of imported gas: if Order 380 undercut the viability of new Canadian pipelines, the Americans might lose access to future gas supplies. The National Energy Board took the unusual step of formally communicating its concerns to FERC in a note which stressed the need to retain protection for Canadian suppliers via contractual provisions respecting minimum bills and take-or-pay[50].

Canada's lobbying for exemptions won the support of Energy and State Departments on July 13 when the federal Minister of Energy, Mines and Resources, Gerald Regan, announced the government's decision to move to negotiated, or market-oriented, pricing for gas export deals. Regan's pricing criteria followed the federal-provincial task force's recommendation with one exception: viz, that the price of exported gas must not be less than the price of gas at the Toronto city-gate - an amendment that was made at the Cabinet level, presumably for electoral reasons. Gas moving through the prebuild could be sold below the Toronto city-gate floor (approx. $3.15 ((U.S.) because of that pipeline's alleged "special situation": its high capital cost, low throughput and short amortization period, resulting in "abnormally high transportation costs on the U.S. portion."[51] Regan's announcement was interpreted as a crass attempt to win Liberal votes (in Calgary ?), but in fact it seems to have been timed to influence the lobbying effort over FERC 380. Canada's cause quickly gained sympathy from senior State and Energy Department officials, and within days FERC issued a new ruling exempting the prebuild from any order that prevents U.S. utilities from passing on gas purchase costs to their customers[52]. Canada proclaimed a "total victory" - another victory for the ancient strategy of exemptionalism.

It is tempting to argue that the true beneficiary of this bilateral exchange of commitments was neither Canada nor the U.S., but the owners of the prebuild, Foothills Pipe Lines (in turn controlled by Nova Corporation). The prebuild as born as the dubious stepchild of years of political turmoil over the northern pipeline; it was constructed on a stand-alone basis in the face of high-level warnings from the Americans that completion of the northern sections of the line might never be undertaken; and the decision to proceed was taken without proof that the prebuild could be financially viable on a stand-alone basis. In light of the concessions gained for the prebuild by Geoffrey Edge and others in 1984, we may recall the arguments made against the project in 1980 by the Departments of Finance and Energy, Mines and Resources: the risk of open-ended exports; the risk of greater delay in the northern sections of the pipeline; the risk of losing an option for the transportation of Canadian frontier gas; the risk of increasing U.S. dependence on Canadian gas imports[53]. All of those risks are now realities, and it becomes clearer with each passing year that the Americans see Canadian gas as a long-term substitute for Alaskan gas. The prebuild's only viability lies in the political and bureaucratic influence it enjoys on both sides of the border; far from improving the market position of those Alberta producers who clamoured for the new line in 1980, the prebuild has weakened the bargaining power of gas exporters and will continue to depress export prices thanks to its "special situation." Those who argued against the 1980 prebuild decision as an act of impolicy can take scant comfort from these events.

In conclusion, we have seen that the Canadian government and the producing provinces have adapted, albeit reluctantly, to changing market conditions in the U.S. It has not been merely a question of lowering natural gas export prices, although that has happened. The American gas industry is in the throes of deregulation; it is being forced to abandon anti-competitive practices, and this is causing uncertainty and market instability. Risks are being shifted from consumers back to producers, and simultaneously take-or-pay protection is being weakened. As exporters selling into this changing market, Canadian producers are also being affected by instability in the U.S. gas industry and by the process of deregulation. Canadians cannot expect to participate in gas trade with the U.S. - a trade worth $4 billion a year - and to be exempted from the changes that are occurring in the industry: indeed, it seems clear that Canadian exporters will have to be exceedingly competitive if they wish to gain new markets in the U.S. The decision to move to market pricing was the correct one, but it probably should have been taken much earlier. With the reservations noted above concerning the prebuild, we would argue that Canada has adapted successfully to market change and instability in the American gas industry. How this will affect the domestic Canadian gas industry is as yet unclear, but deregulation is clearly an issue that could pit Ontario interests against those of Alberta and Western producers. For the longer-run, Canadians must decide whether they want to become ever more deeply involved in the North American natural gas trade (assuming that markets are available). It is a decision that should not be made on commercial grounds alone.

NOTES

Presented to the Conference on the Provinces and Canadian Foreign Policy, University of Alberta, March 28-30, 1985.

[1] The New York Times. December 30, 1984. p. F21.

[2] J.D. Davis. Blue Gold: The Political Economy of Natural Gas. London: Allen and Unwin, 1984. p. 39.

[3] Ibid., p. 38. Davis notes that it is a rule of thumb that firms cease being purely economic actors, when in pursuit of higher profit or a large market scale, they apply pressure on government to change the rules by which the market is ordered. Those industries only marginally affected by the market will be more "political" than others. "Nowhere is this more true than of the natural monopoly nature of the natural gas industry. To be successful in this business, one must have the hardened qualities of a successful political tactician." (p. 44.) The roles of government range form those of the U.S.S.R., where the gas industry is the government, through strong planning systems (France and Japan), through nations with their own national gas entities (Holland and the U.K.), to governments which regulate privately owned firms (the U.S. and Canada).

[4] The economic problems associated with common-property ownership of "non-specific" resources such as oil and gas and the tendency toward wasteful development are summarized in, J. Richards and L. Pratt. Prairie Capitalism. Toronto: McClelland and Stewart. 1979. pp. 47-49.

[5] This is not to imply that governments are powerless to limit such practices; we merely note that the waste of oil and gas resources is often economic rather than physical in nature.

[6] The economic structure of the gas industry and the issue of natural monopoly are discussed in, Davis, op. cit. Chapter 2.

[7] Taussig, A.R. and C.C. Barlow. The Natural Gas Industry: Evolution, Structure and Economies, Cambridge, Mass. 1984.

[8] Ibid. pp. 62-3. An excellent introduction to the history of U.S. regulation of the natural gas industry is, I.C. Bupp, and F. Schuller, "Natural Gas: How to Slice a Shrinking Pie," in R. Stobaugh and D. Yergin, (eds.), Energy Future, New York: Random House. 1979.

[9] cf. Richards and Pratt, op. cit., pp. 50-53.

[10] Royal Bank of Canada, Global Energy and Minerals Group. The North American Natural Gas Industry. Calgary, 1984. p. 54.

[11] Oil and Gas Journal, July 19, 1982. p. 44. The impact of deregulation on take-or-pay and the use of market-out contractual provisions in the early 1980s is analyzed in Davis, op. cit. pp. 87-89.

[12] cf. Bupp and Schuller. "Natural Gas," p. 61. For additional background on the Phillips decision and regulation, see S. G. Breyer and P.W. MacAvoy, "Regulating Natural Gas Produc-

ers" in R. J. Kalter and W. A. Vogeley, (eds.). Energy Supply and Government Policy. Ithaca: Cornell University Press. 1976. pp. 161-192. A useful study of gas deregulation in the U.S. is H. Broadman and W.D. Montgomery, Natural Gas Markets After Deregulation, Washington. 1985.

[13] The Natural Gas Policy Act is examined in Davis, op. cit, pp. 82-84; and in Bupp and Schuller, "Natural Gas."

[14] Several studies by the Congressional Research Service argue that the NPGA served to encourage rather than eliminate distortions in the natural gas market. See, for example, L.C. Kumins et al., Natural Gas Supply and Demand Under Selected Legislative Options. Congressional Research Service Report No. 84-601S. May, 1984.

[15] M.A. Adelman, "The International Context," in E.A. Carmichael and C.M. Herrera, (eds.), Canada's Energy Policy, 1985 and Beyond. C.D. Howe Institute: Toronto, 1984. p. 35. Adelman argues that "it would be very profitable for Canadian gas producers to prove up large amounts of new gas reserves and enter into long-term contracts at that price. But the Canadian government will not permit it." To keep gas in the ground when energy prices are stagnant makes little sense: therefore, Canada should do away with its floor price, he argues, and compete for new sales in the U.S. with low-cost gas. There is something to be said for this approach, but it overlooks the long-term interests of Canadian consumers and the political influence they wield in Ottawa. It also ingores the likely protectionist reaction by U.S. gas producers to such a strategy.

[16] J.P. Prince. "North American Natural Gas Trade," delivered for the International Natural Gas Study, Harvard University, Nov. 29, 1984. Dr. Prince is also the author of the excellent study by the Royal Bank of Canada, cited in footnote 10. I am grateful to him for permission to quote from these studies, but he bears no responsibility for the heresies contained in this paper.

[17] The Globe and Mail. March 15, 1985.

[18] Ibid.

[19] Royal Bank of Canada. The North American Natural Gas Industry, p. 76.

