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WORKING TOGETHER

THE ROLE OF EXTERNAL AGENTS IN THE DEVELOPMENT OF AGRICULTURE-BASED INDUSTRIES

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ABSTRACT

The objective of this study is to determine the role that external agents and organizations play in fostering the development of agricultural industries. Industries develop in some situations and not in others. This research tests the hypothesis that industry development is more likely to occur when external agents—namely governments, existing firms in related industries, and industry development groups—provide services which encourage industry participants to co-ordinate their behaviour and work together as a group to achieve development goals.

Case studies and a literature review indicate that the role of the external agent includes: (a) rallying together a critical mass of participants; (b) helping groups of participants develop institutional arrangements which can address assurance and credible commitment issues; (c) identifying the problems and needs faced by group members; (d) developing strategies to address these problems or needs; and (e) mobilizing resources both from within and outside the groups. To be effective, an external agent requires: credibility and fair mindedness; a solid knowledge of the industry; the ability to link this knowledge with an appropriate institutional arrangement; and the ability to foster mutual trust and interdependence among participants.

EXECUTIVE SUMMARY

The Canadian agricultural sector has experienced a number of major changes in recent years, including significant market deregulation, a sharp decline in government support, the rapid introduction of new technologies, and marked shifts in the preferences and demographic make up of consumers. These changes represent new opportunities for agricultural industries to develop and thrive; at the same time they impose significant challenges to development initiatives within agriculture.

The objective of this study is to determine the role that external agents and organizations can play in fostering the development of agricultural industries. Industries develop in some situations and not in others. This research tests the hypothesis that industry development is more likely to occur when external agents provide services which encourage industry participants to co-ordinate their behaviour and work together to achieve development goals. Among these services are education, facilitation and information provision. These services are critical because they: (a) allow industry participants to address market failures which result from information asymmetry and differing interests; and (b) enable industry participants to exploit economies of scale and complementarities inherent in many development activities.

External agents refer to organizations and agents (which represent organizations) who may be in a position to provide services critical to the development of an industry. External agents are not active players within the industry itself; that is, they are not involved in the production, marketing or processing activities of a particular agricultural product. External agents include, but are not limited to governments, existing firms in related industries, and industry development groups.

While governments have frequently been held responsible for industry development in the past, external factors, such as global trade liberalization, and internal pressures, such as greater fiscal responsibility, have shifted this responsibility. Industry players are having to seek out other sources of expertise to help in their development efforts. Alternative sources for such expertise include firms in related industries (banks and credit unions for example), private consultants,

community development organizations, universities, and other research facilities. Although a single agent of such organizations may be in a position to help industries develop, we will use the term agents to refer to a group of individuals who, from outside the industry, are able to influence and facilitate change within an industry.

INDUSTRY DEVELOPMENT

Development occurs when an industry moves from simple commodity production and marketing to a much more complex constellation of well-defined markets, regulatory bodies, value-added activities, and ongoing product innovation. An important aspect of industry development is the expansion of the market for a particular product or group of products. At least three approaches to expanding the market exist: increasing the demand for the product; increasing the supply of the product; and reducing the marketing margins.

The first approach involves raising the demand for a product, usually through efforts such as product differentiation or advertising and promotion. Demand expansion is not always easy to accomplish. Free riding and other forms of opportunistic behaviour may occur between those involved in demand development. As well, if demand is enlarged but the industry is not able to fulfill that demand, customers may become discouraged and more hesitant to buy in the future.

A second approach to enlarging an industry is for the industry to invest in primary supply expansion. Activities such as research and development lead to increased efficiency, thus shifting the primary supply curve outwards. This approach to industry development has been used often in the past and may be the most commonly used of the three approaches. There are many examples where industry development has primarily consisted of production research. This emphasis on production research continues in many well established industries such as the grains, oilseeds and livestock sectors.

The third approach to industry development is to lower the marketing margins throughout the product chain. Marketing margins depend not only on the real costs of undertaking the activities that occur between the farm gate and the consumer, but also on the organizational relationships that exist between the participants involved in carrying out these activities. These organizational relationships influence the transactions costs that exist in the industry. Transaction costs are those costs of doing business with other parties that are in addition to the price of the good. Examples

of transactions costs include the costs of designing, monitoring and enforcing the terms of contracts and marketing arrangements.

The discussion of transactions costs makes it clear that industry development is often dependent on the ability of industry players to change their existing patterns of economic exchange. Exchange occurs along two dimensions: (a) horizontally, along one level of the industrial chain; and (b) vertically, between different levels of the industrial chain. Examples of horizontal arrangements intended to foster industry development include: the formation of a producer association to share production information; an agreement between processors to standardize packaging; or the co-ordination of breeding stock amongst suppliers to monitor genetic improvements. Examples of vertical arrangements include the formation of a co-operative processing facility by producers or a long-term supply contract between a producer and an input supplier.

COORDINATION AND INDUSTRY DEVELOPMENT

The nature of the institutional arrangements that exist between industry participants is important because these institutional arrangements determine the degree of co-ordination that will exist in the industry. Co-ordination is vital because it determines the extent to which economies of scale and scope are exploited and the degree to which complementarities are recognized and utilized. For instance, as the discussion of industry development in the previous section highlights, demand expansion will be much more effective if it is co-ordinated with supply expansion, and vice-versa.

Standard neoclassical economics suggests economic agents will co-ordinate their actions and engage in industry development activities whenever the benefits from doing so outweigh the costs. Under this model, there is little room for external agents to facilitate industry development as this is handled most efficiently by the market. However, empirical evidence does not support this conclusion. There exist many real world examples where, regardless of the potential net gains, individuals and firms are not able to co-ordinate their activities to take advantage of the gains. Many examples also exist where external agents have played a critical role in industry development. Why does traditional neoclassical theory fail in these cases?

Contrary to the assumptions of neoclassical theory, the bulk of real-life economic behaviour is characterized by uncertainty and by multiple interdependent agents with different long-run interests. Information is costly, and the information-processing capabilities of participants are limited. In this kind of a world, the institutional arrangements participants use to interact with one another and to co-ordinate their activities are critical components in understanding economic behaviour, and hence, industry development.

Co-ordination is only important in situations where there are benefits to co-ordination —that is, in situations where the actions of one party affect the benefits received by another party. The ability of industry participants to co-ordinate their behaviour under such circumstances will be hampered when information is costly to obtain and when the information-processing capabilities of participants are limited. In these types of situations, individual participants will be tempted to act strategically—that is, to try and obtain a bigger share of the pie for themselves.

In most situations, this strategic behaviour reduces the size of the pie, either by discouraging other participants from completing transactions that are desirable from the standpoint of the industry (the hold-up problem) or by causing too little production of goods that are used by all industry participants (the free rider problem). This failure of independent participants to co-ordinate their actions is a form of market failure. The lack of co-ordination and the subsequent reduction in the size of the pie is a major reason why industry development does not occur or occurs at relatively low levels.

A number of views have been offered to explain how the actions of independent economic players can be co-ordinated under complex, uncertain conditions where the potential for market failure is high. The two standard views are: (1) centralization of activities, usually by the government or by organizations that are given special powers by the government; and (2) privatization or the specification of private property rights. Although policies based on privatization and centralization have been used extensively in agriculture as a way of overcoming market failure and the challenges associated with industry development, limitations to these approaches exist. The major weakness of privatization is that independent behaviour does not always give rise to outcomes that are desirable from the perspective of either the agents themselves or the larger society. As was discussed above, strategic behaviour can result in free-rider problems and hold-up problems, both of which are examples of market failure. Market

failure also includes non-competitive pricing by oligopolistic firms, and the provision of goods and services at less than optimal levels.

The same factors which result in market failures (i.e., asymmetric information, uncertainty, and complexity) can also cause government failure. The failure of government to behave appropriately is the major weakness of centralization. Government failure may occur because of imperfect knowledge or foresight, rigidities in regulations, myopic regulation, and political constraints. In addition, political pressures for greater fiscal restraint and greater trade liberalization are severely limiting the ability of governments to provide public services and intervene in agricultural markets.

An alternative perspective, which pays homage to both the role of the market and the state but which emphasizes the role of the participants themselves, is that of self-organized institutional change. This approach highlights the ability of participants to organize themselves to achieve collective goals, in spite of the challenges. The notion that groups of participants can co-ordinate their actions to achieve common goals is based on real life observations that collective activities, such as the management of commonly-owned resources, do occur without the intervention of a central authority.

The development of participant-driven organizations is not the only way to address the challenges associated with industry development. Indeed, in many development situations policies based on either privatization or centralization may be the key to efficiently solving market failure. Each form of institutional change and associated policies has its own related costs and benefits. No one form works best in all situations—in some situations one form may provide the solution to a problem of co-ordination, while a different approach may be required in another situation. It is up to policy makers and participants to evaluate the situation and determine appropriate solutions.

One type of situation in which participant-driven development may be the desirable option is where common pool resources (CPRs) are present. Like public goods, CPRs are resource systems from which it is difficult and/or costly to exclude the people who benefit from its use. Unlike public goods, however, one person's use of the CPR will negatively affect the benefits that others can obtain from the resource. Thus, management of the resource and co-ordination of access to the resource becomes vital.

An example of a CPR is a pool of funds collected through a check-off system and dedicated to market development activities. Such check-off systems typically face two recurring problems: how to get producers to contribute to the pool (since there is an incentive for people to free-ride on the contributions of others) and how to manage and govern the use of the pool (since the money used for one form of activity will not be available for another). Industry reputation is another example of a CPR. For an industry
to build up a positive image, all participants must ensure they do not damage the industry's reputation; detrimental actions by even one person can have a significant impact on the entire industry.

THE ROLE OF EXTERNAL AGENTS IN PARTICIPANT-DRIVEN ORGANIZATIONS

There are a number of variables which can influence the degree to which industry participants will either co-ordinate their activities or engage in strategic or opportunistic behaviour. These variables include:

- the frequency with which participants interact with one another;
- the degree of uncertainty regarding future contingencies;
- the ability to make credible commitments and assurances regarding future behaviour;
- the existence of well-tailored governance structures; and
- the existence of a system which monitors behaviour after contracts and agreements are signed and which clearly defines penalties associated with breaching commitments.

These variables provide an insight into the ways in which external agents can foster industry development by reducing strategic behaviour. For example, external agents can help in the building of ongoing relationships. When contractual agreements or collective activities are perceived as being part of a longer ongoing relationship, factors such as reputation, social norms, and values are likely to influence behavioural decisions and the ability to make credible commitments will be enhanced. If exchanges between industry participants occur more frequently, the costs associated with developing institutional arrangements also decrease. Hence,

a meaningful role for external agents in fostering industry development is to encourage and facilitate ongoing relationships among industry participants.

To this end, external agents can help by encouraging the development of networking opportunities (i.e., trade fairs, industry associations and other events) and communication tools (i.e., electronic bulletin boards, newsletters and industry directories). Activities which foster the creation of a critical mass within an industry (i.e., a group of highly motivated individuals enthusiastic about a development initiative) can become an important component in inspiring others to act collectively. Improved communication channels can also encourage enthusiasm for future projects by spreading the word regarding successful development initiatives in other industries.

Extensive information is often required to undertake development activities, especially if these activities involve more than one organization or individual. Information is also crucial in building governance structures which clearly define the roles and responsibilities of the participants involved in a particular development initiative. However, information is usually costly and asymmetric. Gathering and presenting appropriate information often requires technical expertise in certain areas (i.e., finance, commerce, law, organizational management). The ability for different participants to process information also varies. These factors can make it difficult for industry participants to engage in mutually beneficial activities and suggests that external agents can play a role in industry development by improving participants' access to credible information and technical expertise.

External agents can assist in providing information by either gathering (i.e., undertaking research and development) and disseminating it themselves or by providing funds to allow groups to do so themselves. Having external agents involved in improving access to credible market information can also help in deterring strategic or opportunistic behaviour. The accessibility of relevant scientific knowledge is especially important since some participants may not be familiar with this knowledge or may have difficulties understanding it due to different educational levels. Not all of the development initiatives proposed by certain industry groups or participants will be feasible or even relevant. External agents can encourage industry development by establishing funds to investigate the feasibility of different industry development activities. The search costs associated with accessing funding can be further reduced if distribution centres for such information are established.

The external agent may facilitate development activities by acting as a consultant to groups, building and/or reinforcing leadership within a group, and integrating the efforts of the group. For participant-driven development to occur, it is vital that the participants have control of the development process. External agents can help in this process by assisting in: (a) the identification of the problems and the needs of the group; (b) the development of strategies to address these problems or needs; and (c) the mobilization of resources both from within and outside the group. External agents must not only ensure that participants have the necessary information available to them; the agents must ensure that the participants understand the information and apply it to their situation. Participant-driven development is thus a learning process—it involves training and problem solving.

A central component in achieving credible commitments, and hence collective action, is the development of a set of rules which clearly outline the responsibilities and privileges which come with a particular collective activity or association. In addition, the penalties imposed if those rules are not adhered to must be clearly outlined. The development of such rules requires a familiarity with the effect of different governance structures and agreements on the behaviour of participants and an understanding of how different components, such as monitoring, can be built into the governance structure. A facilitator can aid in this process by either providing such expertise to the group themselves or by co-ordinating the resources to access this expertise from other agents. For example, a facilitator familiar with participant-driven development can encourage groups to consider coupling private benefits with collective benefits to achieve a common goal. Industry groups which already provide members with private benefits often have the authority necessary to encourage the provision of collective goods. A skilled facilitator can also help participants incorporate a low cost mechanism for modifying rules, monitoring behaviour, enforcing rules and resolving conflicts within their institutional arrangements.

There is a risk involved when external agents work in developing participant-driven projects. The group may become dependent on the facilitator as a source of advice and may look to her to make the decisions. Once the facilitator has moved on, the project may fail because no one in the group has assumed the leadership role and the group has not learned to make decisions on its own.

CASE STUDIES

This study uses a number of case studies to examine the process of industry development. The case studies focus on specialty livestock (specifically wild boar and fallow deer), seed

potatoes, and New Generation Co-operatives. The case studies provide examples of privatization, centralization, and participant-driven development.

Examples of industry co-ordination based on privatization and the specification of private property rights include:

- the use of explicit contracts between Sask-Ida and the residents of Lucky Lake, Saskatchewan to secure production for Sask-Ida's seed potato marketing operations;
- the vertical integration of Saskatoon Specialty Meats to ensure the processing of high quality wild boar products; and
- the specification of delivery rights in New Generation Co-operatives (NGCs).

Examples of industry co-ordination based on the centralization of decision making include:

- the public provision of seed potato inspection services by the federal government to co-ordinate product quality;
- the use of mandatory levies on seed potato production to fund marketing activities; and
- the regulation of the fallow deer industry to co-ordinate production and marketing practices.

Examples of participant-driven institutional change include:

- the information dissemination services provided by the B.C. Fallow Deer Association;
- the establishment of potato production by Riverhurst Agricultural Products in Riverhurst Saskatchewan;
- the establishment of processing facilities by the members of NGCs in North Dakota;
- the co-ordination of production practices to ensure quality standards by Edmonton Potato Growers;

- the collective marketing activities of Pacific Northwest Venison Producers and Northern Velvet;

The examples of participant-driven institutional change within the case studies point to a broad range of roles played by external agents. The efforts of the B.C. Fallow Deer Association illustrate how external agents, specifically the provincial government, can facilitate participant-driven development activities by providing flexible funding and credible production and market information. The process of getting potato production established in Riverhurst, Saskatchewan, illustrates the importance of an external agent as a facilitator; developing relationships among key participants, keeping communication lines open and defining the resources available to the community.

Perhaps the clearest example of the positive role that external agents can play in larger-scale industry development initiatives is illustrated by the development of New Generation Co-operatives in North Dakota and Minnesota. In this case a wide variety of external agents played a range of roles in fostering the development of a large number of agriculture-based industries. Representatives of various organizations have created an infrastructure which provides support for regional development initiatives and creates an environment conducive to collective action. This network includes various government agencies which provide flexible funding programs, sponsor forums for industry participants to meet and exchange ideas, and portray enthusiasm for local development initiatives. Financial institutions, in particular the co-operative banks, provide industry participants with business expertise and start-up capital. The rural utility co-operatives and co-operative associations fund the positions of a rural development and a co-operative development specialist. These specialists act as facilitators of collective action and work directly with industry groups to identify common needs and goals, develop strategies to meet these goals, and co-ordinate the resources available to undertake development strategies.

It is important to note participant-driven institutional change does not necessarily require that external agents play an active role in industry development. For example, Edmonton Potato Growers, Pacific Northwest Venison Producers, and Northern Velvet are all examples of collective organizations which developed without direct external aid of any sort. However, while direct help from external agents is not necessary for participant-driven institutional change, a recognition by external government authorities of the legitimacy of such an effort is essential. This point is clearly illustrated by the collapse of the industry development initiatives undertaken by Pacific Northwest Venison Producer. Therefore,
while external agents, in particular the government, can have a positive affect on industry development, they can also be a barrier to development initiatives.

CHECK-POINTS FOR INDUSTRY DEVELOPMENT

The following check-list summarizes some of the more salient conclusions of the study. These findings point to situations where co-ordination is necessary for industry development and where external agents can play a meaningful role in fostering industry development.

- ❏ There are three main approaches to market expansion: increasing the demand for the product; increasing the supply of the product; and reducing the marketing margins. These activities are often complimentary—that is, an expansion of one increases the effectiveness of the others. Industry development will be enhanced if these activities are co-ordinated.

- ❏ Many industry activities such as production, marketing, distribution, processing, financing, and management become less costly to undertake the greater the amount of the activity being undertaken. Co-ordination of these activities can thus foster industry development.

- ❏ When information is costly to obtain and when the information-processing capabilities of participants are limited, individual participants are often tempted to act strategically—that is, to try and obtain a bigger share of the pie for themselves. In most situations, this strategic behaviour reduces the size of the pie. Co-ordinating activities—or reducing strategic behaviour—will improve industry development.

- ❏ Many industry development activities are similar to common pool resources (CPRs) in that it is difficult and/or costly to exclude the people who benefit from these activities. However, one person's behaviour can have a potentially negative affect on the benefits that others obtain from the activity. In these cases effective co-ordination of industry participants is vital to the successful development of the industry.

- ❏ The actions of industry participants can be co-ordinated through a number of institutional arrangements, including: (a) privatization; (b) centralization; and (c) participant-driven organizations. Each institutional arrangement suggests a different form of involvement by

external agents and has a distinct set of associated costs and benefits.

- ❑ Co-ordination and co-peration among industry participants is easier and less costly if forums for participant communication exist and if participants have access to reliable, relevant information and/or the technical expertise to gather such information.

- ❑ The longevity of contractual or collective agreements can be enhanced if a low-cost mechanism for monitoring behaviour and an arena for conflict resolution are available.

- ❑ Some form of credible commitment is often required to provide industry players with the assurances necessary to ensure participation. The existence of a critical mass can also have a positive influence on collective activities. An external agent can help in rallying together a critical mass of participants and can assist groups to develop institutional arrangements which create assurance and credibility.

- ❑ The role of the external agent as a facilitator of collective action involves assisting industry groups with: (a) the identification of the problems and the needs of the group; (b) the development of strategies to address these problems or needs; and (c) the mobilization of resources both from within and outside of the group.

- ❑ To be effective, an external agent acting as a facilitator requires: (a) credibility and fair mindedness; (b) a solid knowledge of the industry; (c) the ability to link this knowledge with an appropriate institutional arrangement; and (d) the ability to foster mutual trust and interdependence among participants.

- ❑ The services identified in this study as being beneficial to the development of industries can be provided by external agents other than the state. For example, firms in related industries can contribute to industry development initiatives by providing funding, technical expertise, and related experience. In fact such agencies and their agents can have an advantage over government agencies in that they can remain non-partisan, can act independently and may have access to a broader base of relevant information.

