The Grain Handling and Transportation Commission

GREG MASON/Department of Economics,
University of Manitoba

INTRODUCTION

From the turn of the century, transportation problems, especially those pertaining to grain transport, have received considerable attention from academics and policy makers. The recent report of the Grain Handling and Transportation Commission (Hall Commission) is a wide ranging document which explores the extensive margin of grain handling and transportation problems, but in this reviewer's opinion it fails to offer proposals that promise a resolution to the fundamental questions.

This paper reviews, in some detail, the recommendations of the Hall Commission and thereby also surveys the major issues involved in the handling and transport of grain. In transportation, as in other heavily regulated areas of the economy, the perceived failure of the regulatory mechanism has prompted a vigorous debate into the usefulness of regulated versus competitive market arrangements.[1] Until these basic controversies are resolved, it is perhaps unfair to unduly criticize commissions of inquiry for failing to solve complex problems. Nevertheless, the Canadian taxpayer has a right to demand an unbiased and rigorous examination of the policy alternatives, in other words a cost-benefit analysis of policy alternatives; this has not been provided.

Before examining the actual recommendations, a description of the terms of reference for the inquiry and an examination of the basic issues involved is useful to set the stage for the evaluation which concludes the paper.

ORIGIN AND TERMS OF REFERENCE OF THE HALL COMMISSION

To date there have been over a dozen commissions of inquiry into grain handling and transportation. Prior to the Hall Commission, the MacPherson Royal Commission into Transportation (1961) recognized that intermodal competition could be a viable and powerful alternative to the regulation of rail transportation. It was recommended also that the railways be permitted to abandon some lines in the rail network, widely acknowledged to be grossly overbuilt, and be compensated for providing service on lines required as public services but which failed to yield a profit. In large measure the failure (by the federal government) to permit the legislative offspring of the MacPherson Commission (The Canadian Transport Commission and the National Transportation Act) to deal with grain handling and transportation issues is the reason for yet another commission into the matter.

From 1961 until 1967 there were but a handful of rail line abandonments and

1 This recent literature is surveyed by Goldberg (1977) and originates with Demsetz (1968).

subsidies approved despite vigorous pressure from the rail companies. Finally in 1967 the federal government prohibited all abandonment proceedings (except for 1800 miles) and in 1974 a basic Prairie network of 12,000 miles was guaranteed until the year 2000 (category A Lines), the railways were given permission to abandon 525 miles (category C Lines), and the Hall Commission was appointed to decide upon the disposition of the remaining 6,283 miles (category B Lines). Specificially, the terms of reference were:

> ... to inquire into the real needs of communities, the economies of a modernized rail system, and the probable conduct of producers and elevator companies in changing circumstances for the purpose of making recommendations concerning the future of the rail network identified for further evaluation. (Canada. Grain Handling and Transportation Commission, 1977:1:6)

Before examining the analysis and proposals of the commission it is useful to survey briefly the nature of the problem in grain handling and transportation.

GRAIN HANDLING AND TRANSPORTATION: A SYNOPSIS OF CURRENT PROBLEMS

Grain handling and transportation is an extraordinarily complex system composed of several subsystems, each with unique features and problems. Those unacquainted with the industry are often submerged in a welter of detail, while those too close to the problems may find it difficult to draw back and synthesize the myriad of minutia. This outline is cursory, but hopefully it does capture the essential details.

It is possible to divide the grain handling and transportation system into some distinct if slightly arbitrary subsystems. Once the grain has been harvested it is delivered to the elevators by farm truck. The original formula of siting elevators at regular seven mile intervals, along with the construction of a dense branch line network, implies that the direct costs of delivering grain to the elevator are relatively slight. A move to 'rationalize' the rail network (abandon branch lines) and the closure of local elevators increased the burden borne by the farmer in delivering grain to the handling subsystem. Thus, rail rationalization is widely feared to reallocate the costs of transportation from the railways to the farmer.

The handling subsystem is composed of a variety of elevators which clean, store and grade grain. In addition, the various elevator companies (originally numbering in excess of 150, but now comprised of fewer than twenty firms) act as agents for the Canadian Wheat Board by remitting various payments to the farmer. Like the delivery subsystem (farmers), the handling subsystem has become much more concentrated in recent years with small firms giving way to larger concerns. The Hall Commission Report presents some very useful data on the concentration of both elevator companies and farmers;

what emerges is that both these economic activities appear to have responded to market forces by adopting structures which more completely exploit scale economies.