[20] Ibid., p. 60. See Office of Technology Assessment, U.S. Congress, U.S. Natural Gas Availability - Conventional Gas Supply Through the Year 2000, September, 1983. The Royal Bank Study concludes that U.S. consumption of gas will be on the high side in 1990 and beyond, but that there is no reliable basis for the assumption that U.S. supply capability will rapidly decline: the latter assumption appears to underpin much of Canada's thinking about future gas trade with the U.S.

[21] J. P. Riva Jr. et al., Conventional Natural Gas Production in the Lower 48 States to the Year 2000: Resource Capability and Cost Implications. Con-

gressional Research Service Report No. 84-47S, March, 1984. p. 1.

[22] Ibid. p. 49.

[23] Canada, National Energy Board, Canadian Energy Supply and Demand 1983-2005, September, 1984. p. 62. The N.E.B. is looking to the U.S. Northeast market as the principal target for expanded exports, but growth will require new pipeline facilities. As U.S. supply falls away, the chairman of the N.E.B. told a Senate committee, "a very big market could open up for Canadian gas over the next decade in the United States." Proceedings of the Standing Senate Committee on Energy and Natural Resources. March 7, 1985. pp. 13-34.

[24] Davis, Blue Gold. pp. 85-86.

[25] Ibid. p. 10.

[26] Ibid. p. 10.

[27] J.N. McDougall, Fuels and the National Policy. Toronto: Butterworths. 1982, p. 78.

[28] Cited in Richards and Pratt. Prairie Capitalism, p. 63.

[29] This point in a number of studies, but see Economic Council of Canada, Connections: An Energy Strategy for the Future, Ottawa, 1985. pp. 66-67.

[30] McDougall. Fuels and the National Policy, p. 106.

[31] Ibid. p. 99.

[32] Cited in Ibid. p. 93.

[33] The best argument on this point is that of McDougall, yet he clearly dislikes the growing trend towards integration into the U.S. gas market.

[34] Economic Council of Canada, op. cit, p. 65. Professor Uhler has shown that the delay times between the discovery and marketing of gas reserves in Alberta have averaged 25 years, and that this has depressed the value of gas reserves in the ground to such a low level that the incentive to explore for new reserves is nil. The delay times for oil are much shorter. R.S. Uhler, "The Supply of Natural Gas Reserves in Alberta." Department of Economics, U.B.C., Resources Paper No. 74. January, 1982.

[35] See P. Eglington and M. Uffelmann. "Observed Costs of Oil and Gas Reserves in Alberta, 1957-1979." Discussion Paper 235, Economic Council of Canada. Ottawa. October, 1983. As the Council remarks in Connections, "While Canada's gas potential has been growing, it has been doing so at increasingly higher real costs." p. 61.

[36] Prince. "North American Natural Gas Trade."

[37] Economic Council of Canada, Connections, p. 69.

[38] Testimony of James K. Gray, Executive Vice-President, Canadian Hunter Exploration Ltd. Proceedings of the Standing Senate Committee on Energy and Natural Resources. February 12, 1985. pp. 8-15.

[39] See Richards and Pratt. Prairie Capitalism, pp. 228-230.

[40] Prince. "North American Natural Gas Trade."

[41] Economic Council of Canada. Connections, p. 68.

[42] See F. Bregha, Bob Blair's Pipeline, (2nd ed.). Toronto: Lorimer, 1981. Chapter 11.

[43] Department of Energy, Mines and Resources, Communique. "Natural Gas Exports," May 14, 1982.

[44] "Canadian Natural Gas Marketing Initiatives: A Discussion Paper, September 24, 1982."

[45] Department of Energy, Mines and Resources, Communique. "Incentive Pricing for Natural Gas Exports." July 6, 1983. The Volume-Related Incentive Pricing scheme was based on a two-tier price: a uniform price for base volumes and a lower incentive price for gas in excess of the base level.

[46] These are summarized in the Royal Bank of Canada's study cited at footnote 10. See p. 49.

[47] Calgary Herald, Febuary 20, 1984.

[48] The Financial Post, July 14, 1984.

[49] Allan Gotlieb, Canadian Ambassador to the United States, to W. Allen Wallis, Under-Secretary for Economic Affairs, Department of State, June 29, 1984.

[50] Canadian concerns and lobbying over FERC 380 were covered in the press, especially by Jennifer Lewington of The Globe and Mail. See Globe and Mail, July 20, 1984; July 28, 1984; August 13, 1984; December 17, 1984. The views of the Canadian delegation headed by Mr. Edge are set out in the Gottlieb letter cited in footnote 49 and in a letter from Allen Wallis, the Under-Secretary of State for Economic Affairs, to Raymond O'Connor, Chairman of FERC, dated July 13, 1984. This letter emphasizes the particular concern of the Canadians regarding the Prebuild and its "special problems." Wallis, in passing on the Canadian concerns, noted that Canada had just announced "what we consider a significant new gas export pricing policy."

[51] Department of Energy, Mines and Resources, Communique: "A New Canadian Natural Gas Export Pricing Policy." July 13, 1984.

[52] Globe and Mail, July 28, 1984.

[53] Bregha. op. cit, p. 214.

Macroeconomic Impacts of the Western Accord

Mary E. MacGregor,
Institute for Policy Analysis,
University of Toronto.

The Western Accord signals a marked reduction in involvement of the federal government in oil and gas pricing and taxation. The main thrust of the Accord is to deregulate the oil market and to remove or phase out special industry taxes and grants. The Accord has been well received by the industry but others have expressed concern over revenue losses at a time when the federal deficit is already a problem.

Simultations with the FOCUS model suggest that the impact of deregulation on consumer prices is relatively small since the increase in old oil prices are offset by the drop in new oil prices and the removal of the Canadian Ownership Special charge. If the industry re-invests 85 percent of its gain in after-tax cashflow as assumed here, investment in the energy sector will provide a significant boost to real GNP, although investment elsewhere in the economy is less positively affected. The impacts on employment are initially small but build up over time. By 1990, real GNP is 0.46 percent higher, the overall price level 0.35 percent higher and the unemployment rate 0.13 percentage points lower under the Accord.

Despite the stimulus to the economy, the gain in the revenues from other sectors is not large enough to compensate for the lost energy tax revenues. As a result, the 1990 federal deficit is $3.9 billion higher than it would have been otherwise. Furthermore, the impacts of the recovery proposed increases in the federal gasoline excise tax suggest that attempts to recoup lost energy tax revenues from other sectors of the economy may have limited success and may undo much of the positive impact of the Accord.

Western Economic Review, Vol. 4, No. 3, Fall 1985 [ISSN 0715-4577]

7.1 INTRODUCTION

On March 28, 1985, the recently elected Progressive Conservative federal government released the details of a long-awaited energy pricing and taxation agreement with the governments of the oil and gas producing provinces. The Western Accord was designed to "revitalize the Canadian energy industry"[1] by moving from an administered pricing system for crude oil and natural gas to a market oriented system and by eliminating special federal taxes on the oil and gas industry. In effect, the Western Accord dismantles most of the remnants of the National Energy Program.

The Accord has been received enthusiastically by the oil and gas industry. However, concerns have also been expressed over the negative aspects of the tax changes on the federal deficit. Energy Minister Pat Carney has estimated that the Accord will cost the federal government up to $500 million over the next two fiscal years as losses from energy taxes will be partially offset by higher tax revenues generated elsewhere through the stimulus to the economy[2].

In the simulations reported here, the FOCUS model has been used to look at some of the implications of the Western Accord for real GNP growth, inflation and unemployment as well as the implications for federal and provincial government balances. Also modelled is the increase in the excise tax on motive fuels, which was announced as part of the 1985 federal budget (and subsequent amendments) and which will be introduced in two phases: two cents/litre starting September 3, 1985, and an additional one cent/litre starting in January 1987. Although not formally part of the Accord, this energy tax will help to offset the revenue losses from the tax cuts provided to the industry as part of the new agreement[3].

The next setion outlines the main points of the agreement, while Section 3.1 describes how the Accord was incorporated into FOCUS and discusses the impacts obtained. The final section provides a summary.

7.2 PROVISIONS OF THE WESTERN ACCORD

One of the main provisions of the Accord is the complete deregulation of crude oil prices starting June 1, 1985. Under the pre-Accord system, oil discovered after March 1974 qualified for the New Oil Reference Price (NORP), which was determined on the basis of posted prices in world markets for equivalent quality crude oils. Oil discovered before March 1974 (old oil), which currently accounts for around 45 percent of domestic production, received 75 percent of the NORP in the case of light oil (subject to a floor of $29.75/bbl), while the price for heavy oil was adjusted in relation to the old light oil price.