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CHAPTER 1

INTRODUCTION

The Canadian agricultural sector has experienced a number of major changes in recent years. The sector has witnessed significant market deregulation and a sharp decline in government support. Prime examples include the partial deregulation of transportation and handling, the removal of the "Crow" payment, the loss of direct support payments (such as GRIP), and the replacement of import controls with tariffs in supply-managed industries. At the same time, these changes have been accompanied by the rapid introduction of new technologies and significant shifts in the preferences and demographic make up of consumers. Many new agricultural products have been the direct result of technological advances, particularly in the area of food processing and genetic engineering. Consumers have influenced these developments by demanding and responding to an increased variety of foods and food products.

On the one hand these changes represent new opportunities for agricultural industries to develop and thrive; on the other, they impose significant challenges to development initiatives within agriculture. Industry development in today's agri-business environment entails going beyond the ability to respond to external changes; it requires that industry players become actively involved in shaping change and in seeking out and maximizing opportunities. That is, industry participants need to focus on offensive, rather than defensive, strategies—a daunting task in an environment characterized by complexity, uncertainty and limited resources. A solid understanding of the elements required for new industries to successfully develop and for established industries to adjust and thrive is required to begin to address these challenges.

OBJECTIVE

The objective of this study is to determine the role that external agents and organizations can play in fostering the development of agriculture-based industries. Industries develop in some situations and not in others. This research will test the hypothesis that industry development is more likely to occur when external agents (such as existing firms in related industries, governments, and industry development groups) provide services which encourage industry participants to coordinate their behaviour and work together to achieve development goals. Among these services are education, facilitation and information provision. These services are critical because they: (a) allow industry participants to address market failures which result from information asymmetry and differing interests; and (b) enable industry participants to exploit economies of scale and complementarities inherent in many development activities.

DEFINITIONS

Central to this study are the concepts of "agriculture-based industries", "external agents" and "industry development." Each of these terms are open to significant differences in interpretation. Therefore, it seems appropriate to introduce and define these terms as we intend to use them in this study and to distinguish these terms from concepts which are, in other contexts, viewed as analogous.

AGRICULTURE-BASED INDUSTRIES

Agriculture is often referred to as the "agricultural industry" with different product and commodity groups viewed as sectors within the industry. In this study we are interested in the development of specific agricultural products. We therefore refer to the activities involved in the production, marketing, and processing of a specific agricultural commodity or product as part of a particular agriculture-based industry. For example, we consider fallow deer producers, slaughtering house, meat cutters, packaging houses, and marketing agents as being a part of the fallow deer industry, which is a part of the specialty livestock sector which, in turn, is a part of the agricultural industry as a whole.

EXTERNAL AGENTS

We use the term "external agents" to refer to organizations and agents (which represent organizations) who may be in a position to provide services critical to the development of an industry. External agents are not active players within the industry itself; that is, they are not involved in the production, marketing or processing activities of a particular agricultural product. Such organizations include, but are not limited to governments.

While governments have frequently been held responsible for industry development in the past, external factors, such as global trade liberalization, and internal pressures, such as greater fiscal responsibility, have shifted this responsibility. Industry players are having to seek out other sources of expertise to help in their development efforts. Alternative sources for such expertise include firms in related industries (banks and credit unions for example), private consultants, community development organizations, universities, and other research facilities. Although a single agent of such organizations may be in a position to help industries develop, we will use the term "agents" to refer to a group of individuals who, from outside the industry, are able to influence and facilitate change within an industry.

INDUSTRY DEVELOPMENT

The concept of "industry development" is another term which is open to a broad range of interpretations. For the purposes of this study, one can think about industry development as occurring when the economic arrangements within the industry are changed to facilitate any activity which aids in stabilizing an industry. By stabilizing an industry we are referring to the activities involved in moving an agriculture-based industry from simply involving production to one which is characterized by elements such as well-defined markets, regulatory bodies, value-added, and ongoing product innovation.

The goal of industry development is to expand the market for a particular product or group of products. At least three approaches to expanding the market exist: increasing the demand for the product; increasing the supply of the product; and reducing the marketing margins.

The first approach is to raise the demand for a product, through efforts such as product differentiation or influencing consumers. Raising the demand for a product often involves targeting a specific group of consumers. As will be discussed below, demand expansion is not

always easy to accomplish. Free riding and other forms of opportunistic behaviour may occur between those involved in demand development. As well, if demand is enlarged but the industry is not able to fulfill that demand, customers may become discouraged and more hesitant to buy in the future. Thus timing of promotion becomes important in demand development. A new market or new group of consumers should be contacted only when the products are available to meet the new demand generated (Lysyshyn).

A second approach to enlarging an industry is for the industry to invest in primary supply expansion. Activities such as research and development lead to increased efficiency, thus allowing the primary supply curve to shift out or rotate outwards. If investment in primary supply expansion is successful, the industry is more efficient and supply will have increased. This approach to industry development has been used often in the past and may be the most commonly used of the three approaches. There are many examples where industry development has primarily consisted of production research. This emphasis on production research continues in many well established industries such as the grains, oilseeds and livestock sectors (Lysyshyn).

The third approach to industry development is drawn from the transactions cost approach of the New Institutional Economics (NIE). Transaction costs are those costs of doing business with other parties that are in addition to the price of the good, such as the costs of designing, monitoring and enforcing contract terms. Transaction costs vary from society to society, and possibly among individuals of a society, due to the differences in attitudes of people toward property and property rights. The risk and uncertainty that arises from the organizational relationships between participants are reflected in the cost of devising the terms of a contract. Oliver Williamson (1987), one of the major developers of
the transaction cost approach, contends that transactional considerations, not technology, are often the deciding factors in determining which method of organization arises and why. Therefore, since transaction costs can play a pivotal role in determining how an industry organizes, then transaction costs are also a factor in determining the size of an industry (Lysyshyn).

The idea that transaction costs are a factor in determining the size of an industry has been further elaborated by Prentice and Storey in an examination of the flaxseed market. Flaxseed is being “crowded out” in international markets due to competition from substitute products in production and in application. As a result of crowding out, the costs of marketing and processing

flaxseed are likely to rise relative to better established substitute products, partly because of relegating flaxseed to secondary crop status. As the costs rise so does the marketing margin. Consequently, the quantity demanded and supplied will decrease. Marketing margins, as used in economics, consist of the real costs of undertaking an activity as well as the transaction costs. All else being equal, large marketing margins result in a smaller industry and may even threaten the existence of that industry, while small marketing margins result in a larger industry. The paper by Prentice and Storey illustrates why transaction costs are important to the development of the flax industry. The implication of their model for this study is that wide marketing margins arising from large transaction costs among industry participants is a serious impediment to industry growth (Lysyshyn).

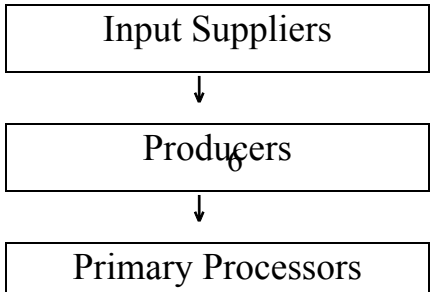
The third approach to industry development therefore focuses on lowering the transaction costs within the industry so that marketing margins throughout the product chain can be narrowed and thus allow an industry to expand. Reducing the transaction costs associated with an activity will decrease the marketing margin. The marketing margin depends not only on the real costs of undertaking activities, but also depends on the organizational relationships that exist between the participants. The magnitude of the marketing margin is affected by the transaction costs which in turn are influenced by how an industry organizes itself. Industry structures that allow free riding and hold-up among participants—these terms are defined later in the report—result in larger transaction costs and thus wider marketing margins. Reducing transactions costs is thus important to industry development (Lysyshyn).

The discussion of transactions costs makes it clear that industry development is often dependent on the ability of industry players to change their existing patterns of economic exchange. Alternatively, industry development requires that the institutional arrangements between industry participants are altered. In their book, *Institutional Change and American Economic Growth*, Davis and North define institutional arrangements as the arrangements which govern the ways in which economic players (firms or individuals) co-operate and compete with one another. The authors maintain that institutional arrangements can be either short term or long term arrangements, formal or informal, but they must be designed to either "provide a structure within which its members can cooperate to obtain some added income that is not available outside that structure" or "to provide a mechanism that can effect a change in laws or property rights to alter the permissible ways that individuals (or groups) can legally compete".

Davis and North note that both exogenous events (such as changes in technology, market size, regulatory environment, income expectations, relative prices and the flow of knowledge) and industry characteristics (such as the existence of economies of scale, market externalities, risk, and transaction costs) can provide opportunities for economic development and growth to occur. However, to exploit these opportunities, a change in institutional arrangements is required. Institutional arrangements may be altered by a single firm or individual or by groups of firms or individuals who are held together by either voluntary agreements or through government involvement (i.e., legislation).

In this study we are concerned with industry development initiatives which involve multiple (i.e., a group of) industry players. We therefore wish to make a clear distinction between industry development and firm development. Strategies to innovate and seek out profitable opportunities are clearly pursued by individual firms and these strategies can undoubtedly have a positive (or negative) impact upon the development of the entire industry, particularly in monopoly situations. However, many development opportunities require the coordination of multiple industry participants and cannot be achieved through the efforts of one player. Specifically we are looking at the ability of industry participants to work together to allow the industry to develop. For our purposes, industry development is distinct from firm development as it requires institutional arrangements which coordinate the actions of at least a subset of industry participants, rather than the decision process of an individual firm.

For example, consider the decision of a processing firm to expand its production operation by purchasing an additional processing facility. This decision is based on a combined assessment of the firm's resources and market opportunities. The transactions between the firm, the firm's customers and its suppliers are determined in the market, according to the price and the quality of service offered. This would be an example of a single economic agent altering the existing institutional arrangements within an industry—firm development. Contrast this process with one which involves a firm deciding to purchase a processing facility in partnership with other firms. The formality of such a partnership could involve a joint-purchase agreement or it could simply be based on informal delivery or purchase commitments from suppliers or customers. In this case, not only do market opportunities and available resources need to be assessed, but the activities and interests of the various firms involved must also be coordinated and some form of agreement must be achieved. This is an example of industry development involving a group of industry participants and requiring an institutional arrangement which recognizes their interdependence.



Institutional arrangements among industry players vary according to the needs and characteristics of the participants involved and the nature and maturity of their industry. However, one can think of these arrangements as occurring: (a) horizontally, along one level of the industrial chain; (b) vertically, between different levels of the industrial chain; or (c) in a combination of both horizontal and vertical links. Figure 1 illustrates the different levels along a typical market chain for agricultural products. Examples of horizontal arrangements intended to foster industry development include: the formation of a producer association to share production information; an agreement between processors to standardize packaging; or the coordination of breeding stock amongst suppliers to monitor genetic improvements. Examples of vertical arrangements include the formation of a co-operative processing facility by producers or a long-term supply contract between a producer and an input supplier.

In summary, this study is concerned with the role that external agents, such as governments and firms in related industries, can play in fostering industry initiatives which involve multiple participants working together to stabilize an industry and realize development opportunities which could not be achieved independently.

AN OVERVIEW OF OUR APPROACH

The approach taken to meet the objective of this study is composed of three parts. The first part consists of developing a conceptual framework from which to analyze industry development in agriculture. In the second part a series of case studies are presented. The third part completes the study by combining the theoretical framework developed in part 1 with the results from the cases in part 2 to identify the development barriers common to agricultural industries and to summarize the most effective role that external agents can play in helping industry participants to overcome these barriers.

In chapter 2 we discuss the process of development as it applies to agriculture-based industries. Specifically we discuss why the coordination of activities among multiple participants is important, and provide a framework with which to identify the types of activities which promote industry development. We also introduce “new institutional economics” (NIE) as the general approach used in formulating a conceptual framework.

Our analysis in chapter 3 concentrates on two of the salient themes examined by institutional economists, contractual uncertainty and collective action. Based on this analysis we illustrate how hold-up and free-rider problems can pose significant challenges to industry development by preventing industry participants from coordinating their actions. In chapter 4 we discuss how these problems can be overcome and how coordination among multiple, independent participants can be achieved. Two standard solutions are offered by the proponents of privatization on the one hand and centralization on the other are outlined. An alternative solution, that of participant-driven institutional change, is also discussed. In chapter 5 we discuss how external agents can encourage industry development by promoting and facilitating participant-driven institutional change.

Part 2 is the empirical component of the study. We begin in chapter 6 by outlining the development process characterizing two newly emerging industries in the specialty livestock sector—the wild boar industry in Saskatchewan and the fallow deer industry in British Columbia. Both industries face a common challenge in trying to develop and expand markets for meat.

Chapter 7 presents a case study of the seed potato industry in Alberta and Saskatchewan. The industry environment in both provinces is very different. This case outlines a broad range of activities that different external agents can undertake to foster both the development of an new industry and the expansion of an existing one.

Chapter 8 focuses on the development of New Generation Co-operatives in North Dakota. This new form of organization has been used by participants in numerous agriculture-based industries to address a variety of development goals. We examine how the organizational structure of the co-operatives and the external agents involved in the development process have contributed to meeting these goals.

In chapter 9, the final part of the study, we combine the conceptual framework developed in part 1 with examples from the case studies in part 2, to identify development barriers common to agricultural industries and to summarize the role that external agents can play in helping industry participants to overcome these barriers.

PART 1

CONCEPTUAL FRAMEWORK

CHAPTER 2

APPROACHES TO INDUSTRY DEVELOPMENT

In the previous section we defined industry development as occurring when a group of industry participants consciously work together to change their institutional arrangements to engage in coordinated, interconnected activities which provide positive benefits not achievable by individual initiative alone. This description of industrial development requires the coordination of decisions and actions of independent industry players.

THE NEED FOR COORDINATION

By focusing on the coordination of activities between multiple participants, we take a slightly different approach to industry development than is commonly found in the mainstream economic development literature. A large part of micro-economic theory has traditionally been devoted to describing and understanding the behaviour of independent individuals and firms. Theories which address the interaction and co-operation between multiple individuals and firms are relatively recent. It is therefore hoped that by applying some of these newer economic theories to the notion of industry development we can offer insights into alternative policy directions. Concerns regarding sustainable community development, the nature of the changes facing the agricultural sector, and an appreciation for economic efficiency in light of limited resources provide additional reasons why we focus our study on development initiatives involving multiple participants.

SUSTAINABLE COMMUNITY DEVELOPMENT

In recent years, the notion of development has changed dramatically to recognize the importance of social development in conjunction with economic goals (Gabriel). Concerns regarding the long-term health of communities and their economic sustainability have motivated many policy makers to look beyond fostering industry development through firm development (for example, through corporate tax breaks) and to demand a more "holistic" approach incorporating multiple participants.

Bryant distinguishes between two opposite approaches to development: an industrial development model and a community-based model. The industrial approach is characterized by a strong emphasis on attracting external sources of investment and business development to an area. At the extreme, it is oriented to marketing to targets outside the community and involves a narrow group of business and political interests with an emphasis on jobs and local tax generation. This approach therefore involves influencing the strategies of individual firms. In contrast, the community-based approach places emphasis on local sources of capital, business development, and entrepreneurship. This approach centres on the creation of an environment favorable to business and entrepreneurial development and involves a broad based group of community stakeholders in shaping integrated economic, social, and cultural development strategies. Analyzing industry development initiatives which involve multiple participants is therefore more consistent with a community-based approach to development.

SHIFTS IN AGRICULTURE

Many of the changes occurring in the agricultural sector have also resulted in greater emphasis being placed on the coordination and relationship between industry participants. Traditionally agriculture has been thought of as primarily the production and marketing of unprocessed generic commodities—i.e., farming. Money and physical assets were the prime source of power and control in this agriculture. Ownership of physical assets such as land, machinery and buildings provided much of the competitive advantage in producing those commodities and generally precluded most decisions of what to produce. Technological innovation played an important role in gaining a competitive advantage. Production decisions were customarily made independently of the buyers' requirements. The relationship between each of the sectors in the vertical system were often adversarial. Inherent with the adversarial relationships was the problem of price risk. In this traditional agriculture, information regarding the production or marketing of commodities was easily obtained from public bodies set up to dispense such knowledge (Boehlje).

The new or "modern" agriculture differs in a number of ways from traditional agriculture. Modern agriculture is viewed as including all aspects of the food production and distribution

system including the production of generic commodities. In modern agriculture, the customer plays a much more important role in this system. Production decisions no longer revolve solely around commodity production, but now include products with very specific attributes. Not only is technological innovation becoming more important in providing customers with specific products, but the information required for technological change is becoming increasingly proprietary. This proprietary information has become the main source of power and control in the new system. Further, competitive advantages are now arising from soft assets such as people, proprietary information and organization. As a result, changes in business relationships have occurred. The adversarial relationships are giving way to partnering with suppliers and buyers, resulting in the system becoming more interdependent. With the growing interdependence, risk is shifting from price risk to relationship risk (Boehlje).

ECONOMIC EFFICIENCY

Underlying many of the changes in agriculture are concerns regarding efficiency of the entire system rather than each sector. The presence of economies of scale and scope as well as complementarities makes coordination among multiple participants an important consideration when the resources of individual players are limited.

ECONOMIES OF SCALE AND SCOPE

With many production technologies, as a firm's output is increased, the long-run per unit cost of production decreases. These cost savings, or economies of scale, are principally due to the fact that machinery, equipment, and design ideas are indivisible, particularly when multiple processes are linked together. The set-up and operating costs of machinery and equipment also often increase at a slower rate than the capacity of these items. Economies of scale can also be realized if a larger size operation enables the application of superior technologies, allows for a more effective organizational structure, or makes the use of specialized labour and capital equipment feasible. Many industry activities outside of production, includeing marketing, distribution, processing, financing, and management also exhibit inherent economies of scale.

Economies of scope refer to the cost savings which can be attributed to the multi-product production focus of a particular firm. If economies of scope exist, then the costs facing firms producing a single product will be higher than those facing a diversified firm producing numerous

products. This is a result of savings in large-scale distribution, advertising, and purchasing for example.

The existence of economies of scale and scope have often been associated with the minimum efficient size of a firm. Alternatively, economies of scale and scope can be seen as having an important influence on the minimum amount of resources necessary to efficiently engage in activities which would develop an industry. Given that industry participants are rarely equally endowed with the resources relevant to development activities, such as establishing marketing and processing facilities, economies of scale have important implications for the level of coordination required to achieve development goals.

COMPLEMENTARITIES

A notion related to economies of scope is that of complementarities. Complements denote not only the traditional *relation between pairs of inputs* but the term is also used to describe the *relation among a group of activities*. The defining feature of complement groups is that if the level of any subset of group activities is increased, then the marginal return of any or all remaining group activities will also increase. Similarly, if the marginal costs identified with some group activities fall, it will be optimal to increase the level of all group activities (Milgrom and Roberts). Like economies of scale and scope, complementarities can
be thought of as existing both within an individual firm and within an industry as a whole.

Milgrom and Roberts examine the impact of complementarities within a firm. They conclude that complementarities are an important factor in the transformation of a number of traditional mass production firms into flexible multi-product firms and can explain how many of the changes occur in the transformation process. A number of manufacturing firms have been adopting new technology and organizational methods as part of a total restructuring to become more competitive. Two significant results from the restructuring have been the widening of product lines and the increased emphasis on quality through continual product improvements and new product introductions. To increase their competitiveness, these firms find it necessary to totally restructure through large scale and coordinated changes in all of the firm's activities. Small uncoordinated adjustments in each of the firm's activities have not been able to produce the gains in efficiency those firms seek (Milgrom and Roberts).

