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Date April 17, 1978
The Crowsnest Pass rates are fixed rail freight rates that apply on the carriage of most Canadian grain. They were originally established in 1897, and have been embodied in Federal statute since 1925. In recent years, the rates have covered less than 40 percent of rail-grain costs. With continuing cost inflation, this proportion will decrease to even lower levels over time.

Several policy alternatives are available to the Federal Government with respect to the transportation of grain by rail. These alternatives are characterized primarily by different freight rate levels. The lowest rate level considered herein is the current one; the highest is a level at which the railways would recover the long-run variable costs of the rail-grain system plus a contribution to their constant costs. For each price-level alternative, there are a range of subsidy alternatives. Depending on the particular price level, subsidies could be given to the railways, the grain producers, neither of these, or both of them.

In order to evaluate the policy alternatives, there must be criteria for evaluation. The criteria used in this thesis are the major objectives that relate to the issue. Two of the objectives are to improve economic efficiency and to facilitate the development of secondary industry in the Prairie provinces. Both of these objectives favour the pricing alternative of raising grain freight rates to a compensatory level. Without producer subsidies, however, this alternative violates a third objective—that of minimizing grain-producer transportation
costs.

In addition to these three objectives, there are four objectives that refer particularly to the Federal Government. They are maximizing votes, implementing the "user pay" philosophy, minimizing total subsidy payments, and assisting railway variable-cost recovery in grain transport. A major consideration that is not an objective is the resistance of producers to direct, rather than indirect, subsidies.

The quantitative impacts of raising rail-grain rates on the railways and on grain producers are substantial. Implementing rail freight rates equal to the long-run variable costs of transporting grain would have increased the combined net revenue of the Canadian National Railways and CP Rail by at least two-thirds in 1976. It would have decreased the net income of Prairie grain farms by (at most) 15 percent in the same year.

Two policy alternatives are chosen as the better alternatives. The first policy selected is that of initial Crowsnest Pass rates, increasing over time to a larger and larger proportion of rail-grain costs. This pricing scheme would be accompanied by constant railway subsidies to reflect the difference between costs and revenues. The second policy is an immediate increase to rates covering variable costs, with subsequent annual increases to adjust for inflation. With this pricing policy, there would be constant producer subsidies equal to the initial rate increase.
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Acknowledgements

I would like to thank the members of my Thesis Committee, Professor W.G. Waters II, Professor T.D. Heaver, and Professor J.D. Claxton, who assisted and encouraged me throughout the preparation of this thesis. I would also like to thank Professor F.W. Anderson of the University of Regina, who provided valuable early insight into the thesis topic. To Eric, whose patience and support carried me through these arduous months, my deepest love and appreciation.
Chapter I

Introduction

Thesis Objective

There are few issues in Canadian transport that spark more heated debate than that of the Crowsnest Pass rates. These rates apply on the carriage of grain by rail in Western Canada. They were originally established in 1897, and have been embodied in Government legislation since 1925. The rates, combined with post-World War II cost increases, have resulted in substantial railway losses on grain traffic in recent years.

Those people affiliated with Prairie grain producers are generally in favour of keeping rail-grain rates at their current level; those whose interests lie with the railways involved maintain that the rates should be raised to a cost-recovery level. The Grain Handling and Transportation Commission, which reported in 1977, concluded that the Crowsnest Pass rates should continue indefinitely. This conclusion is based on a very brief analysis which omits discussion of many relevant factors. Considering the amount of public concern about the issue, the potential impacts of various alternatives, and the magnitude of the moneys involved, a closer examination of it is warranted.

The objective of this thesis, then, is to evaluate policy alternatives available to the Canadian Government with respect to the Crowsnest Pass rates. The alternatives considered represent a variety of possible rate levels and subsidization
Sources of Information

Information for the thesis was obtained primarily from the following sources:

1) The Commission on the Costs of Transporting Grain by Rail--Report, Volumes I and II

2) Canadian Transport Commission Waybill Analyses

3) 1971 Census of Canada

4) Statistics Canada annual publications: Farm Net Income and Farm Cash Receipts

5) Report to the Grain Handling and Transportation Committee by the Railway Compensation Subcommittee (Canada Grains Council)

6) Various publications by Canadian Pacific Limited and the Province of Saskatchewan.

In addition to these sources, a variety of speeches, research reports, published papers, and statistical references are used. A complete bibliography is given at the end of the thesis.

Limitations and Assumptions

There are two main limitations to the analysis in this thesis. First, the policy alternatives considered vary only according to the financial arrangements for the transportation of grain by rail; the physical structure of the grain-handling system is the same for all the alternatives. Second, all policy alternatives considered involve leaving the ownership and operation of the rail-grain system primarily in the hands of the railways.

The main assumptions of the thesis are those made by the
Commission on the Costs of Transporting Grain by Rail (1976 and 1977), since the calculation of quantitative impacts herein is based on the costs and revenues determined by that Commission. The costs used are those of a rail-grain system modified according to the recommendations of the Grain Handling and Transportation Commission (1977).

Outline of the Remaining Chapters

Chapter II presents the history of the Crowsnest Pass rates, and summarizes the findings of the various Royal Commissions that have addressed the topic of the rates. In Chapter III a list of policy alternatives is generated. Chapter IV discusses some of the major considerations that are relevant to the issue of the Crowsnest Pass rates. The considerations that are the more useful for evaluation are the different objectives; these are discussed in some detail. The impacts of the policy alternatives on various parties are estimated in Chapter V, and the alternatives are evaluated in Chapter VI. The result of this evaluation is the selection of two alternatives which comply "best" with the objectives described in Chapter IV. Chapter VII summarizes the entire analysis.
The Crowsnest Pass rates originated in an Agreement which was signed in 1897 by the Canadian Pacific Railway and the Government of Canada. Under the terms of this Agreement, the Dominion Government gave the CPR a cash subsidy of $3.4 million to assist it in building a line from Lethbridge, Alberta through the Crowsnest Pass to Nelson, British Columbia. In addition, the CPR received 3.8 million acres of land from the Government of the Province of British Columbia. In consideration of the financial assistance received, the CPR agreed to lower its rates on the movement of two classes of freight, and the new rates were to be effective in perpetuity. The first class was that of westbound "setlers' effects", which included such things as fresh fruits, coal oil, binder twine, window glass, paints, livestock, and household furniture. The rate reductions on these items varied between 10 percent and 33 1/3 percent, and were to take effect by the beginning of 1898. The second class of affected items was eastbound grain and flour moving to Fort William and Port Arthur and all points east thereof. The rates on this second group were to be reduced by a total of 3 cents

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1 According to Paragraph 15 of the Agreement, 50,000 of the 3.8 million acres were conveyed to the Dominion for the purpose of securing a supply of coal to the public at reasonable prices.
per hundredweight in two equal installments: September 1, 1898 and September 1, 1899. This decrease represented roughly 12 percent of the average rate.

The Crowsnest Pass Agreement must be viewed in the context of the events and circumstances which preceded it. In 1883, the CPR had completed a line from Winnipeg to Fort William/Port Arthur on Lake Superior. It was the first all-Canadian railway route between these points, replacing the previous indirect route from Winnipeg to the Great Lakes which had passed through St. Vincent, Minnesota. Following the completion of this line, the CPR took advantage of its near-monopoly position by charging grain freight rates that were just low enough to divert the traffic from the St. Vincent route. The situation was made more objectionable by a clause in the Canadian Pacific Railway Act of 1881 which had granted the company monopoly power. Public pressure from Prairie producers led the government to eliminate the clause in 1883, in return for which it guaranteed the interest on $15 million of new CPR bonds. Western pressure also caused the CPR to reduce the grain freight rates considerably by the 1890's; the rate from Calgary to the Lakehead, for example, was reduced from 60 cents to 29 cents per hundredweight. The rates were still unsatisfactory to many, however. Prior to the signing of the Crowsnest Pass Agreement, the Province of Manitoba threatened to aid the construction of a direct line from Winnipeg to Duluth, Minnesota unless the CPR reduced rates.

In this period of the late 19th Century, the development of Western Canada was lagging behind that of the East. The population of the West was sparse. The world price of grain was
relatively depressed, and the Canadian yields were being reduced by drought and grasshoppers. In addition, the Prairies lacked varieties of grain that would give high yields per acre with the low and uncertain rainfall, and that would mature in the relatively short growing season.

The year 1897 found Canada in the low point of a severe recession. The country faced the loss of preferential status as a supplier of resources to England, and was having trouble penetrating the United States market. The Liberals were concluding their first year in power after nearly twenty years of Conservative rule, and were experiencing opposition to the restrictive tariff laws they had passed during that year—laws which, it was felt, benefitted industrialists at the expense of consumers.

Politically, then, the time was right for an action which would bring benefits to both geographic sections of the country. Under the Crowsnest Pass Agreement, the benefits to the West would be higher real incomes leading to increased settlement and resource development, while the East would acquire an expanded market for its manufactured goods and an inflow of resources.

The economic positions of the Prairies and of Canada in general were not the sole reasons for the Agreement, however. The Dominion Government was anxious to promote the building of a rail line into the mineral-rich area near Nelson in southeastern British Columbia. There were already two Canadian lines in the general area, but one ran north of the rich deposits while the other ran south. In 1895, the United States had extended a branch line to Nelson, an action which was viewed
with alarm by the Government. A.W. Currie asserts that the Government was further persuaded to take action by the proprietors of the Toronto Globe and Mail, who were influential with the Government and who "stood to benefit materially from the development of Southern British Columbia." Others who were financially interested in the building of a rail line into the Kootenays were the Province of British Columbia and the Alberta ranchers (who looked forward to the development of a nearby market).

The CPR, too, expected to profit by the Crowsnest Pass Agreement. It anticipated that higher freight volumes would at least partially offset the per-unit price reductions, since with increased real incomes the Western producers would be purchasing more Eastern manufactured goods. In 1897, Canada was still on the gold standard and cost inflation was not anticipated to be a problem. Finally, the federal subsidy provided for in the Agreement enabled the railway to build a line into the Nelson area which it had planned for some time.

The Crowsnest Pass Agreement was signed in June of 1897, a month after the unpopular tariff laws were relaxed. In 1925, the rates on grain and flour were made statutory. Between 1899 and 1925, however, the agreed-upon rates were in effect for only about seven years of the twenty-six; the rest of the time the rates were either higher or lower than the Crowsnest Pass level.

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3 Ibid., p. 88.
The rates were first lowered in 1902. In that year, the Canadian Northern Railway, which had no part in the Crowsnest Pass Agreement, entered into a contract with the provincial government of Manitoba. Under the terms of this contract, the railway was to reduce its rates on all commodities to a level below that of the Crowsnest Pass rates.* At first, the CPR rates applying in the same area were maintained at the higher Crowsnest Pass level, since the Canadian Northern's facilities were inadequate to compete with those of the CPR; the former lacked the lines, equipment, and elevators necessary to handle large volumes of grain. However, public pressure was exerted and, in 1903, the Government of Manitoba persuaded the CPR to lower its rates. This situation existed until 1917, when the inflationary impact of World War I began to be felt strongly. Wage and price increases were surpassing increases in railway revenue, which caused the railways to apply for a general rate increase of 15 percent to the Board of Railway Commissioners (which had taken office in 1904). The increase was granted on all commodities except those covered in the Crowsnest Pass Agreement, whose rates were increased in early 1918 to a level slightly below that of the Agreement. Later in 1918, the Agreement was suspended under the War Measures Act to allow the railways to raise all their rates.

The Board of Railway Commissioners was required by law to

*In return for this rate reduction, the Manitoba Government leased 355 miles of lines to the Canadian Northern and guaranteed the bonds on lines built by the railway to consolidate and extend its rail network.
prevent unjust discrimination among commodities and localities, although this requirement did not apply to arrangements covered by special agreements (such as the Crowsnest Pass Agreement). The proposed Railway Consolidation Bill of 1919, however, stipulated that no case of unjust discrimination could be excused by the Board on the ground that it was justified or required by a special agreement. Because of Prairie opposition in the Senate, this clause was accompanied in the final form of the Bill by a proviso that the restrictions on the Board's power be restored after three years (that is, in July of 1922).

There was some political debate in 1922 as to whether or not the Crowsnest Pass Agreement should be reinstated. In the end the Agreement was suspended for a further two years, with the exception of the portion pertaining to the rates on grain and flour; these were returned to the Crowsnest Pass level. At the end of the two-year period (July of 1924) the Agreement was restored in its entirety, but the lower rates were applied only to those railway lines that had been in existence in 1897 (when the Agreement had been signed). This situation was not satisfactory, and protests of unjust discrimination were made. In October the Board raised the rates on westbound traffic, but in early 1925 the Supreme Court ruled that the Board had no authority to override the Crowsnest Pass Agreement. Later in 1925, Parliament passed legislation which suspended the Crowsnest Pass Agreement indefinitely but which made statutory the Crowsnest Pass rates on grain moving east to the Lakehead. These rates were extended to apply to grain originating on all lines of railway west of the Great Lakes under the jurisdiction
of Parliament, whether the lines were currently existing or later constructed.

After the Crowsnest Pass rates on grain and flour were restored in 1922, British Columbia and Alberta made applications to have the rates apply to westbound as well as eastbound traffic. They were unsuccessful until 1927, when the rates on traffic destined for export through Vancouver and Prince Rupert were made equivalent to those on eastbound traffic by an Order of the Board of Railway Commissioners. In 1931, similar rates were made to apply to grain exported through the port of Churchill. Thus, the Crowsnest Pass rates, which originally applied to westbound grain moving on 3,000 miles of CPR track, now apply in both directions over 17,000 miles of track of the Canadian Pacific, the Canadian National, and the Northern Alberta Railways.5

The Royal Commission on Dominion-Provincial Relations (Rowell-Sirois Commission) reported in 1939. W.A. Mackintosh prepared a study for that Commission entitled "The Economic Background of Dominion-Provincial Relations." Mackintosh's study is pertinent to this thesis because it provides some insight into the position of those who have supported and still defend the Crowsnest Pass rates. Mackintosh considered the historical role of Western-produced grain in the Canadian economy to be of paramount importance—a widely accepted belief. With reference to the late 19th Century, he said that

...the driving force behind the new period was wheat and the wheat-growing region. It gave an economic unity to the country not hitherto experienced and built up a degree of interdependence between its different regions which was in sharp contrast to the isolation of the separate economic regions which had united in 1867.6

In the period 1901-1920

The Prairies stood out as the great export region, which provided an expanding home market for the other regions.... The dominance of one exporting region had given the Canadian economy for the first time a marked interdependence. Wheat was not merely the largest export and the product of a new region, it was the central dynamic and unifying force of the expansion. The fortunes of regions with declining exports depended on their ability to share in the home market, to integrate themselves with the expanding export regions.7

According to Mackintosh, Canada’s tariff policy had had direct effects on the Prairie provinces. With reference to the period 1887-1930, he asserted that Canadian tariffs on imported items resulted in people of the Prairies buying Canadian goods rather than American goods. "Unfortunately, these purchases cost the people of the Prairie Provinces more than had no tariff existed."8 However, he said, the higher costs were partially offset by the low freight rates on wheat, which were lower than comparable rates in the United States even at the beginning of the 20th Century. After 1930, increases in tariffs combined with

7Ibid., p. 28.
8Ibid., p. 88.
falling price levels had "differential effects on real regional incomes."

During the period before World War II, increasing costs faced by the railways in the transport of grain were offset by increasing volumes of freight and improved technology. In 1946, however, the removal of wartime price controls caused costs to escalate. The CPR claimed losses on its grain traffic which it could not recoup from other traffic because of increasing truck competition.

