

**Dual Marketing and the Decisions Facing
Western Canadian Farmers for Wheat and Barley Marketing:
A Brief to the Western Grain Marketing Panel**

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Executive Summary
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The purpose of this paper is to outline our thoughts about the Canadian Wheat Board (CWB), dual marketing, and the decisions western Canadian farmers face regarding the marketing of wheat and barley. Since its inception, the CWB has generated substantial debate among farmers, academics, and policy-makers. A key element of this debate has been the freedom of farmers to market grain in the manner they wish. In recent years, this debate has intensified and serious consideration is now being given to making major changes to the grain marketing system in western Canada.

One of the proposed changes is the creation of a dual marketing system in which the CWB would operate a pooling system alongside a cash market (or open market) system. Proponents of this change argue that creating a dual market will allow farmers the freedom to choose the marketing system under which they wish to operate.

The basis of this paper is that dual marketing will not provide farmers with a choice. We believe a pooling system cannot effectively operate alongside a cash market system. Instead, attempts to introduce a dual marketing system will either lead to very small volumes being pooled or to substantial losses in the pool. As a consequence we do not think farmers will have the choice of selling either on a pooling basis or on a cash market basis. The pooling option will disappear and only the open market option will exist.

Although dual marketing is not a viable option, we do believe that in a democratic society farmers should be given the opportunity to make a choice between single-desk selling and the open market. This choice, however, is not one that farmers can make each day independently of what other farmers do. Instead, the choice is one that western farmers must make as a group and one that must be adhered to for a substantial period of time. The cost of replacing a single-desk selling system with an open market system (or vice-versa) is so large that a change in the marketing system cannot be made even every ten years.

For over fifty years farmers have operated under a single-desk system for the marketing of wheat and barley (with the exception of feed grains to the domestic market over the last twenty some years). Given the level to which the debate surrounding the CWB has risen, we believe farmers should be given a vote in the relatively near future as to whether they would like to continue with the CWB for an additional period of time or move entirely to an open market system. In this vote, farmers should be allowed to decide

whether they would like to market both wheat and barley through the CWB or whether one or both of these grains should be marketed under an open market system.

The choice farmers must make about the wheat and barley marketing system is not unlike the choice citizens living in a democracy make in other areas. A good example is the election of governments. Marketing systems, like governments, are something everyone must choose. Like governments, marketing systems must be something everyone agrees to adhere to, regardless of whether the outcome is one they personally would have chosen. In democratic societies, citizens are often asked to select rules or governance structures they then abide by until the opportunity arises for these rules to once again be examined and either reaffirmed or replaced. The election of political parties is one good example. So are the NAFTA and GATT agreements— these agreements represent rules we agree to abide by as a country, regardless of whether as individuals we think these rules are good or bad.

If farmers are to be given the opportunity to vote on their grain marketing system, they must be fully informed of the alternatives and they must be willing to examine in a critical way the likely impact of the alternatives. They must be willing to move beyond both the “grass is greener” syndrome and the notion that “if it ain’t broke, don’t fix it.” Although society prides itself on being able to make these critical and objective examinations, in practice such examinations are difficult. The decision about the CWB is no exception.

One alternative farmers have is to retain the CWB and single-desk selling. In evaluating this alternative farmers must not only be aware of how the CWB currently operates but of the changes the CWB will make to its operating and governance structure. The other alternative is an open-market system. Determining how the open-market marketing system will function is difficult because the new system will not simply be a minor modification of the current system. Virtually every aspect of the marketing system will undergo a wholesale modification if an open market were to replace the CWB. A good example of how extensive the changes can be is illustrated in the recent removal of the WGTA. Under the WGTA, issues such as the market power of railways, rail car ownership, and rail car allocation simply were not present. These issues have now emerged as a consequence of WGTA’s removal. Although these issues could have been foreseen prior to removing WGTA, for the most part they were not. The WGTA lesson is that an informed decision regarding grain marketing systems will require a great deal of thought.

The Viability of Dual Marketing

Major changes in the agricultural industry, an increasing inability for people to accept divergent views, more individualistic attitudes, an increasing heterogeneity among farmers,

and a feeling that the CWB has not been accountable are among the reasons for a decline in support for the CWB over the last ten years. As this support has declined, the argument has increasingly been made that farmers should have a choice in how they market their grain. This choice is often presented in terms of a dual market in which the CWB continues to offer pooling while the private trade offers cash trading. The proponents of this alternative argue that if the CWB cannot compete in this dual market then this failure is a signal the CWB is inefficient.

This argument is attractive since it suggests that if the CWB is unable to compete and survive, it must be the fault of CWB management rather than an inevitable consequence of trying to operate two contradictory systems side by side. Despite its attractiveness, however, the argument that a dual market is viable is erroneous.

Voluntary Pool

The reason why a voluntary pool cannot operate alongside a cash market is a direct function of pooling. Pooling is a system whereby high and low prices—prices received at different times of the crop year and in different markets—are averaged in some weighted fashion to give the pooled price. The consequence of the averaging process is that for roughly 50 percent of time the prices that make up the pooled price will be greater than the final pooled price.

During the periods when the cash price is greater than the expected pooled price, producers wanting to obtain the highest price for their product will opt to sell to the cash market rather than sell to the pool. The effect of selling to the cash market in the high price periods, however, is to eliminate some of the high prices that would have otherwise made up the pooled price. As a result, the expected pooled price falls. As the pooled price falls, the number of periods during which the cash price exceeds the pooled price rises. Since producers can be expected to sell to the highest priced market, the number of periods during which producers sell to the cash market consequently rises. The result is further downward pressure on the pooled price.

The operation of a cash market alongside a voluntary pool with no price guarantee will often lead to a downward spiral of the pooled price to the point where no one will sell to the pool. Alternatively, a pool price guarantee can lead to substantial pool deliveries, but with the result that the pool account is almost always in arrears. Thus, giving producers the choice between a cash market and a pooled price usually leads to the pool being unsuccessful. This lack of success is not a function of pool management. Rather, the lack of success derives from the fundamental incompatibility of a cash system and a pooling system.

Contractual Pool

One of the key assumptions in the above argument is that pooling is voluntary. Given the increasing use of contracts in specialty crops and in other agricultural sectors such as hog production, the question arises as to whether a contractual grain pool is viable.

Under a contractual pool, farmers would sign a contract to deliver a specified portion of their production to the pool; without a contract farmers would be unable to sell grain to the pool. On the surface, a contract pool appears viable. Farmers who have contracted with the pool should be able to obtain the average price over the year, since there would be no dilution of the pool by farmers selling to the cash market during high price periods. In reality, however, the question of pool viability is more uncertain. First, farmers take on production risk when they sign fixed delivery contracts. To reduce the risk of not being able to deliver, farmers can be expected to contract only a portion of their crop, thereby limiting the size of the pool. Alternatively, contracts could be specified in terms of actual output. Such contracts, however, require costly monitoring to be effective.

Second delivery contracts are not ironclad. Farmers can decide not to deliver on the contract, providing they pay the specified penalty. The implication of contracts not being ironclad is that enforcement can be expensive and contractual price pools still face considerable uncertainty over the amount of grain that will be delivered. Because the penalties cannot be made punitive, contractual pools can expect to see deliveries fall off during periods of rapid price increase. Such an outcome threatens the long-term viability of contractual pools. Third, if tighter and tighter contract terms are required to ensure farmers do not opt out of the pool whenever such action appears desirable, tightening the contract terms may simply result in farmers not contracting in the first place.