Incorporating a number of changes among complementary activities requires extensive and explicit coordination for the changes to be successful. Furthermore, close coordination will be required on an ongoing basis if the initial gains are to be sustainable. This insight is supported by the observation that many technologically advanced firms contain a cluster of mutually complementary characteristics that tend to be adopted as a package, thus making those characteristics even more attractive to the firm (Milgrom, Qian and Roberts).

Complementarities have also been modeled at the economy wide level (Durlauf). Durlauf develops a model to demonstrate how local technological complementarities and incomplete markets can interact over time to affect the aggregate behaviour of the economy. Depending upon the strength of the complementarities, numerous growth paths of the economy can emerge. Durlauf maintains that the expansion of a leading industry (one which trades with all other industries) will induce all of the industries to a higher sustained level of production, implying that complementarities have a sequential characteristic about them. By expanding the leading industry's output, it is likely that production costs would decline and in turn reduce input costs for all other industries. The reduced input costs for other industries will, through the sequential complementarities established among local linkages, induce a sequence of local demand spillover effects that precede an economy iterating to a high production level.

The existence of complementaries raises important considerations regarding the development of industries, particularly the efficient timing and sequencing of development activities. If complementarities exist amongst a group of development activities, and these complementarities have a near simultaneous nature, industry participants should undertake a number of mutually complementary activities within a very short time frame to achieve the most efficient solution. On the other hand if complementarities between development activities have a sequential characteristic to them, such as those proposed to exist within the economy as a whole, then the order in which these activities are undertaken will be important. However, regardless of the particular nature of the complementarities themselves, if complementarities exist among industry development initiatives, some coordination among the various participants is desirable from an efficiency standpoint.

Each of the reasons cited above highlight the need for coordinated action among multiple participants in achieving industry development goals. Standard neoclassical economics suggests that economic agents will co-ordinate their actions and engage in industry development activities whenever the benefits from doing so outweigh the costs. Under this assumption, there is little room for external agents to facilitate industry development as this is handled most efficiently by prices and the market.

However, empirical evidence does not appear to support these assumptions. There exist many real world examples where, regardless of the potential net gains, individuals and firms are not able to coordinate their activities to take advantage of these gains. Many examples also exist where external agents have played a critical role in industry development (Fairbairn, et. al.). Therefore, despite the impressive achievements of neoclassical economics, it has become clear that its application to issues such as economic development is limited (North (1994), Nabli and Nugent). Why does traditional neoclassical theory fail in these cases? What are the barriers which limit players' abilities to innovate and take advantage of potential gains? To answer the first question, we examine the assumptions upon which the traditional neoclassical framework is built. To begin to answer the second question, we turn to an alternative framework which has its roots in neoclassical theory, but is built upon a different set of assumptions.

To facilitate the understanding of production and exchange, traditional neoclassical models are based on several important assumptions, such as frictionless trade, commodity goods, and unitary, profit-maximizing firms. Economic actors are assumed to be inherently rational: they maximize their utility, have perfect information and an unlimited ability to process this information when making decisions. In essence, neoclassical economists assume that the problems associated with forming, developing and maintaining institutional arrangements (the rules economic actors use to relate to one another) are solved (Calvert). Based on these assumption, economies are characterized by efficient markets and economic agents are deemed inefficient if profitable opportunities slip by them.

Contrary to the assumptions of neoclassical theory, the bulk of real-life economic behaviour is complex and is characterized by uncertainty, differentiated products, and multiple

interdependent agents with different long-run interests. Information is costly, and the information-processing capabilities of economic agents are limited. Therefore, the institutional arrangements that agents use to interact with one another and coordinate their activities is a critical component in understanding economic behaviour, and hence, industry development. New institutional economics (NIE) represents an attempt to modify and extend neoclassical theory by incorporating the concepts of institutions and institutional arrangements into economics. Alternatively, NIE is concerned with how economic agents coordinate their actions.

> *"NIE, which derives from the work of Ronald Coase, Douglass North and Oliver Williamson, does not fundamentally challenge the precepts of neo-classical economics but criticises it for failing to explain the nature of institutions and the role they play in supporting the existence and operation of markets. Institutions exist as a means of reducing transaction and information costs so that markets can operate with the kind of fluidity and efficiency projected in the neo-classical model" (Stein, pg. 111).*

To effectively examine relations between economic actors and how these relations are developed, new institutional economists drop one of the basic precepts of neo-classical models—inherent rationality. As North (1995) puts it, "what (NIE) retains and builds on is the fundamental assumption of scarcity and hence competition—the basis of the choice theoretic approach that underlies micro-economics. What it abandons is instrumental rationality—the assumption of neo-classical economics that has made it an institution-free theory (pg.17)." In place of inherent rationality, new institutional economists substitute the assumption of bounded rationality: economic players are intendly rational, but are limited in their efforts by incomplete information and imperfect information processing capabilities. Therefore, although economic players are assumed to base their decisions on the relative costs and benefits which result, they are limited by their inability to correctly predict and calculate these values (Ostrom, et. al.).

Dropping the assumption of inherent rationality enables institutional economists to study a range of issues associated with uncertain and complex situations where market information does not flow freely and where economic actors, in pursuing their self-interest, make decisions and interact with other agents strategically. It is these types of situations which best describe the problems associated with economic and industry development (North, 1994; Toye). Thus, a

central component of our analysis concentrates on some of the more salient problems analyzed by new institutional economists. In the following chapter we examine the implications of bounded rationality, imperfect information, uncertainty, and strategic behaviour on the ability of industry participants to coordinate their actions to undertake industry development initiatives.

CHAPTER 3

THE CHALLENGES

In the previous chapter we introduced New Institutional Economics as a branch of economics which is concerned with institutional change and the development and maintenance of institutional arrangements. Unlike neo-classical approaches, NIE tries to take into account the strategic behaviour of firms and individuals in situations where the incentives and information generated by competitive markets cannot be guaranteed (Ostrom, et. al.). Because we are concerned with initiatives which involve the coordination of multiple participants and which are designed to stabilize agricultural industries, we are also concerned with institutional arrangements under conditions of complexity and uncertainty. In this chapter we draw on some of the principle themes in NIE literature to examine in greater detail some of the challenges involved in changing institutional arrangements, and hence, undertaking industry development initiatives.

Rather than being composed of a single body of literature, NIE represents the "culminating intersection of a number of different lines of investigation" many of which cross over multiple disciplines including history, sociology, political science, psychology, law and, of course, economics (Nabli and Nugent). In their paper, "*The New Institutional Economics and Its Applicability to Development*", Nabli and Nugent note that while there is as yet no consensus on what is included in the NIE, two broad and complementary sets of problems feature prominently—those associated with contractual uncertainty, namely information and transaction costs, and those associated with collective action.

Throughout this chapter we will be using the example of a hypothetical industry—the dodo bird industry—to illustrate some of the challenges associated with industry development. Let us assume that the dodo industry is located across Saskatchewan and is characterized by several small producers and one large producer (who first manipulated the DNA to clone dodo birds). The industry is still young and producers have up to this point been producing solely for breeding stock. The industry is on the verge of developing a market for dodo meat in South East Asia.

PROBLEMS OF CONTRACTUAL UNCERTAINTY

Implicit or explicit contracts represent a common form of institutional arrangement used to coordinate the activities of multiple industry participants. Such contracts specify the activity undertaken, the contribution of each member, and the consequences of not meeting the obligations specified (Ostrom et. al.). The problems of contractual uncertainty focus on the difficulties involved in achieving such contracts and in continuing to coordinate activities after a contract has been reached. The approaches used to address these problems are not embodied in one unified theory, rather they cover several different, but interrelated concepts. In a recent study examining approaches to infrastructure development in lesser developed countries, Ostrom, et al. group these concepts into two broad categories: a) information costs and asymmetries; and b) transaction costs. We use this framework to describe and outline the relevance of these concepts to industry development in agriculture.

INFORMATION COSTS AND ASYMMETRIES

INFORMATION COSTS

Using a new institutional approach, we assume that individuals are boundedly rational and that information is costly to acquire. Because different types of information are required for contractual agreements, we can therefore expect that the parties involved will incur some costs to access this information. In some cases the information costs associated with contracting can become significant barriers to industry development initiatives.

Information costs associated with contractual agreements can be classified as *ex ante*, costs expended in the process of achieving an agreement, and *ex post*, the costs incurred to continue coordination after an agreement is achieved. Ostrom, et. al. define *ex ante* costs as being largely coordination costs which consist of the time and resources associated with:

1. obtaining the relevant information needed to plan any long-term project
2. communicating with all relevant parties.
3. negotiating agreements among participants who may have different preferences, resources, and information.
4. making side-payments to gain the agreement of those who oppose a particular undertaking.

Examples:

1. *The time and resources expended by at least one of the parties involved in identifying a market opportunity for dodo meat in South East Asia and the costs incurred to undertake a feasibility study to determine potential demand and optimal supply.*
2. *The resources allocated towards identifying, contacting and informing potential producers and buyers of dodo meat. These costs are very high in this case as the producers are situated across Saskatchewan and the buyers are in South East Asia, causing significant coordination and communication difficulties.*
3. *Because the potential buyers and producers have different ideas on the type and quality of product to be exchanged, additional costs are incurred to determining the exact quality specifications upon which both parties can agree on.*
4. *All of the small producers commit to supplying all of their mature birds to meet the needs of S.E. Asian market. However, even with this commitment, the buyers are reluctant to sign a contract. Additional supply is required for the buyers to offset the shipping costs and still make a profit. To come up with the extra production, the small producers need to convince the one large producer to join the contract by offering her a premium.*

Ostrom et. al. define *ex post* costs as being a result of the inability for participants to account and plan for all future contingencies. Therefore, *ex post* costs consist of the time and resources associated with:

1. monitoring the performance of participants
2. sanctioning and governance costs
3. renegotiating when the original contract is no longer adequate.

Examples:

1. *The cost of hiring a dodo inspector (to ensure the quality of the birds) and an accountant to audit financial records.*
2. *The stipend paid to one of the producers to govern the on-going relationships among the contract participants.*
3. *The original supply contract for dodo meat has to be renegotiated at considerable expense after six shipments due to the popularity of dodo meat.*

INFORMATION ASYMMETRIES

In 1945 von Hayek proposed that individuals use two types of information in their decision-making process: time and place information and scientific knowledge (Ostrom, et. al.). Time and place information is the knowledge one posses regarding a specific circumstance. Nearly every individual possesses a unique body of time and place information which is based on their individual experience and their familiarity with local conditions. Scientific knowledge, on the other hand, is based on "the regularities of relationships among key variables, rather than the particular state of those variables in a specific context (Ostrom, et. al. pg. 50)." Both types of information can be important ingredients in designing appropriate industry development strategies. Local knowledge is crucial in determining the challenges and opportunities facing an industry. Most development initiatives can also benefit from the application of scientific knowledge, such as the application of organizational models and technical knowledge developed outside of the industry. However, making the two types of information available to all of the participants involved can pose significant problems. Time and

place information is by definition difficult to aggregate and disperse. The communication of scientific knowledge can often be difficult due to differences in education (Ostrom, et. al.).

> *The production of dodos represents a unique blend of time and place information and scientific knowledge. Each of the individual producers are very familiar with the physical and social setting of their farming operations. Examples of the types of time and place information used in production include knowledge of the environmental characteristics of their farms and the financial, physical, and human resources available. Examples of the scientific knowledge used in production includes general information on breeding techniques, feed ratios, and veterinary care conveyed to producers at agricultural colleges, through extension agents, or by experience.*

In addition to the costs involved in acquiring the information necessary to achieve a contract, problems can also arise due to the different types and information participants have available to them. Information asymmetries complicate efforts to achieve agreements as parties base their decisions on different interpretations of the contract terms. These differences are particularly important when integrating time and place information with scientific information to undertake long-term industry development initiatives.

> *Through market research it is discovered that South East Asians will pay a premium for dodo meat which turns light pink when cooked (much like salmon). This color can no longer be achieved "naturally" as a result of the cloning process. Producers must therefore add a supplement to dodo feed to achieve this effect. However, the buyers of the dodo meat have no way of telling whether or not they have purchased "pink" or "white" meat until it is cooked. Therefore, significant information asymmetries exist between the producers and the buyers of dodo meat regarding product attributes.*

Assuming that individuals are bounded rationally draws attention to the significant obstacles which are associated with the information required in contracting activity. It is not surprising therefore to find that significant obstacles to industry development are associated with acquiring

and disseminating relevant information among parties. These obstacles can become even greater when the assumption of bounded rationality is paired with an assumption of self-interest-seeking, or opportunistic, behaviour. The latter assumption allows for economic agents to selectively disclose and distort information in an effort to improve their well-being. Opportunistic behaviour can range from purposeful, calculated fraud (guile), to unconscious shirking. When parties to an agreement behave opportunistically they are expected to take advantage of the terms of the agreement to further their own self interest.

TRANSACTION COSTS

The potential for opportunism lies at the heart of transaction costs theory as developed by Oliver Williamson. Williamson (1989) maintains that certain features of transactions can give rise to potential opportunism and that it is this potential which determines the level of transaction costs associated with a particular agreement. In situations where transactions costs are high, it will be more difficult (costly) for industry players to contract successfully. Hence, the degree to which industry participants engage in development activities will be limited by the level of transactions costs involved. Three aspects of transactions which can raise the potential for opportunistic behaviour, and therefore bear on the level and nature of transaction costs are: uncertainty, frequency, and asset specificity (Williamson, 1989).

UNCERTAINTY

In complex situations involving a high degree of uncertainty the transaction costs approach suggests that the "incompleteness" of contracts provides incentives for opportunistic behaviour. As mentioned previously, contractual uncertainty can be the result of limited, costly, or asymmetric information. When information is limited, it is very difficult, if not impossible, to anticipate all of the possible contingencies for each of the parties. Even for those contingencies which can be foreseen, it is frequently costly to include provisions
for all of them within a specific agreement. If the information regarding the likelihood of a particular set of outcomes is asymmetric, the opportunist may use this information to his benefit at the expense of others involved in the agreement.

Uncertainty can also include the difficulty involved in measuring the contribution of each of the contracting parties. If resources are scarce and monitoring is difficult, incentives exist for

individuals to shirk on their contribution and free-ride on the contributions of others (discussed in further detail later). This type of opportunism can reduce the amount of, or potentially eliminate, mutually productive industry activities.

FREQUENCY

The frequency with which transactions reoccur can also influence the level of transactions costs, not so much in terms of magnitude but in terms of relative costs. If a transaction reoccurs frequently, the parties to the agreement have an incentive to construct governance structures to address specific uncertainties within the contract, since the cost of investing in these structures can be amortized over several transactions. However, in cases where a transaction occurs infrequently or only once, the cost of building a specialized contract is relatively more expensive, resulting in an incentive to use generalized governance structures which may not be well suited to the particular transaction.

ASSET SPECIFICITY

The potential for exploitation within a contract is particularly significant for those parties who own specific assets. Asset specificity refers to the degree to which a particular asset can be redeployed for an alternative use without a loss in productive value (i.e., the degree to which the cost of the asset is a sunk cost). Asset specificity can take many forms, including the following five: (1) site specificity, where assets are located within close proximity to take advantage of lower transportation costs for example; (2) physical asset specificity, where an asset is required for a particular production process; (3) human asset specificity, referring to personal knowledge (i.e., time and space information) gained through “learning-by-doing”; (4) dedicated assets, which are discreet investments allocated to a particular customer; and (5) brand name capital (Williamson, 1989). In each case, the owner of the asset has the potential to become “tied” to another party (or parties) involved in the trade of the productive activity generated by the specific asset. Therefore, in situations where power imbalances exist between agents due to asset specificity, transactions costs are expected to be significant.

The Dodo Cloning Institute (DCI) has developed a feed supplement for dodo birds which will result in a pink coloured meat, when cooked, as opposed to white. Because the supplement is only useful when fed to dodo birds (it reduces feed efficiency in all other fowl), this feed is an example of a specific physical asset.

THE HOLD-UP PROBLEM

An important contribution of transaction costs theory is the recognition that the features of transactions which give rise to potential opportunism have important ramifications on both *ex ante* and *ex post* contracting behaviour. Despite the potential for increased economic returns, individuals or firms are less likely *ex ante* to negotiate agreements to undertake activities which involve high transaction costs because of the increased potential to be exploited *ex post*. This type of market failure (the failure of the market system to achieve optimal results) was first emphasized by Klein, Crawford, and Alchian
and is often referred to as the "hold-up problem".

The hold-up problem centres on the potential for *ex post* hold-up—whereby parties to an agreement worry about being forced to accept disadvantageous terms once they have committed to transaction specific investments—due to high transaction costs. Based on Koss and Eaton, a hold-up problem involving asset specificity can be modeled in the following way.

Consider the following potential transaction, T: in stage 1, parties, A and B, are considering joint investments I_A and I_B in assets specific to the production of good X. The return from these investments is R. It is assumed that $R > 0$ and that both parties know with certainty the value of R. *Ex ante* efficiency considerations dictate that the investments I_A and I_B should be made if $R \geq I_A + I_B$. It is assumed that $R > I_A + I_B$.

In stage 2, each party must decide whether to complete the exchange of good X under transaction T, or to employ their investments in the next best alternative exchange. The (*ex post*) opportunity costs from the (*ex ante*) investments in I_A and I_B, or alternatively the returns received in an alternative transaction, are denoted by C_A and C_B respectively. Therefore, if an

alternative productive use for the investment in I_i exists, $C_i > 0$. If, however, the investments in I_i are purely specific to the production of X, no alternative use exists and $C_i = 0$. *Ex post* efficiency considerations dictate that the transaction T should be undertaken, rather than the next best alternative, as long as $R > C_A + C_B$. Since $C_i < I_i$, $R > C_A + C_B$.

Given that *ex ante* investments I_A and I_B have been made, the incentive to complete the transaction T in stage 2 depends upon the division of the *ex post* returns from the transaction. It is assumed that the parties A and B split the net returns, R, based on a Nash bargaining solution. The Nash theory of bargaining implies that the parties will equally divide the *ex post* gains from trade. Therefore, the *ex post* returns in this model are divided such that:

$$R_A = C_A + \theta/2$$

$$R_B = C_B + \theta/2$$

where $\theta = R - C_A - C_B$, and θ_i (i = A,B) represents the parties' share of *ex post* returns. The above equations define each parties' *ex post* return from the transaction: party A must receive at least the amount C_i in order to complete the *ex post* exchange; in addition they receive half of the *ex post* returns.

By substituting, we arrive at the following two conditions which are necessary in order for each of the parties to agree to the transaction and undertake the initial investments of I_A and I_B: the real returns in excess of each parties' *ex ante* investments, N_A and N_B, must be positive. That is,

$$N_A = R_A - I_A = C_A + \theta/2 - I_A = C_A + \frac{(R - C_A - C_B)}{2} - I_A \geq 0$$

$$N_B = R_B - I_B = C_B + \theta/2 - I_B = C_B + \frac{(R - C_A - C_B)}{2} - I_B \geq 0$$

Now consider the effect of reducing party A's *ex post* opportunity cost, C_A (or in other words increasing the asset specificity of I_A). For each one unit reduction in C_A, R_A falls by one-half ($\partial R_A / \partial C_A = 1/2$). This is because the returns from transaction T are divided according to a Nash bargaining solution achieved once the initial investments have been made. Hence, the lower R_A is due to the lower relative bargaining power A has in stage 2. This lower bargaining power stems from the fact that A's investment has a higher degree of asset specificity. Because the value of A's asset in another use has been lowered, A is forced to accept a lower amount for the product produced and sold to B. The smaller is C_A the less likely it is that θ_A, party A's share of *ex post* returns from the transaction, will cover the initial investment (I_A) due to A's drop in relative bargaining power. In an *ex post* environment where the investment I_A has been made, A would choose to complete the transaction
in order to minimize its loss on the initial investment I_A. However, if we assume that both parties have correct information regarding the *ex post* outcome, then A will recognize the potential for *ex post* opportunistic behaviour by B and will be unwilling to undertake the investment in the first place. This hold-up of the investment is considered a form of market failure since the return from the production of X is greater than the investment required, that is $R > I_A + I_B$, but the incentive to invest is negated due to high transaction costs imposed by asset specificity.