In stark comparison is the transportation subsystem essentially comprised of the two major railways.[2] This industry has not been permitted to adjust its capital in the face of changing market forces by abandoning inefficient and unprofitable branch lines. This lies at the core of the grain handling and transportation problem; part of the system is able to respond to the economic environment, while the remainder is constrained by public policy to operate inefficiently and accordingly is compensated by subsidies. No doubt the reason for this constraint on the railways is the vast sums of money originally granted for construction to the CPR and later the myriad of companies that eventually made up the CNR. Railways in Canada have never been a truly private operation and politicians are understandably reluctant to permit them to behave so. An economist properly views sunk costs as neutral with respect to policy analysis, however for a politician this is impossible.

Inevitably rail line abandonments are going to benefit the railways and federal treasury at the expense of small prairie communities, producers and provinces. Thus, on the one hand there are mounting branch line subsidies which are due the railways for the continued operation of 'uneconomic' and largely grain dependent branch lines, while on the other hand, were abandonment to proceed, many fear substantial social costs to the prairie social fabric and substantially higher costs to producers who face increased personal debt as they are required to invest in energy inefficient trucks and storage facilities. In addition, there may be substantial redistribution from the federal to provincial governments with respect to transport infrastructure expenditures.

Inseparable from rail line abandonment are the Statutory or 'Crow' rates. Some (such as various producer and handling groups) argue that the freight rate subsidies on export destined grain are completely separable from the branch line subsidies and lobby for their retention. Others (the railways) argue that were it not for the Crow rates, fewer abandonments would be required and push for their removal. It is this author's opinion that to separate the two policies, rail line abandonment and statutory rates, is myopic. There seems little question that the requirement that the railways provide service at less than cost (as demonstrated by the Snavely commission)[3] is a major reason for the deterioration of the branch line network and may even be a significant factor in the alleged distortions in the entire Canadian rail freight rate structure.

2 Technically the transportation system could also be comprised of the rail system east of the Lakehead and the St. Lawrence Seaway, however, interest has always centered on the operation of the railways in the West.

3 The Commission Into the Cost of Moving Grain by Rail (1977) was struck to derive some current estimates of the costs actually faced by the railways in the transport of grain. Without this information their claims about hardship inflicted by the Crow Rate are difficult to substantiate. Unfortunately, the technical volume which describes how the estimates were derived has not yet appeared.

MAJOR RECOMMENDATIONS OF THE HALL COMMISSION

The Hall Commission chose to take a cautious approach toward rail line abandonment, coupled with some additional regulation in the form of a new agency, the Prairie Rail Authority (PRA). The most important recommendation however is that the Crow rates should be retained as they stand; in this regard the commissioners bow to current political reality and attempt no new initiatives.

Another major recommendation is the limited abandonment of some 2165 miles of category B lines over the next five years. Of the remainder, 1813 miles are to be retained within the basic network that is preserved until 2000, while 2483 miles (39 miles new construction, plus 2344 miles from the existing network) are to be placed under the jurisdiction of the PRA. This agency is given the responsibility to evaluate 'without fear or favour' these lines over the next decade or so and to preserve, in proper operating order, lines warranted in the public interest. According to the commission, the yearly parade of rail company accountants to the CTC, cap in hand, is to be eliminated, with the new, 'independent,' and regionally representative agency assuming the responsibilities and deficits associated with these routes. The rail companies would lease, for a 'nominal' fee, the railbeds under PRA jurisdiction, while transport operations would be contracted at cost plus. The maintenance and rehabilitation of the network would be contracted (presumably also at cost plus) and in the event that a branch line is abandoned, trucking firms would be contracted to provide service to an 'off-line' elevator. To finance the new agency, the commissioners see the PRA collecting rentals for land leased to elevator companies, charging for non grain traffic, and of course, sharing in the Statutory grain revenues. The revenues would in no way cover the costs of course, and subsidies from the federal treasury are proposed to meet the deficit. Assuming that the PRA would have the same record as the CTC in dealing with deficits from branch line operations, initially one could expect losses in the order of 60 to 100 million dollars per year. Presumably it is felt that payments to a public agency are less politically sensitive than payments directly to the rail companies. In any event, the commission appears to feel that the PRA would also proceed with the abandonment of its lines and that by 1990 the agency would self liquidate and its deficits pass quietly from the Canadian bureaucratic mosaic.