The Royal Commission on Transportation (W.F.A. Turgeon, Chairman) was appointed in 1948, in part to investigate the current situation surrounding the Crowsnest Pass rates. In its submission to the Turgeon Commission, the CPR recommended that the Crowsnest Pass statute in the Railway Act be repealed. It had done a costing study of its grain traffic for the year 1948 and had estimated the annual losses to be between $14 million and $17 million. The company maintained

(1) That it is desirable that freight rates without exception should in all respects be subject to the jurisdiction of the Board of Transport Commissioners [rather than subject to the jurisdiction of Parliament], and,

(2) That, while the national policy may require special assistance to producers of grain in Western Canada, such assistance should not be given at the cost of other users of railway services or at the cost of the railways."

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9Ibid., p. 96.
The statement that other railway users were "assisting" the carriage of grain refers to the railways' assertion that the artificially low grain rates were compensated for by artificially high rates on other commodities.

The position of the Western representatives was that the grain rates were a matter of public policy and therefore should be under the direct control of government. Also, the Western interests in general favoured a subsidy to the railways, rather than to the producers, to cover any losses on the carriage of grain.

With respect to the jurisdictional issue, the Commission sided with the Prairie interests. The Commission report states that

...the time has not come for Parliament to divest itself of the immediate control of these rates which it assumed in 1897.... It would be against the national interest at this moment, in view of the uncertainties which exist in world affairs, and consequently in world market prospects, to subject this great export industry to the disturbance which the abandonment of statutory protection would undoubtedly cause. This abandonment would mean that Parliament no longer looks upon Western Canada's production of grain for export as an industry requiring special consideration in the national interest.12

The Commission was careful to point out that, while it had concluded that Parliament should maintain control of the Crowsnest Pass rates, these rates need not necessarily be constant over time. It recommended only that "...Parliament

11Ibid., p. 243.
12Ibid., p. 249.
itself should make whatever changes in these rates, upward or downward, it may appear just and reasonable to make as time goes on."13

With respect to the question of subsidization, the Commission recommended that any subsidy be paid to the railways as was the case under the Maritime Freight Rates Act. However, it concluded that no such subsidy should be given, based on the railways' argument of cross-subsidization by other shippers. The Commission reasoned that, first, the existence of truck competition had made other shippers' railway freight rates much lower than they would have been in its absence and thus these shippers could not be said to be suffering hardship. Second, the statement by the CPR that the greater burden of the Crowsnest Pass rates had been borne by other shippers since 1922 implied that there was "really not much to be said against these rates in respect of their effect upon the railways."14

Following 1951, when the Turgeon Commission reported, the railways' operating costs continued to rise. In addition, business recessions in 1954 and 1957 led to reductions in railway revenues. These factors forced the railways to apply for increases in the general level of rates. In the years 1948-58, the Board of Transport Commissioners15 approved general increases totalling 155 percent. The actual increases

13Ibid., p. 250.
14Ibid., p. 252.
15The Board of Railway Commissioners was renamed the Board of Transport Commissioners in 1938 to reflect its expanded functions.
implemented were approximately 55 percent.\textsuperscript{16} The railways could not apply these increases to all their traffic, however, because of truck competition for many movements and because of the statutory grain rates. Thus, the railways' increasing costs were being borne by a decreasing base of traffic.

The appointment of a second Royal Commission on Transportation followed an application by the railways for a further 12 percent increase in freight rates in 1955. The Commission was under the chairmanship of the Hon. C.P. McTague, who soon became ill and resigned; he was replaced by M.A. MacPherson of Regina. With respect to the Crowsnest Pass rates, the submissions of the railways and those of Western groups to the MacPherson Commission were similar to those that had been submitted ten years previously to the Turgeon Commission. The CPR had changed its position with respect to subsidization, however; it was now willing to accept an indirect subsidy in the form of corporate tax concessions to compensate it for losses suffered on the carriage of statutory grain. Failing this, it held that the rates should be raised and the subsidies be given directly to the producers of grain.

In addition to this departure from their previous position, the railways in their presentations made two changes of degree (rather than of kind): their costing techniques were more sophisticated, and the Canadian National Railways gave full support to the CPR on the need for some form of assistance in the transportation of grain by rail in the West. The latter was

\textsuperscript{16}Currie, \textit{op. cit.}, p. 17.
in contrast to the CNR's lukewarm support at the time of the Turgeon Commission and suggested how much more serious the problem had become in the intervening years.\(^{17}\)

The MacPherson Commission's main recommendation with respect to statutory rates in general was that "...for those obligations which involve losses imposed upon railways by law, there is an obligation to assist" on the part of Parliament.\(^{18}\) It specifically applied this recommendation to the Crowsnest Pass rates, concluding that the CPR and the CNR should each receive an annual amount equal to the excess of the variable cost of moving grain over the revenues received under the statutory rates. The Commission determined that this figure was $2 million for the CPR and $4 million for the CNR for the operating year 1958. In addition, it recommended that the CPR and the CNR receive $9 million and $7.3 million, respectively, as annual contributions to constant costs. The Commission suggested that the shortfall on variable costs be re-calculated at the end of each year, and that the annual contribution to constant costs be re-evaluated at the end of five years.\(^{19}\)

For various reasons, legislation based on the MacPherson Commission recommendations was not introduced in Parliament until 1966. At that time, the Commission's recommendations with respect to the Crowsnest Pass rates were not pursued on the

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\(^{17}\)Currie, op. cit., p. 106.


\(^{19}\)Ibid., Volume I, p. 30.
basis that the cost estimates were badly out of date. Further, as was pointed out by the Minister of Transport at that time, remarkable technological improvements were being made in the grain-handling and transportation system. Hence he suggested that a new study be undertaken to determine what aid (if any) was required.

The 1967 National Transportation Act introduced a new National Transportation Policy in which regulation was significantly reduced, it created the Canadian Transport Commission to take over and extend the duties of the Board of Transport Commissioners, and it made several amendments to the Railway Act. The Act left the Crowsnest Pass rates untouched, except that it made statutory the Orders given by the Board of Railway Commissioners extending equivalent rates to grain and flour moving to Vancouver, Prince Rupert, and Churchill for export. It did, however, include two clauses which could potentially affect the carriage of grain by rail in Western Canada. First, it instructed the Canadian Transport Commission (CTC), to undertake a study of the rates on grain moving to British Columbia for domestic consumption. Second, the CTC was given the power to consider applications for the abandonment of branch lines by the railways. If it determined that the retention of a branch line was in the "public interest", it was authorized to order the continuation of service thereon and to subsidize the railway concerned for all losses incurred on grain traffic originating on that line. The subsidy payments made under this section totalled $82.5 million in 1975.

The CTC's study of westbound domestic-grain rates resulted
in these rates being independent of the Crowsnest Pass rates. Current comparable rates are widely disparate. For example, as of January, 1978, the carload rate on the CPR from Winnipeg to Vancouver was 35 cents per hundredweight for export wheat and $2.92 per hundredweight for domestic wheat.

In order to carry out the second obligation mentioned above (and to carry out a similar obligation with respect to passenger services), the CTC issued a Costing Order in August of 1969 (Order R-6313). It prescribed for all the purposes of the Railway Act the items and factors which are relevant in the determination of railway operating costs.  

In accordance with the amended Railway Act, the CTC used its Costing Order as a basis for determining the subsidies payable to railways for the operation of uneconomic branch lines in the early 1970's. The losses claimed by the railways on the entire grain-transportation network, however, far exceeded the branch-line subsidies received, especially with the high inflation of the period. The losses, they claimed, were rendering them unable to purchase equipment needed for the system. (To assist the railways, in 1972 the Government purchased 2000 hopper cars for use by the railways; it has since supplemented this equipment with another 6000 cars.) The Prairie provinces' position was, predictably, contrary to that of the railways. They asserted that the railways' losses were not as great as was claimed, and that the losses were largely compensated for by the branch-line

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subsidies.

Because of the dissatisfaction of the parties involved in grain transportation and the importance of the issue, in April of 1975 the Federal Government announced the appointment of two Commissions of Inquiry: the Commission on the Costs of Transporting Grain by Rail (Carl M. Snavely, Commissioner) and the Grain Handling and Transportation Commission (Emmett M. Hall, Chief Commissioner).

The Snavely Commission chose 1974 as the year for which to determine the costs of transporting Western grain by rail. Volume I of its report, which was released in October of 1976, states that the parties involved in the transportation of statutory grain by rail contributed to the costs involved in the following proportions:

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<table>
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<tbody>
<tr>
<td>Users of the Service</td>
<td>38.3%</td>
</tr>
<tr>
<td>Federal Government</td>
<td>23.6%</td>
</tr>
<tr>
<td>Railways</td>
<td>38.1%</td>
</tr>
</tbody>
</table>

The "cost covered by the railways" is the excess of long-run variable cost over all considerations received by the railways for their grain operations. With the inflation that has occurred since 1974 and the unchanged statutory rates, the proportion of costs paid for by users has declined.

The Hall Commission was to look into all economic aspects of grain transportation in the West (except costing), and

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particularly to make specific recommendations with respect to branch-line abandonment in the Prairies. In 1975, 64 percent of the total mileage of Prairie rail lines was protected from abandonment until the year 2000 by the Federal Government. Three percent of the total mileage, representing lines no longer in use, was referred to the CTC for abandonment decision. The remaining 33 percent was to be examined by the Hall Commission and to be protected from abandonment pending the completion of that Commission's report.

Volume I of the Hall Commission Report was released in April of 1977. It recommended that 34 percent of the mileage examined be abandoned in stages to the year 1981, that 29 percent become part of the basic rail network and thus guaranteed to the year 2000, and that 37 percent be placed under the jurisdiction of a new body to have its status determined on the basis of need.

In their submissions to the Hall Commission, the railways reiterated their position that the users should pay compensatory rates for the transportation of grain and be subsidized as the Government sees fit. The Prairie interests also maintained their former position, saying that the railways should be subsidized directly. As with the Turgeon and MacPherson Commissions, each side in the debate agreed on the need for subsidization, but held that the subsidies should be given to the parties on the opposing side. The arguments put forward by these parties to the Hall Commission form part of the analysis in Chapter IV of this thesis.

The Hall Commission recommended the retention of the
Crowsnest Pass rates and the direct government subsidization of the railways for losses incurred.\textsuperscript{22} The Commission based its recommendation of subsidization on the premise that "anything else would be a violation of promises made to the producers of Western Canada."\textsuperscript{23} It stated further that

\begin{quote}
The contribution Western grain makes to Canada's balance of payments demands that a substantial part of any increase be borne by the federal government.\textsuperscript{24}
\end{quote}

The justification given by the Commission for its recommendation that subsidies be given to the railways, rather than to the producers, was that "the very idea of sending out cheques to 160 thousand farmers is appalling."\textsuperscript{25}

Volume II of the Snavely Commission Report, which was released early in 1978, commented on the Hall Commission recommendations with respect to the Crowsnest Pass rates. Noting that its comments could be construed to be outside its terms of reference, the Commission nevertheless criticized the present rail rate structure as being

\begin{quote}
...virtually devoid of monetary incentives for efficient use of the transportation resource and, perhaps even worse, monetary penalties for
\end{quote}


\textsuperscript{23}Ibid., Volume I, p. 336.

\textsuperscript{24}Ibid., Volume I, p. 336.

\textsuperscript{25}Ibid., Volume I, p. 337.

\textsuperscript{26}Snavely Commission Report, op. cit., Volume II, p. 156.
inefficient use of that resource.
Chapter III

The Policy Issues

Introduction

The history of the Crowsnest Pass rates has been fraught with political controversy. There have been two dominant opposing groups, each with a financial stake in the issue. The railways, caught between increasing costs and a declining portion of lucrative traffic, have been anxious to relieve themselves of the financial burden imposed by non-compensatory, statutory, grain rates. Their complaints have become much more intense in the last two inflationary decades. The grain producers, on the other hand, have been caught between rising operating costs and fluctuating world prices for grain. They see the Crowsnest Pass rates as a commitment to them by the Federal Government that dates back to the 19th Century, when the West became the beneficiary of the low freight rates and the East received increasing tariff protection. The producers have come to view the Crowsnest Pass rates as their "right", a right they have earned by their contribution to Canada's economic welfare.

The problems associated with the transportation of Canadian grain resulted in the appointment of two Commissions of Inquiry in 1975, both of which made recommendations with respect to the Crowsnest Pass rates. The Grain Handling and Transportation Commission (Hall Commission) recommended that the rates for transporting grain by rail remain at their current level, and
that the railways be subsidized to compensate them for losses suffered in the provision of this service.¹ The Commission on the Costs of Transporting Grain by Rail (Snavely Commission) responded to this recommendation by noting that it provided no monetary incentive for improving the efficiency of the grain-transportation service.²

The fact that the two recent Commissions of Inquiry held contradicting views with respect to the Crowsnest Pass rates indicates the difficulty of analyzing this complex issue to determine the "best" course of action. The Federal Government has until recently made the decision of maintaining the status quo, but it has been experiencing increasing pressure to take some action. In the National Transportation Act of 1967, the Government provided for some railway compensation in the form of branch-line subsidies. In the 1970's it has purchased a total of eight thousand hopper cars for use by the railways in the carriage of grain, and following the release of the Hall Commission Report in 1977 it made a grant of $100 million for the purpose of upgrading parts of the rail-grain system. These actions do not indicate that the Government has committed itself to a particular policy with respect to the Crowsnest Pass rates; rather, the actions are stop-gap measures designed to relieve some of the short-term problems.

Thesis Approach

Given public pressure for the Federal Government to take some action with respect to the Crowsnest Pass rates, it is pertinent to determine what policy options are available and which of these are the most attractive. Such determination is the primary purpose of this thesis; a secondary purpose is to indicate the trade-offs involved in each of the "better" alternatives. The following approach is adopted herein to achieve these objectives. In this chapter, a set of policy alternatives is generated. Chapter IV discusses the major criteria which are salient to the issue, and derives a "short-list" of feasible alternatives. The impacts of these alternatives are assessed in Chapter V, and the alternatives themselves are evaluated according to the criteria in Chapter VI. Chapter VII summarizes the analysis.

The Issues

The current system of transporting grain by rail is characterized by group rates, a specified price level governed by Parliamentary statute, and some degree of (railway) subsidization. Each of these three important features is described below. Once the policy choices relating to each of the characteristics are established, the choices can be combined in different configurations to yield a set of distinct policy "packages". Each such package will be characterized by the existence or absence of group rates, a general price level subject to or not subject to Parliamentary control, and a subsidization scheme.
Group Rates. Under a group-rate system, the rate for transporting freight to a specified destination is the same for all points within a specific geographic area. Group rates occur frequently in transport. They are simpler to administer than individual rates for each location, but do not allow rate discrimination between higher- and lower-cost locations within a geographic "group". With respect to the carriage of grain, then, there is the choice of either retaining the existing group-rate structure or eliminating it. Although this choice is not usually considered in discussions about grain transport, it is important and warrants explicit attention. The reasons for its importance are given in Chapter IV.

Pricing. The possible price levels for the carriage of grain by rail depend on the existence or absence of government rate control. Therefore, the first policy choice with respect to pricing is whether or not to have the rates subject to direct regulation by the Federal Government. Because of the railways' goal of profit maximization, it is assumed that in the absence of government rate control there would be only one possible price level: a level providing gross revenues somewhat greater than the long-run variable costs of providing the grain-transporting service.

Under the government-controlled pricing option, there are four possible price levels for the carriage of grain by rail:

a) Crowsnest Pass rate level

b) non-compensatory level greater than the Crowsnest Pass level
c) compensatory level

d) compensatory level plus some contribution to constant costs

"Compensatory" as used here means approximately equal to the long-run variable cost of providing the service (calculated according to the method used by the Snavely Commission). It is assumed that in options (c) and (d) the rates would be variable over time; otherwise, a rate that was compensatory in 1978 would, with inflation, eventually become non-compensatory. Option (b) also includes the possibility of changing rates.