The current price being offered for "pink" dodo meat is $50/kg, $20 more than the $30/kg price for "white" dodo meat. The cost of the feed supplement—including development costs—works out to $10/kg. Therefore the opportunity for exchange is a profitable one. However, the potential for opportunistic behaviour amongst participants is also high. A number of hold-up problems exist:

- Example of a hold-up due to asset specificity:

The research and development costs associated with developing the feed supplement are very high. The feed supplement also only works for dodos so it has no resale value outside of the industry. DCI is afraid that once the supplement is produced, those interested in buying it will refuse to pay the high price necessary for DCI to recover its development costs.

- Example of a hold-up due to information asymmetry:

> *Because the buyers of the dodo meat have no way of telling whether or not they have purchased "pink" or "white" meat until it is cooked, they are reluctant to pay a premium price up-front for pink meat. Producers do not want to produce "pink" dodo meat without an up-front commitment from the buyers for fear that the price will drop below $40/kg once they have purchased the supplement.*

> *As a result of these problems, agreements between DCI and the producers and between the producers and the buyers cannot be achieved. The premium market for dodo meat remains undeveloped.*

PROBLEMS WITH COLLECTIVE ACTION

In addition to providing insight into the complexities involved in contractual agreements, the recognition that economic agents are boundedly rational and therefore engage in strategic behaviour under conditions of complexity and uncertainty has also contributed significantly to our understanding of the problems associated with collective action—coordinating the activities of multiple agents to achieve a common benefit. Specifically, it has brought to light the paradox that occurs when individuals, acting in their best interest, make rational behavioural decisions which ultimately result in an outcome which is not cumulatively rational or in the collective interest.

Much of the literature associated with collective action focuses on the difficulties involved in the provision and management of open access goods. Open access goods are goods where the quantity supplied to any one individual cannot be independently varied due to the high costs associated with excluding people from using or benefiting from the provision of the good. Two types of open-access goods are collective goods and common pool resources.

COLLECTIVE GOODS

Public or collective goods are goods where: (a) the costs associated with limiting access to them are high; and (b) where one individual's consumption of the good does not affect the consumption of the same good by another individual. Hence, a collective good can only be supplied collectively to groups of people. Typical examples of collective goods are public weather forecasts or public security.

In his much quoted work *The Logic of Collective Action*, Olson argues that although all the members of a group may have a common interest in obtaining a collective benefit, they have no common interest in paying the cost of providing collective goods. He states that "rational, self-interested individuals will not act to achieve their common or group interests" (p 2, Olson) unless coercion is used or incentives are developed to make individuals act in the common interest. This argument is based on the free rider hypothesis—the assumption that individuals are self-interested and, since everyone receives the benefits from the good whether they contribute or not, they will therefore prefer that others contribute to the provision of collective goods rather than contributing themselves. Olson concludes that small groups will provide suboptimal amounts of collective goods and larger groups will provide little or none. Hence the larger the group the greater the need for coercion and the higher the costs of developing appropriate incentives to encourage individual investment.

Many industry development activities share similarities to collective goods. For example, one way in which industries can be developed or stabilized is through increased market activity. Greater marketing activity can be stimulated through improved production and distribution efficiency, improved product quality, increased promotion and by meeting the needs of the consumer more effectively and efficiently (Kotler and McDougall). While these activities are often undertaken at the firm level, efforts to increase market activity on an industry wide level, such as through generic advertising campaigns or research and development, are often hampered. Economic agents are often reluctant to pay for industry development activities that are not clearly for their own benefit, and which may provide greater benefits to others in the industry rather than themselves.

Examples of Collective Goods

1) Dodo producers across the province recognize the importance of educating consumers about the benefits of dodo meat, such as the superior flavour. An education campaign highlighting these attributes is an example of a public good — the entire industry would benefit, regardless of whether or not they contributed resources (such as organizational talent or finances) to the campaign.

2) Dodo bird producers decide that the best way to stabilize the industry and develop the market for meat is to establish a set of quality standards. The standards will be publicly available to provide a clear indication to consumers of the different cuts and grades of dodo meat available. The standards also enable producers to discriminate between the different markets (such as high-end restaurants, retail grocery chains, and dog food manufacturers). Again, once established, all producers will be able to make use of the quality standards, regardless of whether or not they contributed to the establishment of these standard. Hence, industry standards are collective goods.

COMMON POOL RESOURCES

Another form of open-access goods are common pool resources (CPRs). New institutional economists refer to a common pool resource as a "natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use (Ostrom, pg. 30)." Resource systems are thought of as systems which, when managed properly, can produce a flow of resources which can be appropriated from the system without harming the system itself or its productive capacity. Some common examples of resource systems are fishing grounds, grazing areas, and irrigation canals. The respective resources produced by these systems and appropriated from them are the fish harvested, the grass consumed as animal forage, and the water withdrawn.

A resource system can be provided, produced, and appropriated by a single individual or by groups of people. However, the individual resource units produced *cannot* be used by more than one individual. For example, the fish caught by one boat are no longer available for another boat. Therefore the resource units produced by a CPR cannot be used jointly even though the CPR itself can be used jointly. Furthermore, because of the high costs involved in excluding people

from using the system, if the CPR is enhanced in some way, everyone who uses the system benefits from these enhancements (Ostrom).

These features lead to two general problems concerning CPRs. First, as a result of the difficulties arising from excluding people from benefiting from either good, both CPRs and collective goods share the free rider problem (Ostrom). However, unlike collective goods, the issues associated with managing and governing the use of common pool resources are also critical, since one person's use of the good influences the ability of others to use it. In contrast, those who provide a collective good do not theoretically care about who uses the good or how the good is used. Therefore the second general problem regarding CPRs focuses on how to manage the resource and its users to avoid individuals from negatively affecting the productivity of the entire system.

The problems associated with common pool resources were popularized by Hardin in his article "*The Tragedy of the Commons*." Hardin uses the example of common grazing grounds to illustrate how, if each herder is trying to maximize his profits without consideration of his behaviour on the cumulative wealth of all those who benefit from the pasture (i.e., the village), the grounds will become overgrazed and the well-being of the entire village will suffer. This is because the individual herder makes his decision regarding his use of the pasture based on the direct benefits he receives from grazing his cows on the land. The herder's decision represents only a portion of the full costs associated with this behaviour. What has been left out of this decision is the fact that the marginal cost associated with grazing an extra cow will reduce the output from all other cows. Hence, as the herder is not bearing all of the costs associated with grazing his cows on the common pasture, a negative externality exists. The term externality refers to the costs or benefits of an economic decision which are not born by those involved in the decision-making process.

In the context of agricultural industry development, an example of a good which shares similarities with common pool resources is a pool of funds collected through a check-off system and dedicated to market development activities. Such check-off systems typically face two recurring problems: how to get producers to contribute to the pool (since there is an incentive for people to free-ride on the contributions of others) and how to manage and govern the use of the pool (since the money used for one form of activity will not be available for another). Industry reputation is another example of a good which is similar to a common pool

resource. In order for an industry to build up a positive image, producers must recognize their inter-dependence, since independent actions by a single producer can have a significant impact on the entire industry.

The above examples differ from CPRs in the traditional sense, because tangible resource "units" are not produced. Also, like collective goods, one person's "use" of an industry's reputation or of market development does not limit the "use" of these goods by another person. However, it is important to note that many industry development initiatives share attributes with common pool resources, in that the behaviour of individual agents can have a positive or negative impact on the entire industry and, as a result, the success of such initiatives.

> *In the past, a number of dodo producers tried to develop a domestic market for meat by selling into white-tablecloth restaurants. The producers were very careful to ensure that the quality of meat delivered to these restaurants was exceptional. Slowly the market began to take hold. Unfortunately the market was lost when producer X, looking to get out of the dodo business, sold his spent hens to a well known, high-end restaurant. The chef, who had previously tried dodo meat on her menu, was outraged to find that the meat was not of the standard she had come to expect. To ensure that other restaurants did not make the same mistake, the chef wrote an article denouncing dodo as a meat of inconsistent quality. The domestic market for dodo meat dried up immediately after the article appeared in "*Western Chef*" magazine and several well-read newspapers.*

THE FREE RIDER PROBLEM

At the centre of the problems associated with open-access goods lies the free rider problem which stems from the inability to exclude both contributors and non-contributors from the benefits associated with these goods. Free riding is defined as the choice not to contribute to a common effort, but still benefit from the efforts of others. Olson and Hardin outline three possible consequences of free riding: (1) if everyone free-rides, a collective benefit will not be produced; (2) if only some individuals free-ride, and others do not, or if all individuals partially free ride (referred to as shirking), the collective benefit will be produced but at a less than optimal level; and (3) if the temptation to free-ride dominates the decision process of all of the individuals involved, everyone may end up in a situation where no one wanted to be (Ostrom). This last

consequence of free riding has been formalized by game theorists as a prisoner's dilemma (PD) game.

In a PD game each player:

- is aware of the payoffs associated with the outcomes of all players decisions;
- faces a dominant strategy, meaning that each player has the same optimal choice independent of the choice of the other player
- cannot communicate with the other players.

The example often used as to describe the PD game is the interrogation of two prisoners, prisoner A and B, who were partners in a crime. The prisoners are being questioned in separate rooms by the police who do not have sufficient evidence to convict them of the crime. Each prisoner is given two choices, to confess or deny the crime. If only one prisoner confesses to the crime, the confessor will sentenced to 6 months in jail in return for providing state evidence, while the other prisoner will receive 6 years. If both prisoners deny being involved they will both be sentenced to one year on a lesser charge. If both prisoners confess they will both be sentenced to 3 years.

The strategic decisions facing the prisoners in the PD game can be modeled using a game matrix:

		Prisoner B	
		Deny (Co-operate)	Confess (Defect)
Prisoner A	Deny (Co-operate)	(1,1)	$(6, \frac{1}{2})$
	Confess (Defect)	$(\frac{1}{2}, 6)$	(3,3)

The entry in the box corresponding to the first row and the second column, (Deny, Confess), indicates that if prisoner A denies the charges and prisoner B confesses, prisoner A will receive the full sentence of six years while prisoner B will receive a reduced sentence of six months. The optimal solution for both prisoners would be (Deny, Deny).

However, the dilemma that occurs is that each prisoner faces a dominant strategy (the greatest incentive) to confess to the crime, or alternatively to defect from the co-operative strategy of (Deny, Deny). The end result is that both players play their best individual strategy and end up being sentenced to 3 years in jail. This outcome makes both players worse off than if they had coordinated their actions and acted for the common good, rather than following their own self-interest.

An example of the prisoner's dilemma in the context of industry development:

To help stabilize their industry, the Dodo Producers' Association publishes a price list corresponding to particular cuts and grades of dodo meat. Producer X and producer Y live in the same area and both make farm-gate sales into the same local market. The pricing scheme proposed by the Association is voluntary. Hence, both producer X and product Y face two choices:

(a) to price their meat according to the price list, or

(b) to sell their meat below the list price.

If both producers choose (a), they will be able to sell 50 birds a week, netting a return of $300. If one producer chooses (b),and the other producer chooses a), the former will be able to sell 90 birds a week, netting a return of $450, while the latter producer will only be able to sell 10, with a return of $60.

Both producers understand the consequences of their actions, but decide to sell their birds below the list price. As a result they both end up making $250 each; $30 below their weekly cost of production.

A year later both producers X and Y are forced to sell their dodo operations at a loss.

SUMMARY

Many development activities have: inherent economies of scale associated with them; may be complementary with other activities; and share similarities with collective goods and common pool resources. These attributes, combined with the reality that industry participants are not equally endowed with the resources required to undertake development activities, highlight the need for industry participants to change their institutional arrangements and coordinate their activities to take advantage of development opportunities.

However, as was outlined in this chapter, two sets of problems can pose significant barriers to the coordination of economic activities among multiple participants. The difficulties associated with contractual uncertainty highlight the problems involved in coordinating behaviour when: (a) information is limited, costly or asymmetric; and (b) transactions costs are high and the potential for *ex-post* hold-up is great. Furthermore, the problems associated with collective action illustrate the difficulty in coordinating behaviour when individuals face an incentive to free-ride, particularly when securing or managing open access goods. Both sets of problems point to market imperfections which can lead to market failure —a situation where the best attainable outcome is not achieved. In other words, certain factors (such as costly and asymmetric information, differential market power, and negative externalities) can cause the market to fail in coordinating the economic decisions of independent industry participants, therefore either preventing them from completing the transactions required for the efficient allocation of resources or causing too little production of particular industry goods.

Although both sets of problems described in this chapter have been developed separately in the literature they are by no means independent nor unrelated. This is not surprising considering that they are both based on common axioms of bounded rationality and self-interest, including opportunism (Nabli and Nugent). Because of this similarity, factors which affect the ability to overcome hold-up problems are also likely to affect the tendency for economic agents to free-ride. In the following chapter we examine some of the ways in which the challenges identified in this chapter can be addressed.

CHAPTER 4

ACHIEVING COORDINATION

In the previous chapter we discussed a number of reasons why industry development initiatives which involve the coordination of multiple participants may not occur, even though such activities have the potential to make the entire industry better off. Specifically we noted the hold-up and free rider problems associated with contractual uncertainty and collective action. These problems pose significant barriers to industry development as they limit the ability for industry participants to coordinate their behaviour, thus preventing them from: (a) completing the transactions required for the efficient allocation of resources within the industry; or (b) causing too little production of goods common to industry participants.

The purpose of this chapter is to discuss alternative views offered to explain how the actions of independent economic players can be coordinated under complex, uncertain conditions where the potential for market failure is high. Standard theoretical viewpoints can be grouped according to two contrasting perspectives: centralization—those who underscore the role of the state in coordinating economic behaviour; and privatization—those who believe in the primacy of the market to coordinate economic behaviour (Bates; Ostrom). An alternative perspective, which pays homage to both the role of the market and the state but stresses the role of the participants themselves, is that of self-organized institutional change. Although relatively neglected in the mainstream economics literature, this approach highlights the ability of participants to organize themselves to achieve collective goals, in spite of the challenges.

CENTRALIZATION

Lipsey, et. al. note that "by far the most common remedy for market failure is reliance on government intervention (pg. 420)." Standard methods for addressing market failure have focused on how various governments can "prevent, alter, complement, or replace the workings of the unrestricted market economy." Such methods include: the redistribution of resources through public expenditures and taxes; the public provision of goods and services;
the adoption of rules and regulations to control private behaviour; and the structuring of incentives to encourage certain behaviour.

Each of the methods, or policy tools, mentioned above have frequently been used in agri-culture-based industries, and each has the potential to achieve industry development goals. As little as 15 years ago, direct subsidies to agricultural producers and railroad companies formed an integral part of Canada's farm policy. In addition, many of the services critical to industry development, such as inspection services and research and development, were provided by various government bodies and funded by taxpayers. The direct subsidies and the provision of services by the state are both examples of policy based on the notion of centralization. Proponents of centralization contend that in many situations an external government agency is in the best position to coordinate the actions of economic agents in a way which serves the public good and reflects public preference. This view is closely tied to Olson's theory that a system based on authority and coercion is required to achieve collective action.

In recent years concerns over fiscal responsibility and international trade agreements have resulted in a significant decline in the use of government subsidies and the provision of public services to agriculture. However, governments continue to coordinate the decisions of economic agents through the establishment of various regulations and regulatory agencies in many agriculture-based industries. The impetus behind regulations can come from general concerns regarding the welfare of the public or the environment. Many natural resource systems, such as fisheries and ground water basins, are controlled by central governments to avoid the "tragedy of the commons" outlined earlier (Ostrom). Alternatively, regulatory systems may be put in place in response to requests from producer groups. For instance, many producer groups have successfully lobbied federal and provincial governments to legislate mandatory check-off systems designed to fund industry research, promotion, and other development activities.

PRIVATIZATION

The proponents of privatization believe that if the market fails to coordinate the actions of agents in an efficient way, and if beneficial activities are not occurring, then the reason is likely to lie in misspecified property rights. Misspecified property rights stem from the absence of a clearly defined residual claim on the earnings generated from the resources involved in a particular economic activity. In his seminal piece, *The Problem of Social Cost*, Ronald Coase (1960) focuses on the establishment of private property rights to resolve market failure and advocates the specification of private property rights as a means to induce people to coordinate their actions and achieve a situation which would be of mutual benefit. It is argued that if the ownership of a resource is clearly defined, then an efficient solution regarding the use of the resource will be achieved through bargaining. For example, the establishment of private property rights has often been put forward as a solution to problems concerning common pool resources (Ostrom). The advocates of such policies believe that by converting common property into private property, the users, turned owners, of the property will be provided with an incentive structure conducive to proper management, thus avoiding the "tragedy of the commons."

In essence, the proponents of privatization consider the market, not governments, as the best tool for coordinating the behaviour of independent economic agents. However, this is not to say that privatization is a "state-free" theory which does not require government intervention. On the contrary, governments and central agencies are viewed as critical to implementing rules and regulations which specify the legal ownership and use of resources.
In particular, it is seen as the role of the state to establish an infrastructure which determines, monitors and enforces a system of property rights (e.g., a police force) and arenas where conflicts regarding property rights can be resolved (e.g., courts).

Patents and explicit contracts are two of the tools used to specify property rights. In many cases patents can correct market failures which result in the sub-optimal production of goods with open-access characteristics. For example, the patenting of plant and animal varieties can allow those who have invested in genetic breeding programs to have a residual claim on the earnings generated from marketable varieties. Without the establishment of a patent system, it is likely that individual firms would be reluctant to invest in the research and development of new varieties since they could not exclude others from the benefits generated from such activities. By converting research and development initiatives from being open-access

goods to being private goods with associated property rights, free rider problems are lessened and research and development at the firm level is encouraged.

Explicit contracts can go a long way in mitigating contractual uncertainty and potential hold-up problems by specifying *ex ante* the terms and conditions for future actions and the division of residual claims. These types of contracts have been used extensively in the recent development of the US and Canadian hog industry. Meat processors have been able to coordinate their needs for particular product attributes with the actions of producers by defining production methods within purchase agreements. For either patents or explicit contracts to be successful in overcoming market failure, third-party enforcement through a legal system which recognizes contracts as binding are essential (Koss and Eaton).

Proponents of privatization also point to vertical integration as an alternative to contracting and as a way to avoid hold-up problems. "Vertical integration is the purchase of the assets of a supplier (or of a purchaser) for the purpose of acquiring the residual rights of control", or alternatively, for the purpose of acquiring the property rights (Grossman and Hart). For example, a livestock producer purchases his own feed mill to avoid having to rely on the services provided by the local feed company. At its essence, vertical integration bypasses the need to coordinate the actions of multiple decision makers. As such, development initiatives accomplished through vertical integration can be considered a form of firm development, as opposed to industry development which involves multiple participants. A property rights system which recognizes the transfer of property rights is integral to vertical integration.

WEAKNESSES OF CENTRALIZATION AND PRIVATIZATION

Although policies based on privatization and centralization have been used extensively in agriculture as a way of overcoming market failure and the challenges associated with industry development, limitations to these approaches exist.