The price for old oil was the basis for determining all other prices. Producers of NORP oil received the old oil price plus a supplement to bring the price up to the NORP. The supplement was financed through the Petroleum Compensation Charge (PCC), a refinery levy on all domestically consumed oil. The PCC was also used to finance the import subsidy, which subsidized the difference between the cost of imported and domestic oil. Since the necessary adjustments were not made to the PCC rate until late in 1984, the account accumulated a deficit of an estimated $1.4 billion[4].

Export prices for crude oil were set by the National Energy Board (NEB), which also had to approve export volumes. The difference

between the old oil price and the export price net of transportation charges was collected as the oil export tax and shared equally with the governments of the producing provinces. The oil export tax brought in an estimated $394 million in 1984-85[5].

Deregulation dismantles this complex domestic and export pricing structure, as well as lifting controls on short-term exports. Light crude oil contracts for less than one year and heavy crude oil export contracts for less than two years will no longer require NEB approval, although the NEB must still be informed. Deregulation automatically eliminates the oil import subsidy, the NORP levies, the PCC and the oil export tax.

The Accord also promises a move to more "market-sensitive" natural gas pricing, but defers the issue until November 1985, pending the report of a joint task force of senior government officials from the federal government and the governments of the producing provinces. In the meantime, the Alberta border price is frozen at 1984 levels ($2.79/gigajoule (gj) or approximately $2.95/thousand cubic feet (mcf)) and the transportation subsidy between Alberta and eastern Canada ($0.057gj or $0.06/mcf) is removed. The Market Development Incentive Payments Program (MDIP), which is a charge of $0.91/gj (Canada 1984) levied at the wellhead and used to finance development and expansion programs for Alberta gas in eastern markets, will also be eliminated by April 30, 1986, or as soon as the federal government recovers its $160 million deficit in the account.

A number of special federal taxes on the industry are also being removed or phased out. The Incremental Oil Revenue Tax (IORT) was originally designed to collect some of the windfall gains on old oil, but it has been suspended for most categories of old oil since June 1982 so its elimination will not affect government revenues. The Natural Gas and Gas Liquids Tax (NGGLT) is in a similar situation. It was equal to the difference between the regulated Toronto city-gate natural gas price and the Alberta border price net of the Canadian Ownership Special Charge (COSC) and transportation costs. It was to act as a cushion which would permit regular fixed increases in the Alberta border price and at the same time maintain 65 percent BTU-parity with oil prices at the Toronto city-gate. Oil prices, however, did not rise as quickly as had originally been anticipated so the NGGLT rate has been set at zero since February 1984 and its elimination will not have any revenue effects.

Elimination of the COSC will result in revenues losses, however, as it generated around $900 million in 1984. The COSC was a flat rate levy of $1.15/bbl on crude oil and $0.15/mcf on natural gas and was originally introduced to finance Petro-Canada's takeover of Petrofina. Its indefinite continuation had been announced in the April 1983 federal budget as a revenue generating device.

The tax measure with the most serious consequences for federal revenues is the phasing out of the Petroleum and Gas Revenue Tax (PGRT), as it generated as estimated $2.4 billion in revenues in 1984-85[6]. The PGRT is a tax on gross revenues net of operating costs with an effective rate of 12 percent on conventional oil and natural gas, ten percent on synthetic oil, and with special exemptions for small producers[7]. Capital cost deductions have also been instituted for various high cost sources on a project by project basis.

Under the terms of the Accord, production from wells drilled after March 31, 1985 will be exempt from the PGRT, while the effective rates on conventional production will be reduced to ten percent in 1986, eight percent in 1987 and six percent in 1988 (the corresponding effective rates for synthetic production will be 6%, 4% and 2%). The PGRT will be completely eliminated starting in 1989. In addition, companies not currently paying corporate income tax will be able to use new development and exploraton write-offs to offset part of their PGRT liability.

Although the Accord provides significant tax relief for the oil and gas industry, it also removes some incentives. The Petroleum Incentives Program (PIP) will be eliminated starting in March 1986, but with some provisions for grandfathering existing exploration agreements. PIP is a system of cash grants available for exploration and development expenditures with the amount of the grant depending on the location of the activity and the degree of Canadian ownership of the company. They amounted to an estimated $1.17 billion in 1984-85[8]. The grants have been criticized on the grounds that they encourage premature exploration and development for high cost energy sources and that they discriminate against foreign investors. The Accord states that in the future, any tax-based incentives for the industry will not discriminate on the basis of location or ownership.

The Accord also agreed that the benefits from the agreement were to flow through to the industry, and that industry profits would be monitored closely. The federal government agreed not to introduce special taxes on the industry in order to recoup the deficit in the PCC account, which currently stands at an estimated $1.4 billion.

7.3 IMPACTS OF THE ACCORD

7.3.1 Assumptions and Modelling of the Accord

Modelling the impacts of the Western Accord required a base case or pre-Accord projection for the Canadian economy against which the Accord provisions could be compared. A FOCUS projection prepared in December, 1984 was used[9]. Its most important feature, for present purposes, is that it projects the Canadian economy to be at excess capacity through the next decade, although the severe output gap opened in the early 1980s is gradually being closed. On the energy side, several of the Accord provisions had already been foreseen and it was necessary to modify the projection slightly to obtain a non-Accord projection. Specifically, it was assumed that the pre-Accord pricing system for oil would have remained in place: oil light oil prices would have continued at 75 percent of the NORP with a floor of $29.75/bbl, while the price for old heavy oil would have been lower by a constant quality differential. The Alberta border price for natural gas was frozen in 1985 in the base case and a 65 percent BTU parity maintained thereafter. The 1985 price for Saudi marker crude was lowered from $29.00/bbl. (U.S.) in the original projection to $28.00/bbl (U.S.).

The simulations were run with Version 84B of the FOCUS model and a new version of the Energy module (ENR85B) which includes quality differentials. Assumptions about the response of the monetary authorities are very important in FOCUS model simulations: for the present study the authorities were deemed to be following money-growth targets,

permitting the exchange rate and interest rates to find their equilibrium levels under the impact of the Accord.

Finally, it is worth noting that the simulations of the western Accord presented here are not offered as forecasts and of course depend strongly both on the model employed and on the numerous asumptions made. They are offered as an element of quantification in debate over a complex policy innovation.

All of the main provisions of the Accord have been modelled with the exception of the phasing out of the MDIP and the exploration and development expense offset to PGRT liabilities for companies not paying corporate income tax. The structure of the energy module requires several exogenous estimates: the impact of the Accord on future oil production was borrowed from a run of the MACE model at the University of British Columbia[10], as were estimates of prodution from wells drilled prior to 1985. The revenue impacts of phasing out the PIP are based on estimates contained in the 1985 federal budget[11]: $836 million in 1986-87 increasing to $924 million in 1990-91. After 1990-91, the saving is assumed to be $1.0 billion annually.

The two stage increase in the federal excise tax on motive fuels introduced in the 1985 budget has also been modelled and the results are discussed in sub-section 3.1.5 below. Federal excise tax revenues have been increased by $300 million to account for the fact that the tax covers a broader base than the motor gasoline included in the energy accounting module. This permits a more accurate assessment of the revenue effects while maintaining the appropriate effects on prices.

7.3.2 Energy Prices, Demand and Supply

In light of the uncertainty over future natural gas pricing, no attempt has been made to model deregulation for natural gas. The fundamental pricing mechanisms have been retained, so that aside from the 1.1 percent drop in eastern natural gas prices in 1985 - which comes about as the result of removing the COSC and the transportation subsidy - all changes in natural gas prices reflect changes in domestic oil prices.

Estimates of oil prices under deregulation are subject to some uncertainty. Table 1 compares NORP prices and Energy Mines and Resources (EMR) estimates for comparable deregulated prices over the past few months. Estimates of the deregulated prices vary, depending on whether import prices are used or export prices to the Unites States; estimates based on import prices have tended to be higher than the equivalent prices in the U.S. market. The gap has tended to close in recent months for light oil but remains significant for heavy oil.

Until the recent announcement by President Reagan lifted the ban on net U.S. exports[12], the differential between import and export prices created the possibility for Canadian producers to develop a two price system in the short term, where domestic consumers would be charged the higher import prices and export customers would pay the going price in the U.S. oil market[13]. With the free movement of both Canadian and U.S. oil across the border, it is anticipated that deregulated Canadian oil prices will be set with reference to the Chicago market[14].