A third major recommendation concerns branch lines subsidies. In 1968 the Canadian Transport Commission began payment to the railways under sections 256 and 258 of the Railway Act for losses attributable to operation of lines required as public services. As table 1 indicates, the annual claim has mounted steadily, as have the annual payments; however at the moment the cumulative unpaid 'deficit' is in excess of 200 million dollars. Clearly, the deficit either has to be paid, or reasons for non-payment be given. The Hall Commission quite properly takes the CTC to task for failing to be clear and firm in this matter. In no small way this policy ambiguity on the part of the CTC contributes to strained relations between the railways and the federal government, which in turn creates further barriers to the resolution of the problems.

TABLE 1

Railway claimed losses, CTC payments and 'unpaid' claims under sections 255 and 258 of the Railway Act (Freight)

Year	Claimed loss $ (million)	CTC payment (to Dec. 31 1976) $ (million)	'Unpaid' claim $ (million)
1971	46.8	32.7	14.1
1972	56.1	37.8	18.3
1973	66.6	45.6	21.0
1974	103.7	75.5	28.2
1975	120.9	82.5	38.4

SOURCE: Report of the Grain Handling and Transportation Commission p. 58

Yet another major set of recommendations concerns the distribution and incidence of public expenditures in infrastructure. Provincial governments in the west are very much concerned that major rail line abandonments could imply greater reliance upon trucking in the collection subsystem, with consequent increases in provincial expenditures on highway systems. In addition, abandonment could accelerate the decline of small rural communities and eliminate their tax base. This, of course, is a short-run problem, but one which has to be covered out of provincial treasuries. The Hall Commission recommends that the federal government compensate the prairie provinces for increases in expenditures incurred by the greater use of provincial roads and decline of rural tax bases. While certainly acceptable to local and provincial governments in the west, this recommendation will find little favour with a federal government intent upon redistributing the fiscal load within confederation.

In addition to the four major recommendations (retention of the Crow rates, an explicit abandonment scheme, a clear compensation program for branch line losses, and a reversal of recent trends in fiscal federalism) the Hall Commission investigates the decline of the food processing industry in the West. The decline of the flour milling, rape-seed crushing and processed beef industry is chronicled, with the general 'discriminatory' nature of the freight rates faced by western agricultural processors receiving emphasis. Employing a basic theory of location, heavily biased in favour of transport rates as the prime explanation for regional differences in industrial development, the commissioners propose that the freight rates on prairie products such as rapeseed oil, flour, malt and processed livestock 'be set at levels which do not discriminate against the natural advantage of private producers.' Specific changes are not detailed and there seems to be an almost metaphysical notion behind the concept of 'natural advantage.'

Finally, there are recommendations which for lack of a better category may be termed logistical and technical. These range from coordination of train activity in the Vancouver harbour, to construction of a new inland elevator at Yorkton, Saskatchewan, to improved labour relations at the various port terminals. These, in themselves, undoubtedly contribute to the overall efficiency of the grain handling and transportation system, yet they do not receive systematic treatment and are frequently advanced in a gratuitous and offhand manner.

The report in general is a curious document with respect to format. Policies, ranging from the picayune to profound, are proposed with little analytical basis. Often a major recommendation is treated in a very summary matter, while other issues, of decidely peripherical concern, receive exhaustive examination. For example, the Statutory Grain rates, are examined and disposed or in one and a half pages, yet a northern railroad and the shipment of northern oil by rail receive almost thirty pages, with little emerging more than a 'motherhood' recommendation advocating the federal government examine the problem. This contributes to a pervasive feeling of superficiality throughout volume one, despite the excellent technical reports contained in volume two. The commissioners appear to be willing to perpetuate the impasse between economic theory and political policy by largely ignoring their own and other commissioned research!

THE RECOMMENDATIONS: AN EVALUATION

The Hall Commission report clearly recognizes the politics of grain handling and transportation and avoids the Scylla of extreme government interference and skirts the Charybdis of *laissez-faire*; however the recommendations are either unexceptional (dredging operations in harbours), or politically palatable only to western interests. The examination of policy options is at best superficial, and one is left with the impression that the report sacrifices rigour for politics. The recommendations may be grouped into broad themes for evaluation.