Sourcing Grain and Grading

Contractual and voluntary pools face other problems in addition to those described above. The root of these problems is that the CWB does not own any country or terminal elevators. Relying on grain companies for grain leaves the CWB open to various types of opportunistic behaviour by the grain companies. Opportunistic behaviour by grain companies can be expected to not only make pooling more difficult for the CWB, but also make pooling less attractive to farmers. The CWB may be unable to obtain grain for loading on a waiting ship and the CWB may be unable to blend grain, thereby making it more difficult for them to offer attractive grades to farmers.

Implications of an Open Market System

The discussion of pooling concludes that a dual marketing system is not a viable grain marketing alternative. The implication of this conclusion is that farmers must choose between the CWB or an open market system. If the CWB was replaced by an open market system, the nature of the grain marketing system would fundamentally change.

Competition

In examining competition, two issues are of importance—the competition among grain traders as they purchase grain from farmers and the competition among grain traders as they sell grain to domestic and international customers. For farmers, the most desirable situation is one where there is substantial competition among grain traders when the traders purchase grain and no competition when they sell. With no competition on the selling side, grain traders would be able to maximize sales revenues by exploiting quality differences and price differentials (due to policies such as the EEP) in the various grain markets. The presence of competition on the buying side creates a situation where grain traders are forced to return all sales revenues (less costs of revenue generation) to farmers.

The actual market structure appears to be almost the inverse of this ideal structure. On the selling side, there will be numerous grain trading companies selling Canadian grain. While companies that are able to source a substantial amount of Canadian grain may have the ability to exploit different markets to some extent, smaller companies will not have this ability. More importantly, attempts by individual farmers to access domestic and United States markets will lead to premiums in these markets being bid away.

On the buying side, the evidence indicates limited competition. There is a small number of grain companies operating in the prairie region of Canada. The top four companies (provincial wheat pool, Cargill, United Grain Growers, and Pioneer Grain or Paterson & Sons) operate 88 percent of the primary elevator storage capacity in Manitoba, 92 percent in Saskatchewan, and 94 percent in Alberta. Economists generally believe effective competition is not present when the concentration ratio exceeds 75 percent. Because of the lack of effective competition in grain trading, farmers can expect to face an excess basis between the price FOB terminal position and the local street price.

Grading

The grading system in Canada is just that, a system or a package. The CWB enforces the tight grades established by the Canadian Grain Commission; this enforcement makes it possible to extract premiums for higher quality grain that is not possible in the United States. The move to an open market system in Canada will likely mean a movement

towards a system much more like that in the United States than the one that currently operates in Canada. The move to an open market system will also mean a redistribution of the benefits from grading and blending.

Infrastructure Use

In addition to providing pooling and a single-desk selling function, the CWB rations limited resources such as rail transportation and terminal capacity among farmers and grain companies. In the absence of the CWB, these resources would still require allocation. The most likely way of making these allocations would be via the market. During times of excess demand for transportation or terminal capacity, the farmers or companies that are willing to pay the most for the service would be able to access the service.

The use of the market to allocate limited resources has both cost and equity effects. In general, the use of the market is expected to increase costs. The high level of concentration in the grain handling and transportation system is likely to result in continued shortages of rail, terminal, and perhaps even country elevator capacity. The use of the market also means a transfer of income from farmers to the owners of rail or terminal capacity, since a limited resource can only be rationed by charging higher prices.

Development of Further Processing on the Prairies

One of the major criticisms applied against the CWB is that it is deterring the development of further processing on the prairies. If the CWB is detrimental to grain processing it must be because the CWB raises the price of grain and either makes it too expensive for a company to purchase grain as an input or, at the farmer level, provides farmers with better returns than they could get processing the grain in some fashion on their own. This argument suggests the CWB is successful at raising the price farmers receive and that replacing the CWB with an open-market system will lower grain prices. The consequence of lower prices is that processing may be encouraged, but at the farmers' expense.

The discussion of price ignores the fact that increasingly what is important to processors is not just price, but the ability to know in advance the quality and quantity of grain they will be obtaining. On this point, maltsters and millers in western Canada appear to prefer the CWB system and would suffer losses if it were replaced with an open market.

Future Changes to the CWB

One of the major themes of this paper is that farmers must choose between the CWB or an open market system. When considering the CWB alternative, farmers must understand not only how the CWB currently operates, but how a CWB system will operate in the future.

Recent Changes

In recent years the CWB has implemented a number of changes in an attempt to address farmers' concerns. More grades have been added to the pooling system to account for varying levels of protein. The quota system has been replaced with a contract system designed to make better use of the transportation and handling system. In 1995, the CWB changed the freight deductions used to calculate the location advantage of producers.

Futures Trading

Mechanisms can be developed which would serve to enhance the marketing flexibility of producers while maintaining single-desk selling and price pooling. For example, the CWB could assist in developing a wheat options trading program for farmers. If this program were available, farmers would be able to use this to "replicate" an open market trading environment for themselves similar to the canola market. Under the program farmers would still deliver their grain to the CWB and receive the pooling price (as in the current system). However, they could attempt to increase their net selling price by purchasing a call option when they feel that the market price is rising or purchasing a put option when they feel that the market price is falling. Through using options, the farmer would be able to replicate the same potential gains and losses that would be available in a pure open market environment.

Accountability and Governance

We argue in this paper that the CWB provides a number of benefits—the ability to offset market power, reduce opportunistic behaviour, and coordinate selling activities—that would not be present under an open market system. To provide these benefits the CWB requires a different organizational structure than is used by for-profit firms. Because of the presence of limited resources such as rail and terminal capacity, a single agency with legislative power like the CWB is required to provide coordination and rationing in a reasonably equitable fashion. Similarly, price pooling represents not only a method of pooling risk, but a way of ensuring that market revenues are returned to farmers.

The CWB has its weaknesses, however. One of its major weaknesses in the past has been an inability to provide suitable accountability. This lack of accountability stems from two factors. First, the CWB faces problems in terms of evaluating operating efficiency. Standard methods of measuring efficiency for for-profit firms are generally not applicable for the CWB, and as a single-desk seller the CWB has no obvious firms or institutions with which it can be compared. Second, the CWB has not had in place an

effective method of obtaining feedback from western Canadian grain producers and of ensuring farmers' concerns are reflected in the decisions made by the board.

One solution to these problems involves changing the nature of the CWB so its performance can be compared to that of other for-profit firms. This solution, however, involves disposing of those institutional elements—coordination, rationing, risk pooling, and revenue returning—that are the very strength of the CWB.

The other solution is to develop a governance and accountability structure that is appropriate to the CWB's institutional structure. If the CWB is to attract the support of a substantial majority of farmers and if the CWB is to be viewed as a legitimate marketer of grains, the CWB must become much more democratic in nature and action. The new structure must provide farmers with some say in who runs the operations of the CWB and it must provide for a method of evaluating the actions of the CWB. At the same time, the farmers in the CWB region are diverse and have many conflicting demands. Not all advice can be used or acted upon. Thus, the task of a new structure is to create a balance between listening to and acting on farmers' concerns and making decisions quickly and effectively.

Some of these objectives can be met by a representative democracy in which western Canadian grain farmers elect CWB delegates and a Board of Directors (the Board would be elected directly by grain farmers or by the CWB delegates). The Board may also include appointed representatives of the federal government; however, the elected producer members should make up the majority. CWB delegates would be chosen on the basis of one-farmer, one-vote. If the traditional representative model is followed, delegates would be elected to represent geographical areas. Thought should be given to having delegates elected to represent non-geographical interests such as on-farm processing.

Relying on representative democracy is not likely enough, however, to ensure continued farmer support for the CWB. Some form of effective participatory democracy is also required by encouraging farmer's participation in the CWB, strengthening the relationship between management and farmers, developing an innovative organizational structure, expanding employee participation, and being cognizant of social concerns.