In these simulations, it has been assumed that under deregulation all domestically produced oil will receive the export price[15]. This

TABLE 1

1985 NORP Prices and Estimated Deregulated Crude Oil Prices
$(U.S.)/bbl in Edmonton[1]

		NORP	Deregulated
January	- light	30.37	26.42
	- heavy	25.70	24.37
February	- light	30.34	27.18-28.98
	- heavy	25.81	-
March	- light	29.34	28.13-29.07
	- heavy	25.41	23.53-26.11
April	- light	29.97	28.66-28.90
	- heavy	26.02	24.52-26.10
May	- light	29.26	26.82-26.97
	- heavy	25.51	24.51-26.11

Source: Oil Pricing Information Newsletter (Canada 1985c), January-May, 1985.

[1] Prices are given in U.S. $ to abstract from the fact that the exchange rate in the FOCUS base case is higher than has actually been the case in the first half of 1985. The lower end of the range for the estimated deregulated price is based on prices in the U.S. market (West Texas Intermediate for light, Wyoming Sour for heavy), while the upper end is based on spot prices for imports (Brent for light crude and for heavy, Maya which is not sold on the spot market).

results in a drop of $3.60/bbl for light oil which has been receiving the NORP, and of $1.80/bbl for heavy oil. Average prices for new oil drop by $1.57/bbl (4.0 %) in 1985, while average prices for old oil increase 10.9 percent (see Table 2). Although the net result is an increase of around $0.67/bbl in the average wellhead price of oil, consumer prices drop slightly (1.0 %) because of the removal of the COSC. In 1986, the first full year of deregulation, average wellhead prices increase by $2.37/bbl (6.8%) [16], and consumer prices rise by 0.06 percent.

Demand for both crude oil and natural gas is up slightly in the first two years, partly because of lower prices, but mainly because of a higher level of economic activity[17]. Oil imports show a minor increase in the first year because of higher demand and the lags in bringing new production on stream.

TABLE 2

Energy Module - Summary Table.

Production/Demand (Percent Change vs. Base Case)	1985	1986	1987	1988	1989	1990
Total Petroleum Production	0.00	0.99	1.56	2.22	2.98	3.28
Domestic Demand for Petroleum	0.09	0.21	0.09	0.13	0.30	0.50
Demand for Motor Gasoline (MILL. GAL.)	0.12	0.25	0.08	0.13	0.33	0.57
Oil Imports (Ex Swaps) (MILL. BBL)	0.63	-4.32	-6.30	-7.52	-8.12	-6.99
Oil Exports (Ex Swaps) (MILL. BBL)	0.00	0.00	0.00	0.00	0.00	0.00
Total Natural Gas Production	0.10	0.19	0.05	0.07	0.20	0.35
Domestic Demand for Natural Gas	0.14	0.29	0.08	0.13	0.35	0.60
Natural Gas Exports (BCF)	0.00	0.00	0.00	0.00	0.00	0.00
Energy Prices (Percent Change vs. Base Case)						
Saudi Marker Crude Price (US$/BBL)	0.00	0.00	0.00	0.00	0.00	0.00
Exchange Rate (CDN$/US$)	0.08	0.11	0.05	0.16	0.34	0.56
Average Oil Import Price	0.08	0.11	0.05	0.16	0.34	0.56
Average Price for New Oil	-4.02	-3.58	-1.71	0.14	0.27	0.48
Wellhead Price, Old Oil	10.94	27.91	31.76	33.54	33.72	33.99
Average Wellhead Price, All Crude	1.92	6.84	7.97	8.61	7.65	6.98
Refiners' Acquisition Cost (Blended Price)	-1.04	0.06	0.20	0.09	-0.60	-1.06
Alberta Border Price, Domestic Natural Gas	0.00	4.79	4.75	4.31	3.06	2.16
U.S. Border Price, Export Natural Gas	0.07	0.08	0.06	0.15	0.28	0.47
Weighted Average Wellhead Price, Natural Gas	0.04	4.72	4.16	3.75	2.64	2.09
Toronto City-Gate Price, Natural Gas	-1.08	0.06	0.20	0.09	-0.60	-1.06
Ratio: Gas/Oil Cost per BTU	0.00	0.00	0.00	0.00	0.00	0.00
External Trade ($/BBl as Indicated) (Solution Minus Base Case)						
Total Oil Imports (CDN.$MILL)	21	-157	-299	-434	-559	-564
Oil and Gas Exports (CDN.$MILL)	6	7	6	19	40	72
Balance on Oil and Gas Trade (CDN.$MILL)	-16	163	306	453	601	637

TABLE 3

Estimated Revenue Impacts of the Accord

	1985	1986	1987	1988	1989	1990	1985-90
	($ Billions)						
Federal							
PGRT	***	-0.6	-1.3	-1.9	-3.0	-3.5	-10.4
IORT	-	-	-	-	-	-	-
NGGLT	-	-	-	-	-	-	-
Export tax	-0.2	-0.3	-0.4	-0.5	-0.5	-0.5	-2.4
COSC	-0.4	-0.9	-0.9	-0.9	-1.0	-1.0	-5.1
Income tax	0.1	0.3	0.4	0.4	0.4	0.3	1.8
PIP's[1]	-	0.8	0.8	0.8	0.9	0.9	4.2
Total	-0.5	-0.7	-1.4	-2.1	-3.2	-3.8	-11.9
Provincial							
Royalties	0.2	0.7	0.8	0.8	0.8	0.7	4.0
Export tax	-0.2	-0.3	-0.4	-0.5	- 0.5	-0.5	-2.4
Income tax	***	0.1	0.1	0.1	0.1	0.1	0.5
Total	0.1	0.5	0.5	0.4	0.4	0.3	2.2
Industry							
Gross revenues	0.4	1.8	2.1	2.4	2.5	2.5	11.7
After-tax	0.2	1.2	2.0	2.7	3.7	4.0	13.9
Energy Investment (1971$)							
Non-residential	***	0.1	0.2	0.3	0.5	0.5	1.6
M & E	***	***	0.1	0.1	0.1	0.1	0.4

[1] Estimates of the revenue impacts of the phase out of the PIP are taken from 1985 budget documents.

7.3.4 Macroeconomic Impacts of the Accord

The Western Accord boosts real GNP by 0.06 percent in 1985 and by 0.14 percent in 1986 (see Table 4). (See Table 4.) The positive impacts flow mainly through total fixed business investment, which increases by 0.1 percent in 1985 and 0.7 percent in 1986. Virtually all of the increase in investment comes from the energy sector. Although consumption rises above the base case levels throughout the simulation period (0.04 to 0.26%), on average it contributes only about one-third as much as investment to the higher levels of real GNP.

The Accord reduces inflation in the first year as the inflationary aspects of the investment boom are offset by the slight drop in oil prices at the consumer level. In the second year, however, the CPI is 0.08 percent higher in response to the continued investment boom and higher oil prices (0.06%). Wages

TABLE 4

Summary of Macroeconomic Impacts.
(Percentage Change: * Indicates Change in Levels)

	1985	1986	1987	1988	1989	1990
Gross National Product	-0.03	0.23	0.35	0.47	0.68	0.82
Implicit Price Deflator For GNP	-0.09	0.09	0.15	0.23	0.27	0.35
Real Gross National Product	0.06	0.14	0.20	0.25	0.41	0.46
Expenditure on Personal Consumption	0.04	0.07	0.13	0.21	0.33	0.44
Expenditure by Governments	0.00	0.00	0.00	0.00	0.00	0.00
Investment Expenditure	0.15	0.68	1.12	1.51	2.05	2.04
Residential Construction	-0.02	0.03	-0.02	-0.03	-0.06	-0.09
Non-Residential and Mach. & Equip.	0.20	0.88	1.44	1.90	2.57	2.55
Exports	0.08	0.19	0.13	0.04	0.12	0.20
Imports	0.05	0.35	0.50	0.65	0.84	0.97
Unemployment Rate *	-0.02	-0.06	-0.07	-0.07	-0.11	-0.13
Employment	0.03	0.09	0.11	0.13	0.18	0.23
Participation Rate *	0.01	0.02	0.03	0.03	0.04	0.06
Narrowly Defined Money Supply, M1	0.00	0.00	0.00	0.00	0.00	0.00
M1 Velocity (M1/GNP)	-0.03	0.23	0.35	0.47	0.68	0.82
Finance Co. 90-Day Paper Rate *	-0.01	0.05	0.08	0.10	0.15	0.18
Industrial Bond Rate *	0.01	0.01	0.06	0.08	0.16	0.21
Consumer Price Index	-0.07	0.08	0.09	0.13	0.14	0.20
Average Annual Wages and Salaries	0.00	0.09	0.18	0.33	0.48	0.66
Real Annual Wages Per Employee ($71 '000)	0.07	0.01	0.09	0.21	0.33	0.46
Productivity Change (GDP/Employee)	0.05	0.07	0.13	0.19	0.32	0.36
Exchange Rate (US$/CDN$)	-0.07	-0.08	-0.06	-0.15	-0.28	-0.47
Terms of Trade (PX/PH)	-0.14	0.08	0.21	0.26	0.25	0.18
Balance on Current Account ($ MILL) *	-149	-88	-229	-584	-869	-1173
Balance on Long-Term Capital ($ MILL) *	45	37	244	355	612	785
Change in Foreign Reserves ($ MILL) *	-40	-16	2	4	1	0
Consolidated Government Balance ($ MILL) *	-477	-99	-677	-1483	2546	-3205
Federal Gov't Balance (NA BASIS) ($ MILL) *	-605	-738	-1331	-2117	-3281	-3936
Federal Balance (Inflation-Adjusted) *	-729	-366	-1177	-1773	-2819	-3069
Personal Savings Rate (%) *	0.03	0.01	0.06	0.09	0.13	0.13
Nominal After-Tax Corporate Profits	1.07	5.04	6.71	7.96	10.14	10.06
Real Personal Disposable Income	0.07	0.08	0.21	0.32	0.49	0.61