1. The greatest contribution of the report, and the policy which physically occupies the greatest space in the final document, is the resolution of specific abandonment decisions. There has clearly been great care taken over the disposition of the catagory B lines and no one can fault the commissioners for their deliberations in this regard. Throughout the report runs a clear thread of awareness over the social costs inposed on small farmers and rural communities by rail line abandonment. The next move is very clearly up to the federal government, in particular the Canadian Transport Commission, to validate these recommendations; any hesitancy compounds the uncertainty prevalent in rural areas.

2. The creation of a new institution, the Prairie Rail Authority, presumes that existing legislation and agencies are deficient. However, even though a new agency is proposed, the old institutions will neither be eliminated nor revitalised. The Commission clearly feels that the PRA does not obviate the need for, or the responsibilities of, the Canadian Transport Commission. Branch line subsidies would still be paid on lines within the basic network as long as the losses claimed fell within the costing orders of the CTC. Decisions to extend the basic network, general rate supervision and future rail line abandonment will also still be handled by the CTC. The commissioners do not attempt to analyse the reasons for the failure of the National Transportation

Act, the Railway Act or the CTC to create a framework which facilitates the efficient evolution of the grain handling and transportation industry and this is regrettable. Aside from an occasional swipe at the CTC (with respect to unpaid subsidies), the commissioners take a middle ground and do not find fault with any level of government. Yet fault must exist; how else can the present morass be explained.

The Prairie Rail Authority, as set out by the commissioners, attempts the job the CTC ought to have done ten years ago. It is not clear why the PRA should be any more successful than the CTC in proceeding with rail line abandonments. The authority is to be strongly regional in composition and, with the federal government subsidizing its operations, there is little reason to believe the PRA will have any incentive to pursue policies based upon global efficiency or equity. The view that the PRA would be voluntarily self liquidating is also not substantiated, either by the report or the record of the CTC.

Even taking the PRA on its own merits and assuming that rail line abandonments could proceed, its other duties are extremely vague. First, the contracting for rail service and maintenance at cost plus is surely at least as costly as the present arrangement. There is little reason to believe that the PRA would be able to improve upon the present, very costly system of auditing the annual railway claims for subsidization; no evidence or analysis is presented to ease the reader's concerns that rail operations under the PRA would be any improvement over the present order.

Concerning the siting of elevators on the PRA network, the commissioners retreat into history and argue that 'overbuilding' must be prevented. Accordingly the PRA is given complete jurisdiction over elevator licensing on its lines. There are no reasons given why this duty should be removed from the Canadian Grain Commission which presently performs this task for the entire rail network; this is yet another case of bureaucratic redundancy. Also the concern over 'overbuilding' is antiquated. With clear evidence of increasing concentration ratios, scale economies and mergers, the fear ought to be one of underbuilding and monopoly power, not overbuilding. The report completely fails to consider this aspect of grain handling.

In sum, the Prairie Rail Authority overlaps with existing agencies and is given no clear duties. As such, it can only serve to obscure what is already an institutionally congested area. An alternative, less severe interpretation is that the PRA is not designed to come into existence, but rather is proposed to spur the existing agencies into action.

3. The Commissioners share a common misconception that subsidization from the federal treasury is costless; also they fail to acknowledge the potential distortions of federally imposed income taxes upon the allocation of resources in the entire economy. Since the contribution of grain exports to total export earnings has fallen from 11 per cent in 1965 to 4 per cent in 1976, it is important to examine the nature of subsidization to grain production. Any recent Canadian Statistical Review published by Statistics Canada will substantiate this claim. Of course, if one also includes the dependence of the agricultural implements and fertilizer industries upon the export grain economy these figures would have to be moderated. In any event, agricultural

implement producers in Canada are increasingly turning to the United States market, especially given the current depressed nature of the grain economy.

For example, the commissioners estimate that in terms of 1974 dollars, the cost of rehabilitating the lines granted the PRA would be 30.9 million dollars per year (ostensibly to decline as lines are abandoned). In addition to rail operations and maintenance of the railbeds, the PRA would also contract for trucking services where lines were abandoned and could even be called upon to construct 'off-line' elevators in the event that a significant number of producers were left without rail or elevator service from the private sector. All deficits, not covered by revenues obtained by land leasing and freight rates would come from the federal treasury.

It is extremely difficult to predict the annual cost of operating the PRA, but it is unlikely to be less than $100 million per year. Clearly a commission of inquiry has a duty to explain why increased subsidies are due an industry declining in importance to Canada's export revenues and why a new agency will relieve the grain producer, handler and shipper of the costs associated with the present system.