Subsidization. The government's subsidization policy may provide for producer subsidies, railway subsidies, or no subsidies. The subsidy scheme can reasonably be expected to depend on the pricing policy adopted. First, the absence of government subsidies is possible under any of the pricing policies. Second, direct subsidization of producers is a possibility under any of the pricing policies except that of retaining the Crowsnest Pass rates. Third, Government subsidization of the railways is a possibility if the rates are non-compensatory or even if they are exactly compensatory (alternative (c) above). In the case of compensatory rates, the subsidy (if it existed) could be in lieu of the contribution to constant costs that would have been provided by grain traffic in unregulated circumstances. Currently, railway subsidization takes place in the form of branch-line subsidies and the provision of grain hopper cars by the federal government.
**Summary of Policy Alternatives.** Combining the various choices that exist with respect to the three characteristics yields the following set of policy alternatives:

<table>
<thead>
<tr>
<th>Group Rates</th>
<th>Pricing</th>
<th>Subsidy Recipient*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-non-govt. controlled</td>
<td>-none</td>
<td>-none</td>
</tr>
<tr>
<td>-govt. controlled: Crowsnest Pass</td>
<td>-none</td>
<td>-producers</td>
</tr>
<tr>
<td>-govt. controlled: non-compensatory</td>
<td>-none</td>
<td>-railways</td>
</tr>
<tr>
<td>with or without</td>
<td></td>
<td>-producers</td>
</tr>
<tr>
<td>-govt. controlled: compensatory</td>
<td>-none</td>
<td>-railways</td>
</tr>
<tr>
<td>-govt. controlled: compensatory plus</td>
<td>-none</td>
<td>-producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and railways</td>
</tr>
</tbody>
</table>

*These subsidization possibilities do not indicate the level of subsidies to be given. This will be discussed in Chapters V and VI.*
Chapter IV

Considerations Relevant to the Evaluation of the Policy Alternatives

Introduction

The term "considerations" is a vague one, but its vagueness is a desirable characteristic in the present context. The considerations that are relevant to the issue of the Crowsnest Pass rates are based on such things as economic theory, applied economics, industrial development, distribution of wealth, social equity, historical facts, perceptions of history, perceptions of the role of transportation today, and political realities. These considerations comprise a complex mosaic of inter-related parts. They derive from the financial interests of many different groups, primarily the grain producers, the railways, the Prairie Provinces, and the Canadian taxpayers. The nature and significance of the various considerations are discussed by both politicians and academics. In view of the complexity of the relevant considerations and the diverse interests involved, it is not surprising that the grain freight-rate issue continues to be unresolved.

As is stated in Chapter III, one purpose of this thesis is to determine the more attractive policy alternatives with respect to the Crowsnest Pass rates. This task requires the specification of one or more criteria by which to judge the alternatives. In order to achieve such a specification, the
author has extracted from the mass of relevant "considerations" those which appear to be of major importance. These considerations are categorized into two groups. The first group contains objectives; these are in turn classified as either economic, social, developmental, or political. The second group is termed simply "other considerations" to reflect the non-classifiable nature of its components.

**Objectives**

**Economic Objective.** From the viewpoint of Canada as a whole, the major economic objective in the transportation of grain is to improve the economic efficiency of that activity. In general, improvements in economic efficiency occur either when the productivity of a given set of resources is increased or when the resource requirements for producing a given level of output are reduced. Thus, for example, a scheme for transporting grain to export positions which used fewer resources than the current scheme would be more economically efficient than the current scheme.

To provide a basis of comparison for projects utilizing different resources, the dollar "real costs" of those resources are measured. The real cost of a resource is defined to be its "opportunity cost", that is, the resource's contribution to the value of the other products that could have been produced using that resource. By implication, the real cost of a good or service is the combined real costs of the resources required for its production. Assuming free individual choice and the desire of individuals to maximize their net income, the economic
efficiency of a system is enhanced by prices of goods and services which reflect the real costs of those goods and services; with real-cost pricing, individuals are motivated to choose the least-real-cost means of pursuing their activities. If prices do not reflect real costs, the goal of maximizing net income results in individual choices which do not promote the economic efficiency of the system. This is evident in the transportation of grain today, with producers in some cases using rail branch lines at artificially low rates when the use of short-haul trucking would have a lower real cost.

The economic-efficiency objective ignores the effects of policy alternatives on the distribution of income. These effects are important and are discussed below under the heading of "Social Objective".

Adopting improved economic efficiency as the sole policy objective has definite implications with respect to the three policy decisions described in Chapter III.

1) Group rates should be modified to allow the rates on branch lines to reflect the additional costs of operating such lines.

2) The general price level for transporting grain by rail should be raised to a level reflecting the real overall costs of providing this service.

3) If subsidization of grain producers is deemed appropriate, it should be given to them directly by the Federal Government, rather than indirectly by the railways via non-compensatory grain freight rates.

There is a practical problem in determining "real costs". The real cost of a good or service is defined above to be its opportunity cost, that is, the value of opportunities forgone to
produce that good or service. This definition is theoretically useful but must be made more explicit in order to be of practical applicability. For practical purposes, the real cost of a unit of output is defined to be its (long-run) variable cost plus some contribution to the constant costs of the firm (the size of the contribution is discussed below). The Snavely Commission Report (on which the quantitative analysis in Chapter V is based) defines the variable cost of a movement to be

...the long-run marginal cost of output, being the cost of producing a permanent and quantitatively small change in the traffic flow of output, when all resource cost inputs are optimally adjusted to change.\(^1\)

The Snavely costing approach, which is based on the above definition of variable cost, leaves unresolved the problem of determining the contribution, if any, that grain should make to the constant costs of the railways. In unimpeded market circumstances, this contribution would be determined by the elasticity of demand for the service, which would in turn depend on competition from other carriers (intramodal and intermodal competition) and on the nature of Canada's position in the world

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\(^1\) Constant costs are costs which are incurred by a firm but which cannot be attributed to specific goods or services produced by the firm at its existing levels of output. (The Commission on the Costs of Transporting Grain by Rail—Report (Snavely Commission Report), Volume I (Ottawa, October 1976), p. 30)

\(^2\) Ibid., Volume I, p. 29; taken from Canadian Transport Commission, Reasons for Order No. R-6313, p. 337.
In order to perceive the improvements in economic efficiency that would potentially result from the implementation of real-cost pricing, it is useful to describe the major economic impacts of the current rate structure. First, the Crowsnest Pass rates provide little incentive for efficient use of the current grain-transporting system. There is no incentive for producers to abandon high-unit-cost grain-related branch lines because of the existence of rate groupings, and little incentive to ship grain to a near port rather than to a distant one because of the small absolute rate differentials. Second, the development of secondary agricultural processing industries in the Prairie Provinces has been hindered by the existence of artificially low rates on grain combined with relatively high rates on more highly-processed commodities (such as livestock). Third, the non-compensatory grain freight rates have diminished the overall profitability of the railways, thus distorting the allocation of investment capital in the Canadian economy. Fourth, the continued existence of artificially low grain rail rates inhibits the development of alternate forms of long-haul


It would be difficult, however, to distinguish the distortion in railway investment caused by the Crowsnest Pass rates from that caused by other factors. One such factor is that both CP Rail and the CNR are somewhat removed from financial markets because of their respective ownerships: CP Rail is completely owned by the large CP Limited conglomerate, and the CNR is owned by the Federal Government.
grain transportation, such as trucking and commodity-pipeline transportation.

Adopting the principle of real-cost pricing would not entail prices that exactly reflected the real cost of every single movement: some degree of grouping is desirable. For example, it would be impractical to have a rate differential reflecting a 50-metre distance between two originating points on the same line (if such a pair of points exists), even though the longer haul would be marginally more costly. Rather, real-cost pricing would be implemented to the extent where the additional administrative costs resulting from having greater detail outweighed the benefits derived therefrom. However, this practical qualification does not undermine the economic argument against the current group-rate structure, which involves a large degree of aggregation. Modifications to the existing structure need not be very complicated. For example, the railways might find it suitable merely to have a surcharge for picking up freight on grain-related branch lines. If the market would not bear such a surcharge on a given branch line, that is, if producers trucked their grain to the nearest main line in order to avoid the surcharge, there would be economic and business justification for abandoning the line.

The position that grain freight rates should be raised to a compensatory level is supported by the observation that such a rate increase would alleviate the problems mentioned above.

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*Grain-related branch lines are those branch lines on which grain constitutes a majority of the originated and terminated traffic.
thereby improving economic efficiency. There are other "economic" arguments put forward of raising the Crowsnest Pass rates, two of which are examined here.

The first of these two arguments is based on the fact that grain traffic is "cross-subsidized" by other rail-freight traffic. In fact, it has been asserted that the non-compensatory grain freight rates force the rates on other commodities to be higher than they would be otherwise. This statement must be examined in the light of the fact that the railways are operated as business enterprises, that is, they attempt to maximize their profits. Therefore, they could be expected to charge rates on non-statutory traffic that are as high as the competitive and regulatory circumstances permit, regardless of the rates imposed on grain by statute. In theory, then, the statutory grain freight rates have no effect on the rates for transporting other commodities. A possible counter-argument to this proposition is based on the assertion that the management of the railways is, in general, risk-averse. A result of this characteristic would be to maintain the general rate level lower than it could be in order to be certain of keeping traffic. The losses sustained on statutory grain traffic could thus result in risk-taking in the form of raising other freight rates, although the higher level of these rates may be simply the level that would be in effect if railway management were less risk-averse.

A second argument put forward in favour of raising grain

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7For example, see H.L. Purdy, Transport Competition and Public Policy in Canada (Vancouver: University of British Columbia Press, 1972), p. 180.
freight rates is one often made by railway representatives. They assert that the non-compensatory grain freight rates have resulted in a deterioration of the grain-handling system because of a lack of financial incentives. To assist in the evaluation of this argument, we note that a "financial incentive" is merely an expected return on investment. There are two general forms that return on investment can take, depending on the nature of the investment. These forms are, first, increased revenue and, second, decreased cost. Regardless of the rate level, investment in the grain-transporting system would not have a return of the first type (increased revenue); this is because the railways are monopolists in the long-haul transportation of grain. As such they can be expected to transport all the grain, with no competition from other carriers, at a rate level that is as high as possible (that is, at the highest level permitted by regulation and market competition in grain). Increased investment would allow them neither to charge higher rates nor to generate new traffic, and thus could not result in increased revenue. On the other hand, investment for the purpose of reducing costs (the second type of investment) would have a positive return even in this monopolistic situation. However, the return would be realized under the current non-compensatory rate structure (where it would reduce losses) as well as under compensatory rates (where it would increase profits). Here again the financial incentive is independent of the rate level. In

*For example, see "The Railway and Grain", a booklet published by CP Rail (reprinted from CP Rail News, 1975).
summary, then, excepting the circumstances described below, there is no economic justification for the statement that increased grain freight rates would result in increased railway investment.

There are two situations in which increased grain rates would lead to improvements in the system for economic reasons. The first situation would be that in which the rate level was high enough to be profitable to the railways and to attract competition from other modes; such competition would be an effective incentive for the railways to implement service improvements in the grain-transporting system. The second situation could occur in the absence of competition from other modes, but it requires a particular set of circumstances. There is a return on investment associated with investment in the plant and equipment required for grain transportation (in the form of cost savings with non-compensatory rates, or increased profit with compensatory rates). Several such investment projects are available to the railways; these projects are evaluated according to some criterion (such as return on investment or net present value). With current levels of railway revenue, it is possible that the scarcity of funds limits the projects undertaken to those providing a greater return than the project of improving the grain-transportation system. Thus, with increased revenues resulting from compensatory grain rates, the cut-off point for project selection could be lowered to include more projects, including those in the grain-transporting system.

A scarcity of railway investment funds caused by statutory-grain losses could have implications for all rail shippers. It
is possible that losses on grain traffic have resulted in the postponement of capital investment in main-rail-line improvements. If such is the case, all shippers bear grain-related costs in the form of delayed shipments or reductions in the general quality of rail service.

There are possible explanations for the deterioration of the grain-handling system (an undisputed fact) other than the lack of financial incentives. As is indicated in Chapter II, the National Transportation Act of 1967 instructed the Canadian Transport Commission to receive and make judgments on railway applications for the abandonment of specific branch lines. However, the authority to permit abandonment has been suspended since 1973, with the exception of 525 miles of lines (3 percent of the total) which were no longer in use; the CTC was authorized to permit the abandonment of these lines in 1975. As a result of the regulatory delay, the railways have not known which lines they will be permitted to abandon, and thus have been reluctant to invest in the branch-line network. Further, the subsidies paid to the railways for the operation of uneconomic branch lines have been used as a general commodity subsidy rather than being used to keep the lines in proper repair. Another possible contributor to the deterioration of the branch-line system is the current system of group rates. Under this system, there is no incentive for the railways to invest in branch lines; if a branch line were to deteriorate to

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the point of inoperability, the grain formerly received on that line would instead be received on a main line with less cost to the railway concerned but no loss in revenue. Finally, the lack of maintenance of the grain-transporting system may be an act of the railways designed in part to elicit support for higher grain freight rates.

The preceding discussion introduces an aspect of the system-deterioration problem that is not mentioned in the economic-theory (financial-incentive) analysis. From the railways' point of view, it is very efficient economically to allow system deterioration if there is a large possibility that the Federal Government will step in and help (as it has done in the 1970's). The implementation of compensatory rates may well lead to improvements in the rail-grain system, merely because the railways would no longer have an excuse for not investing and would be subject to public pressure. Further, there would be no expectation of future Government assistance. Regardless of its causes, the deterioration of the system for transporting grain is a major economic problem in its own right. A rail-grain system which is on the point of collapse is not as economically efficient, in the long run, as a well-maintained system. Therefore, the objective of improving the rail-grain system is hereafter incorporated into the more general objective of improving economic efficiency.
Social Objective. The previous section indicated that the objective of economic efficiency supports the removal of statutory grain freight rates. However, there are other considerations that are relevant to the issue of the Crowsnest Pass rates, many of which are given in support of continuing the current rate structure. Primary among these considerations is the social objective of maintaining an "equitable" distribution of income in Canada. The nature of an equitable income distribution is not clearly defined; it depends to a large extent on individual judgment. In the judgment of Prairie representatives, increasing grain freight rates to a compensatory level would be unfair to grain producers. The representatives argue that "...the cost to the Prairie economy and to Prairie grain producers [of compensatory rates] is just too great." The implication of such an argument is that the rate increases borne by grain producers would outweigh the benefits they would receive from improved economic efficiency, and that the resulting net costs would be unreasonable. Any increase in freight rates would be felt immediately by producers, since the price of rail transportation is deducted from the payment received when the grain is delivered to an elevator. Although the financial burden of higher rates could be alleviated by direct subsidization, this option is opposed by producers. Their resistance seems to stem from the "visibility", and therefore vulnerability, of such subsidies. In the words of

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\(^{10}\) "Why the Crow Can't Go", a brochure published by the Transportation Agency of Saskatchewan (1977).
the Transportation Agency of Saskatchewan, "...it appears likely that such aid would gradually be phased out and, sooner or later, the Prairie farmers would end up absorbing all of the loss."\(^{11}\)

There are at least two possible approaches to the role of the general social-equity objective in the evaluation of the policy alternatives. According to the first approach, the particular rate level and subsidization scheme associated with each policy alternative together entail an implicit judgment with respect to the nature of an equitable income distribution. For example, consider the alternative of compensatory rates combined with no subsidization. The implicit judgment associated with the selection of this alternative would be that an equitable income distribution is one in which producer income is reduced by the implied amount. Under this approach, then, evaluation of each alternative requires a specification of the social-equity objective. The second, equally defensible approach to the role of the social-equity objective embodies the particular objective suggested by Prairie representatives, that is, the objective of not raising producers' transportation costs above their current level. According to this approach, each policy alternative involves an implicit judgment with respect to the relative importance of the predetermined social-equity objective and other objectives. For example, if the policy alternative of compensatory rates with no subsidies is adopted,

\(^{11}\)The Crow Rate and National Transportation Policy (Regina: The Transportation Agency of Saskatchewan, 1977), p. 8.
the economic-efficiency objective could be said to be judged as more important than the social-equity objective of minimum producer transportation costs. This thesis adopts the second perception because it involves a determination of the tradeoffs among well-defined objectives. In contrast, the first perception involves the difficult task of defining the social-equity objective itself.