rise more quickly than the CPI, but despite the rise in real wages, the growth in output results in an increase in employment and a drop in the unemployment rate. By 1990, employment has increased 0.23 percent above base case levels (28,400 more employed people) and the unemployment rate is 0.13 percentage points lower.

The Accord also results in an improvement in the energy trade balance after the first year when increases in domestic production catch up to the increase in demand due to increased economic activity. By 1990, the energy trade balance shows an improvement of some $640 million. Despite this, the overall current account balance is $1.2 billion lower in 1990. Exports increase slightly[24], but this is outweighed by the increase in imports. Real imports are nearly one percent higher in 1990, with approximately 60 percent of the increase coming from higher merchandise imports and 30 percent from higher capital service payments. The Canada-U.S. interest rate differential increases by five to 20 basis points over the period[25] and leads to higher capital inflows.

The impacts of the Accord on the overall federal balance are shown in Table 5. As was shown previously in Table 3, once the complete removal of the PGRT is in place, the federal government loses three to four billion in net revenues from the energy sector under the terms of the Accord, while the provinces gain slightly. However, the higher level of economic activity leads to gains in revenues from other taxes by 1990: $0.6 billion in personal taxes, $0.9 billion in other corporate taxes and $0.3 billion in other indirect taxes. The increase in tax revenues outside the energy sector is not sufficient to offset the losses from the energy taxes, however, so the federal deficit increases by $600 million in 1985 and by $3.9 billion in 1990. Even when the effects of the energy tax changes are netted out, the federal deficit is around $100 million higher in 1990 because of higher interest payments on the public debt.

7.3.5 Federal Excise Tax on Motive Fuels

Although not directly related to the Accord, the increase in the federal excise tax on motive fuels announced in the May 1985 federal budget will help to offset some of the losses from the tax changes in the Western Accord. The tax will be increased by two cents/litre starting September 3, 1985 and will apply to motor gasoline, diesel fuel, aviation gasoline and jet fuels. Budget estimates expect the tax to bring in $930 million in 1985-86[26]. A further increase of one cent/litre starting in January 1987 was announced after the budget in order to compensate for the government's decision not to go ahead with the deindexation of Old Age Pensions.

Since the tax covers a wider base than the demand for motor gasoline incorporated in the FOCUS energy accounting module, $300 million has been added to federal sales tax revenues to bring the FOCUS *ex ante* estimates in line with the budget projection. This has the advantage of maintaining the appropriate price increases in gasoline.

The addition of the excise tax increases gasoline prices in 1985 by 1.0 percent more than under the Accord alone, although when combined with the initial drop in oil prices under deregulation, the price is only 0.2 percent higher than in the base case. In 1986, the combined effects of the two policies increase gasoline prices by around 4.1

TABLE 5

Federal Government Revenues and Expenditures.

Revenues	1985	1986	1987	1988	1989	1990
	(Millions of Dollars)					
Indirect Taxes	-2373 (-13.76)	-4744 (-25.20)	-5547 (-26.22)	-6237 (-25.96)	-6816 (-27.33)	-7412 (-27.32)
Direct Taxes - Corp. & Govt. Bus. Ent.	91 (0.71)	-197 (- 1.45)	-755 (- 4.70)	-1272 (- 6.77)	-2234 (-10.35)	-2572 (-10.49)
Direct Taxes and Transfers from Persons	5 (0.01)	89 (0.19)	118 (0.23)	234 (0.42)	423 (0.70)	609 (0.92)
Direct Taxes on Nonresidents	7	17	30	42	63	77
Investment Income	0	17	46	81	145	219
Net Transfer from (+), to (-) Other Govts.*	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Expenditures						
Current Exp. on Goods and Services	-6 (- 0.03)	23 (0.10)	48 (0.18)	95 (0.34)	146 (0.49)	222 (0.69)
Gross Capital Formation	-1 (- 0.05)	2 (0.10)	2 (0.13)	4 (0.20)	6 (0.28)	9 (0.39)
Transfers to Persons	-15 (- 0.05)	-41 (- 0.12)	-23 (- 0.06)	-14 (- 0.04)	-20 (- 0.05)	-17 (- 0.04)
Subsidies	-1703 (-25.81)	-3603 (-70.64)	-4325 (-79.25)	-4945 (-84.70)	-5544 (-88.74)	-6167 (-92.24)
Capital Assistance	3	-615	-828	-833	-830	-843
Transfers to Nonresidents	0	0	0	0	0	0
Interest on the Public Debt	58 (0.25)	154 (0.58)	347 (1.21)	657 (2.15)	1103 (3.42)	1651 (4.92)
Capital Consumption Allowances	0	0	0	0	1	1
Surplus (+) or Deficit (-)	-605 (-605)	-738 (-738)	-1331 (-1331)	-2117 (-2117)	-3281 (-3281)	-3936 (-3936)

Note: Percent Changes (or Levels Changes) in Parentheses

* Includes "Other Revenues"

percent, which reduces the demand for gasoline by around 1.0 percent[27]. The overall CPI is 0.32 percent higher than the base case in 1986 or 0.24 percent higher than under the Accord alone.

The excise tax offsets much of the positive impact of the Western Accord (see Table 6)[28]. The combined policy raises real GNP by 10-30 percent as much as the Accord alone, and when the second stage of the excise tax takes effect in 1987-88, real GNP falls slightly below base case levels. In 1990, real GNP is 0.15 percent higher than the base case under the combined policy compared to 0.46 percent under the Accord alone. Most of the difference is the result of lower consumption, particularly for automobiles and non-durables. Auto consumption is strongly influenced by the CPI for gasoline, and in turn, influences the consumption of non-durables. In addition, consumption in other categories is reduced because of the drop in real disposable personal income brought about by higher inflation and smaller increases in nominal wages. The employment effects are also much smaller than under the Accord alone, and in some years fall below base case levels. In 1990, employment is almost exactly what it was in the base case.

Interest rates do not rise as much in the combined excise tax-Accord policy because of lower-growth; this has a small positive effect on investment outside the energy sector. It also reduces the inflow of foreign capital and the subsequent outflow of interest and dividend payments to foreigners. Lower growth also cuts the increase in the real imports of goods nearly in half, so by 1990, total real imports rise by 0.6 percent compared to 1.0 percent under the Accord alone. Exports are hard hit by the rise in the domestic price level, falling by 0.1-0.6 percent over the period. Despite this, the current account balance shows an improvement of around $210 million in 1990 compared to the Accord alone, and the exchange rate does not depreciate significantly.

Although the increase in the excise tax does reduce the impact of the Accord on the federal deficit by around $1.0 billion in 1990, the effect on the combined deficit is only $530 million since revenue gains in personal taxes and non-energy corporate taxes are smaller because of the lower level of economic activity.

7.4 SUMMARY

Any simulation study depends upon the model used and assumptions made. Subject to this important caution, the results of the present paper suggest that the Western Accord is likely to have significant positive macroeconomic impacts. However, the results also suggest that the most important impacts will come through the effects of the Accord on investment in the energy sector; thus the assumptions about re-investment of corporate profits in the industry are critical. In these simulations, it has been assumed that 85 percent of the after-tax gain would be reinvested which, although not out of historical ranges, may tend to overstate the long-term investment impacts. The short-term impacts, on the other hand, may be understated as the immediate removal of the PGRT on production from newly drilled wells and the retention of the PIP create incentives for producers to push ahead with investment projects as quickly as possible.