Increased support and accountability cannot be ensured by democratic processes alone. Because of the lack of readily available performance measures, the CWB should develop its own performance criteria. The CWB should expand its annual financial audit to a much more extensive audit that examines such things as the effectiveness of CWB operating procedures. As well, the CWB should routinely engage in the type of independent evaluation of its pricing activities that was recently undertaken. Independent evaluations are particularly important given the confidentiality of much of the CWB's operations.

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One of the proposed changes is the creation of a dual marketing system in which the CWB would operate a pooling system alongside a cash market (or open market) system. Proponents of this change argue that creating a dual market will allow farmers the freedom to choose the marketing system under which they wish to operate.

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Although dual marketing is not a viable option, we do believe that in a democratic society farmers should be given the opportunity to make a choice between single-desk selling and the open market. This choice, however, is not one that farmers can make each day independently of what other farmers do. Instead, the choice is one that western farmers must make as a group and one that must be adhered to for a substantial period of time. The cost of replacing a single-desk selling system with an open market system (or vice-versa) is so large that a change in the marketing system cannot be made even every ten years.

For over fifty years farmers have operated under a single-desk system for the marketing of wheat and barley (with the exception of feed grains to the domestic market over the last twenty some years). Given the level to which the debate surrounding the CWB has risen, we believe farmers should be given a vote in the relatively near future as to whether they would like to continue with the CWB for an additional period of time or move entirely to an open market system. In this vote, farmers should be allowed to decide whether they would like to market both wheat and barley through the CWB or whether one or both of these grains should be marketed under an open market system.

The choice farmers must make about the wheat and barley marketing system is not unlike the choice citizens living in a democracy make in other areas. A good example is the election of governments. Marketing systems, like governments, are something everyone must choose. Like governments, marketing systems must be something everyone agrees to adhere to, regardless of whether the outcome is one they personally would have chosen. In democratic societies, citizens are often asked to select rules or governance structures they then abide by until the opportunity arises for these rules to once again be examined and either reaffirmed or replaced. The election of political parties is one good example. So are the NAFTA and GATT agreements— these agreements represent rules we agree to abide by as a country, regardless of whether as individuals we think these rules are good or bad.

If farmers are to be given the opportunity to vote on their grain marketing system, they must be fully informed of the alternatives and they must be willing to examine in a critical way the likely impact of the alternatives. They must be willing to move beyond both the “grass is greener” syndrome and the notion that “if it ain’t broke, don’t fix it.” Although society prides itself on being able to make these critical and objective examinations, in practice such examinations are difficult. The decision about the CWB is no exception.

One alternative farmers have is to retain the CWB and single-desk selling. In evaluating this alternative farmers must not only be aware of how the CWB currently operates but of the changes the CWB will make to its operating and governance structure. The other alternative is an open-market system. Determining how the open-market marketing system will function is difficult because the new system will not simply be a minor modification of the current system. Virtually every aspect of the marketing system will undergo a wholesale modification if an open market were to replace the CWB. A good example of how extensive the changes can be is illustrated in the recent removal of the WGTA. Under the WGTA, issues such as the market power of railways, rail car ownership, and rail car allocation simply were not present. These issues have now emerged as a consequence of WGTA’s removal. Although these issues could have been foreseen prior to removing WGTA, for the most part they were not. The WGTA lesson is that an informed decision regarding grain marketing systems will require a great deal of thought.

The structure of this paper is as follows. The next section outlines some of the reasons why the debate about the CWB has intensified in recent years. The paper then examines in some detail why dual marketing is not a viable option. Given that farmers need to make a choice between marketing systems, the paper then examines the implications of each of the alternatives farmers face. The open market system is examined

first, followed by a discussion of some of the changes we believe should be made to the CWB if this option is chosen by farmers.

Challenges to the CWB

The CWB has always generated considerable debate among farmers, academics, and policy-makers. Nevertheless, over the years the CWB has generally enjoyed the support of most farmers in western Canada. During the past five to ten years, however, the debate surrounding the CWB appears to have intensified and the CWB's traditional support appears to have declined. The purpose of this section is to outline some of the factors we believe are behind this decline in support and in the intensification of debate.

Part of the reason for the intensification of debate about the CWB is that agriculture is undergoing profound changes in the latter part of the 20th century. Traditional trade barriers are being removed, governments are withdrawing from agriculture on both the fiscal and regulatory side, vertical coordination and integration are more and more important, and product differentiation is growing. The development of computers and networks is making market information more readily available than ever before. Farm size continues to expand and off-farm income is becoming increasingly important for farm families, even as rural communities lose population.

It is human nature that some people like change for the sake of change, while others attempt to avoid change. As a consequence, people often do not closely examine the likely impacts of change, relying instead on their personal views of whether change is good or bad in and of itself. In such situations, the implications of change are often viewed as philosophical questions rather than as logical or factual questions. We believe this tendency to view the issues surrounding the CWB in increasingly philosophical terms is part of the reason for the intensification of debate. While factual and logical questions can in theory be decided, philosophical questions by their very nature cannot be resolved.

At the same time we recognize that a substantial part of the debate regarding the CWB is not merely factual, it is also deeply philosophical. Farmers hold very different beliefs about such issues as freedom, equality, and the proper role of the market and the state. Beliefs about these issues cannot be settled by appeals to facts or economic analysis. Because these beliefs are so immutable, a major task for society is to find a way that allows people holding these beliefs to live and work alongside each other; divergent views, after all, are a hallmark of our society, rather than something that must be removed. However, participants in the agricultural industry—like citizens generally—appear to have lost some of their ability to accept divergent views, thus raising the intensity of debate.

The loss of an ability to accept divergent views is not the only change that has occurred in farmers' attitudes. Over the past 30 years farmers as a group appear to have become increasingly individualistic. More and more farmers appear to be defining the benefits and costs of particular actions solely in terms of what is in their individual self-interest, rather than what is in both their own interest and the interest of others.

This distinction is important because it strikes at the heart of a collective institution such as the CWB. As we argue later in the paper, we believe the CWB provides a number of benefits—the ability to offset market power, reduce opportunistic behaviour, and coordinate selling activities—that would not be present under an open market system. These benefits arise precisely because actions are coordinated rather than taken independently. Coordinated actions in a system provide benefits over independent actions whenever there is a strong interdependence between the individuals in the system. This interdependence emerges whenever the decision of one individual has a spillover effect on other individuals. A good example of this interdependence is a group of farmers trying to access a common but limited resource such as rail capacity or terminal capacity. If all farmers attempt to access this resource at the same time, they drive the price of the resource up, making all farmers (or at least most farmers) worse off. Limiting access to this resource through queuing, for instance, can provide a way for all farmers to access the resource while at the same time limiting the degree to which the owners of the resource can increase price.

As farmers define the benefits and costs of actions more and more in terms of what is in their individual self-interest, rather than what is in both their own interest and the interest of others, they are likely to increasingly disregard or ignore situations where interdependence is important. The consequence of this behaviour is a decline in farmer's support for the activities of the CWB. This decline in support is not because the CWB is not providing a benefit, but because the benefit being provided is no longer being valued.

Another factor of importance in the decline of support for the CWB is an increased heterogeneity among farmers. The increasing specialization that began in the 1970s now means farmers identify themselves as wheat growers, hog producers, dairy producers, or specialty crop growers. Farm size is no longer relatively uniform and increases in off-farm employment mean the income base of farmers often differs substantially. Geographical location also has become increasingly important. Increased transportation costs due to the loss of the WGTA differentiates farmers in terms of their effective distance to markets, while the Export Enhancement Program creates high (e.g., U.S. and Japan) and low value markets (e.g., African countries) that are geographically differentiated. Since heterogeneity means solutions that are acceptable for one group are likely not to be acceptable to another

group, increased heterogeneity implies a greater inability to provide solutions that are viewed as acceptable by all western Canadian grain farmers.