The major weakness of privatization is that independent behaviour does not always give rise to outcomes which are desirable from the perspective of either the industry participants themselves or the larger society. As was discussed in Chapter 3, conditions of imperfect information, bounded rationality, and strategic behaviour can result in free-rider problems and hold-up problems, both of which are examples of market failure. Market failure also includes non-competitive pricing by oligopolistic firms, or the provision of goods and services at less than optimal levels.

The same factors which result in market failures (i.e., asymmetric information, uncertainty, and complexity) can also cause government failure. The failure of government to behave appropriately is the major weakness of centralization. Government failure, however, can also be a weakness of the privatization approach. In their introductory economics text, Lipsey, Purvis, and Steiner offer the following six reasons why governments may fail:

- *Imperfect knowledge or foresight*. Decisions regarding industry development initiatives often involve a combination of both scientific and time and place information. Because of the amount and types of information required, as well as information asymmetries, government regulators may not know enough about specific initiatives to make appropriate decisions regarding taxes or subsidies. Alternatively, the demand for a public good may be overestimated, resulting in too much of the good being provided and public resources wasted. A lack of information or foresight may also result in a poor allocation of property rights, which in turn may result in perverse incentives with unintended consequences.
- *Rigidities*. Institutional arrangements which are contingent on government regulations and allocations can be difficult to change once in place due to bureaucratic lags. Property rights structures or public goods and services which meet the needs of industry participants at one point in time can quickly become inefficient or even restrictive in the face of changing technologies and economic circumstances.
- *Inefficient means*. Governments, like all organizations, may fail to choose the least costly or most appropriate means of solving a problem. For example, the government may decide to provide a public good, when a change in property rights structure could have caused the good to be produced within the market at a lower cost.
- *Myopic regulation*. Regulators are often required to specialize in a given area. The downside of such expertise can be the inability to relate a particular area to broader concerns. As a result, regulations may become too restricted and too narrowly defined. For example, officials representing production interests may fail to understand the consequences of producer policies on the processing sector and the industry as a whole.

- *Political constraints*. Even when the appropriate policy has been clearly defined, political realities, such as lobby groups and trade agreements, may prevent this policy from being implemented.
- *Decision maker's objectives*. Although government officials are paid to serve the public interest, they, like all people, face their own sets of needs, personal incentives and prejudices. Officials can therefore end up basing decisions and passing policies which are more in line with their own objectives than those of the industry.

Each of the above factors can add to the costs or reduce the benefits of government involvement in industry development. In addition, political pressures for greater fiscal restraint and greater trade liberalization are severely limiting the ability of governments to provide public services and intervene in agricultural markets. Therefore, as a result of a changing social and political climate, alternative methods of institutional change, which do not rely on the ability of central authorities to make decisions on behalf of industry participants, need to be examined in further detail. One such alternative is participant-driven institutional change.

PARTICIPANT-DRIVEN INSTITUTIONAL CHANGE

In her book, *Governing the Commons*, Ostrom notes that both of the viewpoints presented above ignore the capacity of groups of participants themselves (the beneficiaries of coordinated behaviour) to coordinate their activities and achieve collective benefits. She notes:

> "One set of advocates presumes that a central authority must assume continuing responsibility to make unitary decisions for a particular resource. The other presumes that a central authority should parcel out ownership rights to the resource and then allow individuals to pursue their own self-interest within a set of well-defined property rights. Both centralization advocates and privatization advocates accept as a central tenet that institutional change must come from outside and be imposed on the individuals affected (pg. 14)".

In the case of privatization, once private property rights have been established, the coordination of activities is left up to individual entrepreneurs to negotiate a series of contracts, usually on a bi-lateral basis. In the case of centralization, interdependent activities are organized through

regulations designed by a central body to achieve (mandatory) collective action and manage common property. Ostrom further notes that there exists no equally well-developed and generally accepted theory which explains and furthers our understanding of participant-driven institutional change undertaken by groups of principals, as opposed to institutional change which is organized externally by a central governing body.

BEYOND SELF-INTEREST

The notion that groups of participants can coordinate their actions to achieve common goals is based on real life observations that collective activities, such as the management of common pool resources, do occur without the intervention of a central authority. Recall that central to Olson's theory of collective action and Hardin's tragedy of the commons is the assumption that individuals are motivated solely by narrow self-interest. It follows therefore, that rational individuals will not contribute to collective goods without being coerced nor will they be able to avoid destroying common pool resources. However, real life observations of voluntary collective action suggest that: (a) there are a number of other factors outside of self-interest which affect individuals' behaviour and decision making; and (b) that even if self-interest is an overriding motive, cooperation can still be a 'rational' choice under certain conditions. In this section we review a number of studies which suggest that factors which
are ignored in standard micro-economic models (such as the notions of fairness, expectations and on-going relationships) do play an critical role in the coordination of individuals and collective action.

NOTIONS OF FAIRNESS

In the paper "Economists Free-Ride, Does Anyone Else?" Marwell and Ames document the results of eleven experiments which test the free rider hypothesis. Based on Olson's conclusions, the free-rider hypothesis states that under conditions where neither contributors nor non-contributors can be excluded from benefiting from a good, it is irrational for an individual to contribute voluntarily. The weak version of the free rider hypothesis states that voluntary contributions will provide the good at a sub-optimal level; under the strong version, the good will not be provided at all.

Ten of the eleven experiments conducted by Marwell and Ames resulted in a low incidence of free riding. The one experiment where free riding proved to be the dominant choice was based

on the responses of a group of graduate students in economics. The other rounds involved groups of university and high school students. The results of the experiments show that the strong version of the hypothesis does not hold. The players repeatedly contributed substantial amounts (averaging 40 - 60 percent of resources) to the provision of the public good. However, the weak free rider hypothesis is supported. The good is not provided at the optimal level because all players held some of their resources in reserve.

Participants in the experiment were asked what they considered to be a fair investment in the public good and whether concern for fairness effected their own investment decision. The results showed that there was a correlation between the level of investment and the response to these questions. Those that contributed the most were those that thought high levels of investment were fair and that they were concerned with the fairness of their contribution. The point that Marwell and Ames make is that the concept of fairplay appears to have affected the outcomes of these experiments and that such concepts should not be overlooked when studying collective action.

THE ROLE OF EMOTIONS

Frank argues that emotions serve our interests in a manner not easily explained in economic terms. Frank sees a paradox in the self-interest model. The paradox arises from observations of situations where the pursuit of self-interest would result in inaction, yet action, which in some cases was very costly, did take place. Listing examples of petty theft (where the cost of retaliation exceeds the cost of simply replacing the object), famous feuds (such as the Hatfields and McCoys, British/Argentine fight for the Falklands), voting and restaurant tipping, Frank illustrates that people would be better off in terms of finance, convenience and time if they took no action.

Frank's commitment model stresses the role of emotions—envy, guilt, anger, pride—in solving problems which require a commitment by the players involved to pursue a course of action. For example, a player may threaten retaliation to deter the actions of others. However, the commitment to pursue such a course of action must be credible to others to be effective—that is, it must be believed by the other players that the retaliation will occur regardless of the costs. The point of Frank's argument is that those players who are known to experience certain emotions, such as feeling bad or guilt about cheating, can make credible commitments and can therefore maintain a strong position in negotiations. If a person is known to repeatedly act in their

immediate self-interest, others will judge their commitment in relation to the costs of the actions. Thus self-interested individuals will not hold as strong a bargaining position.

EXPECTATIONS, ASSURANCE AND CRITICAL MASS

Runge (1984, 1986) argues that coordination of participants' expectations provides the foundation for institutional arrangements. He notes that institutional arrangements are formed and survive if they successfully coordinate the expectations of the members thereby providing assurances to the membership regarding the actions of other members. The assurance problem is based on the fair-mindedness of members—that is, they are willing to give their share if others will do the same. Runge further points out that the relationship between expectations and behaviour is dynamic. If the expectation of the co-operation of others causes Member A to co-operate, the action of Member A will encourage others to co-operate as well. This interactive process creates a spiral of co-operation (or defection if the initial expectation is that others will not co-operate). As the coordination of members' expectation increases, co-operative behaviour increases causing expectations of future co-operation to increase and so on.

Runge (1986) identifies the assurance of the actions of others as a crucial factor in rallying the "critical mass" necessary to high levels of co-operation. The concept of critical mass is used in many disciplines and is central to the study of collective action, such as social movements, fund raising, riots, strikes, barn raising, and business cartels. It is widely understood that it takes some minimum number of people contributing to the collective activity
to attract other contributors.

Marwell and Oliver develop a theory of critical mass in collective action based on the proposal that group outcomes cannot be determined from models of individual behaviour due to the role of mobilizing agents and the interdependence among participants. In their theory, Marwell and Oliver argue collective action depends on a critical mass of contributors and not the whole group and specifically not the actions of the average member. Instead, they maintain that collective action results from the efforts of a small group of highly motivated and resourceful people. This small group, or critical mass, can spearhead collective activities by contributing large amounts of resources themselves or by mobilizing agents and rallying others to contribute. As long as this critical mass exists, some participants can contribute
at a lower level or even free ride without seriously jeopardizing the success of the activities. Furthermore, the interdependence of participants suggests that participants observing the

contributions of others will be assured of some benefits to their own co-operation. As a result they will therefore be motivated to co-operate and coordinate their actions even when the decision on an individual basis is to defect.

FREQUENCY AND ON-GOING RELATIONSHIPS

In addition to the role of emotions, conceptions of fairness, and the existence of a critical mass, game-theorists have pointed out that the frequency with which a "game" is played (or an agreement is made) plays an important role in the capacity for individuals to co-operate. Using models based on repeating the prisoners' dilemma, Axelrod shows that co-operation through "tit-for-tat" strategies can become the rational choice. That is, players can punish (not co-operate) or reward (co-operate) each other according to their behaviour in the previous round. Kreps and Wilson illustrate how, under conditions of uncertainty, the importance of building a reputation can heavily influence the outcome of a repeated game and can result in mutual co-operation.

The importance of building an ongoing relationship based on previous performance is echoed in Ostrom's study of the origins of a set of institutions to manage groundwater basins in California. In her analysis Ostrom points to the importance of institutional change occurring in an "incremental and sequential" manner within a facilitative political regime. She notes that rather than occurring within a single step, the process of institutional change involved a series of small steps with low initial costs which progressively built upon one another. She stresses that:

> "because the process was incremental and sequential and early successes were achieved, intermediate benefits from the initial investments were realized before anyone needed to make larger investments. Each institutional change transformed the structure of incentives within which future strategic decisions would be made (p137)."

The sequential nature of the institution building process allowed for participants to learn from previous experiences and enhanced the ability to share information and communicate with one another.

Olson notes that groups who have already established an ongoing relationship among participants through private incentives are often in a position to be able to either: (a) coerce members to providing a collective good; or (b) provide the collective good as an aside or add-on to their original purpose. Olson explains the existence of large organized groups such as unions by observing that these groups have the common characteristic of organizing for some purpose other

than to provide a collective good. In this way, ongoing relationships which are based on attaining private benefits can be drawn upon to attain collective action and provide goods of benefit to the entire group.

SELF-GOVERNING THE COMMONS

Each of the factors cited in the above section contribute to our understanding of how and why independent agents coordinate their actions to undertake collective activities, even in uncertain and complex environments. Put another way, these factors contribute to our understanding of how groups of participants go about supplying themselves with new institutional arrangements (i.e., contractual or collective agreements). Supplying a new set of rules to attain a collective good is in itself a form of collective good and has been described as a second-order collective dilemma (Bates, Ostrom). However, this is often only the first step in participant-driven institutional change. The importance of ongoing relationships in achieving collective action highlights the fact that many coordinated activities are usually part of an longer process of cooperation. In this section we discuss the factors critical to long-term cooperation.

In *Governing the Commons*, Ostrom analyses a number of cases of long-enduring CPRs to further our understanding of how principals themselves cannot only develop rules (i.e., institutional arrangements) to manage collective resources, but also how they can resolve the problem of making credible commitments to one another and monitor their behaviour. The provision of a monitoring and dispute resolution mechanism are important factors in addressing how the problem of credible commitment can be solved in the long-run. Based on these case studies she offers a list of eight "design principles" which she speculates are essential elements or conditions which help to account for the successful long-term management and governance of common pool resources in an environment of uncertainty and change. The effectiveness of these principles is based on their ability, as a whole, to affect the incentives of the beneficiaries such that they are willing to commit themselves to acting in a manner which coincides with the collective, rather than individual, interest.

1) Clearly Defined Boundaries

The people who have the rights to use the CPR, and the boundaries of the CPR itself, must be clearly defined. The clear definition of boundaries does not mean that private property rights are assigned to the individual users themselves; rather it refers to es-

tablishing regulations which transfer purely public property into common property — property that is common to those individuals and organizations who use it. This process involves establishing what is being managed and for whom—the first step in collective action.

2) Well-Tailored Appropriation and Provision Rules

Defining the boundaries of a CPR and its users is not enough to ensure that individuals will pursue collective rather than self interest. A set of rules must be defined which clearly state the ways in which the resource units will be appropriated (time, place, technology, and/or quantity) and the provision requirements (the labour, materials, and/or money needed to provide and maintain the CPR). To be effective these rules must be tailored to local conditions and there must be congruency between the appropriation and provision rules (e.g., those who receive the highest number of resource units also pay the highest proportion of the fees required for the management and maintenance of the resource).

3) Collective-choice Arrangements

This principle stresses that a low-cost mechanism to allow for modifications of the rules by the users is an important success factor. This principle corresponds to the previous design principle in that the individuals most affected by the operational rules are not only the best equipped to tailor their rules to local conditions, but are also best able to modify these rules to adjust to internal and external changes to their environment.

Ostrom maintains that the appropriators of CPRs should be able to devise a good set of rules if they keep the costs of changing these rules relatively low, if the terms are clearly defined, and if they take into account local conditions. The existence of such rules are integral to ensuring credible commitments from the participants. However, Ostrom also notes that neither rules alone, nor the involvement of participants in developing these rules, is enough to ensure that people will comply and follow the rules *ex post* (once the agreement is complete). In the standard views offered earlier, the problem of gaining compliance is solved by government agencies who enforce agreements. In contrast, the cases examined by Ostrom relied on their own internal enforcement

mechanisms to maintain compliance. Hence, the following three design principles address how assurances and credible commitments can be provided internally.

4) Monitoring

The appropriators themselves, or agents who are accountable to the appropriators, monitor both behaviour and the condition of the common pool resource. In many of the CPRs studied, the monitoring costs were relatively low as a result of the rules in place. This was because the monitoring function was incorporated into the rules themselves and monitoring activities occurred as a by-product of the users' incentives to get the most out of their contribution. Ostrom uses the example of an irrigation rotation system to illustrate. The irrigator who nears the end of a rotation turn would like to extend his turn and use more water than that which is allocated to him under the rules. However, the next person in line to use the system is anxious to start his turn and maximize his allocation of water. There is therefore a built-in incentive to monitor the behaviour of the users of the system based on their individual motivations—"the presence of the first irrigator deteres the second from an early start, the presence of the second irrigator deters the first from a late ending."

5) Graduated Penalties

A system must be in place so that those who violate the rules are penalized by the appropriators themselves or by officials accountable to the appropriators. Ostrom notes that it is not enough to rely on reputation and shared norms alone for compliance in the long-run. Sanctions are graduated to correspond to the seriousness of the offense. In this way the individual who is generally committed to compliance and who submits to the temptation to break the rules is given a modest penalty as a reminder of the importance of compliance. However, it must be apparent to all users that in the event that violations are repeated or a more serious offense is perpetrated, a more serious penalty will be enforced. Otherwise, out of fear of being the only "sucker" to abide by the rules, the commitment to inter-dependent action will unravel.

6) Conflict-resolution mechanisms

In many models involving rules it is assumed that these rules are unambiguous. However, as was pointed out in the previous chapter, due to information asymmetry, uncertainty, and opportunism it is very difficult to develop a contract or a set of rules which will adequately describe and account for all possible contingencies. Hence, an arena where appropriators and their officials can resolve their conflicts quickly and inexpensively is an important component of successful CPRs.

As an example, Ostrom notes that in the groundwater basins case referred to earlier the ability for the participants to communicate, share information and build on previous co-operative efforts was further enhanced by facilities provided by the state. These facilities included maintaining a court system where litigation regarding water rights could be initiated and disputes over water rights could be without incurring high costs. However, in the same volume, Ostrom discusses cases in which the activities of external political regimes had a negative influence on the efforts of participants to act collectively and govern CPRs themselves. All CPRs operate within a larger external environment, as do all industries. This environment can have either a positive or negative impact on the success of collective action which is organized by the participants themselves. The remaining two design principles put forth by Ostrom recognize this influence.

7) Recognition of the Rights to Organize

Rules regarding the appropriation and provision of CPRs do not have to be created through the use of formal governmental jurisdictions. External government authorities need to at least give minimal recognition to the legitimacy of rules developed by the participants and must not challenge them.

8) Nested Enterprises

In situations where the CPRs are part of a larger system, it is important that rules be established at all levels of the system, otherwise an unsustainable and incomplete structure may result. Examples of a multi-level nested CPRs include irrigation systems where the local water supply is dependent on regional sources of water.

Although Ostrom's work is specifically focused on addressing the provision and management of common pool resources, much of the material can be applied to our understanding of industry development and how these activities can be achieved.

SUMMARY

In this chapter we explored three alternative ways in which institutional arrangements can be changed to overcome market failure—centralization, privatization, and participant-driven institutional change. We noted that the proponents of privatization stress the role of the market in coordinating activity. Therefore, under this perspective the role of external agents in fostering industry development is minimal and limited to the state developing a property rights system and specifying property rights in such a way as to allow the smooth operation of the market. In contrast the proponents of centralization see a much more expanded role for the state

in overcoming market failure, either by providing public goods directly, establishing regulations to coordinate industry behaviour, or by redistributing resources. Each method involves a certain amount of "coercion" and hence limits the involvement of external agents to various government bodies which are powerful enough
to impose decisions regarding property rights and regulations, and/or wealthy enough to provide public goods.

The third alternative involves industry participants themselves instigating institutional change. This alternative is based on real-life observations of collective action and studies which suggest that narrow self-interest is not the only factor motivating firms and individuals; other factors such as notions of fairness, the existence of a critical mass, and
on-going relationships are also important. The role of external agents in facilitating participant-driven industry change is the subject of the following chapter.

CHAPTER 5

THE ROLE OF EXTERNAL AGENTS

Based on our analysis in the previous chapters, we conclude that due to contractual uncertainty and the problems associated with collective action, the market can fail to coordinate the activities of industry participants, even when such coordination could make the entire industry better off. Without coordination, the ability of industry participants to work together to address common goals is diminished, as is the prospect of industry development. We noted that the standard policy solutions offered to address coordination problems are the specification of property rights on the one hand and the centralization of economic decision making on the other. An alternate view was also presented—that of participant-driven institutional change—where it is the beneficiaries from such change who organize and coordinate their activities to overcome market failure.

The goal of this chapter is to consider ways in which external agents can encourage industry development by promoting and facilitating participant-driven institutional change. Although we focus on the role of external agents in promoting and facilitating participant-driven institutional change, we, like Ostrom, do not believe that this type of change is the "only way" to address the challenges associated with industry development. Indeed, we acknowledge that in many development situations policies based on either privatization or centralization may be the key to efficiently solving market failure. In essence, each form of institutional change and associated policies have their own related costs and benefits. We maintain that no one form works best in all situations—in some situations one form may provide the solution to a problem of coordination,

but a different approach may be required in another situation. It is up to policy makers and participants to evaluate the situation and determine appropriate solutions.