Two major uncertainties remain: the possible modification of incentives for exploration and development in the offshore and frontier

TABLE 6

Summary of Macroeconomic Impacts.
(Percentage Change: * Indicates Change in Levels)

	1985	1986	1987	1988	1989	1990
Gross National Product	0.02	0.33	0.36	0.37	0.47	0.54
Implicit Price Deflator For GNP	-0.04	0.32	0.43	0.47	0.42	0.39
Real Gross National Product	0.06	0.01	-0.07	-0.10	0.05	0.15
Expenditure on Personal Consumption	0.02	-0.03	-0.02	-0.03	0.05	0.14
Expenditure by Governments	0.00	0.00	0.00	0.00	0.00	0.00
Investment Expenditure	0.21	0.75	1.06	1.23	1.66	1.67
Residential Construction	0.00	0.03	-0.09	-0.08	-0.12	-0.10
Non-Residential and Mach. & Equip.	0.27	0.97	1.37	1.56	2.09	2.09
Exports	0.06	-0.06	-0.43	-0.65	-0.52	- 0.34
Imports	0.05	0.30	0.36	0.35	0.47	0.59
Unemployment Rate *	-0.01	0.00	0.06	0.10	0.06	0.01
Employment	0.02	0.00	-0.09	-0.15	-0.09	0.00
Participation Rate *	0.00	0.00	-0.02	-0.03	-0.02	0.01
Narrowly Defined Money Supply, M1	0.00	0.00	0.00	0.00	0.00	0.00
M1 Velocity (M1/GNP)	0.02	0.33	0.36	0.37	0.47	0.54
Finance Co. 90-Day Paper Rate *	0.00	0.07	0.08	0.08	0.10	0.12
Industrial Bond Rate *	0.00	0.02	0.07	0.08	0.15	0.16
Consumer Price Index	0.00	0.32	0.40	0.40	0.35	0.35
Average Annual Wages and Salaries	0.02	0.17	0.29	0.34	0.34	0.36
Real Annual Wages Per Employee $71,000)	0.02	-0.15	-0.11	-0.06	-0.01	0.01
Productivity Change (GDP/Employee)	0.04	0.01	0.03	0.08	0.20	0.24
Exchange Rate (US$/CDN$)	-0.05	0.12	0.19	0.09	-0.02	-0.20
Terms of Trade (PX/PH)	-0.08	0.42	0.67	0.69	0.61	0.46
Balance on Current Account ($ MILL) *	-92	98	-197	-565	-751	-964
Balance on Long-Term Capital ($ MILL) *	14	51	286	344	570	661
Change in Foreign Reserves ($ MILL) *	-25	35	51	10	5	3
Consolidated Government Balance ($ MILL) *	-236	545	-258	-1244	-2255	-2770
Federal Gov't Balance (NA BASIS) ($ MILL) *	-356	86	-464	-1305	-2398	-2952
Federal Balance (Inflation-Adjusted) *	-342	780	-237	-1216	-2321	-2570
Personal Savings Rate (%) *	0.02	-0.01	0.07	0.09	0.12	0.12
Nominal After-Tax Corporate Profits	1.03	3.99	4.98	6.02	8.25	8.36
Real Personal Disposable Income	0.05	-0.04	0.06	0.08	0.19	0.29

TABLE 7

Federal Government Revenues and Expenditures

Revenues	1985	1986	1987	1988	1989	1990
	(Millions of Dollars)					
Indirect Taxes	-2136	-3829	-4355	-5075	-5671	-6280
	(-12.39)	(-20.34)	(-20.58)	(-21.12)	(-22.73)	(-23.15)
Direct Taxes - Corp. & Gov't. Bus. Ent.	78	-372	-1072	-1644	-2616	-2938
	(0.62)	(-2.74)	(-6.68)	(-8.76)	(-12.11)	(-11.99)
Direct Taxes and Transfers From Persons	18	129	106	209	344	394
	(0.04)	(0.28)	(0.21)	(0.38)	(0.57)	(0.60)
Direct Taxes on Nonresidents	4	10	13	21	38	49
Investment Income	1	26	53	74	124	173
Net Transfer from (+), to (-) Other Gov'ts. *	0	0	0	0	0	0
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Expenditures						
Current Exp. on Goods and Services	1	56	93	124	129	142
	(0.00)	(0.23)	(0.36)	(0.44)	(0.43)	(0.44)
Gross Capital Formation	0	4	6	7	7	9
	(-0.01)	(0.24)	(0.28)	(0.32)	(0.32)	(0.35)
Transfers to Persons	-10	36	148	217	210	170
	(-0.03)	(0.10)	(0.41)	(0.56)	(0.51)	(0.38)
Subsidies	-1703	-3603	-4325	-4945	-5544	-6167
	(-25.81)	(-70.64)	(-79.25)	(-84.70)	(-88.74)	(-92.24)
Capital Assistance	4	-613	-828	-837	-837	-852
Transfers to Nonresidents	0	0	0	0	0	0
Interest on the Public Debt	30	-2	115	326	653	1049
	(0.13)	(-0.01)	(0.40)	(1.06)	(2.03)	(3.12)
Capital Consumption Allowances	0	0	1	1	1	2
Surplus (+) or Deficit (-)	-356	86	-464	-1305	-2398	-2952
	(-356)	(86)	(-464)	(-1305)	(-2398)	(-2952)

Note: Percent Changes (or Levels Changes) in Parentheses

* Includes "Other Revenues"

regions, and the outcome of the current debate on natural gas pricing. Although there has been some discussion about possible federal incentives for exploration and development on the Canada lands and offshore regions, the current concern over the size of the federal deficit and the already significant revenue losses from the Accord may make further concessions on the part of the federal governemnt unlikely.

These simulations also suggest that while the Accord should have a positive impact on the economy, it may have limited success in generating a large number of new jobs. It also appears unlikely that tax revenue gains from other sectors in the economy will be large enough to offset the revenue losses from the energy sector. Furthermore, an examination of the impacts of the increase in the motive fuels excise tax suggests that attempts to recoup the revenue losses from other sectors of the economy may undo much of the positive impact of the Accord without achieving the desired objective of offsetting the revenue losses.

NOTES

PEAP Policy Studies are special or preliminary reports circulated to suscribers of the Policy and Economic Analysis Program.

[1] Canada 1985a, p. 1.

[2] Francis, 1985.

[3] The 1987 increase is intended to compensate for the return to full indexation of Old Age Pensions, which were to be de-indexed in the original budget plans.

[4] Francis, 1985.

[5] Oilweek, 1985b, p. 8.

[6] Canada 1985b.

[7] The statutory rate of the tax is 16 percent with a 25 percent resource allowance exemption to reflect capital costs.

[8] Oilweek, 1985b.

[9] Dungan et al., 1984.

[10] See Helliwell et al., 1985.

[11] Canada 1985b

[12] The announcement about the removal of the ban was reported in the June 18, 1985 issue of the Globe and Mail, p. B4, "Gasoline Leads Pace in April for Canadian Oil Product Sales."

[13] In the long-term, of course, all such price differentials would be expected to equalize.

[14] Oilweek, 1985a.

[15] Since the Canadian dollar has been weaker in the recent past than was projected in the FOCUS base case, $U.S. oil prices have been adjusted so that conversion with the FOCUS exchange rate will yield import and export prices equivalent to current Canadian dollar values. The distinction between import and export prices, along with the current overpricing of NORP oil, is assumed to disappear by 1988 as the market returns to equilibrium conditions.

[16] The decrease in NORP prices is proportionately less in 1986 than in 1985, since it was assumed that the overpricing would disappear as the differences between spot and posted prices faded under more equilibrium market conditions. The decline in NORP prices therefore does not have as much of an offsetting influence on the rise in old oil prices as it had in 1985.

[17] Demand elastics are assumed to be:

	Oil	Natural Gas
Income	1.0	1.0
Own price	-0.506	-0.615
Cross price	0.135	0.049

Price elasticities are taken from Helliwell et al., 1983.

[18] Increases in new oil production are 2.0 percent in 1986, 2.9 percent in 1987, 4.1 percent in 1988, 5.1 percent in 1989 and 5.4 percent thereafter. It has been assumed that production of old oil does not change.

[19] Humphreys, 1985.

[20] Humphreys, 1985.