A final factor in the decline of support for the CWB is the belief by farmers that the CWB is not as accountable as it should be. There are a number of reasons for this view. One reason is producers have not had the opportunity to elect representatives that had power to determine CWB policy. A second reason is the current generation of farmers have not been given the chance to determine whether they would like to have the CWB. Third, by its very nature the CWB must keep some information confidential. Fourth, the CWB is not a for-profit firm and cannot be judged by the same criteria as other for-profit firms, nor can it be compared with other for-profit firms; the result is that gauging performance is difficult. Finally, farmers with ready access to market information are inquiring whether the CWB is selling grain in the most desirable fashion.

The Viability of Dual Marketing

Major changes in the agricultural industry, an increasing inability for people to accept divergent views, more individualistic attitudes, an increasing heterogeneity among farmers, and a feeling that the CWB has not been accountable are among the reasons for a decline in support for the CWB over the last ten years. As this support has declined, the argument has increasingly been made that farmers should have a choice in how they market their grain. This choice is often presented in terms of a dual market in which the CWB continues to offer pooling while the private trade offers cash trading. The proponents of this alternative argue that if the CWB cannot compete in this dual market then this failure is a signal the CWB is inefficient.

This argument is attractive since it suggests that if the CWB is unable to compete and survive, it must be the fault of CWB management rather than an inevitable consequence of trying to operate two contradictory systems side by side. Despite its attractiveness, however, the argument that a dual market is viable is erroneous. The purpose of this section is to outline why a dual marketing system is not viable. After examining this question, the section examines the consequences of using a contract pool rather than a voluntary pool. The section concludes with an examination of additional factors which influence the CWB's ability to offer voluntary or contract pools.

Voluntary Pooling

The reason why a voluntary pool cannot operate alongside a cash market is a direct function of pooling. Pooling is a system whereby high and low prices—prices received at different times of the crop year and in different markets—are averaged in some weighted

fashion to give the pooled price. The consequence of the averaging process is that for roughly 50 percent of time the prices that make up the pooled price will be greater than the final pooled price.

During the periods when the cash price is greater than the expected pooled price, producers wanting to obtain the highest price for their product will opt to sell to the cash market rather than sell to the pool. The effect of selling to the cash market in the high price periods, however, is to eliminate some of the high prices that would have otherwise made up the pooled price. As a result, the expected pooled price falls. As the pooled price falls, the number of periods during which the cash price exceeds the pooled price rises. Since producers can be expected to sell to the highest priced market, the number of periods during which producers sell to the cash market consequently rises. The result is further downward pressure on the pooled price.

This logic has important ramifications for two generic types of pools that might be operated: (1) a guaranteed price pool; and (2) a pool where farmers simply receive the pooled price at the end of the crop year. Analysis of these pools using computer simulations have shown that these pools are not viable under reasonable market conditions. A description of the computer analysis and a summary of the results are presented in the Technical Appendix.

The first type of pool involves the provision of a pool price guarantee—for instance, the CWB would announce a guaranteed initial price or payment at the beginning of the crop year. Farmers could be expected to deliver to the pool whenever the cash market price fell below the guaranteed initial price and to deliver to the cash market whenever the cash market price rose above the guaranteed initial price. Such a pooling scheme, however, would almost inevitably result in the pool account being in arrears at the end of the crop year. Since the CWB would only obtain grain during the time when the cash market price was below the guaranteed initial price, it would be generally be impossible to earn enough revenue from grain sales to cover the initial price guarantee.

The operation of a pool with a guaranteed price would be similar to the operation of the loan rate program in the United States. Experience in the United States indicates that when the loan rate was set high enough to be a viable alternative to the cash market, large stocks were accumulated at substantial cost to the government. Stocks were not accumulated when the loan rate was set relatively low; in this situation, however, the loan rate ceased to be a viable alternative. Under a pooling scheme, of course, stocks would not accumulate since the CWB would be required to sell all the grain committed to the pool. However, the operation of the pool would almost inevitably lead to losses, with the result that the guaranteed price pool would not be sustainable for more than one or two years.

The computer model provides some idea of how nonviable a guaranteed price pool is likely to be. Simulations indicate a voluntary pool will never be viable if it attempts to return to producers a pooled price equal to the long run average price. The reason is that when prices are above this guaranteed price farmers will not deliver to the pool and the pool will be unable to sustain a price equal to the long run average. In roughly five percent of the years the voluntary pool can return a price equal to 95 percent of the long run price, but *only* if the pool is able to obtain premium prices compared to the open market (the premiums need to be in the order of 10 percent). The ability of a voluntary pool to obtain premiums can be expected to be quite limited, since in an open market the competition with other grain traders selling Canadian grain can be expected to reduce the premiums the CWB has been able to obtain in the past.

The second type of pool involves no provision of a pool price guarantee. In this type of pool, farmers simply receive the pooled price at the end of the year. At any time in the crop year, farmers can reasonably be expected to deliver to the pool whenever the current cash price is greater than the current pooled price (i.e., the pooled price calculated to the current point in the crop year). The choice of delivery to the pool or the cash market depends on the pattern of prices over time.

For instance, if prices generally rise over the crop year, farmers will find over time that the current cash price usually exceeds the current pooled price (the pooled price is an average of the lower prices received earlier in the crop year). As a result, farmers will deliver to the cash market rather than the pool. A good example of this type of behaviour was the feed barley pool in the 1994-95 crop year. As a result of tight supplies, the price began moving upward early in the crop year. This upward movement in price led farmers to renege on their delivery contracts, since cash prices were greater than the Estimated Pool Return. The lack of deliveries resulted in the CWB being unable to make sales, which in turn resulted in a drop in the Estimated Pool Return (EPR).

If prices are relatively stable over the crop year, the current pool price may at times exceed the current cash price. Under these circumstances, farmers can be expected to deliver to the pool. Assuming the CWB is able to make sales as deliveries occur, delivery to the pool means a drop in the current pool price, since sales will be made at prices below the previous pooled price. The result is that in future weeks or months, farmers will be less and less likely to deliver to the pool at any given cash price.

Thus, a voluntary pool will generally be viable only when the pattern of prices over the crop year is falling or under certain conditions when the pattern of prices over the crop year is relatively stable. These two price patterns, however, are likely to occur infrequently and unpredictably. If these price patterns were common or predictable, people in the grain

trade—and this includes farmers—would react by selling grain early in the crop year to avoid the falling prices and the storage costs associated with holding the grain over the crop year. Such a strategy would have the effect of lowering the price in the early part of the crop year and raising it in the latter part of the crop year, i.e., causing prices to generally rise over time. This arbitrage strategy is not possible, however, if these price patterns occur infrequently or unpredictably. The conclusion then is that a voluntary pool can only be expected to be viable under conditions that are likely to be infrequent and unpredictable.

When numerous crop years are examined, an additional question is raised concerning the likelihood of farmers delivering to a pool. If farmers decide to opt out of the pool and use the cash market, the result is that the pool price falls (farmers will deliver to the cash market whenever the cash market is high relative to the pool). This lowers the returns to all the farmers that deliver to the pool. Over a number of crop years farmers are likely to realize that delivering to the pool is costly in the sense that they could have done better had they ignored the pool and delivered only to the cash market. Such a realization further threatens the viability of voluntary pools.