Thus, the social-equity objective is defined as the objective of maintaining the current level of grain-producer transportation costs (net of subsidies). The visibility of possible producer subsidies is dealt with separately. The tradeoffs between this objective and the other objectives are clarified in Chapter V, where the quantitative impacts of different rate levels on producer incomes are estimated.

The objective of social equity applies not only to the general level of the Crowsnest Pass rates, but also to the existence of group rates. As is previously indicated, economic efficiency implies that group rates should be abolished to the largest practical extent. Social equity, on the other hand, dictates that producers whose farms are far from a main line should not be discriminated against because of their location. This general principle applies in many rail movements throughout Canada, for example, in the movement of lumber by rail in British Columbia.

The author believes that the abolishment of the group-rate structure of the Crowsnest Pass rates is neither forthcoming nor warranted in the short run (although it may be warranted in the long run). This belief is based on two observations. First,
Group rates are justified by the social-equity objective. Second, the role of real-cost pricing in the abandonment/retention of grain-related branch lines has been replaced, in the short run, by government action. Many miles of such lines are currently being abandoned and others are being upgraded, based on the recommendations of the Hall Commission.

Development Objective. Many Prairie people are concerned about the reliance of the Prairie economy, particularly the Saskatchewan economy, on grain. Grain-producer incomes, and therefore the economies of the Prairie provinces, are "at the mercy" of fluctuating world grain prices. This concern with producer-income vulnerability is implicit in the social objective of not increasing producer transportation costs.

The exposure of grain revenues has resulted in efforts to encourage the development of secondary industries in the Prairies. Transportation rates are an important factor in this development. It is commonly accepted that the rail-transportation rates on grain, which are low relative to those on processed grain products (such as livestock and dressed meat), are a deterrent to the locating of processing industries on the Prairies. The Crowsnest Pass rates are only one of two Federal Government policies contributing to this freight-rate

\[\text{See, for example, W.D. Gainer, S.E. Drugge, and R.A. Knowles, Economic Analysis of the Effects of Transport Rates on Products of the Industrial Chemical and Meat Packing Industry with Special Reference to Edmonton, a Canadian Transport Commission Research Publication (June 1973).}\]
difference; the other one is the Feed Freight Assistance program. The latter policy consists of transportation subsidies on feed grain moving from the Prairies to British Columbia, Central Canada, and the Maritimes. Western livestock production, which is close to the source of feed supply, should enjoy a comparative advantage with respect to Eastern production because there is a weight loss associated with the livestock "processing" of feed grains. For example, the ratio of feed weight to animal weight gain is approximately 4.5 to 1 in hog production and approximately 5.25 to 1 in beef production.\(^{13}\) The two federal policies reduce (or reverse) this comparative advantage.

There are many factors other than transportation rates that affect industrial location. Some of these are market location, labour and capital costs, returns on investment in the existing local industries, product characteristics (such as perishability), and the historical location of development. The effect of the last item is to encourage a perpetuation of the current industrial structure; the economic cost of reorganizing to improve efficiency may be greater than the cost of maintaining the original system.\(^{14}\) Nevertheless, transportation rates play an important role in determining the location of

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\(^{13}\)Ibid., p. 82.

industry. In the case of grain and grain processing, many Prairie groups advocate lowering the rates on processed commodities to a level in line with the statutory grain rates.\textsuperscript{15} Other parties, however, favour raising the statutory rates on grain. With reference to the Crowsnest Pass rates, one report recommends "...that the statutory rates be phased out and that the rates on the commodities concerned be determined in the same manner as the rates on other commodities."\textsuperscript{16}

The effects of the policy alternatives on agricultural processing industries are discussed further in Chapter V and are taken into consideration in the evaluation of alternatives in Chapter VI.

\textbf{Political Objectives.} The economic, social, and developmental objectives described above are objectives of the Federal Government to the extent that that body represents the Canadian people. There are other objectives, however, which are objectives of the Government \textit{per se}. It is not possible for someone outside the decision-making body to be familiar with all of the "political" objectives that have a bearing on the issue of the Crowsnest Pass rates. However, four possible objectives

\textsuperscript{15}For example, see The Crow Rate and National Transportation Policy, \textit{op. cit.}, Chapter 5; and J.D. Wahn, Transportation and Industrial Development in Manitoba, a Canadian Transport Research Publication (May 1973), pp. 24-25.

of this type are apparent.

The first and primary political objective is assumed to be the maximization of votes. This assumption is consistent with a model of political decision-making which was originated by Joseph Schumpeter and developed by Anthony Downs. The consequences of this objective for the statutory-grain-rate issue objective depend on the characteristics of Canadian voters. Many Prairie voters perceive the issue to be one of major importance. These people perceive that they would lose directly and substantially by the abolishment of the Crowsnest Pass rates. On the other hand, most of those who perceive that they would benefit by such legislative action are potential indirect beneficiaries whose personal incomes would not be immediately affected by the change. The issue of statutory grain rates is not as important to the "beneficiaries" of increased grain freight rates as it is to the "losers". The former group is faced, in general, with many political issues of equal or greater personal impact than that of the Crowsnest Pass rates. These observations indicate that, when viewed in isolation, the objective of vote maximization favours retention of the Crowsnest Pass rates.

The other political objectives to be mentioned here are based on vote-maximization, to the extent that all Government objectives are so based. However, their implications for the

Crowsnest Pass rates are different from the implications of the vote-maximization objective per se. The second objective derives from the "user-pay" philosophy which is embodied in the 1967 National Transportation Act. This philosophy is derived in part from the economic-efficiency argument given above; its intention is that the users of transport facilities should bear the costs of providing and operating those facilities.

The third political objective is a goal of Canada's National Transportation Policy as expressed in the National Transportation Act. According to section 3 of that Act, the achievement of an "economic, efficient and adequate transportation system making the best use of all available modes of transportation at the lowest total cost" is most likely to occur under conditions ensuring that, in part, "each mode of transport, so far as practicable, receives compensation for the resources, facilities and services that it is required to provide as an imposed public duty...." This philosophy is continued in section 2(h) of Bill C-33, an Act to Amend the National Transportation Act, which was introduced in the 1976-77 Session of Parliament. With respect to the Crowsnest Pass rates, then, it can be inferred that one Government objective is to reduce or eliminate railway losses in the carriage of statutory grain. This inference is supported by the fact that grain-related railway subsidies were initiated in 1967 and have grown annually since then. In the light of these facts, the option of keeping the Crowsnest Pass rates without railway subsidies is dropped from further consideration.

The fourth political objective is that of minimizing the
funds paid by the Government in connection with grain transportation. This objective arises from the fact that the Government has recently made a commitment to restrain the general level of its spending. The impacts on the federal budget of the various subsidization schemes are assessed in Chapter V.

Both the second and the fourth political objectives described indicate a modification in the statutory rates. The fact that the vote-maximization objective has a contradictory implication adds to the difficulty of evaluating policy alternatives that are proposed with respect to the Crowsnest Pass rates.

Other Considerations

As is indicated in the opening paragraph of this chapter, there are many, interrelated considerations of relevance to the grain-rate issue. The main economic, social, developmental, and political objectives are discussed in the previous section. This section describes those considerations which are not objectives but which may be perceived to be significant in the evaluation of the policy alternatives.

The first such consideration is indicated by the excerpts from Mackintosh's report which are quoted in Chapter II. Prairie producers assert that they have contributed to the Canadian economy since the 19th Century by supplying a significant portion of the national export trade. They maintain

that the statutory grain rates are one of the few benefits that they receive from the federal government, comparing them to the benefit received by Eastern manufacturers in the form of tariff protection. The Transportation Agency of Saskatchewan estimates in a recently published booklet that Canada's tariff policy costs Western Canada about $200 million each year, although no calculations are presented to support this estimate.\(^1\)

The second consideration is the fact that the Canadian Pacific Railway made a perpetual commitment in 1897 when it signed the Crowsnest Pass Agreement. Notwithstanding the fact that the Agreement was suspended by Parliament in 1925, the original intention with respect to grain rates should be adhered to. It is held that this is especially true in view of the land grant received from the Province of British Columbia in connection with the Agreement. However, the grant was given largely as an incentive to build the line into Nelson, which was done, and not as compensation for lowering the grain rates; B.C. did not stand to benefit from the latter action (although it did benefit from the lower rates on westbound settlers' effects). In general, it is often asserted that the CPR should make some concessions to the Canadian public in return for the grants of land and money it received in the 19th Century. The author maintains, however, that these grants should be irrelevant to current pricing decisions. The grants were given as incentives to the railway to open up the country; we will never know

\(^1\)The Crow Rate and National Transportation Policy, op. cit., p. 25.
whether they were necessary for achieving this objective or whether they were, indeed, excessive. Regardless, they are now "sunk costs" from the point of view of the Canadian Government, and should be treated as such. A second reason for maintaining the irrelevance of the grants is that the CNR had no part in the Crowsnest Pass Agreement, but is forced to bear the same financial burden as CP Rail. Further, the losses on statutory grain borne by the CNR are indirectly borne by the Canadian public.

The view of transportation as a public utility is a third consideration that is sometimes raised in discussions of the Crowsnest Pass rates. This concept is consistent with the role played by transportation in uniting Canada at the time of Confederation. In the present, the public-utility role of transportation is extended by some to include the use of transportation as a tool for overcoming regional disparities. The national railways, in particular, are singled out as ideal candidates for the task of "equalizing" the geographically disadvantaged areas of the country. The extensiveness of the two rail networks and the reliance of many shippers on rail transport indicate the railways' suitability to this role. Prairie grain producers are especially susceptible to the monopoly power of the railways because of their dependence on export grain, which must move to market by water, and because of their location far from both western and eastern ports.

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\(^{20}\)This position is implied in The Crow Rate and National Transportation Policy, ibid., Chapter 4.
Many Canadians do not advocate the use of rail transportation as a public utility. However, it is generally agreed that the railways should not be completely free from government control. Even the National Transportation Act of 1967, which established a National Transportation Policy that promoted competition in the provision of transport services, provided for some regulatory responsibility in the activities of the railways. The issue of grain freight rates is a particularly sensitive one, and it is unlikely that, in the foreseeable future, there will be much support for a removal of government control in this area. For this reason, the policy alternative involving no government control of pricing is not considered further in this thesis.

Another consideration to be taken into account is the economic dislocation that would result from a sudden, drastic change in grain freight rates.

A final "other consideration" is the reaction of non-grain shippers to the continued existence of the Crowsnest Pass rates. Many of these shippers resent the fact that their payments for rail transportation are being used to subsidize statutory grain traffic, and believe that compensatory grain freight rates would result in less railway pressure for rate increases on non-grain freight traffic.

Summary

The considerations described in this chapter are those that, in the author's opinion, are of major relevance to the issue of the Crowsnest Pass rates. The list of considerations is
not exhaustive, but it does indicate some of the problems encountered by policy-makers in dealing with that issue.

The examination of various considerations in this chapter has justified the deletion of some of the policy alternatives listed at the end of Chapter III. The feasible alternatives are reduced to the following ones, all of which involve group rates and the government control of price levels.

1. Crowsnest Pass rates with railway subsidies

2. Non-compensatory rates greater than the Crowsnest Pass rates
   a) with no subsidies
   b) with producer subsidies
   c) with railway subsidies
   d) with producer and railway subsidies

3. Compensatory rates
   a) with no subsidies
   b) with producer subsidies
   c) with railway subsidies
   d) with producer and railway subsidies

4. Compensatory-plus rates
   a) with no subsidies
   b) with producer subsidies.
Chapter V

Quantitative Impacts of the Policy Alternatives

Introduction

The policy alternatives with respect to the Crowsnest Pass rates which are "feasible" are those listed at the end of Chapter IV. The alternatives vary according to the particular price level for the transportation of grain by rail and the indicated recipient (if any) of Government subsidies for relieving the "burden" imposed by the specified price level. At the current, non-compensatory rate level, the subsidy recipient would be the railways. At higher rate levels the recipient could be the railways, the grain producers, neither of these, or both of them.

Each of the policy alternatives has many different impacts. Chapter IV, in part, indicates the nature of the major impacts involved; this chapter provides quantitative estimates where possible.

Estimating the impacts of every policy alternative individually would be a tedious task. Fortunately, it is not necessary to make complete individual calculations; there are four policy alternatives whose quantitative impacts can be used as a basis for estimating the impacts of all the other alternatives. The four "basic" alternatives are as follows:

(1) Crowsnest Pass rate level with the current level of railway subsidies (excluding branch-line subsidies for lines to be abandoned)
(2) Crowsnest Pass rate level with fully-compensating railway subsidies

(3) Compensatory rate level with no subsidization

(4) Compensatory rate level with fully-compensating producer subsidies.

"Fully-compensating railway subsidies" are equal to the difference between the costs of providing the grain-transporting service and the revenues received. "Fully-compensating producer subsidies" are equal to the difference between compensatory rates and the Crowsnest Pass rates.

To estimate the impacts of the four policy alternatives listed above, this chapter first specifies the costs and revenues that are to be used as a basis for the analysis. Following this specification, the impacts of the alternatives on each party involved are estimated. First, the quantitative impacts on the railways of the four alternatives are assessed. This is followed by an estimation of the policies' quantitative impacts on grain producers, on secondary agricultural industries in the Prairies, on each Prairie province as a whole, and on the Federal Government.

1974 Costs and Revenues

The Report of the Commission on the Costs of Transporting Grain by Rail (the Snavely Commission Report) is used as a basis for determining the quantitative impacts of the policy alternatives. Volume I of that Report determines the costs and revenues of the grain-transporting system experienced by the railways in 1974. Volume II of the Report develops the 1974 costs and revenues of the grain-transporting system that would
have been experienced if the recommendations of the Grain Handling and Transportatin Commission (Hall Commission) had been fully implemented in that year. The Hall Commission recommendations referred to are:

(1) the removal from the owning railway of 2,473 miles of line through abandonment or transfer, and

(2) the assignment of 2,344 miles of line remaining in the railway system to a new Federal Government agency to be called the Prairie Rail Authority (PRA).¹

According to the Hall Commission Report, the PRA is to lease the designated lines at a nominal fee (such as $1 per branch line per year) from the railways. It is to "contract with Canadian National and CP Rail to conduct train operation and related functions on these branch lines on a cost reimbursement basis, including a management fee...."² The PRA is to be given the authority to determine if, and when, the branch lines under its control are to be abandoned. Further, it is to determine the extent of rehabilitation to be carried out on the lines, and to contract with the railways to perform such rehabilitation.

A rail-grain system incorporating the above recommendations of the Hall Commission is termed a "modified system". This thesis employs the Snavely Commission costs and revenues of the modified system, rather than those of the actual system, as a basis for its quantitative analysis. This is done because the author believes that the modified system corresponds more

closely to the future grain system than does the actual 1974 system. However, as is shown below, the difference between the annual costs of the two systems is only in the order of 10 percent.

Unfortunately, as the Snavely Commission Report is careful to point out, even the "modified system" does not incorporate changes that have taken place in the rail-grain system since 1974. Some of the more significant of these changes are the discontinuance of the statutory rates on grain moving to Victoria, the implementation of the Calgary/Edmonton interchange, the abandonment of some grain-related branch lines, the closure of "a significant number" of elevators that originated statutory grain in 1974, an increase in the Federal Government-owned hopper-car fleet from 2,000 to 8,000 cars, and the retirement by Canadian National of "a substantial number" of its small-capacity box cars.

For the reasons given above, the 1974 modified-system costs developed by the Snavely Commission cannot be considered to be absolutely "correct". Nevertheless, they indicate the order of magnitude of such costs and are the best estimates available. Hence they are used without qualification for the remainder of this thesis.