[21] In the May 1985 budget, PGRT losses were estimated to be $125 million in 1985-86 and $920 million in 1986-87 (Canada 1985b). The FOCUS estimates of $45 million in 1985 and $600 million in 1986 are not strictly comparable because of differences between the calendar and fiscal year. The federal government estimate of $125 million over 1985-86 encompasses the rate decrease which comes into effect in January 1986, which is one of the reasons for the higher revenue loss estimate. The situation is similar for the following year.

[22] Oilweek, 1985b.

[23] Alberta royalty changes worth an estimated $460 million in producer revenues were announced June 24, 1985. See "Lougheed's Largesse Leaves Oilmen Smiling," in the June 25, 1985 Globe and Mail, p. B1.

[24] The increase in exports is entirely due to a rise in auto exports, which is influenced by total North American auto consumption. Exports of other goods actually decline slightly.

[25] Interest rates rise since nominal GNP is higher and the nominal money supply is held at base case levels. This also has a depressing effect on investment in the non-energy sector.

[26] Canada 1985b.

[27] Estimates of the price elasticity of demand for motor gasoline in Canada are based on Gallini (1983). The five year price elasticity is -0.65, with 56 percent of the impact being felt in the first year.

[28] The estimated equation for consumer non-durables has had the coefficient on the CPI for gasoline set to zero for all of the simulations reported in this paper, as the equation over-responded to changes in gasoline prices. With the normal coefficient, the excise tax/Accord combination resulted in even higher losses in real GNP.

BIBLIOGRAPHY

Canada. "Long Term Energy Supply/Demand Outlook, Spring '84 Forecast." Energy Market Analysis and Statistics Division, Energy Strategy Branch, Department of Energy, Mines and Resources, Ottawa. May, 1984.

Canada. "The Western Accord: An Agreement Between the Governments of Canada, Alberta, Saskatchewan and British Columbia on Oil and Gas Pricing and Taxation" and accompanying background news releases on crude oil price deregulation, natural gas pricing and fiscal measures." Department of Energy, Mines and Resources, Ottawa. March 28, 1985a.

Canada. "The Fiscal Plan." Department of Finance, Ottawa. May 23, 1985b.

Canada. Oil Pricing Information Newsletter. Oil Pricing and Compensation Programs Branch, Department of Energy, Mines and Resources. Issues 21-25. January-May, 1985c.

Dungan, Peter, Mary MacGregor and Andre Plourde. "The National Projection Through 1995." Policy Study No. 84-5, Policy and Economic Analysis Program, Institute for Policy Analysis, University of Toronto. December, 1984.

Francis, Diane. "New Energy Deal Will Cost Ottawa $500 Million a Year, Carney Says." The Toronto Star. March 29, 1985. p. A1.

Gallini, Nancy T. "Demand for Gasoline in Canada." Canadian Journal of Economics, Vol. 16, No. 2. May, 1983. pp. 299-324.

Helliwell, John F., Robert N. McRae, Paul Boothe, Ardo Hanssen, Michael Margolick, Tim Padmore, Andre Plourde and Reg Plummer. "Energy and the National Ecnomy: An Overview of the MACE model." Resources Paper No. 89, Department of Economics, University of British Columbia. In A.D. Scott (ed.), Progress in Natural Resource Economics, Oxford. Oxford University Press, 1983. pp. 17-85.

Helliwell John, Mary MacGregor, Robert McRae and Andre Plourde. "A New Direction for Canadian Energy Policy: The Western Accord and 1985 Alberta Royalty Changes." Mimeo. Department of Economics, University of British Columbia. 1985.

Humphreys, Vic. "Alberta is Next Up to Bat." Oilweek, Vol. 36, No. 17. May 27, 1985. p. 3.

Oilweek. "Deregulation Will Have Little Effect on Ontario Refiners." Oilweek, Vol. 36, No. 18. June 3, 1985a. p. 3.

Oilweek. "Federal Energy Spending Rose 40% Last Year." Oilweek, Vol 36, No. 19. June 10, 1985b. pp. 8-9.

Book Reviews:

Derek P.J. Hum,
Book Review Editor.

Canada's Energy Policy, 1985 and Beyond, E.A. Carmichael and C.M. Herrera (eds.), Toronto, C.D. Howe Institute, 1984. (97 pp.). ISBN 0-88806-126-9.

This short volume contains revised and edited versions of seven papers originally presented at the C.D. Howe Institute's energy conference, held in late 1983. The papers included are "Towards More Flexible Energy Policy" by Carmichael and Herrera, "The International Context" by M.A. Adelman, "Canadian Energy Policy After 1985: Lessons from the Present" by L. Waverman, "Energy Revenue Sharing" by B.W. Wilkinson, "Managing Canadian Energy Supply and Demand" by R.G. Wirick, "Financing Energy Developments, 1985 and Beyond" by J. Grant, and "Energy Issues in a Public Policy Context" by T.E. Kierans.

The collection of papers attempts to outline an integrated package of policy changes that will help, by deregulation, to improve economic efficiency in the Canadian petroleum and natural gas industry. The policies suggested are similar to, but less detailed than, those outlined recently by the Economic Council of Canada in Connections, An Energy Strategy for the Future. They include oil price deregulation at the wellhead, phased deregulation of natural gas prices at both the Alberta and United States borders, and several important changes in taxation and royalty arrangements as they pertain to the primary oil and gas industry. By and large, the policy package also has desirable side-effects on both employment levels and the inflation rate. The main ingredients in the policy package include the following nine elements.

1. Conventional old oil prices should be deregulated and allowed to rise to world levels, which are themselves expected to remain flat or decline somewhat further over the next few years. In consequence, there would no longer be a separate new oil reference price (NORP), and prices for new oil would decline to reflect conditions in the North American segment of the world market place. Moreover, with the deregulation of old oil prices, the petroleum compensation charge and the oil export charge will disappear.

2. Natural gas prices should undergo phased deregulation at both the Alberta and U.S. borders, and will probably fall in the process. To ensure both economic efficiency and equitable internal prices, this also implies that the rules set by the National Energy Board for the export of natural gas should be further relaxed. Indeed, Canadian natural gas should be allowed to penetrate and supply all the Northern tier markets in the United States in which it is able to compete without subsidy. Nevertheless, it is difficult to see how one can have total deregulation of the domestic natural gas industry, given the pipeline distribution systems and utilities involved in getting the gas to the final consumer.

3. The Canadian ownership charge should be changed to an "oil self-sufficiency charge" which is applied to all oil consumed in Canada. It should be removed from all forms of petroleum exports and from all Canadian natural gas production, whether consumed domestically or exported. This will reduce the degree to which natural gas is unfairly treated in the market place relative to electricity. To raise the same revenues, the "oil self-sufficiency charge" on Canadian oil consumption may have to be somewhat higher than the ownership charge it replaces.

4. The federal petroleum and natural gas revenue tax (PGRT) on old conventional crude oil should gradually be altered so that it applies more as an excess profits tax than as a revenue tax. However, some tax of this form on old oil needs to remain in place for the foreseeable future, for reasons of the federal government's revenue picture, especially if old oil prices are deregulated.

5. With the exception of old oil production, however, the PGRT should be substantially reduced if not eliminated on all other forms of hydro-carbon production, including natural gas. This is required to prevent new oil and natural gas netbacks from falling as much as they otherwise might with oil and gas price deregulation.

6. Further productivity offsetting effects should be built into provincial royalty regimes over time to ensure that formula adjustments compensate for rising operating and capital costs. In addition, reductions in royalty rates may well be required for natural gas as deregulation occurs.

7. For new heavy oils and tar sands (bitumen) developments, a generic fiscal regime which postpones the bulk of any rent capture until after the pay-out of initial capital investment occurs should be developed and implemented. More generally, provincial production royalties should be designed to capture economic rents, without distorting patterns of potential profitability; and they should continue to be used in tandem with a "bonus bidding" system for land.

8. The petroleum incentives programs (PIPs) should be phased out on both Canada lands and provincial lands. This will result in a more efficient pattern of exploration and development activity, as well as reducing government expenditures in this area in a

way which will offset certain revenue losses.

9. The fiscal regime on Canada lands should be similar to that for new heavy oil and in situ tar sands developments. It should move away from PIPs and PGRT towards sliding scale, progressive incremental royalties and profits taxation. In addition, the retroactive "back in provision on Canada lands" should be eliminated; more generally, no further experimentation with "Canadianization distortions" should be contemplated.