The examples discussed above and the decision-making rules given to farmers have been relatively simple. If a voluntary pool were to actually operate, more complex forms of pools and decision rules would undoubtedly be used. For instance, a reasonable expectation might be that the pool would offer some type of estimated pool return as the CWB does now. Our analysis indicates that the use of this sort of pool forecasting does not improve the viability of the pool. This result accords with the lesson learned from the 1994-95 feed barley pool. In that example, increases in the EPR over the crop year were not able to provide an incentive for farmers to honour their barley contracts. In addition, by the end of the crop year the EPR was markedly above the actual pool price, a direct result of the pool's inability to sell barley during the high price periods.

In summary, the operation of a cash market alongside a voluntary pool with no price guarantee will often lead to a downward spiral of the pooled price to the point where no one will want to sell to the pool. Alternatively, the presence of a pool price guarantee can lead to substantial deliveries to the pool, but with the result that the pool account is almost always in arrears. Thus, giving producers the choice between a cash market and a pooled price often leads to the pool being unsuccessful. This lack of success has nothing to do with the management of the pool. Rather, the lack of success derives from the fundamental incompatibility of a cash system and a pooling system.

Contractual Pooling

One of the key assumptions in the above argument is that pooling is voluntary. The assumption that farmers can choose on a day-by-day basis whether to deliver to the pool or deliver to the cash market is clearly important to the pool's viability. Given the increasing use of contracts in specialty crops and in other agricultural sectors such as hog production, the question arises as to whether a contractual pool would be viable.

Under a contractual pool, the assumption is that farmers would sign a contract to deliver a specified portion of their production to the pool; without a contract farmers would be unable to sell grain to the pool. On the surface, a contract pool appears viable, since farmers are contractual committed to delivering their grain to the pool, regardless of the price pattern over the crop year. Farmers who have contracted with the pool should be able to obtain the average price over the year, since there would be no dilution of the pool by farmers selling to the cash market during high price periods. In reality, however, the question of pool viability is more uncertain.

The first point to make concerns the production risk farmers take on when they sign fixed delivery contracts. To reduce the risk of not being able to deliver on such a contract, farmers can be expected to contract only a portion of their crop. The result is that the CWB would be able to obtain only a portion of the crop in any given year, even if the pool resulted in prices favourable to those obtained in the cash market. The CWB could attempt to increase the portion of the crop contracted by offering contracts based on the actual output produced by farmers. However, the cost of monitoring such contracts is likely to be high, making this option less attractive to both the CWB and farmers (the assumption is that the monitoring costs would be deducted from the pool).

The second point to make concerns the degree to which delivery contracts can be enforced. In most instances, delivery contracts are not ironclad. The penalty specified in most commodity contracts is usually the difference between the current market price and the price guaranteed under the contract. Attempts to introduce clauses that impose punitive liquidation damages over and above such differences are usually held to be non-enforceable. Thus, farmers can decide not to deliver on the contract, providing they pay the specified penalty. The implication of contracts not being ironclad is at least two-fold. The cost of enforcing contracts, particularly when there are a large number, could be enormously high. In addition, contractual price pools still face considerable uncertainty over the amount of grain that will be delivered. Because penalties cannot be made punitive, contractual pools can expect to see deliveries fall when price increases rapidly. Such an outcome threatens the long-term viability of contractual pools. The example of the barley pool during the 1994-95 crop year provides a good example of a situation where farmers decided not to sell to a

contractual pool during periods of rapid price increases, even though there was a penalty for such a decision.

Thirdly, relying on penalties to enforce contracts raises an important additional question. If tighter and tighter contract terms are required to ensure farmers do not opt out of the pool whenever such action appears desirable, tightening the contract terms may simply result in farmers not contracting in the first place. In other words, if the problem in a voluntary pool is that farmers use the inherent flexibility to try and obtain higher prices, then creating a tightly controlled contract pool is not likely to attract farmers who desire this flexibility. The result is therefore likely to be a decrease in the volume of grain handled by the pool.

The above analysis of contractual pools for grain is necessarily incomplete given the lack of experience with such pools in Canada. Evidence from other crops is difficult to interpret given the different conditions that exist. Specialty crop contracts have appeared to work in western Canada. However, there is no well defined cash market for these crops that farmers can easily sell to and the products are much more differentiated. Such conditions likely limit the degree to which farmers can default on their contracts. As well, despite these factors, concerns about non-delivery on contracts are being raised as companies debate whether farmers that have defaulted on deliveries should be allowed to enter into new or additional contracts. Much further research is required on specialty crop contracts before any firm conclusion can be reached that are applicable to grain.

Sourcing Grain and Grading

Contractual and voluntary pools face other problems in addition to those described above. The root of these problems is that the CWB does not own any country or terminal elevators. The implication of the CWB not owning elevators is that it does not have independent access to farmers' grain. Instead, under a dual-marketing system, the CWB would be dependent upon grain companies for the grain pledged by farmers to the pool.

Relying on grain companies for grain leaves the CWB open to various types of opportunistic behaviour by the grain companies. For example, without an independent source of grain, the CWB may be unable to obtain grain for loading on a waiting ship if one of the existing grain companies also needs grain to load a waiting ship. Similarly, without an independent source of grain, the CWB will be unable to offer a #1 grade to farmers that have produced a high quality #2 (companies with an independent source of grain could make such an offer because they would have high quality #1 grain they could blend with the high quality #2). Such opportunistic behaviour by grain companies can be

expected to not only make pooling more difficult for the CWB, but also make pooling less attractive to farmers.

Implications of an Open Market System

The discussion of pooling concludes that a dual marketing system is not a viable grain marketing alternative. The implication of this conclusion is that farmers must choose between the CWB or an open market system. If the CWB was replaced by an open market system, the nature of the grain marketing system would fundamentally change. The purpose of this section is to outline some of the ways in which the system might change if the CWB no longer had sole authority to market Canadian barley and wheat internationally and to domestic food markets.

Competition

One of the arguments for having an open market system is increased competition. Competition, however, can have a number of effects, both good and bad. Critics of the single-desk selling system argue the single-desk seller is often inefficient in selling grain because it faces no market competition. By allowing additional firms in the market, the former single-desk seller will be forced to become a better marketer of grain. As we argued in the previous section, the former single-desk seller will likely be unable to effectively compete if it is required to operate a pooling system. Nevertheless, an important question remains: Can numerous grain traders obtain higher prices for farmers as compared to a single-desk seller operating alone?

The answer to this question depends on a number of factors. One important factor is the degree to which the single-desk seller operates inefficiently—e.g., not pursuing markets aggressively enough, operating with a larger staff than necessary. The issue of evaluation will be examined in more detail later in the paper. A second important factor is the degree of competition among the grain traders that emerge to operate under the open market system. Effective competition is important because it determines both the degree to which higher prices can be obtained in international markets and the degree to which these prices are passed onto farmers.

With a single-desk seller operating a pooling scheme, the question of effective competition is largely unimportant, since all returns generated from grain sales are passed onto farmers. Indeed, one of the reasons for operating a pooling system is to ensure all grain sale receipts are returned to farmers. However, under an open market system, the question of effective competition becomes a critical issue, since there is no other

mechanism present that ensures that the returns generated from grain sales are passed onto farmers.

In examining competition, two issues are of importance—the competition among grain traders as they purchase grain from farmers and the competition among grain traders as they sell grain to domestic and international customers. From a farmer's perspective, the ideal situation is one where there is substantial competition among grain traders when they purchase grain and no competition among the grain traders when they sell. With no competition on the selling side, a grain trader would be able to maximize sales revenues by exploiting quality differences and price differentials (due to policies such as the EEP) in the various grain markets. At the same time, the presence of competition on the buying side would create a situation where the grain traders would be forced to return all sales revenues (less costs of generating this revenue) to farmers.

The actual market structure appears to be almost the inverse of this ideal structure. On the selling side, there will be numerous grain trading companies selling Canadian grain. While companies that are able to source a substantial amount of Canadian grain may have the ability to exploit different markets to some extent, smaller companies will not have this ability. More importantly, attempts by individual farmers to access domestic and United States markets will lead to premiums in these markets being bid away.