Exhibit 1 shows, for both the modified and the actual systems, the costs to CP Rail and Canadian National of transporting statutory grain in 1974 and the moneys received by

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4Ibid., pp. 5-6.
Exhibit 1

1974 Costs, Revenues, and Subsidy Payments in the Transportation of Statutory Grain by Rail

<table>
<thead>
<tr>
<th></th>
<th>Amount ($000,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modified System</td>
</tr>
<tr>
<td>Costs</td>
<td>203.908</td>
</tr>
<tr>
<td>Revenues</td>
<td>88.107</td>
</tr>
<tr>
<td>Subsidies</td>
<td>41.458</td>
</tr>
<tr>
<td>Revenues &amp; Subsidies</td>
<td>129.565</td>
</tr>
</tbody>
</table>

1Figures for Canadian National and CP Rail (Northern Alberta Railways Excluded). Source: Snavely Commission Report, Vol. II, pp. 96, 100, and 104; Appendix 0.

2Revenues = statutory grain freight rates +miscellaneous revenues.

The miscellaneous revenues account for less than one-half of one percent of Revenues.

the two railways for the performance of this service. In Volume II of its Report, which was published in November of 1977, the Snavely Commission estimates that "...the 1974 costs have increased by at least 25 to 35 percent as a result of inflation." This is equivalent to an average annual cost inflation rate of 8 to 11 percent over three years. Therefore, a general cost inflation rate of 9 percent per year is used in the

5Ibid., p. 105.
following section for estimating rail-grain costs in the years 1975-77. (At an annual inflation rate of 9 percent, the costs for transporting grain by rail double about every 9 years. By the year 2000, rail-grain costs would be about 20 times the revenues received under the Crowsnest Pass rates. With 5 percent annual cost inflation, rail-grain costs would be 8 times revenues in the year 2000.)

The Impacts

Railway Impacts. An indication of gross and net railway revenues is necessary for estimating the impacts of the four policy alternatives on the railways. Exhibit 2 gives these figures for 1974-77, as well as estimates of annual losses incurred in the carriage of statutory grain. In determining the rail-grain costs, revenues, and subsidy payments that would have been experienced with a modified system in 1975, 1976, and 1977, it is necessary to extrapolate from 1974 figures. Adjusting the 1974 costs to obtain cost estimates for 1975-77 is done as follows. First, the 1974 costs are divided into "volume-related" costs and "line-related" costs according to the figures given in Volume II of the Snavely Commission Report. Then the volume-related costs are adjusted to reflect changes in the volume (carloads) of grain traffic in the years 1975-76 (the number of carloads in 1977 was not available at the time of writing). Following this adjustment, both the volume-related and the line-related costs are increased by a general annual inflation rate of 9 percent to yield a total-cost estimate. In estimating the grain revenues for 1975-77, the 1974 figures are adjusted to
### Exhibit 2

**Gross Rail Revenues, Net Rail Revenues, and Statutory-Grain Costs and Revenues, 1974-76**

<table>
<thead>
<tr>
<th></th>
<th>Amount ($000,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Railway Revenues</strong></td>
<td></td>
</tr>
<tr>
<td>from Carload Freight(^1)</td>
<td>1428</td>
</tr>
<tr>
<td><strong>Net Railway Revenues</strong></td>
<td></td>
</tr>
<tr>
<td>CP Rail(^3)</td>
<td>45</td>
</tr>
<tr>
<td>Canadian National(^4)</td>
<td>(38)</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
</tr>
<tr>
<td><strong>Statutory Grain Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Revenues(^5)</td>
<td>204</td>
</tr>
<tr>
<td>Subsidies(^7)</td>
<td>42</td>
</tr>
<tr>
<td>Net loss</td>
<td>74</td>
</tr>
</tbody>
</table>

\(^1\) Source: Canadian Transport Commission Waybill Analyses, 1974-76. Figures exclude subsidies.

\(^2\) Not available to date (April, 1978).

\(^3\) Source: Canadian Pacific Limited Annual Reports, 1975 and 1976; "CP Earnings Zoom," The Province (Vancouver: March 14, 1978). Figures represent net revenue from all rail operations of CP Rail (including non-carload freight traffic and passenger traffic).

\(^4\) Source: Canadian National Railways Annual Reports, 1975 and 1976; "Bandeen's Getting CN Back on the Track," The Province (Vancouver: March 8, 1978). Figures represent net revenue after interest payments from entire CNR System (including all rail and non-rail operations).

\(^5\) Source: Exhibit 1. Figures for 1975-77 derived from 1974 figure by adjustments reflecting changing traffic volumes and general cost inflation (9 percent per year).

\(^6\) Source: Exhibit 1. Figures for 1975-76 derived from 1974 figure by adjustments reflecting changing traffic volumes.

\(^7\) Source: Exhibit 1. Figures for 1975-77 derived from 1974 figure by adjustments reflecting subsidy increases due to changing traffic volumes and general cost inflation.

reflect changing traffic volumes. To estimate the 1975-77...
subsidy payments, the 1974 subsidies are adjusted to reflect changing traffic volumes in addition to general 9 percent annual increases. For all of the categories (grain costs, revenues, and subsidies), the 1977 traffic volumes are assumed to be the same as the 1976 volumes. In addition, the origin-destination pattern of statutory-grain shipments, which would also affect the dollar figures, is assumed to be constant throughout the 1974-77 period.

From the figures in Exhibit 2, it can be calculated that the existence of compensatory rates rather than Crowsnest Pass rates (Policy Alternatives 3 and 4) would have increased 1974 gross rail revenues from carload freight traffic by 8 percent; the figure is 9 percent for both 1975 and 1976. These estimates are based on the assumption that the increase in grain freight rates would have affected neither the volume of grain shipped nor the revenues received from non-statutory-grain traffic. If it is assumed that the increase to compensatory levels would be accompanied by a 3-percent reduction in revenues from other carload freight traffic (see Chapter IV), the net effect of the change would be to increase gross revenues by 5 percent, 6 percent, and 6 percent in 1974, 1975, and 1976.

In each of Alternatives 2, 3, and 4, the railways would have recovered the variable costs of the grain-transporting system, either through subsidies or through rate increases. Exhibit 3 indicates the net railway revenues (from all operations) that would have been realized under these alternatives. The revenue figures in column 2 are based on the assumption that other freight revenues would not have declined;
### Exhibit 3

#### Railway Net Revenue Under Varying Assumptions, 1974-77

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual Net Revenue</th>
<th>Net Revenue with Cost Recovery on Grain, no Decrease in Other Revenue</th>
<th>Net Revenue with Cost Recovery on Grain, 3% Decrease in Other Carload-Freight Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>7</td>
<td>81</td>
<td>41</td>
</tr>
<tr>
<td>1975</td>
<td>(136)</td>
<td>(42)</td>
<td>(87)</td>
</tr>
<tr>
<td>1976</td>
<td>63</td>
<td>167</td>
<td>105</td>
</tr>
<tr>
<td>1977</td>
<td>83</td>
<td>205</td>
<td>--2</td>
</tr>
</tbody>
</table>

1. Source: Exhibit 2 and Canadian Transport Commission Waybill Analyses, 1974-76.

The figures in column 3 assume a 3-percent decline in other freight revenues. Under the first assumption, net railway profit would have increased by about eleven-fold in 1974 with cost recovery on grain traffic. In 1975, net losses would have been cut by approximately 69 percent. In 1976 and 1977, net profit would have been increased by 165 percent and 147 percent, respectively. In all these years, then, implementation of any of the three alternatives would have had a substantial effect on net railway revenue.

The net-revenue figures in column 3 of Exhibit 3 are based on the assumptions of variable-cost recovery on statutory grain
(Alternatives 2, 3, and 4) and a 3-percent reduction in revenues from other carload freight traffic. The figures show that Policy Alternatives 2, 3, and 4 have a significant positive effect on railway net revenue even if they do result in the indicated reduction in other railway freight revenue. In 1974, net revenues would have been almost 6 times greater than they were. Losses would have been reduced by 36 percent in 1975, and profits would have been increased by 67 percent in 1976.

Grain-Producer Impacts. Estimates of the annual net income of grain farms are required for assessing the impacts on grain producers of the four policy alternatives. "Grain farms" are defined to be those farms for which grain sales constitute at least 51 percent of sales of agricultural products. The definition is further restricted to farms having annual sales of agricultural products exceeding $2,500.

In this thesis, "net grain-farm income" is interpreted as net grain-farm income from the sale of agricultural products plus government subsidy payments related to those products. Income received by grain producers from non-farm activities is excluded. Even as defined here, the aggregate net income of Prairie grain farms is difficult to estimate with confidence.

"Grain" refers to wheat and "small grains" as defined in the 1971 Census of Canada. See the Appendix for a complete description of "small grains."

Sales of "over $2,500" farms account for approximately 95 percent of total farm cash receipts. (Source: 1971 Census of Canada and 1970 Farm Net Income (Statistics Canada Catalogue 21-202 Annual).)
largely because of the difficulties associated with estimating grain-farm expenses. Statistics Canada publishes annual estimates of farm gross income and expenses by province, but these are not broken down by type of farm. The 1971 Census of Canada, on the other hand, categorizes farms according to their principal agricultural product but does not give complete estimates of 1970 farm expenses. By combining the 1971 Census information and the 1970 Farm Net Income figures, it is possible to derive rough estimates of 1970 grain-farm expenses. This is accomplished in the Appendix to the thesis. In this section, the 1970 gross and net grain-farm incomes are estimated, and the entire analysis is extended to the years 1971-76.

The 1971 Census of Canada gives estimates of the "value of agricultural products sold, 1970" classified by farm type and by province. Statistics Canada Farm Net Income figures for "supplementary payments" are added to these figures to give estimates of 1970 gross grain-farm income. The 1970 net grain-farm income is then calculated by subtracting the 1970 expenses from the 1970 gross income, and summing over the three provinces (Manitoba, Saskatchewan, and Alberta). The expenses include depreciation on machinery and buildings (29 percent of total expenses).

To estimate gross grain-farm income for the years 1971-76, the following procedure is adopted. First, the 1970 figures for "value of products sold" for each province are adjusted by

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8In 1970, the "supplementary payments" were payments made under the provisions of the Prairie Farm Assistance Act (PFAA) and the Lower Inventory for Tomorrow (LIFT) program.
factors reflecting changes in annual cash receipts from the sale of field crops. Second, "supplementary payments" and "deficiency payments" are added to the adjusted figures to get estimates of gross grain-farm income by province. The supplementary payments are included for all years without adjustment. Deficiency payments are included only for the years 1973-76, since it is only in those years that they incorporate payments for grain (under the two-price wheat program). The deficiency-payment figures are reduced by 25 percent to reflect the fact that they also include payments made under the Agricultural Stabilization Act for hogs, poultry, beef, and potatoes. Finally, the gross-income figures are summed over the three provinces.

To estimate grain-farm expenses in the years 1971-76, the 1970 expenses are separated into operating and depreciation expenses, then each of these is adjusted by a factor reflecting annual changes in the figures for all farms in the same province.

The factor for each province and year is

\[
\frac{\text{"Income from field crops" for year}}{\text{"Income from field crops" for 1970}}
\]

These figures are taken from Farm Cash Receipts 1972, 1974, 1976 (Statistics Canada Catalogue 21-201 Annual).

The supplementary payments are payments made under (in various years) the PFAA, the LIFT program, the Farm Acreage Payment Program, the two-price wheat program, the Western Emergency Assistance Program, and various crop-assistance programs for farmers affected by adverse weather conditions.
province. The two types of expenses are then summed together and summed over the provinces. "Net Income" is calculated by subtracting "Expenses" from "Gross Income".

Exhibit 4 shows the results of these calculations. Under policy alternatives 1 and 2, both of which involve retention of the Crowsnest Pass rates, grain-farm net income would have been that shown in the exhibit.

The impact on grain-farm income of Alternative 3 (compensatory rates with no subsidies) can be deduced from the fourth column of Exhibit 4. In this column are estimates of the difference between the cost to the railways of transporting grain and the revenue received by them under the Crowsnest Pass rates—in other words, the additional costs that could be borne by grain producers under Alternative 3. They are overestimated relative to the Net Income figures to the extent that they represent the increased costs to all grain shippers, rather than to just "grain farms." Further, producers would probably not bear all of the increased freight costs. It is possible that the rate increases would be passed on to foreign and domestic grain customers. Although some studies have indicated that the foreign

\[ \text{"Operating expenses" for province and year} \]
\[ \text{"Operating expenses" for province, 1970} \]

The factor for adjusting depreciation expenses is analogous to the above factor. The "operating expenses" and "depreciation expenses" are taken from Farm Net Income 1974, 1976 (Statistics Canada Catalogue 21-202 Annual).
demand for Canadian wheat is price elastic,\textsuperscript{12} one recent study determined a price-inelastic demand.\textsuperscript{13} The elasticity of eastern-Canada demand for Prairie grain depends largely on the price of grain from the United States, a potential competing source of supply.

Even if grain producers absorbed all of the freight-rate increase, the net decrease in grain-farm income would probably be less than that indicated in column 4 of Exhibit 4. There would almost certainly be a transfer of Prairie resources out of grain production and into other activities, mitigating the income reduction.

Because the cost increases in column 4 are those affecting all grain shippers and because they assume no cost transference, they are probably the maximum quantitative impacts of Alternative 3 (subject to the qualifications noted below). At a maximum, then, the implementation of compensatory rates would have reduced net grain-farm incomes by 10 percent in 1974 and 1975, and by 15 percent in 1976.

There is one further aspect of Alternative 3 that should not be ignored. That is, an increase to compensatory rates would have differential effects on Prairie producers. It is certain that the income of some grain farms would be reduced by much


### Exhibit 4

**Grain-Farm Net Income, 1970-76**

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Income $</th>
<th>Expenses $</th>
<th>Net Income</th>
<th>Additional Cost of Compensatory Rates $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>649</td>
<td>574</td>
<td>75</td>
<td>---</td>
</tr>
<tr>
<td>1971</td>
<td>819</td>
<td>600</td>
<td>219</td>
<td>---</td>
</tr>
<tr>
<td>1972</td>
<td>1,102</td>
<td>642</td>
<td>460</td>
<td>---</td>
</tr>
<tr>
<td>1973</td>
<td>1,317</td>
<td>774</td>
<td>543</td>
<td>---</td>
</tr>
<tr>
<td>1974</td>
<td>2,143</td>
<td>974</td>
<td>1,169</td>
<td>116</td>
</tr>
<tr>
<td>1975</td>
<td>2,582</td>
<td>1,122</td>
<td>1,460</td>
<td>144</td>
</tr>
<tr>
<td>1976</td>
<td>2,333</td>
<td>1,268</td>
<td>1,064</td>
<td>156</td>
</tr>
</tbody>
</table>

1. **Gross Income** = $\text{FCR: Income from field crops for year}$
   
   FCR: Income from field crops for 1970
   
   x (Census: Value of agricultural products sold, 1970)
   
   + (FCR: Supplementary payments for year)
   
   + .75 x (FCR: Deficiency payments for year (only in 1973-76))

   for each Prairie province, summed over the provinces.
   
   ("FCR" = Farm Cash Receipts (Statistics Canada, Catalogue 21-201 Annual); "Census" = 1971 Census of Canada (Catalogues 95-708, 96-709, 96-710))

2. **Expenses** = $\text{FNI: Operating expenses for year}$

   FNI: Operating expenses for 1970
   
   x (Ex.7: Grain-farm operating expenses, 1970)
   
   + $\text{FNI: Depreciation expenses for year}$
   
   FNI: Depreciation expenses for 1970
   
   x (Ex.7: Grain-farm depreciation expenses, 1970)

   for each Prairie province, summed over all provinces.
   