We also acknowledge that actual policy prescriptions rarely adhere to only one viewpoint and, more often than not, contain elements of all three forms of institutional change. As one example, consider supply management. The impetus for supply management grew in part out of the efforts of producers acting collectively to change their institutional arrangements—participant-driven institutional change. However, production quotas are an example of specified property rights (i.e., the right to produce and receive income from that production) for the purpose of achieving an industry goal (i.e., control over supply, quality and price). And finally, the system is administered centrally through the institution of provincial and federal regulations.

The purpose of this report is not to advocate one form of policy prescription over another. Rather the purpose is to add to the standard repertoire of policy strategies an additional way in which industry development can be encouraged. Our focus is on self-organization, not because it is the *only* solution, but because it is usually ignored, at least in the economics literature, as an area where external agents can play a role. As we shall see in part 2, empirical evidence suggests that external agents can and often do play an important role in participant-driven industry development.

ENCOURAGING COOPERATION

In chapter 3 we noted that specific challenges to coordination, and hence, industry development include:

- overcoming contractual uncertainty and hold-up problems; and
- overcoming free-rider problems and achieving collective action.

These challenges stem from: (a) complex industry environments characterized by uncertainty and costly, often asymmetric, information; and (b) the propensity for industry participants to base their decisions on self-interest and engage in opportunistic behaviour under such conditions. However, real life observations of voluntary collective action suggest that there are a number of variables which can influence individual decision-making and encourage cooperation. These variables include:

- the frequency with which participants interact and trust one another;
- the degree of uncertainty regarding future contingencies;
- the ability to make credible commitments and assurances regarding future behaviour;
- the existence of well-tailored governance structures; and
- the existence of a system which monitors *ex post* behaviour and clearly defines penalties associated with breaching commitments.

Based on this understanding we can begin to identify ways in which external agents can foster industry development which go beyond the standard policy solutions offered by economists.

BUILDING ONGOING RELATIONSHIPS

Ongoing relationships are a key factor in overcoming contractual uncertainty and achieving collective action. The process of institutional change frequently involves a series of small steps with low initial costs which progressively build upon one another. When contractual agreements or collective activities are perceived as being part of a longer ongoing relationship, factors such as reputation, social norms, and values are likely to influence behavioural decisions and the ability to make credible commitments. If exchanges between agents occur more frequently, the costs associated with developing institutional arrangements also decrease. Hence, we conclude that a meaningful role for external agents in fostering industry development is to encourage and facilitate ongoing relationships among industry participants.

Ongoing relationships among industry participants can be encouraged if the costs involved in identifying and communicating with other participants are reduced. To this end, external agents can help by encouraging the development of "networking" opportunities (i.e., trade fairs, industry associations and other events) and communication tools (i.e., electronic bulletin boards, newsletters and industry directories). These activities which foster the creation of a critical mass within an industry (i.e., a group of highly motivated individuals enthusiastic about a development initiative) can become an important component in inspiring others to act collectively. Improved communication channels can also encourage enthusiasm for future projects by spreading the word

regarding successful development initiatives
in other industries.

PROVIDING CREDIBLE INFORMATION

Extensive information is often required to undertake development activities, especially if these activities involve more than one organization or individual. Information is also crucial in building governance structures which clearly define the roles and responsibilities of the participants involved in a particular development initiative. However, information is usually costly and asymmetric. Gathering and presenting appropriate information often requires technical expertise in certain areas (i.e., finance, commerce, law, organizational management). The ability for different participants to process information also varies. These factors can make it difficult for industry participants to engage in mutually beneficial activities and suggests that external agents can play a role in industry development by improving participants' access to credible information and technical expertise. Some types of information required include: production, processing, and market information; information on alternative institutional arrangements; and information on feasible development initiatives.

To identify reasonable development goals, industry participants require significant amounts of information regarding factors such as production and processing technologies, market structure, consumer preferences and market opportunities. External agents can assist in providing such information by either gathering (i.e., undertaking research and development) and disseminating it themselves or by providing funds to allow groups to do so themselves. Having external agents involved in improving access to credible market information can also aid in overcoming problems due to information asymmetries, such as opportunism. The accessibility of relevant scientific knowledge is especially important since some participants may not be familiar with this knowledge or may have difficulties understanding it due to different educational levels.

External agents can also play a valuable role by undertaking research and distributing information on alternative institutional arrangements. Different institutional arrangements can have an important impact on the potential for opportunistic behaviour, and hence, the level of transaction costs. If participants have information available to them regarding alternative institutional arrangements they can better determine an arrangement which is suited to their situation and which lessens the potential for opportunistic behaviour within an industry. For

example, explicit contracts are one way of overcoming high transactions costs. Although they are difficult to achieve in complex situations, uncertainty and the potential for opportunism can be lessened if technical and financial resources are available to develop legally binding contracts and to research and amass information on possible contingencies.

Not all of the development initiatives proposed by certain industry groups or participants will be feasible or even relevant. External agents can encourage industry development by establishing funds to investigate the feasibility of different industry development activities. The search costs associated with accessing funding can be further reduced if distribution centres for such information are established.

FACILITATING COLLECTIVE ACTION

The activities listed above encourage cooperation among industry participants by lowering the costs associated with: (a) identifying, communicating, and developing relationships with other industry participants; and (b) identifying and evaluating activities which would promote the development of their industry. However, the actual process of undertaking development activities can remain difficult due to the problems associated with collective action discussed earlier. In a study examining co-operative enterprises (a form
of collective action) as a community development tool, Fairbairn et. al. observe that the presence of a perceived need does not always lead to co-operation, even though co-operation may be an obvious solution in many situations. They go on to argue that co-operative enterprises form when influenced by an outside agent. The outside influence appears to be in the form of facilitation rather than leadership or direction. This suggests that an additional role for external agents is to act as a facilitator of collective action.

The role of the external agent as a facilitator of development activities is a central theme in community development literature. For example, Fischer sees the role of the external agent as facilitating community development by acting as a consultant to community groups; building and/or reinforcing leadership within the group; and integrating the efforts of the group. Fischer stresses that it is vital that the participants have control of the development process and the outcome so that viable institutional arrangements are created. External agents can stimulate this process by assisting in: the identification of the problems and the needs of the group; the

development of strategies to address these problems or needs; and the mobilization of resources both from within and outside of the group.

In many ways the activities carried out by a facilitator are the same activities identified in the previous section—building ongoing relationships through greater communication and providing credible information. However, rather than providing these services at a general, industry-wide level, a facilitator's role is focused on working directly with a particular group to address a specific challenge. In this role an external agent can help participants in a particular industry to define common problems and needs by facilitating open discussions between industry players. Such discussions can create the expectation that everyone is working toward the same goals and from there the strategies of achieving these goals can be developed. In *Adults Learning for Development*, Rogers refers to this type of activity as "awareness enhancement".

An important part of awareness enhancement is to help participants identify what they can control, what they can influence, and what they must accept. The aim is to find ways around the things that must be accepted and expand the areas of control and influence. In addition to facilitating communication between participants, external agents aid this process by gathering and disseminating relevant information and determining the resources available to the group, both internally (i.e., from within the group) and externally. The emphasis here is placed on ensuring that participants not only have the necessary information available to them, but that they also understand the information and can apply it to their situation. As Rogers points out, participant-driven development is a learning process—it involves adult education and training. He sees external agents as the facilitators of this learning process.

Once the needs, resources, and goals of the group are identified, the facilitator can guide the group in developing a strategy and in deciding on an appropriate institutional arrangement (i.e., course of action). A facilitator from outside the industry can contribute to this process by drawing on experiences with other industries in similar situations. In this way the costs of supplying new institutional arrangements can be lowered, since participants can learn from other peoples' experiences. A facilitator with broad connections can also help the groups make linkages between groups with similar or overlapping mandates, ensuring that development initiatives are nested within, or fit with, other initiatives taking place.

A central component in achieving credible commitments, and hence collective action, is the development of a set of rules which clearly outline the responsibilities and privileges which come with a particular collective activity or association. In addition, the penalties imposed if those rules are not adhered to must be clearly outlined. The development of such rules requires a familiarity with the effect of different governance structures and agreements on the behaviour of participants and an understanding of how different components, such as monitoring, can be built into the governance structure. A facilitator can aid in this process by either providing such expertise to the group themselves or by coordinating the resources to access this expertise from other agents. For example, a facilitator familiar with participant-driven development can encourage groups to consider "coupling" private benefits with collective benefits to achieve a common goal. Industry groups which already provide members with private benefits often have the authority necessary to encourage the provision of collective goods. A skilled facilitator can also help participants incorporate a low cost mechanism for modifying rules, monitoring behaviour, enforcing rules and resolving conflicts within their institutional arrangements.

It is important to note that in participant-driven development, the participant groups control the development by controlling the decision making. They must be involved in all steps of decision making and feel comfortable that the choice of action is theirs. They will be more motivated and more likely to follow through if they are aware of the alternatives and choose their own course of action. Outside agents must guard against influencing the decision and the agent must constantly guard against imposing her views on the group—ownership and leadership must be left in the hands of the participants. Throughout the development process, Rogers stresses that although external facilitators can have an important and positive influence on development activities, the external agent must be aware that part of her role is to become redundant.

Community development facilitators warn there is a risk involved in working on the development of participant-driven projects. The group may become dependent on the facilitator as a source of advice and may look to her to make the decisions. Once the facilitator has moved on, the project may fail because no one in the group has assumed the leadership role and the group has not learned to make decisions on their own.

In summary, an external agent can facilitate collective action by helping groups of industry participants define the problems they face and by providing guidance in selecting an appropriate

strategy and course of action. To this end, facilitators can improve communication between participants, collect and disseminate relevant information, evaluate existing resources, and contribute skills and experience regarding alternative institutional arrangements and in developing governance structures. Because of the necessity of leaving the project in a viable and feasible state, the external agent should also work to build leadership and confidence in the group to enable members to make their own decisions.

LONG-TERM CONSIDERATIONS

Once relationships between industry participants have been established to the point where participants have developed an institutional arrangement (i.e., set of rules) to enable them to engage in industry development initiatives, some form of monitoring and an arena for conflict resolution may be required to ensure that coordination will continue into the long-term. Sometimes these aspects can be built into the arrangements themselves, with or without the help of an external agent, or alternatively, they can be provided externally.

External agents can assist and encourage groups to develop rules which are well-tailored to local conditions by providing a low-cost mechanism for modifying these rules and clearing up inevitable ambiguities regarding their application. In addition, a system of monitoring behaviour and enforcing graduated penalties is often required to ensure that collective action commitments are kept in the long-run (i.e., to prevent *ex post* opportunism). External agents can act as monitors and enforcers of rules. However, it is important to stress that as such, external agents must remain answerable to the principals for the process to remain self-governed.

These activities are similar to those proposed by proponents of privatization and centralization—the difference lies in the level at which the activities are located and positioned. For instance, external agents provide a forum for conflict resolution—this is also an essential component to any property rights system. The external agent "coerces" participants into behaving a certain way by monitoring compliance to a set of rules—this activity corresponds to the role played by the state in enforcing property rights and in setting taxes. However, in the context of participant-driven institutional change, the important difference is that both activities are designed to ensure the participants continue to modify and adhere to a set of rules which they themselves have developed. Therefore, rather than having a central agency specify appropriate property rights, participants specify these rights themselves. And, rather than a central agent determining

appropriate behaviour, corresponding penalties and the means with which these penalties will be imposed, it is the participants themselves that make these rules, define the consequences and then assign an agent to monitor participant adherence to the rules. Such an agent does not necessarily have to have the central authority associated with governments. Often, particularly when other factors such as community ties are involved, it is enough for the agent to represent the rest of the group (Ostrom).

CONCLUSION

Based on a review and analysis of relevant literature, we conclude that external agents do have a meaningful role to play in fostering industry development. Specifically, they can aid industry participants in overcoming market failures, due to contractual uncertainty and the "open-access" nature of many industry development initiatives, by promoting and facilitating participant-driven institutional change.

All industries operate within a larger external environment. This environment can have either a positive or negative impact on the success of participant-driven institutional change. There are a number of ways in which external agents can contribute to creating an environment which fosters cooperation among industry participants. Cooperation amongst industry participants can be made easier and less costly if forums for participant communication exist and if participants have access to reliable, relevant information and/or the technical expertise to gather such information. The longevity of contractual or collective agreements can be enhanced if a low-cost mechanism for monitoring behaviour and an arena for conflict resolution are available.

However, even within a supportive external environment, the actual process of undertaking development activities can remain difficult due to the problems associated with collective action. Often some form of credible commitment is required to provide industry players with the assurances necessary to ensure participation. The existence of a critical mass—a group of highly motivated and committed participants—can also have a positive influence on collective activities. An external agent can help in rallying together a critical mass of participants by identifying enthusiastic and goal-oriented individuals within the industry and connecting them with like-minded counterparts. An outside agent can also help groups to develop institutional arrangements which can address assurance and credible commitment issues. These activities require the external agent to work directly with participant groups in particular industries as a facilitator. The

role of the external agent as a facilitator of collective action involves assisting in: (a) the identification of the problems and the needs of the group; (b) the development of strategies to address these problems or needs; and (c) the mobilization of resources both from within and outside of the group.

It is important to note that some external agents will be better suited and adept at undertaking certain activities discussed in this chapter than others. Some agents may also feel greater responsibility, either due to public or self interest, to foster industry development. For these reasons it is important for external agencies and their agents to recognize their level of commitment to certain activities and their relative strengths, weaknesses and suitability in engaging in such activities. For example, the role of facilitator requires external agents with a very unique set of skills and expertise. Working directly with groups to facilitate collective action requires: credibility and fair mindedness; a solid knowledge of the industry; the ability to link this knowledge with an appropriate institutional arrangement; the ability to foster mutual trust and interdependence among participants; and the ability to work with others to identify development strategies and create a positive learning environment.

Other external agents may have skills and expertise which correspond to specific development activities, such as the ability to resolve conflicts or undertake economic assessments, research, or feasibility studies. These agents can play an important role in industry development by providing expert services and by sharing their experiences with participant groups. Depending on the activity, the resources available and the mandate of the agent, these services can be provided as a public or a private good. For example, general advice on new business start-up can frequently be obtained free of charge from various government agencies. More detailed, financial advice tailored to a specific situation often requires hiring the services of a business consultant.

Still other agents may want little direct contact with industry groups and may prefer to limit their involvement to providing financial assistance. At a minimum, external agents interested in fostering industry development can play a positive role in the development process, regardless of the resources available to them, by maintaining an attitude which is supportive of development initiatives and guarding against unduly discouraging individuals from pursuing participant-driven institutional change.

The roles and activities identified in this chapter flow directly from the theoretical framework developed in the previous four chapters. In part 2 of this study, we use this framework to present a number of cases which focus on the development needs and activities of several agricultural industries across western Canada and the United States.

PART 2

CASE STUDIES

CHAPTER 6

SPECIALTY LIVESTOCK INDUSTRY

B.C. FALLOW DEER AND SASKATCHEWAN WILD BOAR

THE CHALLENGES

The specialized livestock industry encompasses the commercial production of any non-traditional livestock or game animals such as elk, fallow deer, wild boar, and Boer goats. To date, high prices for breeding stock have driven most of the growth and demand within the specialty livestock sector. However, the breeding stock market for a number species has become saturated and the process of developing further markets has become a common challenge throughout the sector.

In this case we examine some of the issues and challenges facing the B.C. fallow deer industry and the Saskatchewan wild boar industry. We also discuss some of development initiatives which have been pursued in response to the challenges facing industry participants. With the markets for breeding stock nearing a saturation point, participants in both industries are in the process of trying to develop markets for meat. Like many specialty livestock producers, most wild boar and fallow deer producers became involved in the industry on the belief that markets would soon open up for meat. This belief was based on the assumption that because consumers were demanding lean meat as part of a healthier lifestyle, a demand for alternative meat sources would result. To date this has not happened to the extent expected and, although there is some consumer demand, it is becoming increasingly clear that significant effort is needed to develop and expand markets for venison and wild boar meat.

B.C. FALLOW DEER INDUSTRY

The fallow deer industry is a relatively new industry for B.C., with fallow deer production being approved just 10 years ago. British Columbia has the highest number of fallow deer in the country (see Table 1). As of October 1997, it was estimated that there are about 74 fallow deer farms in the province with a total of approximately 15,000 animals (Canadian Venison Council). About 1500 deer are slaughtered each year for meat. These animals are found throughout the province with a higher concentration in the Thompson/Okanagan region.

Table 1 - 1997 Canadian Fallow Deer Herd Estimates

Area	Number of Head	% of Total
British Columbia	**15,000**	**53%**
Alberta	Nil	-
Saskatchewan	5,000	18%
Manitoba	600	2%
Ontario	4,000	14%
Quebec	3,500	12%
Other	250	1%
Total Canada	**28,300**	**100%**

Source: Canadian Venison Council

While there are markets for other fallow deer products (such as velvet and breeding stock), it is the production of venison which is the focus of the fallow deer industry. In 1990, the bulk of venison sold in B.C. was imported from New Zealand. Today, approximately 80 percent of the market is being served by B.C. fallow deer producers. There has also been an increase in the number of restaurants serving venison and the number of stores selling it. This case study examines the B.C. fallow deer industry's development process, with the specific objective of identifying some of the development barriers encountered and some of the ways in which participants have responded to these barriers.

INDUSTRY DEVELOPMENT

The deer industry is world wide in scope, with Germany being the largest importer of venison and New Zealand being the primary exporter. Deer farming began in New Zealand in the early 1970s with the capturing of wild feral deer. The industry rose out of the need to control the population of wild feral deer which had exploded since being introduced to the islands in the mid 19th

century. With the development of European markets for venison and the wild populations beginning to decline, exporters sought to maintain their markets by encouraging the development of a farmed industry to supplement wild kill and to control the quality and supply of venison (View West Marketing).

The successful development of an international market for venison by New Zealand producers prompted many producers in other regions to try their hand at deer farming. B.C. producers, who began to examine the opportunities associated with the farming of game animals in the early 1980s, were no exception. With their adaptability to a wide range of climatic zones and an established, albeit small, domestic food service market for imported New Zealand venison, fallow deer appeared an opportunity. One of the first challenges facing those interested in deer farming was getting approval from the government to engage in game farming.

REGULATION

Those interested in game farming began to lobby the government in the mid 1980s for permission to do so. However, the idea of game farming has met with considerable resistance from various groups. Like many other regions, such as Europe and New Zealand, the opposition to game farming is principally focused on three major concerns: the impact of game farming on wild species, ecological impact, and health and welfare concerns. Many people believe that the development of markets for native wildlife species will result in increased poaching of wild populations. The introduction of new species raises concerns regarding the spread of diseases, such as tuberculosis, within wild populations and the potential for ecological damage. The possibility of serious environmental damage is particularly poignant in B.C., where the ecology of two gulf islands was devastated with the introduction of fallow deer to the islands in the late 1800s. Concerns regarding the humane treatment of game animals have also been at the forefront of the debate (View West Marketing).

In response to the public debate the provincial government set up the Game Farm Advisory Council. The Council is made up of representatives from a diverse group of organizations, which include: B.C. Wildlife Federation; Society for the Prevention of Cruelty to Animals; Ministry of the Environment; B.C. Federation of Agriculture; B.C. Ministry of Agriculture Fisheries and Food; and B.C. Game Farmers Association. The purpose of the Council is to bridge some of the difficulties and clear up misunderstandings between the various ministries and lobby groups

concerned with the farm production of game animals. In essence the Council provides a forum to get the different sides of the issue together to share information and viewpoints and disseminate information among the groups. Also, because most groups represented agreed that strict rules regarding aspects such as the production, health care, handling, transport, and identification of animals, were the key to mitigating public concerns, the Council became an effective vehicle to institute and maintain industry regulations.