On the buying side, the evidence indicates the degree of competition is limited. There is a small number of grain companies operating in the prairie region of Canada. The top four companies (provincial wheat pool, Cargill, Pioneer Grain and United Grain Growers) operate 86 percent of the licensed primary elevators in Manitoba, 94 percent in Saskatchewan, and 95 percent in Alberta. These companies operate 88 percent of the primary elevator storage capacity in Manitoba, 92 percent in Saskatchewan, and 94 percent in Alberta. These concentration ratios are very high; economists generally believe effective competition is not present when the concentration ratio exceeds 75 percent. The recent experience of the malting and milling industry provides a signal that concentration in the grain handling industry could potentially become even more concentrated through mergers and acquisitions.

The spatial nature of the country elevator system is another indication of lack of competition. Spatially located facilities and the transportation costs associated with moving between facilities reduce the ability of farmers to change their hauling patterns to avoid a large basis on cash prices or high elevator tariff charges. These spatial constraints have become particularly important since the removal of the transportation subsidy on August 1, 1995. According to Transport Concepts (1995), the number of primary elevators was at a high of 5300 in the 1930s. The current system consists of approximately 1400 elevators at

900 shipping points, servicing over 33 million planted hectares. The number of kilometers of rail line is also decreasing (e.g., from 31,485 kilometers in 1974 down to 25,920 kilometers in 1995). Transport Concepts predicts that an additional 9500 kilometers could be abandoned as the system continues to rationalize.

Barriers to entry also appear to be high. To participate completely in the grain trade requires a country elevator system, terminal elevators, and an international marketing staff. Anything less than complete participation in the grain trade does not effectively add new firms to the industry, since companies that enter only one part of the industry must still rely on the full participants for the remaining services. One example of this is the inland terminal groups that are forming in a number of regions. These firms have contracted with existing companies for marketing and terminal services. A second example is farmers that sell their grain directly overseas. Although one or two farmers may be able to develop niche markets for their grain (e.g., containerization), all farmers would not be able to do so.

The need for terminal elevators, and to a lesser extent an international marketing staff, act as a barrier to companies that might otherwise be able to construct country elevators. The move to large concrete elevators as primary delivery points is also indicative of barriers to entry; the continued construction of country elevators also points to the importance of grain companies having an independent source of grain to move through their marketing operations. Concrete elevators have few alternative uses. As a result, firms that build such facilities have committed themselves to operating these facilities, even in the face of severe price competition. The consequence is that building concrete elevators acts as a deterrent to other companies entering the industry.

The lack of effective competition in the grain trading business has important consequences for the price farmers are paid for grain. Without effective competition, farmers can expect to face an excess basis between the price FOB terminal position and the local street price. Alternatively, since the grain companies are effectively integrated from the terminal level to the local level, the grain companies may opt for a smaller basis but larger tariff charges at either the primary or terminal locations.

In summary, the CWB acts as way of reducing the competition present on the selling side while providing an effective way (through pooling) of returning to farmers the revenue generated in international and domestic markets. We agree with the recent evaluation of CWB performance by Darryl Kraft, Hartley Furtan and Ed Tyrchniewicz that a move to an open market system would reduce the revenue generated from Canadian grain sales. At the same time the loss of the CWB will provide the conditions by which this reduced revenue is not fully transferred back to farmers.

Grading

An important element of the grain marketing system that is often not considered when examining the CWB is grading. The grading system in Canada is just that, a system or a package. The CWB and the Canadian Grain Commission (CGC) work together to create a system that is quite different from that in the United States. The CWB enforces the tight grades established by the CGC; this enforcement makes it possible to extract premiums for higher quality grain that is not possible in the United States.

In the United States, grain is typically sold on the basis of the specification of each carload or lot, rather than on the basis of a tightly specified grade. Although companies could benefit from tighter standards, each company lacks the size, volume, and clout to impose stringent grade guidelines. As a consequence, the overall quality tends to be poorer and there is considerable variation within a so-called grade. The move to an open market system in Canada will likely mean a movement towards a system much more like that in the United States than the one that currently operates in Canada.

The move to an open market system will also mean a redistribution of the benefits from grading. Under the current system, grain companies are able to earn some revenue by appropriate blending at the country level. For instance, grain companies can blend a high quality #1 with a reasonably good quality #2 to produce a minimum quality #1. In doing so, the companies are able to generate additional revenue equal to the difference between a #1 grain and a #2 grain. The degree to which the grain companies are able to undertake such blending is determined by the degree of effective competition that exists between companies.

The grain companies are not the only ones able to earn additional revenues by blending. The CWB is also able to generate additional revenues at terminal position by appropriate blending. These additional revenues are collected in the pool account and are distributed to farmers as part of the final payment. The movement to an open market will eliminate this source of revenue for farmers and will transfer some of it to the grain companies.

Infrastructure Use

In addition to providing pooling and a single-desk selling function, the CWB also acts as a method whereby limited resources such as rail transportation and terminal capacity are allocated or rationed among farmers and grain companies. In the absence of the CWB, these resources would still require allocation. The most likely way of making these allocations would be via the market. During times of excess demand for transportation or

terminal capacity, the farmers or companies that are willing to pay the most for the service would be able to access the service.

The use of the market to allocate limited resources has both cost and equity effects. In general, the use of the market is expected to increase costs. One of the reasons for this increase in costs is that firms operating in a non-competitive environment and knowing they can charge extra during periods of excess demand will have little incentive to provide additional rail or terminal capacity. The use of the market also means a transfer of income from farmers to the owners of rail or terminal capacity, since a limited resource can only be rationed by charging higher prices.

Development of Further Processing on the Prairies

One of the major criticisms applied against the CWB is that it is deterring the development of further processing on the prairies. Before this question is examined in more depth, the point must be stressed that CWB pricing does not apply to feed grain for domestic use, canola, lentils, peas, and other specialty crops. Since these crops appear to be the largest potential for value-added processing, the impact of the CWB would appear to be relatively small.

If the CWB is detrimental to processing on the prairies it must be because the CWB raises the price of grain and either makes it too expensive for a company to purchase grain as an input or, at the farmer level, provides farmers with better returns than they could get processing the grain in some fashion on their own. This argument suggests the CWB is successful at raising the price farmers receive; the implication is that replacing the CWB with an open-market system will lower grain prices. The consequence of lower prices is that processing may be encouraged, but the farmers' expense.

The discussion of price ignores the fact that increasingly what is important to processors is not just price, but the ability to know in advance the quality and quantity of grain they will be obtaining. On this point, maltsters and millers in western Canada appear to prefer the involvement of the CWB. Maltsters are currently willing to pay a premium to consistently obtain the highest quality malting barley. The current system of offering millers a Domestic Human Consumption (DHC) formula price provides them with a competitive price vis-a-vis their US counterparts and ensures no trade actions will be launched. The millers also like access to a guaranteed quality and quantity of grain.

If it is desirable to have more processing in western Canada, and we believe it is, a way must be found to do this that does not involve making farmers worse off in the process. Research suggests there are a number of barriers to development, including such things as producers failing to recognize the presence of an opportunity or producers being

unable to agree precisely on the strategy to use to take advantage of an opportunity. Unless these barriers are addressed, changes in the marketing system for grain are unlikely to have any significant impact on processing in western Canada.

Future Changes to the CWB

One of the major themes of this paper is that farmers must choose between the CWB or an open market system. When considering the CWB alternative, farmers must understand not only how the CWB currently operates, but how a CWB system will operate in the future. In this section we discuss a number of the changes that have been and could be introduced to regain the support the CWB has traditionally enjoyed among farmers.