All of these changes will help to put oil and gas taxation into a more efficient, less distortionary, mold than has been the case under the National Energy Program (NEP). As the Economic Council of Canada has demonstrated, they also make good economic sense from the point of view of employment generation and the inflation rate. Nevertheless, one should now be well aware that one cannot successfully run an energy policy with "revenue sharing," "inter-regional distributional equity" or "macro-economic stabilization policy needs" as the main objectives since the resulting policy instruments are bound to be over-loaded. Because energy policy instruments are likely to be rather unsuitable for reaching these forms of macro-economic targets, the NEP can clearly be judged to be a failure from this perspective. The new taxation and royalty regime, to which we should now be headed, must put efficient non-distortionary rent collection first among all objectives. Being a market-orientated approach, it will thereby also serve the fundamental objective of security of energy supply.

It is interesting to observe that much of this nine-point agenda has already been reflected in the Western Accord, signed on March 27, 1985, between the federal government and three western-most provincial governments. The main exceptions pertain to elements 3, 4, and 5. The Canadian ownership charge has been removed, effective June 1, 1985. However, to replace the lost revenues the federal government has added two cents per litre to the gasoline excise tax effective September 3, 1985, rather than impose an "oil self-sufficiency charge." The petroleum and natural gas revenue tax (PGRT) will be phased out gradually and symmetrically on all categories of conventional oil and gas production over the next four years. The effective PGRT rate will fall from 12 percent of net production revenues in 1985, to ten percent in 1986, eight percent in 1987, six percent in 1988, and zero percent in 1989. A similar phase-out also occurs for synthetic oil from the initially lower base rate of eight percent. However, as an incentive to further exploration and development activity, the PGRT is also removed from all production from oil and gas wells newly spudded after April 1, 1985.

Effectively, the PGRT phase-out will occur more quickly on old oil production than suggested in element 4 above, and more slowly on all other categories of hydro-carbon production than suggested in element 5 above. However, it remains feasible for provincial governments to adjust relative royalty rates to achieve much the same consequences. More specifically, in the mandatory review that is now being undertaken, provincial governments should reduce royalty rates on new oil production, enhanced oil and non-conventional recovery projects, and natural gas, while maintaining their existing royalty rates on old oil. This further differentiation in royalty rates seems essential to prevent

further netback erosion on hydrocarbon production other than old oil production, while containing the increase in old oil netbacks that results from price deregulation.

Much more could be said of the Western Accord, whose major ingredients have been foreshadowed in several policy documents including the C.D. Howe monograph currently being reviewed. There can be no question that, in removing many of the adverse elements of the NEP, the Western Accord will be beneficial to western Canada. There is also no question that this collection of C.D. Howe energy papers have been one of many instruments pushing towards a more sensible energy policy for Canada. From this perspective, the whole collection is well worth reading.

Brian L. Scarfe, Department of Economics, University of Alberta.

Consultation and Budget Secrecy: Reforming the Process of Creating Revenue Budgets in the Canadian Federal Government, Evert A. Lindquist, Ottawa, The Conference Board of Canada, Study No. 86, February, 1985. (90 pp.)

In recent years complaints about the revenue budget process have come from a variety of powerful economic groups. If one event more than any other gave rise to calls for reform, it was the November, 1981 budget of then Finance Minister Allan MacEachen. It was seen by many as an economic and political disaster. The flaws of the MacEachen budget were widely attributed to its having been drafted in a vacuum, ignoring the economic and practical realities which lay beyond the cloistered confines of the Department of Finance in Ottawa. The Conference Board, therefore, commissioned a study to investigate how the federal government prepared its revenue budgets, what took place in selected other jurisdictions, and how the balance might be changed between the requirements for budgetary secrecy on the one hand and wider consultation over proposed taxation changes on the other. In addition to a review of recent literature, the author of the study interviewed 30 past and present participants in the Canadian federal revenue budget process. The final result is a competent and useful, but somewhat unexciting, report.

At the outset the author notes that he intends to concentrate on the "process" by which revenue budgets are determined, though noting that process and product are inextricably intertwined. Criticisms of the procedures for budget creation are often thinly disguised attacks on budget policies since a budget is both an economic and a political document. It confers or withdraws material benefits on particular groups and individuals while also serving the broad symbolic purpose of affirming widely cherished values. Ignoring the wider political purpose and significance of the budget as an "occasion" in democratic life could lead to a naive faith in the benefits of technical and procedural changes. The importance of the wider context is reflected by the fact that recent dissatisfaction with revenue budgets has as much to do with their failure to solve intractable economic problems as with flaws in the procedures used to

prepare them.

This study concludes that difficulties associated with the revenue budget process are attributable to several factors: secrecy, the general nature of pre-budget submissions by outside groups, the inability of the government to accompany budget statements with draft legislation, and staff turnover in the Department of Finance. The major inhibition to advance consultation is not budget secrecy, but the difficulty encountered by the Department of Finance in staging effective consultations when there is no "normal" budget date. Moving to a predetermined time in the year for the budget presentation is the main recommendation for improvement. Before reaching this conclusion, the author reviews 21 proposals for reform, organized under four categories of issues: timing, provision of information, the role of the executive, and the role of the legislature. Each proposal was tested with a panel of 30 experts interviewed. Arguments for and against proposed changes are reviewed, but the author takes no stand on which changes are workable and would represent an improvement.

Another part of the report compares the Canadian revenue budget process to that in four other jurisdictions: Ontario, the United Kingdom, Australia, and the United States. Although the discussion is, of necessity, brief there are some useful insights presented. Some of the proposals for change in the Canadian system would diffuse responsibility within the political system in somewhat the same manner as the American system. Presenting the traditional model of parliamentary government, the study argues that though MPs lack the capacity to change financial proposals, they do control the fate of governments. It is suggested that the logic of the congressional system strips Congress of the power to make governments, but grants it a real role in the shaping of financial legislation. A disappointment is the lack of discussion of how more advance consultation with outside groups would impinge on Parliament's already marginal role in the formulation of tax policy. The fundamental question is whether Parliament - both the House of Commons, the Senate and committees of both houses - can play any significant role in the highly complex and technical field of broad economic policy formulation and tax legislation.

In Ontario, the revenue and expenditure budgets are separate processes, but are linked by reason of the virtual domination of the Department of Treasury and Economics on the revenue side. By setting the "budgetary stance" of the government, Treasury determines a great deal about the expenditure pattern. The Treasurer consults regularly with the Premier whose support is crucial in terms of "selling" the budget. The abandonment of Finance Minister Wilson by Prime Minister Mulroney after the last federal budget illustrates the importance of this relationship. While Ontario retains the convention of budget secrecy it also consults extensively - a practice which is generally viewed positively.

In only 90 pages, this study could hardly go into great depth on the issue of budget secrecy. It does present valuable information and opinion. I suspect that reforms to the revenue budget process at the federal level will be slow in coming and incremental in nature. Not just the traditional reticence of the Department of Finance to share official opinion will account for this caution, it will also reflect the calculations of ministers about the political risks and benefits of

opening up the process. There is a trend, as witnessed by the growing role of political assistants to the Minister of Finance, to attempt to "stage manage" the budget so as to avoid disasters like November, 1981. Perhaps the Macdonald Commission will provide further ideas for reform.

Paul G. Thomas, Department of Political Studies, University of Manitoba.

The Western Economic Review is computer typeset, using the University of Waterloo SCRIPT text editing system, installed on an Amdahl 5850. The camera-ready proofs are produced on a XEROX laser printer.

Except where noted, all tables, charts and figures are produced by the Computer Assisted Socio-Economic Data Base (CASED) extracting time-series from the CANSIM University Base (Statistics Canada). The Statistical Analysis System (SAS) is also used to prepare the basic tables and graphs.

P R I Z E

APPLIED SOCIAL AND ECONOMIC POLICY

The Western Economic Review offers an annual essay prize in applied social and/or economic policy. Submissions within the following guidelines are welcome:

- Any field within applied social and/or economic policy
- Submissions will be judged on innovation, clarity of exposition, rigour and timeliness
- All submissions must be typewritten, double spaced, in triplicate, not exceed 10,000 words, and be submitted by June 1, 1986. Please signify "Essay Prize" on the paper. All student submissions must be accompanied by a letter from an academic institution
- All submissions become the property of the Institute for Social and Economic Research for one year, and will be reviewed for possible inclusion in the Western Economic Review regardless of the outcome of the essay contest

The prize-winning essay will be published in the Fall '86 issue of the Western Economic Review.

STUDENT PRIZE - $1,000.00

Send all submissions to:

The Editor
Western Economic Review

THE PRIZE IS MADE POSSIBLE WITH A GRANT FROM THE ALUMNI ASSOCIATION OF THE UNIVERSITY OF MANITOBA