Official approval for the farming of fallow deer was given in 1987. However, the B.C. *Game Farm Act* and regulations outlining the basis under which game farms are administered in B.C. were not passed until 1990, after being withdrawn from the Legislature in 1989. The process involved in the development of game farm regulations was the result of consultation with the Game Farm Advisory Council and 13 agencies directly affected by game farming. The *Game Farm Act* therefore represent a compromise amongst various interests.

Many of the people initially drawn to game farming were interested in raising wapiti (elk). However, concerns over poaching led to the decision that the farm production of game animals in B.C. be limited to non-domestic breeds and to certain areas. Specifically the following species are allowed to be farmed in B.C.: plains bison (limited to northern B.C.), reindeer (in the Peace River region), and fallow deer (across B.C. with the exception of the gulf islands). Fallow deer farms now make up 55 percent of the game farm industry in British Columbia (Canadian Venison Council).

All game farms within the province must be licensed with the B.C. Ministry of Agriculture, Fisheries and Food (BCMAFF). To prevent the escape of animals, fences and facilities of certain specifications are required. Stringent rules regarding the importation and movement of deer (permits are required for both activities) were established to address fears regarding the spread of tuberculosis and other communicable diseases. To prevent the illegal trade of wild animals and to enable the tracing of animals, rules regarding the tagging and control of inventory are also outlined. Tamper-proof metal tags are provided by the government and are mandatory for all game farm animals. Periodic and year-end inventories are filed and reconciled with transport and import permits.

Since the adoption of the B.C. Game Farm Act, the B.C. Game Farming Association, which used to represent producers of all three game species, has since divided into four independent

organizations: two of which represent bison farmers; one which represents reindeer producers; and the B.C. Fallow Deer Association (BCFDA). The division of the Game Farming Association into separate associations was largely the result of bison producers actively engaged in lobbying the government to recognize bison as non-game animals, which would mean that they would be bound by the same regulations as beef producers, rather than game farmers. Some members of the BCFDA have also expressed interest in the reexamination of game farm regulations to take into account that the industry has now had a chance
to prove itself and perhaps calmed some of the public's concerns. In addition to acting as a liaison between the government and producers on such matters as regulatory changes, the Association's mandate is to coordinate and disseminate information of interest to producers.

PRODUCTION

One of the areas where the BCFDA has traditionally been very active is the dissemination of information regarding production practices. This activity was important for the development of the industry because many of the people entering the industry had never been involved in livestock production. As well, due to the public debate surrounding game farming, various interest groups were watching the industry closely. Hence, the education of producers and the dissemination of information was an important factor in minimizing the negative attention given the industry. In an effort to mitigate public concern, the BCFDA was actively involved in setting standards for good fallow husbandry within the province. To this end, the association compiled and published a set of guidelines and a code of ethics for the raising and humane care of farmed fallow deer.

The Association also provides members access to publications and organizes information seminars on a broad range of deer farming topics including fencing, herd health, and proper velveting techniques. For example, in the early 1990s a series of workshops on production techniques were organized across British Columbia. People who were interested in getting involved were able to learn more about the venison market and were given the chance to talk to experienced producers from Australia and New Zealand. The material presented in the workshops was also published for broad distribution. To help new producers locate quality breeding stock, the Association published a breeders' directory. In addition the Association produces a newsletter and holds annual general meetings, which also include a large information component.

The incentive behind the Associations' efforts to disseminate production information came from a number of sources. First, all existing producers had an interest in building an industry wide reputation for responsible, humane farming practices to alleviate public fears regarding the industry. Similarly, since B.C. farmed fallow deer was a new product, all those who had invested in the industry had an interest in ensuring that an industry-wide reputation for quality was also developed. Finally, making information about production available to potential investors can encourage the entry of new farms into the industry. Expansion of production is a key to developing the market for breeding stock.

Many of the educational initiatives undertaken by the Association have been sponsored by the B.C. Ministry of Agriculture, Fisheries, and Food. Information seminars which were set up by the Association were often government sponsored on a cost recovery basis. However, the Association was allowed to keep at least a portion of the money made. The Ministry has also assisted through funding of research projects which aim to improve production techniques. Most recently a study was completed which examined the feasibility of alternative feed sources.

PROCESSING

During the initial development stages of the industry, many producers felt that production was all that was needed for success. However, regulatory and production challenges were only the beginning and these challenges have quickly been replaced by others. One of the challenges identified as important for a number of B.C. producers at the 1997 BCFDA annual meeting was access to appropriate processing facilities.

Appropriate slaughter and further processing facilities for specialty meats are determined by the minimum level of inspection required for different markets. There are four general levels in determining appropriate slaughter and processing facilities. At the lowest level are the farm gate sales made directly by the producer to local consumers. In this case animals can be slaughtered and processed on the farm or in plants inspected by the local department of health. If meat products are destined to be sold through the retail or wholesale system within the province, then the slaughter and processing must take place in provincially (domestic) licensed plants and the meat must be inspected by a provincial inspector. If the market sought is out of province sales or exports out of Canada, then federally inspected and licensed slaughter and processing facilities must be used. And finally, if the destination market is Europe, then slaughter

and processing must take place in a European Union (EU) approved plant. Western Canada currently does not have an EU approved facility for specialty livestock (Sundom, 1994).

Processing in B.C. ranges from on-farm slaughtering for local sale to full federal slaughter plants and further processing facilities for sale into out-of-province markets. At the moment there are only three federally inspected slaughtering facilities spread across B.C.: one in Langley in the lower mainland area; one in Northern B.C.; and a third in the Cowachin Valley on Vancouver Island. For some producers the distance to any one of these facilities is quite far and can become a cost impediment to the development of markets beyond the farm gate, especially for the small farmer. While some of the producers who face this problem have discussed pooling their kills and sharing transportation costs, it does not appear that this is happening to any great extent.

The problem of limited processing capacity has intensified recently due to an overlap in government jurisdictions. Recently, the municipality of Vernon declared itself a "meat-inspected" area. This has meant that producers in the area who were formerly slaughtering their animals on farm are now being forced to send their animals to licensed and inspected slaughtering facilities in order to sell their products into local previously established markets. Although it is not sure at this point how strict these regulations are, many fear that other municipalities and districts will soon follow Vernon's example without knowing the full repercussions of such a declaration on the industry, including increased costs to both producers and consumers. Members of the B.C. Fallow Deer Association are currently involved in a lobbying effort to make policy makers aware of the repercussions of this decision on the industry.

BY-PRODUCTS

Although venison is the principle product from raising fallow deer, there has been an increased demand for velvet and other animal by-products. Antler velvet and shavings are purchased primarily by distributors who export them to various Asian countries where they are used for medicinal purposes to increase vitality, energy and overall health. To make the cost of exporting deer velvet worthwhile, a large volume must be collected before a market can be found. Consequently, a single producer will rarely have enough velvet to be able to find a buyer. To mitigate this problem the BCFDA started a velvet pool. The velvet is collected from producers and stored in freezers until sufficient quantities are obtained and a buyer can be located. Fortunately, none of the marketable aspects are lost when velvet and other byproducts are frozen.

As a result, many producers are able to supplement their income from venison sales with that from velvet sales.

DEVELOPING MARKETS FOR VENISON

The most difficult challenge facing the fallow deer industry in British Columbia is the development of consistent markets for domestic farmed venison. The majority of venison produced in B.C. is sold domestically, either to restaurants or at the farm gate. The bulk of the restaurant market is currently for prime cuts demanded by white table-cloth restaurants. Many producers process lower quality cuts into venison products such as jerkies, sausages, and patties for sale in local markets. The retail market for venison is currently quite small with chain stores shying away from the product. It is anticipated that venison will become more available at the retail market once venison is more entrenched in the restaurant system and once consumer demand has been built up through exposure to the product in restaurants. Potential opportunities for venison and venison products include flight kitchens and cruise ships, for their first class meals, and target specialty markets, such as heart patients and people with allergies.

Although domestic venison has traditionally been marketed locally by the producers themselves, larger domestic markets and some export markets are beginning to be pursued by wholesale operations (such as Northern Velvet discussed in detail below) through the use of food brokers and distributors. Costs to producers who are marketing their product through wholesalers are higher due to processing, transportation, storage, and marketing costs. In addition, because there are more producers than distributors, producers do not have a lot of control over the price that they receive for venison which is not direct marketed. As a result, producers can expect increased prices if products are sold on a farm-gate basis, especially if specialty markets are targeted. However, direct marketing involves substantially more effort on behalf of the producer.

MARKET CHARACTERISTICS

In developing markets for venison, firms need to be cognizant of a number of characteristics which can factor either positively or negatively in the development of these markets. For purposes of discussion we have labeled principle factors as: price competitiveness, education and information, and consistent quality and supply. However, it is important to note that each of these factors are highly interrelated. For example, the price consumers are willing to pay for venison is

directly related to amount of knowledge they have regarding product attributes and quality. As a result, the market characteristics described should not really be thought of in isolation.

Price Competitiveness

Price competitiveness is very important because of the global nature of the industry. As was mentioned earlier, previous to the domestic production of venison, a number of white table cloth restaurants were already purchasing venison from local distributors offering New Zealand venison products. Today, even though approximately 80 percent of the market is being served by B.C. fallow deer producers, Canada still imports venison from New Zealand. In 1994 and 1995, Canada imported 64,157 kilograms and 36,443 kilograms of venison, respectively. Approximately 95 percent of these imports came from New Zealand (Saskatchewan Agriculture and Food, 1996).

Production costs are considerably lower in New Zealand than British Columbia. As a result the prices offered by New Zealand growers, even with transportation costs included, are generally lower than those sought by B.C. producers. Therefore, although most chefs are willing to support B.C. products, they are unwilling to pay a significant premium for B.C. venison, given that they can easily import a similar product from New Zealand.

Price competitiveness relative to other forms of meat is also important in developing new markets for venison in British Columbia. Specialty meat purveyors in the Vancouver area are generally interested in handling the product, but only if prices were considered to be "reasonable" for the general consumer and relative to other specialty meat products. To date only a few butcher markets and specialty stores stock venison products. However, sales from this type of outlet are expected to increase, especially in more affluent neighborhoods, once people become more aware of the value of venison rather than the relative price. This awareness can be encouraged through consumer education and information dissemination.

Product Awareness

Part of being price competitive with other meat products involves the awareness of restaurateurs and consumers about the value of venison rather than the price. There are at least three attributes which figure in the comparative value of venison. First, although the price per pound of venison is higher than prime cuts of traditional red meats, venison is a much richer

product. Therefore less venison is required per portion compared to other meats. Consequently, venison is best marketed to restaurants on a "per plate" rather than "per pound" basis. Secondly, many consumers are not aware that venison is raised without chemical requirements and is lower in fat, cholesterol and calories than traditional meats, such as beef and pork. These features are appealing to a growing number of health conscious consumers. Thirdly, many consumers negatively associate venison with a gamey taste. However, fallow venison does not have a "gamey" flavour, therefore the demand for farmed venison could increase if more consumers were aware of this attribute. If chefs and consumers were more aware of the above attributes they may be more willing to try the products and pay a higher price for them relative to other meats.

Awareness regarding the proper preparation of venison products is also an important consideration. Even if people are familiar with the attributes of venison and its comparative value, they may shy away from buying it as they are unsure of how to prepare it. Unfortunately, it is very easy to do a poor job cooking a meat as lean as venison. Therefore consumers may be enticed to buy venison, only to be turned off of the product by overcooking it. For chefs and consumers alike, awareness of appropriate cooking methods and presentation may encourage them to feature venison on their menu or to try venison at home.

Consistent Quality and Supply

Consistent quality and sufficient supply are important factors for the development of any of the larger markets beyond the farm gate, including restaurants, retail chains, and export markets. Restaurants will clearly not put venison on their regular menu unless the supply is guaranteed. Although more family style restaurants may start demanding lower quality cuts, the bulk of venison is sold to white table-cloth restaurants who stake their livelihood on exceptional quality.

Grocery chains have different procedures that a firm must follow before a product can appear in a store. However, all chains require that the firm selling the product provide assurances regarding consistency of supply, quality and information on all aspects of operations and product handling. Specific types of information demanded from potential suppliers include: inspection status and location of the processing plants; visual appeal and federal approval of labeling; type and method of packaging; how it is distributed to retailers throughout the province or Western Canada; and, of course, the price. Retail chains will not accept any financial liability for a product which does not sell and it is up to the supplier to do follow up on sales and

undertake promotional and marketing activities. In some cases minimum threshold volumes are required to maintain a listing. Some stores also require information regarding the financial history of the firm, in-store demonstrations and/or payment for shelf space.

Of course, consistent quality and supply are also crucial to the development of export markets. The development of these markets usually requires establishing a long-term relationship with food brokers and distributors. These firms will rarely promote the product directly, but if they know the product to be of consistent quality and supply, they will be more likely to highlight it as one of their selections. Canadian growers exported 25,767 kilograms of venison in 1994 and 22,102 kilograms in 1995. About 58 percent of venison exported from Canada goes to Japan and 31 percent to the USA (Saskatchewan Agriculture and Food, 1996). However, for the time being these markets are expected to remain somewhat limited due to the volumes required for steady supply contracts.

Much of the success of the New Zealand industry is based on quality production. The industry has been active in developing good quality products and building a reputation on quality through a major marketing program. The marketing program involves the creation of a new name "Cervena", to identify premium New Zealand farmed venison. Marketing of “Cervena” products is limited to licensed franchises (exporters) and only top quality venison, according to size, age, and quality standards, is included under the label. However, because New Zealand is a southern hemisphere country, producers are six months out of phase with North America and hence have some difficulty in supplying fresh chilled product to the major North American markets during the highest sales season, fall and winter. This represents an opportunity for domestic growers and has prompted some New Zealand producers to invest in production facilities in B.C. to complement their domestic supply and serve their markets year round.

DEVELOPMENT INITIATIVES

A number of initiatives have been undertaken by groups of producers and industry players to try address some of the challenges and opportunities associated with the development of markets for B.C. venison. In this section we discuss a number of these initiatives.

BCFDA

In addition to educating members regarding production practices, the BCFDA has also played a role in providing members with market information, such as prices, and in undertaking promotional activities. Market information is presented to members through the publication of regular newsletters and at the annual general meeting of the Association. With funding provided from the provincial government, the BCFDA also funded a market assessment and market strategy study. Part of this study highlighted the importance of establishing quality guidelines. Based on this recommendation the Association organized an information session on implementing a grading system and investigated the feasibility of setting up such a system. However, it was decided that the costs involved could not be justified. As part of a promotional effort the Association published a consumer brochure which focused on advertising the positive attributes of venison meat (i.e. a healthy, tender, low-fat red meat).

In general, however, the market development activities of the Association have been somewhat limited for a number of reasons. First, membership in the Association is voluntary and currently only half of the fallow deer producers in province are members. Although producers agreed to the introduction of a levy in 1992 in order to fund market development activities, such a system was never put in place, partly due to bureaucratic lags by some of the government agencies involved in the process. The low level of membership and the lack of a mandatory levy system have meant that the operating budget of the Association is limited. Secondly, the commitment of those producers who are members varies considerably. Hence, it is difficult for the Association to encourage volunteers from outside a core group of dedicated producers. Finally, the expectations and demands that members have of the Association are also very different. This last point has important ramifications on the types of marketing activities and initiatives which are supported by the majority of the membership.

While a number of members are very interested in having the Association involved in the marketing, those producers who have successfully developed markets on their own are against such a move. In recent years, many producers have left the industry primarily due to price instability, but also in part due to structural changes in the New Zealand industry that have caused spasmodic returns for B.C. producers. From 1995 to 1997, the number of fallow deer in B.C. dropped from 22,000 head to 15,000. Those producers who remain in the industry have had to work hard to develop local markets for their products. Many sell prime cuts directly to local

restaurants and meat markets, and quite a few are involved in marketing their own processed products, such as jerkies and sausages. In each case these initiatives have involved considerable investment of time, money, risk and effort. For example, one producer has purchased a mobile vending unit (much like a hot dog stand) which is regularly taken to farmers' markets, both to sell and to promote assorted venison products offered by the firm. Another has developed a small recipe booklet to provide information to customers regarding venison preparation and to encourage repeat sales. Such producers would likely feel that their investments and markets would be threatened if the Association was to get directly involved in marketing. Producers involved in large scale marketing initiatives (such as Northern Velvet described below) are against the Association becoming directly involved in marketing as this would mean additional competition for them as well.

Although a number of producers have been able to stay in the industry by developing local markets for their products, most individual growers have been unable to produce the volumes necessary to develop larger markets beyond the farm gate. Pacific Northwest Venison Producers (PNVP) and Northern Velvet are examples of initiatives undertaken by groups of producers in order to achieve the supply and economies of scale necessary to become involved in large scale venison sales.

Pacific Northwest Venison Producers

One of the first large scale marketing efforts began in the spring of 1989 with the formation of the Pacific Northwest Venison Producers (PNVP). The company was organized as a co-operative made up of 26 deer farmers in B.C., Washington and Oregon. It grew out of the need for growers to market their product, while recognizing that marketing is a specialized skill which involves considerable resources. "The small producer if required to market on his own must devote a disproportionate share of sales and time to this effort. Farmers through the years have approached this dilemma through cooperatives, marketing associations, or pools - some form of banding together to achieve economiy of scale. The Pacific Northwest Venison Producers was established to meet this need." (PNVP)

As a member of PNVP, producers needed to commit their entire production to be sold through the company. In return, producers received: a guaranteed market for their product; a floor price established by the board of directors upon the delivery of animals to the slaughter facility; a

say in the operations of the company through a one-member one-vote control system; and an additional dividend payment based on patronage and the returns of the company at the end of the year. The company contracted for slaughter, fabrication, processing and packaging services while maintaining ownership of the product. Products were then marketed under a PNVP label through regional distributors or direct marketing, depending on the location and situation.

The main focus of PNVP's marketing strategy was to ensure top quality control. To do this PNVP established a code of ethics, a set of quality standards and a grading system. Each product sold by the company bore either a "Superior" or a "Premium" quality seal developed specifically for PNVP. The fresh markets in Canada and the United States were supplied only with venison which was graded "Superior Pacific Northwest Farmed Venison". To be graded as such the carcasses needed to meet strict fat, age, stress, and finish standards. Animals slaughtered which did not meet the prime standard, but which met another lower set of criteria bore a quality seal of "Premium Pacific Northwest Farmed Venison". In order to develop a market for trim and "Premium" quality venison, PNVP invested heavily in developing a market for processed products, such as sausages and venison jerky (PNVP).

Active promotional efforts and a strong relationship with distributors were recognized as important elements in fostering the success of PNVP. As was noted in a company brochure: "The market for venison in Canada and the United States is strong, but it must be nurtured. Effective promotion in cooperation with and through our distributors is essential (PNVP)." Birscoe's Fine Foods in Coquitlam B.C. was given exclusive distribution rights of PNVP products in Canada. PNVP also worked closely with distributors based in Seattle to serve the U.S. market. Through this relationship, Pacific Northwest Venison Producers was able to sell venison through Larry's Markets in Seattle. Larry's Markets is an upscale retail chain which carried venison in their gourmet foods "Chef's Cuts" section. PNVP actively promoted their product through product samplings at the various Larry's Markets from time to time. This type of promotion was effective but needed to be ongoing, as sales would increase when product demonstrations took place and then trend down until the next occasion. PNVP was also able to sell directly to a number of restaurants in the Seattle area.

Unfortunately, PNVP was forced to shut down their operations in early 1992 when the Director of Fish and Wildlife of Washington State placed an illegal ban on live imports into the United States. This effectively shut out 90 percent of the established markets to B.C. producers.