   ("FNI" = Farm Net Income (Statistics Canada, Catalogue 21-202 Annual); "Ex.7" = Exhibit 7 (in the Appendix))

3. **Source:** Exhibit 2. Assumes entire rate increase would be borne by producers. Figures prior to 1974 unavailable.
more than 10 percent, while that of other grain farms would be reduced by much less. This is due to locational factors affecting the level of compensatory rates as well as to differences in current net income (affecting the ratio of compensatory rates to net income).

Policy Alternative 4 is that of compensatory rates with "compensating" producer subsidies. The effects of this alternative on grain-farm income, like those of compensatory rates with no subsidies (Alternative 3), depend on whether or not the freight-rate increases would be passed on. If they were not passed on, net grain-farm incomes would have been the same as they actually were, that is, equal to the figures in column 3 of Exhibit 4. Grain sales would not have been affected by a price increase, and there would have been no incentive for a transfer of Prairie resources out of grain production. If, on the other hand, the rate increases were partially passed on, grain-farm incomes would have been higher than they actually were. The higher grain prices would have increased cash receipts, but net producer transportation costs would not have been increased (due to the subsidy).

There is one final qualification that applies to the impact analyses of all the policy alternatives. Each analysis assumes that grain-farm expenses other than rail freight charges increase only by a general inflation rate. In fact, with the branch-line abandonment taking place now and in the future, grain-producer trucking costs will increase by an amount reflecting the longer hauls. A recent study dealing with transportation in the Interlake Area of Manitoba investigates
the average increase in trucking costs associated with various route configurations. In 1974 dollars, these increases vary between 0.6 cents per bushel and 2.0 cents per bushel. Another study, which was published in 1974, estimates that a doubling of a producer's truck haul from 5.5 to 11 miles would increase the cost of trucking 5230 bushels by 42 percent, or 1.3 cents per bushel. Assuming that an abandonment program would result in an increase in the per-bushel trucking cost of 2.0 cents (because of higher current fuel prices), and assuming 1975-76 levels of producers' marketings, the effect of such a program on 1976 net grain-farm income would be a reduction of 18 million dollars, or 1.7 percent. This would be in addition to impacts resulting from implementation of the policy alternatives.

Secondary-Industry Impacts. As is stated in Chapter IV, raising grain freight rates (Policy Alternatives 3 and 4) would make locating in the Prairies more attractive to agricultural-processing industries than is currently the case (assuming that the higher freight rates would be passed on, at least partially, to domestic grain purchasers). However, it is difficult to

\[\frac{1^{14}}{}\]


\[\frac{1^{15}}{}\]

Ibid., Tables 64, 74, 84, 94.

\[\frac{1^{16}}{}\]

estimate the extent of industrial relocation and development that would in fact take place in such circumstances. In the case of the livestock industry, the possibility of relocation is affected not only by the grain freight rates to the Lakehead, but also by the Federal Feed Grain Assistance Program. The existence of the latter would diminish the development incentives resulting from the implementation of Alternatives 3 and 4. Further, as is also indicated in Chapter IV, there are many factors unrelated to transportation rates that influence current patterns of industrial location. Not the least of these is the existing geographical structure of the industry. Although there is an established livestock industry in the Prairies, particularly in Alberta, a large proportion of Canada's beef production is located in Eastern Canada.17

Even if there is no inherent locational rigidity, the impacts on Prairie industry of raising grain freight rates are difficult to estimate. This difficulty is attested to by the fact that two recent studies reached entirely different conclusions with respect to the impacts of freight-rate increases on the livestock industry. The report of the first study presents the results of a three-part model of the livestock sector. According to this model, a shift to "market" grain freight rates would increase the revenue of Western

Canadian livestock producers by $100.1 million, or 8 percent.**

Another group of Agricultural Economists used a linear-programming model to determine the effects of rate increases and route adjustments on agricultural production. This group restricted its analysis to the Interlake region of Manitoba, which has a fairly diversified economic base. Its results "...indicate clearly that the levels and distribution of agricultural production would not be affected by any of the route-rate options considered under 1973-74 prices."** This is due to the relative financial returns in the various sectors of the economy; grain prices were high in 1973-74. In years with prices lower than those prevailing in 1973-74, increased grain freight rates could affect the most profitable (optimal) production mix. Such is the case for the 1970-71 crop year, which had very low average prices. Even in that year, however, the model showed an adjustment of less than 1 percent in the optimal production mix.**

Thus, the impacts of Alternatives 3 and 4 on the Prairie livestock industries are unclear. However, it is likely that in the long run, with transportation costs rising faster than other costs because of increasing fuel prices, there could be a

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19 Tulloch et. al., op. cit., p. 47.

20 Ibid., Table 27.
noticeable westward shift in the location of these industries.

In addition to the livestock industry, other agricultural processing industries would be affected by an increase to compensatory grain freight rates. Unlike most livestock production, some of these industries require no change in the general mix of farm products. Rather, they are non-farm industries utilizing farm outputs. Such an industry is rapeseed crushing. An increase to compensatory rapeseed freight rates would encourage the expansion of this industry in the Prairies, but the expansion would be an addition to the Prairie economy rather than a reallocation of the current farm resources. It is likely that implementing compensatory grain rates would have a larger effect on industrial development in these industries than it would have on development in the livestock industry.

The analysis of development impacts has been inconclusive; no satisfactory quantitative effects have been determined. This makes it difficult or impossible to weigh the development impacts against other, more precisely determined impacts. Nevertheless, the former cannot be ignored. They are included qualitatively in the evaluation of policy alternatives in Chapter VI.

**Prairie-Province Impacts.** The impacts of the policy alternatives on each Prairie province as a whole can be largely inferred from their impacts on its grain farms. For example, the direct effect of Policy Alternative 3 (compensatory rates with no subsidies) on Prairie-province personal income would be to reduce it by the amounts in column 4 of Exhibit 4 ("Additional Cost of
Compensatory Rates"). Exhibit 5 shows the 1975 Additional Cost, broken down by province, and the provincial personal incomes (PPI's) for that year. It can be seen from the exhibit that the direct impact of Alternative 3 is to reduce PPI's by amounts in the order of 1 percent; the largest effect is in Saskatchewan (1.6 percent). The figures given are based on the same assumptions as those mentioned in the section on grain-farm income impacts. These assumptions are, first, that the increases in freight rates would not be passed forward to grain customers, second, that Prairie resources would not be reallocated in response to the reduced profitability of grain, and third, that there would be no increase in trucking costs due increased lengths of haul.Violation of the first two assumptions would reduce the relative size of the additional cost of compensatory rates; violation of the third assumption would increase it (by less than one-tenth of one percent, based on the figures derived previously).

The implementation of Policy Alternative 3 would ultimately reduce Prairie PPI's by more than the amounts indicated above, since the initial direct reduction would result in less consumer spending. This reduction would instigate a "second round" of income reduction, which would cause a "third round," and so on. The phenomenon of compounded income changes is termed the "multiplier effect," and the total drop in income resulting from a 1-unit initial reduction is termed the "multiplier." Assuming

\[ \text{The additional cost of compensatory rates is allocated to the three provinces on the basis of their relative grain-farm expenses in 1970 (see Exhibit 7).} \]
### Exhibit 5

**Provincial Personal Income and the Additional Cost of Compensatory Rates, 1975**

<table>
<thead>
<tr>
<th>Province</th>
<th>Provincial Income</th>
<th>Additional Cost of Compensatory Rates</th>
<th>Additional Cost with a Multiplier of 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>amount</td>
<td>amount (% of PPI)</td>
<td>amount (% of PPI)</td>
</tr>
<tr>
<td>Manitoba</td>
<td>5,742</td>
<td>23 (0.4)</td>
<td>68 (1.2)</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>5,481</td>
<td>85 (1.6)</td>
<td>256 (4.7)</td>
</tr>
<tr>
<td>Alberta</td>
<td>10,721</td>
<td>36 (0.3)</td>
<td>108 (1.0)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21,944</strong></td>
<td><strong>144 (0.7)</strong></td>
<td><strong>432 (2.0)</strong></td>
</tr>
</tbody>
</table>

2. Source: Exhibit 4 and Exhibit 7. The latter exhibit provides the basis for allocating the "Additional Cost to the three provinces.

That a multiplier of 3 is appropriate in the present situation, the total direct and indirect effects of Alternative 3 are those in column 3 of Exhibit 5. The average "multiplied" income reduction is 2 percent of PPI, with a reduction of 4.7 percent in Saskatchewan.

The numbers in Exhibit 5 represent the income effects of Alternative 3. There is another income effect, however, which would occur under any of the policy alternatives with the implementation of the modified branch-line system. This effect
is the increase in highway upgrading and maintenance costs that would be incurred as producers were required to haul their grain over longer average distances. The PPI's would not be altered as a result of the increased spending, but there would be a transfer of income (via the provincial governments) from the general population to the engineering and construction companies employed to do the work. A report prepared for the Hall Commission presents the Prairie-province estimates of the increase in highway costs that would result from rationalization of the branch-line network. The total of these estimates is in the order of 12 million dollars per year, or approximately 5 percent of the provinces' total highway construction and maintenance expenditures in 1974-75. In relation to the Provincial Government 1975 revenues, the extra highway costs represent 0.2 percent. They are insignificant relative to total Prairie personal income.

Federal Government Impacts. The final impacts to be estimated are the impacts of the policy alternatives on the Federal Government budget. These impacts depend on the subsidization


23Ibid., pp. 86, 87, and 88.

24Only impacts on Government expenditures are considered. There would also be effects on Government tax revenues, but these are ignored because under any policy alternative the revenue gains (eg. from railway taxes) would be partially offset by revenue losses (eg. from grain-farm taxes). The net gain or loss would be minimal (as, in fact, would the net expenditure gain/loss).
scheme adopted. Under Policy Alternative 1, the maintenance of the \textit{status quo}, Government expenditures would not be altered (except in response to the implementation of the modified system). The subsidy payments would have amounted to approximately 0.2 percent of Government expenditures in 1974-75. This proportion would grow over time, assuming that the rate of increase in total Government expenditures will be approximately equal to the general inflation rate. Under Alternative 3 (compensatory rates with no subsidization) the recent annual expenditures would have been reduced by 0.2 percent. Under Alternatives 2 or 4 (both of which involve "compensating" subsidies), the increase in subsidy payments would have raised expenditures by 0.4 percent. In terms of subsidy payments only (by all governments), the effect would be more substantial—Alternatives 2 and 4 would have increased the 1975 payments by 2.5 percent.

Conclusion

The quantitative impacts of the four policy alternatives examined in this chapter are of varying importance, depending on the party being considered. The impacts are very important relative to the railways' net revenue; Alternatives 2, 3, and 4 would have approximately doubled net revenues in 1976 and 1977.

\footnote{Federal Government expenditure figures taken from \textit{Canada, Dept. of Finance, Public Accounts of Canada}, Volume I (Summary Report and Financial Statements).}

Relative to net grain-farm income the impacts are also important; Alternative 3 could have reduced the income figure by (perhaps) 15 percent in 1976. The impacts of the alternatives on agricultural processing industries are not clear, but it is likely that there would be some long-run expansion of agricultural processing in the Prairies. With respect to Prairie-province personal income, the average impacts of the Alternatives are small (perhaps 2 percent), although the effect on Saskatchewan personal income is quite significant (as high as 5 percent). The party affected least by the different policy alternatives in relative terms is the Federal Government; the effects on Government expenditures are less than 1 percent.
Chapter VI

Evaluation of the Policy Alternatives

Introduction

Above all, the policy analyst must be concerned with making recommendations that will get policy moving qualitatively in the right direction, even if the "optimal level" cannot be readily defined nor immediately achieved.¹

Although it is the purpose of this chapter to make evaluations rather than recommendations, the above comment is appropriate in the present context. The issue of the Crowsnest Pass rates is many faceted, and the parties involved have conflicting interests. For these reasons, the "optimum levels" of freight rates and subsidies are certainly not "readily defined": "immediate achievement" is therefore unlikely. Nevertheless, some progress can be made by determining the better levels of rates and subsidies and the trade-offs among the rate/subsidy alternatives so selected.

The combinations of rate level and subsidy recipient (the policy alternatives) to be evaluated are as follows:

1. Crowsnest Pass rates with railway subsidies

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2. Compensatory rates
   a) with no subsidies
   b) with producer subsidies
   c) with railway subsidies
   d) with producer and railway subsidies

3. Rates greater than the compensatory level
   a) with no subsidies
   b) with producer subsidies

4. Non-compensatory rates greater than the Crowsnest Pass rates
   a) with no subsidies
   b) with producer subsidies
   c) with railway subsidies
   d) with producer and railway subsidies.

"Compensatory rates" are equal to the long-run variable costs of the movements; they do not include a contribution to constant costs. Different possibilities with respect to subsidy levels and allocation bases are discussed in the course of the policy evaluations.

In order to determine which of the policy alternatives are the "better" ones, there must be criteria for evaluation. The criteria used in this thesis are primarily the objectives discussed in Chapter IV, namely, the (conflicting) objectives of improving economic efficiency, maintaining the current level of grain-producer transportation costs (net of subsidy), encouraging the development of secondary industry in the Prairies, and achieving a balance of political goals. The "political goals" include those of maximizing votes, implementing the "user-pay" philosophy currently applied to transportation, achieving cost recovery in the rail-grain system, and minimizing subsidy payments. The evaluation of each policy alternative consists of determining how well it accomplishes the different objectives, using the quantitative-
impact analysis of Chapter V. Extensions of the impact analysis are employed where appropriate.

Two of the political goals are not used explicitly in most of the policy evaluations, although they are implicitly included because they relate closely to other objectives. The first of these is the objective of vote maximization. It is not possible to determine how a particular policy would affect voting patterns. However, as is discussed in Chapter IV, vote maximization would likely be favoured by a policy alternative that protected grain-producer income. Therefore, the goal of vote maximization is incorporated into the social objective of maintaining low producer transportation costs, although it is mentioned as a separate objective where appropriate. The second political objective to be used implicitly is the goal of "user pay." Because that goal relates directly to the objective of economic efficiency, it is hereafter subsumed under the more general objective.

Three of the "other considerations" discussed in Chapter IV are, first, the significant contributions of the Prairies to the Canadian economy (and the cost to the West of Canada's tariff policy), second, the fact that the Canadian Pacific Railway made a perpetual commitment with respect to the rate level for transporting grain when it signed the Crowsnest Pass Agreement with the Government of Canada in 1897, and, third, the view held by many Canadians that transportation should be used as a tool for overcoming the geographical disadvantage of regions such as the Prairies. An acceptance of these considerations implies that the Government of Canada should assist Prairie producers in the
transportation of grain through low statutory freight rates, direct subsidies, or both. In other words, an acceptance of these considerations adds relative "weight" to the objective of maintaining the current level of grain-producer net transportation costs. The importance of these considerations must be judged by those who make the final policy decision; they are not considered further in this thesis.

Chapter IV also discusses a fourth consideration: shippers of non-grain freight object to the fact that they must bear, indirectly, the railway losses incurred on the carriage of statutory grain. This consideration supports the political objective of achieving cost recovery in the transportation of grain by rail.

In evaluating the policy alternatives, it is important to be aware of the short-run dislocation that could occur if there were a large, sudden change in grain freight rates.

A final relevant consideration mentioned in Chapter IV (and in Chapter II) is the preference of Prairie producers for indirect rather than direct subsidies. This is taken into account in the evaluations of the policy alternatives.

The Evaluations

Three of the policy alternatives involve sizeable reductions in grain-farm net incomes (reductions in the order of 10 percent). These alternatives are compensatory rates with no subsidies, compensatory rates with railway subsidies only, and rates greater than the compensatory level with no subsidies. Because these alternatives rate very poorly with respect to the
social objective, they are eliminated at the outset.

**Crowsnest Pass Rates with Railway Subsidies.** Regardless of the level of subsidies adopted, this alternative complies with neither the economic objective nor the development objective. It would encourage perpetuation of the current grain-intensive allocation of resources in the Prairies.