Recent Changes

In recent years the CWB has implemented a number of changes in an attempt to address farmers' concerns. More grades have been added to the pooling system to account for varying levels of protein. The quota system has been replaced with a contract system designed to make better use of the transportation and handling system. In 1995, the CWB changed the freight deductions used to calculate the location advantage of producers. Prior to this change, the freight deduction was the lesser of the actual freight rate to Vancouver and Thunder Bay and hence no compensation was provided to farmers located relatively close to the premium markets. Shipping basins have now been established in an attempt to ensure that the basis pattern reflects that which would exist in a competitive system if which the CWB purchased the grain f.o.b. port position.

Futures Trading

Critics of the CWB have long argued they wish to have greater freedom to market their grain. As we discussed in earlier parts of this paper, providing farmers with this freedom will lead to a collapse of a voluntary pool, as well as the loss of the benefits a single-desk seller provides in terms of providing effective competition and rationing limited resources. However, other mechanisms could be developed which would serve to enhance the marketing flexibility of producers while maintaining single-desk selling and price pooling.

For example, the CWB could assist in developing a wheat options trading program for farmers. If this program were available, farmers would be able to use it to "replicate" an open market trading environment similar to the canola market. Under the program farmers would still deliver their grain to the CWB and receive the pooled price (as in the current system). However, they could attempt to increase their net selling price by purchasing a call option when they feel the market price is rising or purchasing a put option when they feel

the market price is falling. Through using options, the farmer would be able to replicate the same potential gains and losses that would be available in a pure open market environment. Options have the nice feature that, once purchased, the worst the farmer could do is lose his or her investment in the option while at the same time the potential for making profits if the price moves in a favourable direction is unlimited. The transaction cost of operating in the options market would be reduced and the process of educating farmers about how options work would be facilitated by having a centralized options trading program administered by the CWB.

Accountability and Governance

We argue in this paper that the CWB provides a number of benefits—the ability to offset market power, reduce opportunistic behaviour, and coordinate selling activities—that would not be present under an open market system. These benefits arise precisely because actions are coordinated rather than taken independently. To provide these benefits the CWB requires a different organizational structure than is used by for-profit firms.

Table 1 shows four different organizational structures that are commonly used in the economy. Since each of these organizational structures has its strengths and weaknesses, no one structure is the most desirable in all situations. We believe that the CWB structure has been chosen because it represents a reasonably effective means of supplying grain marketing services to western Canadian grain farmers. For instance, because of the presence of limited resources such as rail and terminal capacity, a single agency with legislative power like the CWB is required to provide coordination and rationing in a reasonably equitable fashion. Similarly, price pooling represents not only a method of pooling risk, but a way of ensuring that market revenues are returned to farmers.

The CWB has its weaknesses, however. One of its major weaknesses in the past has been an inability to provide suitable accountability. Accountability is important for at least two reasons: (1) the CWB is operating on behalf of farmers; and (2) the CWB requires the ability to enforce the decisions it makes regarding contracts and sales and this ability depends critically on the support of farmers.

This lack of accountability in the past has stemmed from two factors. The first is that as a single-desk seller and as an institution with an objective of maximizing the returns to western Canadian grain farmers, the CWB faces problems in terms of evaluating operating and marketing efficiency. The standard method of measuring efficiency for for-profit firms is to examine financial performance ratios such as the rate of return on equity and the debt-to-equity ratio and to compare these with similar ratios for similar firms. The

Table 1 Strengths and Weaknesses of Various Organizational Forms

Organization	Strengths	Weaknesses
Individual Action	Direct ownership. More control and freedom.	Lack of economies of scale. Lack of risk pooling. Lack of coordination & rationing.
For-Profit Firms (FPF)	Provides economies of scale and risk pooling. Can coordinate & ration resources.	Possible opportunistic behaviour, e.g. use of market power. Lack of knowledge of local conditions.
Co-operative	Provides economies of scale and risk pooling. Reduce opportunistic behaviour. Provide knowledge of local economies critical to success. Introduction of other goals.	Collective action problems – supply too little capital; incentive to overuse facilities.
Government Corporations	Provides economies of scale and risk pooling. Reduce opportunistic behaviour. Can coordinate & ration resources. Introduction of other goals.	Introduction of other goals. Possibly less technically efficient than FPF or Co-op. Lack of knowledge of local conditions.

problem with using this method of evaluation for the CWB is that these performance ratios have been designed with for-profit firms in mind and are generally not applicable for an institution like the CWB. As well, as a single-desk seller, the CWB has no obvious firms or institutions with which it can be compared.

The second factor is that the CWB has not had in place an effective method of obtaining feedback from western Canadian grain producers and of ensuring farmers' concerns are reflected in the decisions made by the board. The CWB commissioners are appointed by government and are accountable to government, not western Canadian grain farmers. Although the Advisory Committee is elected, there is no expectation by farmers that this body has any real power in determining CWB policy.

One of the solutions that has been proposed to deal with these problems involves changing the nature of the CWB and the grain marketing system so that CWB performance can be compared to that of other for-profit firms. Although this is one solution to the problem, this solution will have other consequences. In particular, this solution involves disposing of those institutional elements—coordination, rationing, risk pooling, and revenue returning—that are the very strength of the CWB.

The other solution to the problem is to develop a governance and accountability structure that is appropriate to the institutional structure of the CWB. We have laid out the argument that farmers must be given the opportunity to decide whether they want a CWB style marketing system or an open market system and that this decision must be made in a democratic fashion. If the CWB is to attract the support of a substantial majority of farmers and if the CWB is to be viewed as a legitimate marketer of grains, the CWB itself must become much more democratic in nature and action.

A substantial change in the CWB's governance structure is required to allow the CWB to achieve these goals. The new governance structure must not only provide farmers with some say in who runs the operations of the CWB, it must provide farmers with a mechanism by which their concerns and desires are listened to and reflected in the policies and operations of the CWB, and it must provide for a method of evaluating the actions of the CWB. At the same time, the farmers in the CWB region are diverse and have many conflicting demands. Not all advice can be used or acted upon. Thus, the task of a governance structure is to create a balance between listening to and acting on farmers' concerns and making decisions quickly and effectively.

To achieve these objectives requires elements from both representative and participatory democracy. The main elements from representative democracy are the election of CWB delegates by grain farmers in western Canada and the election of a Board of Directors, either directly by grain farmers or by the CWB delegates. The Board may also include appointed representatives of the federal government; however, the elected producer members should make up the majority of the Board. CWB delegates would be chosen on the basis of one-farmer, one-vote. If the traditional representative model is followed, delegates would be elected to represent geographical areas. However, some thought should be given to also having delegates elected to represent non-geographical interests such as on-farm or community-based value-added processing activities.

The Board of Directors would be responsible for developing the policies and strategies of the CWB; the carrying out of these plans would be left to the senior management of the CWB who would be appointed by the Board of Directors. The Board also plays the role of evaluating CWB performance, verifying that proper procedures are being followed, and scrutinizing confidential information. The role of the delegates would be to facilitate the flow of information between farmers and the Board of Directors. This traditional democratic structure provides farmers with some say in the operations of the CWB, while at the same time ensuring the CWB operates in a reasonably efficient manner.

Relying on representative democracy is not likely enough, however, to ensure continued farmer support for the CWB. Some form of effective participatory democracy is

also required. Farmer's participation in the CWB must be encouraged, perhaps through a process whereby working groups are established to design such things as new delivery contracts as changes are required. The relationship between management and farmers must be strengthened. Farmers must feel there is real communication between themselves and CWB management, so that when management makes decisions it is more likely to take account of farmers' needs. The CWB must develop an organizational structure that is innovative, responsive and that fosters an identification of farmers with the CWB and its activities. The CWB must also expand employee participation, since it is the employees that often have the greatest contact with farmers and may be in the best position to make decisions that benefit farmers. Finally, the CWB needs to be cognizant of both its economic and social roles. The social role encompasses such things as ensuring democratic participation, providing training and education for employees and farmers, and highlighting environmental issues and concerns.