4. The final theme or recommendation is perhaps the most pervasive; the Crow or Statutory rates cannot be altered without serious damage to the prairie economy. For many years the Crow rates have been regarded as part of the 'Confederation Package' made between the federal government and the railways on *behalf* of the western grain producer. Without question, the subsidization of transport rates figured prominently in the growth of the wheat economy and therefore many maintain their removal will do irreparable harm to the economic fabric in the West.

The Crow or Statutory rates are the result of the Crowsnest Pass Agreement of 1897 between the federal government and the Canadian Pacific Railway. In exchange for a $3 million subsidy from the federal government to construct a rail line from Lethbridge, Alberta to the mineral rich Kootenay Valley of British Columbia, the CPR agreed to lower, by three cents per hundredweight, the rate on moving grain to the Lakehead. In addition, the rate on certain settler's effects incoming to the prairies was lowered. In 1903 the CPR further reduced the rate on grain transport in response to competition from the many independent branch line operations emerging especially in the Winnipeg vicinity. Between 1903 and 1925 the rates on grain transport fluctuated widely and in 1925 the 1899 rate was legislated to include all export destined grain and all grain moving through Thunder Bay; these rates have been substantially in effect until the present.

Usually the argument proceeds by comparing the present rate structure with one assumed to reflect the 'true' cost of moving grain. According to the Commission into Transporting Grain by Rail, the present shortfall amounts to about 55 cents per hundredweight and assuming a markup of 10 per cent, it is likely that the market rate for shipping grain would range from 70 to 80 cents per hundredweight (compared to 14 to 26 cents at present). The farmer, who initially must meet this cost as a deduction from the Canadian Wheat Board payment, could expect revenues to fall by about 30 cents per bushel or about 10 per cent.

The incidence of this increased freight rate would vary, of course, with some gaining and others losing; the assumption of ubiquitous hardship is somewhat overstated however. It is very difficult to quantify the probable impacts on the major groups (a major obstacle in the removal of the Crow rates) nevertheless, it is worth reviewing the incidence of grain transport charges even if only direction and not magnitudes can be given.[4]

a. *Producers*. Clearly the farmer bears the brunt of the first round effects, however there may be some limited opportunity to shift the freight rates forward depending, of course, on the elasticity of demand. However, with the decline in the Canadian share of world grain production the market power of the Canadian Wheat Board has decreased. Producers of high protein grains tend to face buyers with lower elasticities of demand and they may be able to shift more of the transport charges than producers of lower quality grain. In general, the prospects for shifting (either forward or backward) are *very* limited and the likely long-run impact is for less export grain acreage (oats, wheat and barley) to be planted, a switch from grain production to livestock or abandonment of agriculture on marginal land altogether. As mentioned above, there has been a persistent trend toward fewer and larger farms; a movement to market rates for transporting grain could well accelerate this trend. Undoubtedly the exploitation of scale economies may forestall the exit of some producers, but only at the expense of the small 'family enterprise.'

b. *Grain Handling*. Elevator companies tend to oppose increases in the Crow rates, for they predict that the demand for handling services would drop as a result. Whether the decline in demand for elevator service is the result of less export grain planted or the exit of farmers from the industry is immaterial. The decline in demand could spur the merger movement in grain handling with consequent increases in service differentials among delivery points.

c. *Livestock Producers*. Livestock producers would probably gain, at least initially, from an increase in Crow rates. Grain producers might well attempt to supply more grain to local feed markets and thus drive down the price. In the longer run, as grain production stabilized and as entry into livestock production increased, competition among livestock producers could also increase, reducing the price of cattle, hogs and poultry. Whether the consumer would perceive any reduction in the price of food (or its rate of increase) would depend on the economic rent extracted at various stages in the vertical production and marketing chain; obviously this would vary from product to product.

d. *Railways*. The railways support increases in the rate for transporting grain. Ideally these should be returned to market levels, however even if they were set at break even, this would reduce losses (according to the railways' claim) by some $120 million per annum. The reduction in the direct operating costs of grain transport must be tempered somewhat by reduced revenues that could be obtained if grain production fell significantly. In addition, if the demand for handling services declined, the railways could expect lower land rents from leasing property to elevator companies, although a more concen-

4 For good reviews of these and general grain handling and transportation problems see Trychniewicz (1976) and Kulshreshtha (1975).