Continuation of the Crowsnest Pass rates, if accompanied by a continuation of the current level of railway subsidies, is simply the maintenance of the status quo. This policy alternative has had and would continue to have a significant negative effect on net railway revenues, reducing them by at least 40 percent in 1976 and 1977. It is not consistent with the political objective of assisting railway cost recovery. The fact that studies have been recently undertaken by the Government to identify and examine alternative courses of action is a further indication that this alternative is not favoured politically.²

If the costs associated with an inefficient grain-handling system are taken into account, the alternative of continuing the status quo is also not consistent with the objective of minimizing producer costs. The costs associated with an inefficient system include unnecessary storage and ship-demurrage charges, which are borne by grain producers via the

²See, for example, Canada Grains Council, *Report to the Grain Handling and Transportation Committee by the Railway Compensation Sub-Committee* (Winnipeg, June 1977). This report has the objective of "...investigating alternative proposals for directing compensation to the railways....for the movement of statutory grain" (p. 1).
A railway-subsidy level higher than the current level would result in an increase in railway net revenues as well as an increase in Federal Government expenditures. At current cost and Government-spending levels, the alternative of continued Crowsnest Pass rates with fully compensating railway subsidies would increase Government expenditures by 0.4 percent ($122 million). The relative size of the subsidies would probably grow over time, as the Government would be forced to bear a larger and larger proportion of the rail-grain costs. Although the subsidy payments would be small relative to all Government expenditures, they would be significant in absolute terms. At a time when restraint in Government spending is advocated (both outside and inside the Government), it would be difficult to justify large new grants to the railways.

One possible benefit of fully-compensating railway subsidies would be a general rate level on non-grain freight lower than that which would otherwise apply. Cost recovery on grain would reduce the need for railway risk-taking in the form of raising other freight rates (see Chapter IV). Lower rates would assist existing non-grain shippers as well as providing some encouragement to the development of Prairie processing industries.

Fully compensating railway subsidies have one potential undesirable consequence. Assuring the railways of cost recovery on grain would give them no incentive to operate efficiently; any cost increases would simply be passed on to taxpayers. If such an attitude developed, the economic efficiency within the
rail-grain system would suffer. This effect could be eliminated by fixed annual subsidies, or by subsidies that grew with the general inflation rate rather than with railway costs.

Railway subsidies at intermediate levels may be preferred to fully compensating subsidies, particularly if they take the form of permanent Government investment in the physical plant necessary for transporting grain. Such subsidies would perhaps be viewed as assisting grain producers rather than as assisting the railways. It may, in fact, be the Government's intention to adopt this alternative; in 1977 $100 million was allocated to upgrading parts of the Prairie branch-line network. However, this grant could be merely a one-time subsidy for improving the deteriorated system.

Compensatory Rates. Depending on the subsidization scheme adopted, this policy alternative could be far superior to the previous one in terms of achieving the economic-efficiency and development objectives. Cost-based grain freight rates would promote the economic advantage of the Prairies in agricultural processing industries. Further, compensatory rates could result in lower rates on processed commodities (as would be possible with fully compensating railway subsidies).

It is possible that eastern grain processors, rather than relocating to the Prairies, would simply shift their source of
grain supply to the United States. This would diminish the positive development effects of compensatory rates, although there would still be incentives for new industries to locate in the Prairies.

The alternative of compensatory rates, like the alternative of Crowsnest Pass rates with fully compensating railway subsidies, suffers from an absence of railway incentives for efficient operation. Railway rates would be set simply to cover long-run variable costs. This is perhaps the biggest drawback of such a rate structure. One possible way of avoiding the problem would be to set the initial rates equal to current rail-grain costs, then determine the annual rate changes independently of changes in these costs. For example, rate changes could be determined on the basis of changes in an appropriate Price Index or changes in overall railway costs. Under a pricing scheme such as this, the railways would be motivated to improve efficiency. Efficiency improvements could have the effect of reducing rail-grain costs, leading to grain rate increases in excess of cost increases. Therefore, with this pricing scheme, grain traffic could soon be making a contribution to the railways' constant costs. Over a longer period of time, there could be a move to rates based on market competitive forces.

One disadvantage of an immediate increase to compensatory rates would be its short-run disruptive effects in the Prairies.

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(a) No Subsidies. This alternative is eliminated above because of its pronounced negative effects on grain-farm income.

(b) Producer Subsidies. Producer subsidies could be designed to "fully compensate" the individual producers affected, that is, they could be equal to the difference between the compensatory rates and the Crowsnest Pass rates. If so, the subsidies would be based on the amount of grain shipped. However, permanent annual subsidies of this type would reduce the development advantage of the compensatory rates. There would be no new incentives for a shift from Prairie grain production to secondary industry (such as livestock production), since net grain transportation costs to producers would remain at the same level.

There are other possibilities for compensating producers "fully" on an aggregate basis, some of which would encourage Prairie development. For example, a subsidy allocated on the basis of planted acreage, rather than on the basis of grain transported, would eliminate the incentive to ship grain rather than process it in the Prairies. By design, this subsidization scheme would not fully compensate the individual producers for transportation costs incurred (unless the proportion of land devoted to grain production for local processing was the same on all farms). For this reason, it could be objected to in the Prairies, although such objection would likely diminish once the development advantages of the scheme became clear. To its

*Canada Grains Council, op. cit., pp. 24-26.*
detriment, however, this type of subsidy would be administratively difficult and expensive.

Both of the subsidization schemes proposed above would involve a permanent Government commitment to assisting Prairie grain producers. The visibility of these subsidies could prove embarrassing, the more so as they increased over time due to inflation. This visibility is the source of Prairie objections to direct subsidies: once visible, they may be removed.

Other possible subsidization plans involve subsidies of a constant or even diminishing size. Such subsidies, especially if they are based on acreage planted rather than amount shipped, would have long-run advantages with respect to the Prairie-development goal. When supplemented by additional incentives to promote secondary industry in the Prairies, they could be a politically acceptable alternative (although, as mentioned above, basing subsidy payments on grain acreage would be difficult).

There is one unconventional producer-subsidy alternative which is equivalent to constant subsidies over time, but which avoids the development problem (right from the beginning). This alternative is a lump-sum payment to existing grain producers equal to the amount that, when invested at (for example) 10 percent per year, would yield annual returns adequate to compensate producers for the current increase in freight rates caused by the implementation of compensatory rates.\(^5\) The annual compensation would have been $156 million if the subsidies had

\(^5\)Ibid., pp. 19-21.
been implemented in 1976; at a 10 percent rate of return, the Government outlay required would have been $1.56 billion. This figure represents 4.7 percent of 1976 Federal Government expenditures, or $69 per Canadian. The effects of such a payment on producers would be immediate and drastic. They could be moderated by making annual payments over a finite number of years, the total of which would be equivalent to the lump-sum payment. Although these possibilities are appealing in that they are well defined and short lived (from the Government's point of view), they may not be easily accepted by Canadian taxpayers.

(c) Railway Subsidies. Like the alternative of compensatory rates with no subsidies, the alternative of compensatory rates with railway subsidies only is eliminated above.

(d) Railway and Producer Subsidies. Under a compensatory rate structure, the railways would recover just the long-run variable costs of the rail-grain system. Therefore, in addition to producer subsidies, an annual subsidy could be given to the railways in lieu of a contribution to constant costs by grain traffic. Because of the nature of contribution margins in private enterprise, the size of a subsidy of this type cannot be predicted. Whatever the size of the subsidy, a contribution to constant costs by grain would increase the likelihood of a reduction in rates on other freight traffic, further enhancing Prairie industrial development and relieving the "grain" burden borne by existing shippers.

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6Ibid., p. 21.
The long-run variable costs of transporting grain do not include costs incurred in the ownership and operation of main lines; the latter are examples of the constant costs that cannot be allocated to particular traffic. Nevertheless, they must be recovered from total railway revenues. To the extent that grain traffic contributes to line capacity problems, and hence to future line investment, there is economic justification for having grain traffic make a contribution to railway constant costs. Therefore, with compensatory rates determined in a way to encourage efficiency, railway subsidies would contribute to the economic-efficiency and railway cost-recovery objectives.

Railway subsidies in addition to producer subsidies would increase the required level of Government expenditure. Therefore, this alternative is not favoured by the objective of minimizing Government subsidy payments. It may also hinder achievement of the vote-maximization objective.

Rates Greater than the Compensatory Level. The effects of implementing rates greater than the compensatory level would be similar to those of implementing compensatory rates. The former effects would simply be more pronounced than the latter effects—economic efficiency and Prairie development would be further promoted by forcing the rates on grain traffic, like those on other traffic, to make some contribution to the railways' constant costs. However, there may be some public resistance to this pricing scheme because of the current "captivity" of grain traffic to rail. It may be publicly argued that with "compensatory-plus" rates, the railways would be
taking advantage of Government regulation to transfer income from grain shippers to themselves. Such resistance, if it arose, would not be consistent with the vote-maximization objective.

To encourage railway efficiency in the transportation of grain, "compensatory-plus" rates should be determined independently of railway costs after the rates' original implementation. With an initially high rate level, and with rate increases designed to encourage efficiency, this pricing scheme would probably lead eventually to market-determined rates (see "Compensatory Rates").

(a) No Subsidies. This alternative is eliminated because of its negative effects on grain-farm income.

(b) Producer Subsidies. There are only slight differences of degree between producer subsidies under "compensatory-plus" rates and producer subsidies under compensatory rates.

Non-Compensatory Rates Greater than the Crowsnest Pass Rates (hereafter referred to as "compromise" grain freight rates). Implementing a compromise pricing policy would be a way of assisting economic efficiency and Prairie development while reducing the negative effects of compensatory pricing (see the second paragraph following). A compromise price level would likely be variable over time (or else the new situation would be equivalent to the current unsatisfactory one). There are two reasonable ways in which such a price level could be determined: (1) as a fixed proportion of railway costs, or (2) as a gradually increasing proportion thereof. The latter would be preferred to the former in terms of the long-run economic-
efficiency and development objectives. If the initial price level were about the same as the Crowsnest Pass level, the latter policy would also have the advantage of causing little short-run economic dislocation (contrary to the sudden imposition of a high-proportion price level of the first type).

An example of a gradually increasing price level is one in which railway losses are held constant over time. The price level would at first be equal to the Crowsnest Pass level, but would rise annually to cover the increase in railway costs resulting from inflation. If this policy had been implemented in 1974, and if the annual inflation rate were constant at 5 percent, the users would be paying 83 percent of the long-run variable costs of the grain-rail system by the year 2000. A significant disadvantage of this particular pricing alternative is that it provides no incentive for railway cost efficiency.

One of the benefits of compromise pricing is that it would achieve, to some degree, the benefits of compensatory pricing while avoiding the social and political need for direct producer subsidies. Such subsidies are undesirable because of their visibility. Also, compromise pricing would involve a more gradual, less disruptive change than would an immediate increase to compensatory rates.

(a) **No Subsidies.** With no subsidization, the effects of a compensatory pricing policy on grain-farm income would correspond with the rate level chosen for the particular year. Therefore, the rate level would also determine the degree to

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*Ibid., p. 33.*
which the social objective was infringed upon. For example, requiring grain shippers to pay rates equal to 50 percent of railway costs would have reduced grain-farm net income by 4 percent in 1976; rates equal to 75 percent of railway costs would have caused an income reduction of 10 percent. The effects would depend heavily on long-run world grain prices and on non-transportation agricultural subsidies. Problems resulting from short-run fluctuations in world grain prices would be alleviated by the Grain Stabilization Plan.

The effect on railway revenues of this price-and-subsidy option is also dependent on the proportion of costs covered by revenues. Significant negative effects would result from a price level close to the current one, undermining the political objective of assisting rail-grain cost recovery.

Regardless of the rate level, the elimination of subsidies is favoured by the political objective of minimizing Government expenditures.

(b) Producer Subsidies. According to the analysis given previously, having producer subsidies may defeat the purpose of a compromise rate structure. It would diminish any Prairie-development potential created by the new rate structure (this phenomenon is discussed above under "compensatory rates"). Nevertheless, instituting producer subsidies would be consistent with the social and vote-maximization objectives.

With producer subsidies but no railway subsidies, the objective of cost recovery in the transportation of grain by

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*In 1976, users actually paid 36 percent of rail-grain costs.*
rail would not be furthered. The effects of this alternative on
Government expenditures would depend on the particular producer-
subsidy level chosen.

(C) Railway Subsidies. The political objective of providing
a means for railway cost recovery favours having railway
subsidies under any non-compensatory price structure. If they
resulted in lower rates on finished goods, they would also
assist Prairie development beyond the assistance provided by
grain-rate increases. However, the latter effect is uncertain.

The effect of railway subsidies on Government expenditures
would depend on the particular price-level/subsidy combination.
With rates equal to a constant proportion of railway costs and
continuing inflation, the absolute burden of fully compensating
railway subsidies would increase over time, perhaps in
proportion to the increase in Federal Government expenditures. With freight-rate revenue providing increasing cost coverage,
fully compensating railway subsidies could be of a diminishing,
constant, or even growing absolute size, depending on whether or
not the rate of increase in cost coverage exceeded cost
inflation rates. Under the alternative described above in which
grain shippers absorb all railway-cost increases, the burden of
fully compensating railway subsidies would remain constant in
absolute size but would probably decline with respect to total
Government expenditures.

As with no subsidies, compromise grain rates with railway

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9In the most recent Federal budget, the increase in spending
relative to that of the previous fiscal year was approximately
equal to the expected future inflation rate for the year.
subsidies only would have indeterminate effects on producer incomes. The effects in a particular year would depend on the rail-grain rate level of that year.

(d) Producer and Railway Subsidies. Railway subsidies would result in substantial Government expenditures, especially if the total of subsidies paid to both parties equalled the difference between the grain-rail costs and the Crowsnest Pass rates. The development problem associated with having only producer subsidies would exist, but the rail cost-recovery objective would be met at least partially.

Summary. In order to facilitate the selection of the "better" policy alternatives, the results of the preceding analysis are summarized in Exhibit 6. In this exhibit, each alternative is judged in terms of how well it achieves each of the main objectives. In addition, the "visibility" of producer subsidies under each alternative is indicated.

Of necessity, the one- or two-word judgments are subjective, representing the author's considered opinion. They are in no way a substitute for the preceding analysis, and must be interpreted with caution. Nevertheless, the summary provides a focal point for further discussion and for the final policy selection.
Exhibit 6

Summary of Policy Evaluations

<table>
<thead>
<tr>
<th>Rate Level</th>
<th>Ec. Eff.</th>
<th>So-Cial</th>
<th>Pr. Dev.</th>
<th>Cost</th>
<th>Subs.</th>
<th>Vote</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Subsidies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crowsnest Pass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-low rlwy subs</td>
<td>v.p.</td>
<td>good</td>
<td>v.p.</td>
<td>v.p.</td>
<td>good</td>
<td>fair</td>
</tr>
<tr>
<td>-high rlwy subs</td>
<td>v.p.</td>
<td>good</td>
<td>v.p.</td>
<td>good</td>
<td>poor</td>
<td>good</td>
</tr>
<tr>
<td>Compensatory 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-producer subs</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>poor</td>
<td>fair</td>
</tr>
<tr>
<td>-producer &amp; railway subs</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>v.g.</td>
<td>v.p.</td>
<td>poor</td>
</tr>
<tr>
<td>Compensatory plus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-producer subs 9</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>v.g.</td>
<td>v.p.</td>
<td>poor</td>
</tr>
<tr>
<td>Compromise 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-no subs</td>
<td>good</td>
<td>fair</td>
<td>good</td>
<td>fair</td>
<td>v.g.</td>
<td>fair</td>
</tr>
<tr>
<td>-producer subs</td>
<td>fair</td>
<td>good</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>good</td>
</tr>
<tr>
<td>-railway subs</td>
<td>good</td>
<td>fair</td>
<td>good</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
</tr>
<tr>
<td>-producer &amp; railway subs</td>
<td>fair</td>
<td>good</td>
<td>fair</td>
<td>good</td>
<td>poor</td>
<td>fair</td>
</tr>
</tbody>
</table>

1This summary should be interpreted with caution. The judgments are subjective to a large degree, and the exhibit excludes many relevant factors. For example, all alternatives involving producer subsidies suffer from the "visibility" of such subsidies. See the Chapter VI text for more extensive discussion.
The ratings are very good (v.g.), good, fair, poor, and very poor (v.p.).