Increased support and accountability cannot be ensured by democratic processes alone. Because of the lack of readily available performance measures, the CWB should develop its own performance criteria in consultation with farmers and academics and make these widely available. The CWB should expand its annual financial audit to a much more extensive audit that examines such things as the effectiveness of CWB operating procedures. As well, the CWB should periodically engage in the type of independent evaluation of its pricing activities that was recently undertaken. Independent evaluations are particularly important given the confidentiality of much of the CWB's operations. Farmers need to be assured that the CWB is not using confidentiality to hide operating or marketing inefficiencies.

We would like to stress that individually these activities are unlikely to result in the required support and accountability. However, as a package, these activities can provide farmers with a say in who runs the operations of the CWB, a reasonably effective decision-making process, and a method of evaluating the actions of the CWB.

Technical Appendix¹

The purpose of this appendix is to describe the simulation procedures used to rigorously examine the issue of whether a voluntary pooling scheme can be successfully operated within an open market. Monte Carlo simulation techniques are used to generate a data set within which the null hypothesis (a voluntary pool is feasible) can be statistically tested. The hypothesis test is conducted under a wide range of assumptions concerning the process through which prices are generated and how the pooling scheme is structured.

Let P_t denote the CWB average selling price from all markets at a particular point in time. It is assumed that the price level in a particular period depends on the price level in the previous period plus a random shock according to the following equation:

$$P_t = \alpha + \beta P_{t-1} + \varepsilon_t$$

where ε_t is a normally distributed random variable with mean 0 and standard deviation σ and α and β are fixed parameters. There are a variety of different forms that this price series can take on, depending on the specific values of α and β . For example, with $\alpha = P_0$ and $\beta = 0$, price in period t has a constant mean, P_0 , standard deviation, σ , and does not depend on the price in the previous period. At the opposite extreme, with $\alpha = 0$ and $\beta = 1$, price is a pure random walk that does not converge to a stable mean in the long run. That is, the current price is the best forecast for next period's price. A more intermediate case entails choosing any value for β (typically slightly less than 1 in value) and then setting $\alpha = (1-\beta)P_0$. With this particular specification, prices partially depend on the previous period's price but converge toward a mean value of P_0 in the long run (i.e., price is mean-reverting). Real-world values of β are typically greater than 0.95.

Next we assume that the average selling price from the open market at time t equals γP_t , where $0 \leq \gamma \leq 1$. That is, the open market price is proportionally lower than or equal to the CWB selling price. For both prices we assume that all transportation and marketing fees have been deducted; thus P_t and γP_t are net prices. We assume there are 25 decision periods within which farmers must choose between selling to the CWB or the open market. It may be convenient to view the 25 periods as representing roughly one marketing year in which case a marketing decision is made every second week.

Two alternative types of pooling rules are assumed. In scenario 1, the CWB sets a guaranteed price and it is assumed that farmers deliver to the pool only if the actual market price offered by the open market, γP_t , falls below this guaranteed price. In scenario 2, there

¹This appendix is based on analysis and results from Nathalie Lavoie's M.Sc. thesis which is currently in progress.

is no price guarantee and farmers who deliver to the pool are paid the actual pool price at the end of the marketing year for each unit they have delivered to the pool. In this case, it is assumed that farmers use the current pool price as a forecast of the final pool price (for the first period, P_0 is used as the pool price forecast).

To evaluate the feasibility of the pool scheme for scenario 1, the final pool price is compared to the guaranteed price. If the final pool price is below the guaranteed price, the voluntary pool is not feasible, at least for that particular set of 25 random prices. To statistically test the null hypothesis that in general the voluntary pool is feasible, we solve each particular model 1000 times, each time allowing for a new set of random error terms. We therefore end up with 1000 estimated differences between the final pool price and the guaranteed price. These 1000 differences will generally be somewhat different from each other because the particular pattern of 25 prices will generally be different each time the model is solved (e.g., in one run prices may tend to trend up over time while in another run prices may tend to trend down over time.). For a particular specification of the model, some of the 1000 differences may be negative while others will be positive. We only reject the null hypothesis that voluntary pooling is feasible if we can be 95 percent confident that the null hypothesis is not correct given the 1000 differences we randomly generated.

To evaluate the feasibility of the pool scheme for scenario 2, the satisfaction of the farmers with respect to their decision to sell or not to the CWB is evaluated. We assume farmers have two types of regrets, one that is positive for the CWB and one that is not. Positive regrets occur when, once the final pool price is known, the farmers regret not having sold to the CWB. Similarly, negative regrets occur when farmers regret having sold to the CWB. These regrets arise because the actual pool price each period is used as a forecast of the final pool price and therefore any difference between the final pool price and the actual pool price in a given period may generate a regretted decision later on. If the average size of the net regrets (positive - negative) over the 25 periods is negative, then on average the farmers will regret their decisions that they made over the course of the marketing year (i.e., they delivered to the pool believing that they would be paid a pool price that was higher than the pool price that was actually paid). In such a case the pooling scheme loses some of its credibility. If the difference is consistently negative over many different pricing patterns then in general the pooling scheme is not feasible. Once again to formally test the null hypothesis that the pooling scheme is feasible, the model is solved 1000 times using a different set of random error terms in the pricing equation each time. We only reject the null hypothesis that voluntary pooling is feasible if we can be 95 percent confident that the null hypothesis is not correct given the 1000 differences we randomly generated.

Results

The results overwhelmingly show that for both scenarios 1 and 2 voluntary pooling is not feasible (i.e., we reject the null hypothesis in all cases) when $\gamma = 1$ (i.e., when the average open market price equals the average CWB selling price). This finding remains valid for a wide range of model parameters. If we lower the value of γ sufficiently (i.e., assume that the open market price is lower than the CWB selling price) then we can find situations where we can no longer reject the null hypothesis. If we lower the value of γ even more then at some point we can be confident that pooling is a feasible option.

Table A.1 shows the lowest value for γ for which the null hypothesis can no longer be rejected for two alternative assumptions about the market price process and assumed values for the standard deviation of the random shock, and for different specifications of the guaranteed price in the case of scenario 1. We chose the standard deviation values such that in the simulated price series over the course of a marketing year, the difference between the highest price and lowest price typically varies between 20 and 50. This price range corresponds to data that we typically observe in the Canadian wheat market. We have chosen α and β so that the long run average price is 100.

The critical values for γ reported in Table A.1 are generally less than 0.9 meaning that, for what ever reason, the open market price needs to be generally less than 90 percent of the price obtained by the CWB for there to exist an even remote possibility (i.e., greater than 5 percent chance) that price pooling could be feasible. For this reason we conclude that our result—namely that voluntary price pooling is not feasible—is very robust.

Table A.1 Critical Value of γ For Which There is a 5% Probability that Voluntary Pooling is Viable¹

Price Series ¹	Market Price Std Dev.	Scenario 1		Scenario 2
		Guaranteed Price		
		95	99	
Random Walk				
Alpha=0	5	0.88	0.79	0.64
Beta=1	7	0.80	0.71	0.50
Mean Reverting²				
Alpha=10	5	0.92	0.86	0.89
Beta=0.9	7	0.88	0.80	0.84

¹ For values of γ greater than these critical values, the probability of the voluntary pool being viable falls below 5 percent

² Initial Price(P_0) = 100

³ Price series reverts to a mean of 100