trated handling industry may pass back some of the higher profit. In the event that agricultural production shifts away from grain into livestock production, the railways (and their trucking subsidiaries) could expect additional revenues from the increased demand. In the final analysis the gain to the railways from removing the Crow rates is not merely the direct operating charges claimed annually by the CTC, but may be more, or less, depending upon land value and revenue changes induced by the new rates.

e. *Trucking Companies*. To the extent that producers attempt to deliver more grain to local feed markets, the use of trucks to make deliveries in the range of 200 miles and under will increase. Trucking firms and the sales of trucks will increase (more so if there is significant rail line abandonment of course) and some additional energy consumption can be expected if trucks are substituted for rail.

f. *Taxpayers*. In this case the taxpayer probably gains because federal expenditures are reduced, but if the provinces in the West assist the farmer in the transition to the new market rate, new subsidy programs could be created. In any event the railways could still claim branch line subsidies (although one could argue their 'claim' was weaker) by maintaining that substantial investments were still required to make the remaining grain dependent lines safe and useful. In effect they could argue they are in a short-run cash flow squeeze. Over time, however, market rates for transporting grain should alleviate much of the operating losses on branch lines. Therefore, there would be a reduction in the subsidies required in the long run, which ostensibly could release tax dollars for other uses.

Movement to a rate structure reflecting economic cost could not be accomplished overnight. Nevertheless it has been a clear principle of Canadian transportation policy that the user should pay for the service. It is unfortunate that the Hall Commission chose not to reiterate this principle. In the long run the most significant advantage of removing the Crow rates is the elimination of the yearly subsidy paid directly to the railway – a subsidy which is rapidly approaching over $200 million per year. Rather than flatly rejecting any rate restructuring, the Commission ought to have examined the optimal path toward a revised rate structure. A recommendation that the entire freight rate structure should reflect the marginal cost of production and be purged of significant economic rents would have strengthened the Commission's proposals immeasurably in this regard.

SUMMARY

It is easy to carp about the shortcomings of the Hall Commission; there are some very important and useful recommendations and the matter of grain handling and transportation appears to be chronic to Canadian confederation.

Perhaps the most significant recommendations are those concerning the disposition of the Category B lines. Almost two thirds were allocated back to the basic network or have been relegated to the scrap heap. The Canadian Transport Commission is now bound to act on these recommendations, for the Hall Commission is surely correct when it argues that no further deliberation is warranted.

The lines allocated to the PRA remain in limbo, however, since a federally appointed committee has been struck to evaluate the whole idea of a new agency in grain transportation. It is perhaps a measure of failure when a committee is appointed to evaluate the proposals of a commission. Were the PRA created as recommended, its powers and duties would overlap the Canadian Transport Commission, and the Canadian Grain Commission with confusing results at best. If the PRA were to be given significant powers, it would supersede both those agencies in jurisdiction over a rail network that is spatially very fragmented.

The Hall commission has certainly not alleviated the need for further research into grain handling and transportation issues; in fact, it just may have created new problems and issues. While the proliferation of commission reports and agencies characterize grain handling and transportation in Canada these are merely symptomatic. The real issue lies in the extraordinary problems resulting from regulatory failure stretching for almost a century. The squabble is not really between economists as to the optimal policy, although differences certainly exist, the problem is political in allocating the costs of dismantling a set of institutions acknowledged to be antiquated.

REFERENCES

Canada. Commission Into the Cost of Moving Grain by Rail (1977) *Report* (Ottawa: Queen's Printer)

Canada. Grain Handling and Transportation Commission (1977) *Report* Vols. 1 and 2. (Ottawa: Queen's Printer)

Canada. Royal Commission on Transportation (1961) *Report* Vol. 1 (Ottawa: Queen's Printer)

Demsetz, H. (1968) 'Why regulate utilities?' *Journal of Law and Economics*, April, II:1:55–66.

Goldberg, V.P. (1977) 'Competitive bidding and the production of precontract information,' *The Bell Journal of Economics*, VIII:1:250–61.

Kulshreshtha, S.N. (1975) 'A current perspective on the Prairie grain handling and transportation system,' University of Saskatchewan Extension Publication no. 269.

Trychniewicz, E.W. (1976) 'Transportation problems in Canadian agriculture with special reference to grains,' *Canadian Journal of Agricultural Economics*, July, 18–32.