2"Economic Efficiency"

3The "Social" Objective is the objective of minimizing producer transportation costs.

4"Prairie Development" of agricultural processing industries.

5Railway "Cost Recovery"

6Minimization of total Government subsidies
"Vote Maximization." The judgments in this column are very tentative. It is difficult or impossible to predict the effect of specific policies on voting patterns.

Producer subsidies are assumed to be allocated on the basis of acreage planted and to be constant in absolute size over time. The achievement of the social objective would be "very good" immediately after implementation of the policy, decreasing to fair or poor as the net producer transportation cost (rising compensatory rates - constant subsidies) increased over time. This pricing alternatives have the added disadvantage of causing sudden, dramatic changes in the freight rate structure.

See preceding footnote.

Rates as an increasing proportion of rail-grain costs. evaluations refer to a balance of short-run and long-run effects.

### Conclusion

Each of the policy alternatives evaluated in this chapter has advantages and disadvantages with respect to the different objectives. Of necessity, then, choosing the better of the alternatives requires some degree of personal judgment—the benefits of each alternative must be weighed against its costs.

In the author's judgment, the better policy alternatives are the following ones:

1. Initial Crowsnest Pass rates, increasing annually by an amount reflecting general railway cost increases or changes in an appropriate Price Index; constant railway subsidies equal to the current revenue shortfall

2. Initial compensatory rates, increasing annually at a rate reflecting general railway cost increases or changes in an appropriate Price Index; constant producer subsidies equal to the initial rate increase, based, if possible, on planted acreage of grain.
In alternative (1), the intention of the annual rate increases would be to reflect absolute changes, rather than proportionate changes, in the costs of the rail-grain system. Under both the selected policy alternatives, there would be periodic reviews to ensure that the desired objectives were being met. Any policy revisions, however, would have to be done in a manner that did not detract from the railway cost-efficiency incentives.

Both of the two alternatives chosen are superior to that of continuing the Crowsnest Pass rates in that they would assist improvements in economic efficiency and Prairie development. Alternative (2) would achieve such improvements more quickly than would Alternative (1), but the latter would cause little short-run economic dislocation. The advantages of these alternatives with respect to the Crowsnest Pass rates are offset by their attendant increases in producer transportation costs. For both the alternatives, however, the increases are gradual.

The alternative of having compensatory rates with producer and railway subsidies is rejected for two reasons. First, the author believes that paying subsidies to the railways would be unacceptable to voters if it was accompanied by substantial rate increases on grain. Second, under both the "better" alternatives the railways would be motivated to implement improvements in efficiency. With initial compensatory rates (Alternative (2)), the allowed rate increases combined with the efficiency improvements would result in grain traffic making a contribution to constant costs within a relatively short time, eliminating the reason for Government subsidies to the railways.

The alternative of implementing rates greater than the
compensatory level is also rejected because of voter opposition, mainly from the Prairies, and because of the contribution to constant costs that would be soon be realized with initial compensatory rates.

Both of the chosen policy alternatives are better than that of "compromise" grain freight rates with no subsidies in that they provide for railway variable-cost recovery. They are worse than that alternative from the point of view of subsidy minimization, but this criticism is mitigated by the fact that the relative size of the subsidies would decline over time.

The alternative of compromise grain rates with producer subsidies is eliminated because such subsidies would diminish the efficiency and development benefits of having compromise rates. In fact, one reason for choosing the alternative of compromise rates is precisely that it achieves these benefits without the necessity for producer subsidies.

Thus, the two policy alternatives selected are generally superior to the other alternatives. Choosing between these two would depend on the relative weights given to various considerations; each has advantages in different areas with respect to the other. The main trade-offs between them are summarized as follows. Alternative (2) would result in faster efficiency and development improvements, but Alternative (1) would cause smoother adjustments over time. Alternative (1) would avoid producer-subsidy visibility. Alternative (2) would have higher administrative costs, but would have the benefit of allowing the development of market-determined rates in the foreseeable future, further facilitating long-run economic
efficiency and Prairie development.
Chapter VII

Summary

The Crowsnest Pass rates, which originated more than 80 years ago, have been a growing source of concern to the national railways, and to the Federal Government, in the last two decades. The rates, which now are equal to less than 40 percent of the long-run variable costs of transporting grain by rail, have a significant negative effect on railway revenues. With cost recovery on grain traffic, gross railway revenues from carload freight traffic would have been at least 6 percent larger than they actually were in 1976, and net railway revenues would have been at least two-thirds larger than they were in that year. When extended over time, the effects of the Crowsnest Pass rates are even more pronounced than their current effects. In the year 2000, statutory grain revenues would cover only 12 percent of rail-grain costs, assuming 5 percent annual inflation after 1977. At higher inflation rates, the percentage of costs covered would be even lower.

The railways are supported in their position by shippers of freight other statutory grain, who object to subsidizing the movement of grain with their freight rates.

The Prairie grain producers form a group that perceives its interests as diametrically opposed to those of the railways. They see the Crowsnest Pass rates as their historical right, and maintain that an increase in these rates would result in
undeserved hardship on their part. In fact, raising grain freight rates to a level approximately equal to long-run variable costs would reduce the current net income of Prairie grain farms by about 10 percent, a substantial amount.

Prairie grain producers are also opposed to higher freight rates accompanied by direct subsidies to themselves. They fear that the "visibility" of such subsidies would result in their eventual elimination.

Many Prairie representatives are concerned about the relative lack of secondary industries in the Prairies. One way to encourage the development of these industries would be to bring the freight rates on raw materials exported from the Prairies into line with those on processed commodities. Achieving this alignment would emphasize the comparative advantage of the Prairies in agricultural processing industries, since there is a weight loss associated with most grain-processing activities.

One result of the non-compensatory grain freight rates has been the deterioration of the grain-transporting system. Although there has been an economic incentive for the railways to invest in this system--loss minimization--they have not done so. This could be because of investment funds limitations, but is more likely because of the railways' belief that disinvestment would draw attention to their plight. In either case, compensating the railways for the costs associated with the carriage of grain would lead to an improved rail-grain system. Cost recovery would also create an environment that would be more conducive to the railways undertaking needed line-
capacity additions than is the current environment.

The Federal Government is faced with some constraints in its attempts to satisfy the major parties involved in the issue. The current Government policy of expenditure restraint implies that any additional subsidies must be well justified. The Government must also take into account the general public disaffection towards the national railways, particularly CP Rail. Despite these restrictions, the Canadian Government has a statutory commitment to compensate carriers for losses incurred in the provision of any service that is required as an imposed public duty.

Of the policy alternatives considered in this thesis, two stand out as complying, to a large extent, with the considerations outlined above. The first alternative is to institute a gradual increase in grain freight rates reflecting general railway cost increases or changes in an appropriate price index. This pricing scheme would be accompanied by constant railway subsidies equal to the current revenue shortfall. In the long run, this alternative would result in compensatory or near-compensatory grain freight rates. The increases in producer transportation costs would be gradual, as would the resulting reallocation and growth in Prairie resources. The railways would be motivated to improve efficiency, since the cost increases would not be related specifically to rail-grain costs. Federal Government subsidies would be large initially, but would probably decline in relative size over time.

The second alternative selected is the immediate implementation of compensatory rates, with further increases
tied, again, to general railway cost increases or to changes in an appropriate price index. Subsidies would be given to producers under this pricing scheme. They would be equal to the initial rate increase and would be constant over time. In order to encourage diversification of the Prairie economy, these subsidies would be based, if possible, on planted acreage of grain rather than on weight of grain shipped out of the Prairies; agricultural processing in the Prairies would develop more quickly with the former subsidy allocation basis than with the latter. The main differences between this alternative and the previous one are, first, the immediate increase to compensatory rates with its benefits and problems, second, its higher administrative costs, third, the "visibility" of its producer subsidies, and, fourth, its potential for an increase to market-determined freight rates in the near future.

Both of the alternatives chosen have the disadvantage of upsetting the status quo. However, the negative effects of continuing the Crowsnest Pass rates are too pronounced to be ignored.
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Appendix

Determination of Grain-Farm Expenses, 1970

The farms included in the 1971 Census of Canada are those farms for which the value of agricultural products sold exceeded $2,500 in 1970. The Farm Net Income series, an annual publication of Statistics Canada, gives statistics for all farms. Based on the rent-expense figures, the 1970 expenses of the Census farms comprise 95 percent of the 1970 expenses of the "Farm Net Income" farms \( \left( \frac{\text{1970 "Census" rent expense}}{\text{1970 "Farm Net Income" rent expense}} \right) = .95 \). The Farm Net Income statistics do not distinguish among types of farms. The Census, however, categorizes farms according to the principal crop sold. In this thesis, then, "grain farms" are defined to be those Census farms for which at least 51 percent of total sales was from wheat or other "small grains". The latter include oats, barley, rye, mixed grains, buckwheat, corn for grain, field peas, field beans, flaxseed, soybeans, sunflowers, rapeseed, mustard seed, and safflower.

Many of the grain-farm expenses are given in Census publications. Some expenses, however, must be imputed from the Farm Net Income (FNI) statistics. These costs are allocated to grain farms on the basis of appropriate Census data. For example, "wages to farm labour," an FNI figure which includes payments in kind such as room and board, is allocated to grain farms on the basis of grain-farm cash wages (a Census
statistic). Thus, wages to farm labour are estimated for grain farms as follows:

$$\text{Wages to farm labour} = \frac{\text{Census: cash wages (grain farms)}}{\text{Census: cash wages (total farms)}} \times 0.95 \times (\text{FNI: wages to farm labour}).$$

The 1970 expense estimates are given in Exhibit 7. Interest on indebtedness is divided into interest on mortgage debt and interest on debt required to finance operations. The Farm Net Income figure for total "Interest on indebtedness" is arbitrarily divided evenly between these two types of interest, which are then estimated using the above procedure. Details of all the calculations are given in the footnotes to Exhibit 7.
<table>
<thead>
<tr>
<th>Amount ($000)</th>
<th>Manitoba</th>
<th>Sask.</th>
<th>Alberta</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>Wages to farm labour²</td>
<td>3,675</td>
<td>13,816</td>
<td>5,966</td>
<td>23,457</td>
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<tr>
<td>Taxes</td>
<td>7,133</td>
<td>29,887</td>
<td>8,553</td>
<td>45,573</td>
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<tr>
<td>Rent</td>
<td>5,485</td>
<td>21,547</td>
<td>9,754</td>
<td>36,786</td>
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<tr>
<td>Feed</td>
<td>1,893</td>
<td>4,583</td>
<td>2,751</td>
<td>9,227</td>
</tr>
<tr>
<td>Fuel &amp; oil</td>
<td>7,914</td>
<td>30,392</td>
<td>11,795</td>
<td>50,101</td>
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<tr>
<td>Custom work³</td>
<td>1,189</td>
<td>4,338</td>
<td>2,413</td>
<td>7,940</td>
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<tr>
<td>Comm’l fertilizers</td>
<td>4,087</td>
<td>4,231</td>
<td>5,525</td>
<td>13,843</td>
</tr>
<tr>
<td>Agric’l chemicals</td>
<td>1,588</td>
<td>3,930</td>
<td>1,577</td>
<td>7,095</td>
</tr>
<tr>
<td>Machinery repairs⁴</td>
<td>10,183</td>
<td>36,450</td>
<td>16,411</td>
<td>63,044</td>
</tr>
<tr>
<td>Other mach. expenses⁵</td>
<td>4,183</td>
<td>13,027</td>
<td>6,582</td>
<td>23,792</td>
</tr>
<tr>
<td>Building repairs⁶</td>
<td>3,448</td>
<td>8,675</td>
<td>4,678</td>
<td>16,801</td>
</tr>
<tr>
<td>Elec. and telephone⁷</td>
<td>1,724</td>
<td>4,377</td>
<td>2,600</td>
<td>8,701</td>
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<tr>
<td>Miscellaneous⁸</td>
<td>2,785</td>
<td>17,036</td>
<td>8,466</td>
<td>28,287</td>
</tr>
<tr>
<td>Interest on mortgage debt⁹</td>
<td>5,368</td>
<td>25,089</td>
<td>8,151</td>
<td>38,608</td>
</tr>
<tr>
<td>Interest on debt required to finance operations¹⁰</td>
<td>4,384</td>
<td>24,108</td>
<td>7,418</td>
<td>35,910</td>
</tr>
<tr>
<td>Total Op. Expenses</td>
<td>65,039</td>
<td>241,486</td>
<td>102,640</td>
<td>409,165</td>
</tr>
<tr>
<td>Depn. on machinery¹¹</td>
<td>20,199</td>
<td>81,182</td>
<td>31,059</td>
<td>132,440</td>
</tr>
<tr>
<td>Depn. on buildings¹²</td>
<td>5,344</td>
<td>17,828</td>
<td>9,308</td>
<td>32,480</td>
</tr>
<tr>
<td>Total Depn. Expenses</td>
<td>25,543</td>
<td>99,010</td>
<td>40,367</td>
<td>164,920</td>
</tr>
<tr>
<td>Total Op. &amp; Depn. Expenses</td>
<td>90,582</td>
<td>340,496</td>
<td>143,007</td>
<td>574,085</td>
</tr>
</tbody>
</table>
Exhibit 7 cont'd.

1 See text for the definition of "grain-farms."
All cost categories not referenced are taken directly from the 1971 Census of Canada.

2 Wages to farm labour = Census: cash wages (grain farms) x .95 x (FNI: wages to farm labour)
   Census: cash wages (total farms) x (FNI: wages to farm labour)
   ("Census" = 1971 Census of Canada; "FNI" = 1970 Farm Net Income)

3 Custom work = Census: "Machine rental, custom work, or contract work".

4 Define Ratio(1) to be
   Census: cap. value of machinery and equipment (grain farms)
   Census: cap. value of machinery and equipment (total farms)
   Machinery repairs = Ratio(1) x .95 x (FNI: Machinery repairs)

5 Other machinery expenses = Ratio(1) x .95 x (FNI: Other machinery expenses)

6 Define Ratio(2) to be
   Census: capital value of land and buildings (grain farms)
   Census: capital value of land and buildings (grain farms)
   Building repairs = Ratio(2) x .95 x (FNI: Repairs to buildings)

7 Define Ratio(3) to be
   Census: # grain farms reporting fuel and oil expense
   Census: # total farms reporting fuel and oil expense
   Electricity and telephone = Ratio(3) x .95 x (FNI: Electricity and telephone)

8 Miscellaneous = Ratio(3) x .95 x (FNI: Miscellaneous)

9 Interest on mortgage debt
   = Census: capital value of grain farms x .5 x .95 x (FNI: Interest on indebtedness)
Define Ratio(4) to be

\[
\frac{\text{Total op. expenses of all grain farms except interest}}{\text{Total op. expenses of all census farms except interest}}
\]

Interest on debt required to finance operations

\[
= \text{Ratio}(4) \times 0.5 \times 0.95 \\
\times (\text{FNI: Interest on indebtedness})
\]

11 Depreciation on machinery

\[
= \text{Ratio}(1) \times 0.95 \\
\times (\text{FNI: Depreciation on machinery})
\]

12 Depreciation on buildings

\[
= \text{Ratio}(2) \times 0.95 \\
\times (\text{FNI: Depreciation on buildings})
\]