In response, PNVP was forced to put all processing plans aside and redirect their resources towards suing the Director of Fish and Wildlife. After a long, drawn out legal battle, the courts ruled that the ban was indeed illegal, since there were no legitimate health concerns to support such a ban. However, by the time the dispute was finally settled, PNVP's resources were drained and their markets had collapsed.

Northern Velvet

Northern Velvet began in June of 1993 as a consortium of five of the largest fallow deer growers in B.C. At that time the consortium represented a combined production of approximately 10,000 deer, which translated into about 1500 fallow carcasses to be marketed annually. The primary objective of the group was to be able to pool resources to enable the members to compete with venison imports from New Zealand and obtain a significant share of the local food service venison market.

Northern Velvet acts as a wholesale outlet for venison and, while specifically formed to market the stock of the group members, North Velvet also buys deer from other B.C. Fallow Deer Association members. The firm sees its role as one of educating, motivating and providing back-up service for the sales representatives who distribute and sell Northern Velvet products to food service markets throughout B.C. The consortium worked together to develop the brand name of "Northern Velvet" which was chosen to differentiate their product from imported red venison from New Zealand in the "southern" hemisphere and to bring to mind the "velvety" fine-grained texture and tenderness unique to fallow venison.

The firm has developed a system whereby the supply demanded by customers is determined by distributor orders placed one week in advance. Accordingly, Northern Velvet then processes the required number of carcasses at a federally inspected plant on a contract basis. Deer are delivered to the plant on Sunday, processed on Monday, with fresh deer products available in a Vancouver warehouse on Thursday for distribution to restaurants across the province on Friday for weekend use. Northern Velvet has also developed a grading scheme
to provide consistency in pricing and quality assurances to their customers. The appropriate grade is determined at the slaughtering plant and is based on the age and size of carcasses. In cases where there is fat or bruising on the animal, the plant manager is appointed as an independent assessor. Prices are determined by grade but, because Northern Velvet products are sold through

distributors, prices also reflect the cost of distribution and warehouse storage. As a result the prices offered by Northern Velvet are typically much lower than those which producers can receive if they are willing to market their product on their own.

To make distributors and chefs aware of and confident in Northern Velvet products, the company undertakes a number of different promotional activities. During the summer of 1993 Nothern Velvet allocated $20,000 to the development of: (1) a chef and distributor brochure; (2) a consumer handout; (3) a wallboard with order forms for use in retail outlets and professional kitchens; and (4) product and box labels. Due to the current low volume of sales, no single distributor could justify or afford to produce such promotional materials. To further assist distribution sales representatives Northern Velvet prepared "price per plate" serving costings and accompanied them when they made sales visits. Other promotional activities include the donation of venison to functions, sponsoring culinary events, and maintaining a booth at trade shows, such as the Food and Hospitality Show.

Northern Velvet has also been actively trying to augment local consumption through in-store demonstrations at upmarket retail outlets, providing articles to local Chinese newspapers and participating in media events. The company has also installed a 1-800 number and maintains an internet site (www.hqlc.com/venison) which provides nutritional information and a selection of recipe ideas for venison products available from Northern Velvet.

Since many local food service markets were already being filled with imported, quality red deer venison, Northern Velvet found it necessary to price competitively when compared to New Zealand products in order to encourage chefs to try the local venison and place it on their regular rather than their special menu. Northern Velvet's strategy was to entice people to try their product with a competitive price and then gradually increase the price once customers had confidence in the products being offered, while keeping in mind that venison needs to remain a profitable item for the restaurants themselves and be competitive with other specialty items. Because of the high level of competition from New Zealand and the fluctuation in price, this strategy meant that the prices received by group members were sometimes lower than their cost of production. However, it was hoped that in the long-run, once local markets were penetrated, this situation would be reversed. Somewhat paradoxically, higher prices are sometimes paid to non-member producers than members in order for Northern Velvet to secure the supply required to meet customer orders.

It would appear that the marketing strategy is slowly beginning to show positive results. Even though prices remain lower than the members would like and two members have dropped out of the consortium, Northern Velvet has been able to secure markets. The majority of B.C. restaurants are now purchasing B.C. farmed fallow venison, rather the New Zealand products. Northern Velvet has also had some success in the development of export markets, particularly in Japan and the United States.

SASKATCHEWAN WILD BOAR INDUSTRY

INDUSTRY OVERVIEW

Like the fallow deer industry in British Columbia, the wild boar industry began in Saskatchewan during the late 1980s and early 1990s. For producers contemplating ways to diversify their operations, wild boar seemed to be a good fit as they have many attractive production characteristics. Wild boar are prolific, hardy and easy to care for. Large numbers can be kept on a small area of land and the best land for wild boar is often marginal land with bush and sloughs. Unlike fallow deer, wild boar are considered to be a domestic farm animal in Saskatchewan and are subject to regulations which apply to the establishment and operation of domestic livestock operations. The cost of fencing materials, shelters, handling facilities as well as the cost of breeding stock are relatively cheap when compared with other specialized livestock species (Saskatchewan Agriculture and Food, 1994).

Each of the factors listed above have contributed to a relatively rapid growth in the production of wild boar. There are currently approximately 88 producers of wild boar in the province. The provincial herd size was estimated to be 12,000 head in 1996 and is anticipated to be 50 percent larger by the end of 1997. However, despite the growth in production, the industry faces a number of challenges in the developing consistent markets for wild boar. In the early 1990s, three main markets were seen as opportunities with growth potential: the breeding stock market, the hunt market, and the meat market. However, by 1997 the outlook for the industry is much less optimistic. The breeding stock market has become saturated and largely disappeared within the last year and a half. This is primarily due to the fact that wild boar are prolific, farrowing twice a year and five to eight young per farrowing. Thus a desired line of wild boar stock can be increased in a short period of time.

The hunt market for wild boar is quite narrow. The market is small and seasonal and the majority of buyers are located along the eastern Seaboard of the United States, a significant distance to transport live animals. For the hunt market appearance is a very important factor, therefore pure wild boar, called full-bloods, are preferred over wild boar and domestic hog progeny, called standards. Full-bloods differ considerably from "standards" as they are "wilder" in appearance and behaviour. Standards are raised to meet the demands of certain meat markets, such as Japan, which prefer an higher amount of fat on the carcass. Standards are also easier to produce, as they are more prolific and gain weight faster than full-bloods.

The nature of the hunt market makes it difficult for Saskatchewan producers to pursue business with the hunt farms directly and receive a return adequate to cover their production costs. Given the distances the wild boar must travel, a semi-trailer loads of animals is required to justify the transportation costs. However, the majority of producers in Saskatchewan have herd sizes of less than 350 wild boar and oftentimes few animals within the herd will meet the hunt farm requirements. To achieve the required volume Saskatchewan producers have usually sold to their animals to other Canadian producers or groups which assemble trailer loads for the hunt market, such as the Interlake Wild Boar Co-op Ltd., operating out of Riverton Manitoba. In almost all cases the producer is still responsible for transportation to a collection point in southern Manitoba. Once the producer has accounted for transport costs and the cost of marketing services provided by numerous intermidiaries, the net price can be well under the cost of production, depending upon the markets found and the quality of the animal upon delivery.

Interest in the potential market for wild boar meat grew rapidly with talk of the large consumer demand for lean meats. However, unlike venison in British Columbia, wild boar meat lacked established markets from the outset and was a new commodity to Saskatchewan consumers. Currently the domestic market for Saskatchewan wild boar meat is virtually non-existent and will require significant effort to develop. To date the only market for wild boar meat which has been developed to any extent is the export market to Japan. In the following section we discuss some of the characteristics of the potential markets for wild boar meat and examine some of the challenges involved in developing these markets. We conclude by examining some of the ways in which industry participants have responded to the challenges facing the industry.

Domestic Markets

Local markets for wild boar meat and meat products have largely been individual farm gate sales of whole animals or processed products such as jerky, hot rods, smokies, sausage or burgers. In fact wild boar is more likely to be available through stores in rural communities, where store owners may be more willing to help a local producer market his product, than in more established retail outlets. Within the last year or two, most producers have outgrown the ability to "farm gate" meat and meat products, but they have not increased in size enough to make a serious attempt at entering large scale retail outlets or developing the high end restaurant markets.

The domestic markets for wild boar meat appear to be relatively small in size and, according to many producers, have actually shrunk in the last few years. As with the domestic market for B.C. venison, price competitiveness, product awareness, and consistent quality and supply are important factors in the development and maintenance of domestic markets for wild boar meat, including high-end restaurants, retail outlets and farm gate sales.

A few producers have sold wild boar meat to high-class restaurants in major Canadian cities, but there are some problems in selling to these markets on a regular basis. To begin with, wild boar meat is usually more expensive than traditional meats. Hence, being price competitive on the menu is an important factor in increasing the demand for wild boar. Secondly, restaurants do not want an entire wild boar carcass, preferring only certain cuts
for resale. And finally, many chefs are not familiar with cooking and presenting wild boar products.

There are very few retail outlets for wild boar products in Saskatchewan. A survey of Saskatoon meat stores and butcher shops revealed only one butcher shop, The Country Butcher, that carried wild boar on a more or less regular basis—this shop is no longer in operation. One other butcher shop that tried selling wild boar will not carry it again, saying that customers are scared to try wild boar, it is overpriced and the meat they received had more fat than pork does. Further, there was no product support in the way of assistance or suggestions as to the proper cooking techniques to retain the tenderness.

Accessing appropriate processing facilities is an additional challenge for wild boar producers in search of meat markets. As with fallow deer, the markets sought for the wild boar meats determine the minimum level of inspection required and, hence, where the animal is slaughtered and processed. Finding appropriate processors for slaughtered wild boar does not appear to be particularly difficult. However accessing federally inspected slaughter facilities does appear to be a barrier to market development. One of the biggest problems in slaughtering wild boar is the need to skin the animals. Skinning requires more work and time to complete than scalding, which is usually done for domestic hogs. Further, the abundance of hair on a wild boar requires more care in the slaughter process to avoid hair contamination of the carcass. This results in higher costs for slaughtering wild boar as compared to domestic pork. Saskatchewan has six federally inspected slaughter facilities, none of which is specifically designed to handle specialty livestock. Of the six slaughter plants, only Intercontinental Packers Ltd. of Saskatoon and Moose Jaw Packers of Moose Jaw are willing to slaughter
wild boar.

EUROPEAN EXPORT MARKET

Accessing appropriate slaughter facilities is also a major barrier preventing Saskatchewan wild boar meat from entering one of its largest potential markets—Europe. During 1993, France imported almost 17,000 tonnes of wild boar meat. However, much of this meat may have been re-exported to other European countries—it is estimated that approximately 5,500 tonnes of wild boar meat were consumed in France in 1993 and that consumption increased 20 percent from the late 1980s to 1993. Unfortunately producers in Saskatchewan are not able to access the European market because there are no European Union (EU) approved slaughter facilities in Western Canada.

In addition to the establishment of processing facilities, product quality and identification is an important factor affecting the future development of European markets. In Canada, an animal is classified a wild boar even if there is a significant amount of domestic hog in the genes. In many European countries this classification would not be acceptable. For example, in Britain only full bloods can be marketed as wild boar and the British Wild Boar Association (BWBA) has a registration system in place to identify full blood animals. If Canadian producers wished to enter the British market, they would need to develop a similar system of animal identification in order to market their products as wild boar. A registration system would also allow Canadian producers

to differentiate wild boar products in continental Europe from the large amounts of feral hog imported from Australia and New Zealand.

JAPANESE EXPORT MARKET

To date the only export market which has been developed to any extent is Japan. According to the Canadian trade commission in Japan, Canada exported 99 tonnes of wild boar meat to Japan in 1996. Although some market opportunities exist for wild boar in Japan, it should be noted that the potential for this market is relatively limited (consumption figures for 1992 were estimated at 310 tonnes). There are a number of reasons for this. First, wild boar is a niche product in Japan, rather than a consumer ready product. Part of this is the nature of Japanese demand for red meat in general. Japanese do not eat as much red meat per person as North Americans and fish remains the largest source of protein for the urban markets. However, this pattern is slowly changing as more beef and pork is being consumed. Secondly, although there is a traditional market for wild boar, Inoshishi in Japanese, it is very limited both seasonally and regionally. It is a traditional specialty meat in the Kansai region of Honshu as well as the islands of Kyushu and Hokkaido. In these regions the consumption of wild boar traditionally occurred during the winter months from October to February.

Canada is not known in Japan for producing specialty meats. This poses an extra obstacle for exporters (Wehrmann). The Japanese importers are concerned about Canadian exporters ability to properly service their market in terms of security of supply as well as having a wide variety of products available. Canada's current attempts at marketing wild boar in Japan are not part of an organized effort and depend heavily on establishing and maintaining personal contacts and relationships with a small number of importers. On a recent trade mission to Japan, a representative of the Wild Boar Federation of Canada, Harro Wehrmann, observed that a coordinated marketing venture among the numerous Canadian specialized livestock groups would be viewed more favorably by the Japanese importers. Such an effort would not only open more doors in the Japanese market, it would make better use of scarce resources in marketing Canadian specialty livestock products and it would help to establish a Canadian presence in export markets.

Wehrnmann also noted that product quality and product attributes are of the utmost importance in serving the Japanese market. According to the main importers of wild boar meat in Japan, the meat must fulfill three criteria: a dark red colour accompanied by a very white fat

layer; very tender; and packaged and presented in an appealing way. Buyers will only be willing to pay a premium price if these criteria are met and only product of the highest possible quality is shipped to the country.

MARKET DEVELOPMENT INITIATIVES

The characteristics of potential markets for wild boar meat, in particular export markets, combined with the small herd size of the average wild boar producer, point to the need for concerted and coordinated initiatives for development to occur. Although there have been some attempts at industry coordination, many of these attempts have been hampered by a number of different issues. The recent efforts of the Western Canadian Wild Boar Association (WCWBA) to develop a distinct breed of full-blood wild boar provides an example of such an initiative. An exception is Saskatoon Specialty Meats which offers an example of the types of initiatives involved in the successful development of potential markets.

CANADIAN WILD BOAR

For the past two years, individual members of WCWBA have been participated in a project to develop a breed registry and establish breeding stock standards. The impetus behind this initiative is to develop a distinct breed of full-blood wild boar named the Canadian Wild Boar. Unfortunately the process has been marred by problems of coordination among producers and the WCWBA.

One of the biggest stumbling blocks has been a lack of consensus regarding support for the project. Some producers feel that a breed registry will be a useful marketing tool for both current hunt markets and potential meat markets. The breed registry would aid in the identification of animals appropriate for hunt markets and would lend credibility to assurances regarding product attributes for the future development of certain meat markets, particularly Europe. However, other producers question the relevance of a breed registry and even the need for full bloods when standards (which have more fat than can usually be found on full bloods) are more suitable for serving the only current market for wild boar meat—Japan. Not surprisingly the latter group does not wish to see the resources of WCWBA devoted to the project. Hence, the division between producers has effectively stalemated a process which, although not useful for particular producers, could help the industry to develop as a whole.

SASKATOON SPECIALTY MEATS

As was mentioned previously, to date the only market for wild boar meat that has been successfully developed is the export market to Japan. This development has been largely due to the efforts of one company, Saskatoon Specialty Meats (SSM). Saskatoon Specialty Meats have a high degree of vertical integration within the operations. Mr. Blazeiko, the owner, is a producer who performs the commodity assembly function for his animals as well as those of other producers before having the wild boar slaughtered at Intercontinental Packers in Saskatoon. The processing of the quartered wild boar is completed at the SSM plant. SSM then coordinates the transportation of their product to the Japanese wholesale buyers. One of the wholesale buyers has an investment in SSM. SSM's success is due to previous Japanese marketing experience by the owner, the partial ownership by a Japanese buyer, and the ability of SSM to identify the needs of the market and to address these needs by coordinating production, processing and marketing activities.

Saskatoon Specialty Meats primary function is the processing and marketing of wild boar meat for the Japanese market. However, SSM has strong links with the production side of the industry as well. SSM works directly with a handful of the provinces largest producers to ensure that access to sufficient volumes of wild boar of the variety demanded by the Japanese market is maintained. The company also buys wild boar from smaller producers on a less regular basis.

Serving the Japanese market has been a "learn on the job" experience for SSM. The Japanese customers of SSM want a product that is ready to cook and of exceptional quality, for example, there can be no knife marks on the products. Unlike the North American approach to meat where everyone knows the cut or product, many of the Japanese customers have developed cuts and products that are trade secrets. It has therefore become necessary for SSM to not only perfect proprietary cuts and products (SSM started with 5 products and now has over 22 products) but also maintain the secrecy of these products. Fortunately, although SSM produces proprietary products for a certain customer, it has not limited SSM's ability to service a broad range of clients. In fact, the Japanese customers encourage SSM to find other customers to reduce the dependency on any single customer, thus aiding the success of SSM in Japan.

Meeting the Japanese demand for perfection in wild boar products has not been an easy task.

During the first few years of operation, SSM contracted out the processing of wild boar meat to other firms. However, the quality of workmanship was marginal. According to Ron Blazeiko, owner of SSM, during this time the entire Japanese market was almost lost due to quality problems with Canadian exports. A shipment of 40 tonnes of wild boar meat from another company was rejected, tarnishing the image of the Canadian wild boar industry and prompting Japanese importers to look to other countries for supplies. In an effort to improve control over the quality of SSM's products, the company purchased a plant in 1996 and dedicated it to processing wild boar. SSM now employs about 7 meat cutters trained in the processing of wild boar. The company also has two Japanese trainers who teach, inspect and assist in the production of wild boar products. As a result, the quality of work has improved significantly; the processing at the SSM plant is meticulous, resulting in uniform products which appeal directly to their Japanese customers.

In the beginning the Japanese customer wanted only the darkest red meat, but over time SSM has been able to find that other Japanese markets are accepting a wider range of colors for different buyers. The significance of finding customers that accept a wider range of meat colors is that more of the wild boar that are slaughtered can be processed for the Japanese market. SSM has also found it necessary to improvise a suitable grading system for wild boar meat. While there is a meat color chart for wild boar, it only has six color grades for meat and does not go far enough into the dark red end of the range for Japanese customers. Therefore SSM improvised with the Australian beef color chart, with nine color grades for meat and eleven color grades for the fat. The Japanese were familiar with the Australian color chart, having dealt with Australian beef, so it has become an acceptable color grading system for both parties.

WHAT HAVE WE LEARNED?

Fallow deer producers in British Columbia and wild boar producers in Saskatchewan face a common challenge—developing markets for their products. Both industries have developed to the point where the breeding stock market is becoming saturated and producers are now at the stage where they would like to see stronger markets for meat being developed. Wild boar producers face potential export opportunities to Japan, while fallow deer producers face opportunities in the development of larger domestic markets, as well as export markets to the United States. Developing these markets requires: identifying the needs of the potential consumer; making the

consumer aware of the product and how the product can meet their needs; and meeting those needs with a consistent supply and quality of the products being demanded.

Both of the cases presented in this chapter offer examples of where the neoclassical model of economic development is limited. In each case there are examples where producers would benefit from changing their institutional arrangement to access potentially profitable opportunities. Examples include establishing processing facilities, engaging in product promotion, developing a grading scheme, and pooling product to lower transportation costs. However, in both cases only a select group of producers have been able to achieve the level of coordination necessary to undertake such initiatives. This suggests that the mere existence of potential profits is not enough to induce the development of an industry and lends support to the notion that the problems associated with contractual uncertainty and collective action can be significant barriers to industry development.

CONTRACTUAL UNCERTAINTY

The lack of EU certified slaughtering facilities to serve European markets for wild boar meat can be used to illustrate some of the problems associated with contractual uncertainty, in particular the hold-up problem discussed in chapter 3. To make an investment in processing facilities worth while, a potential investor would like a commitment from producers regarding a certain volume of wild boar to ensure that he can earn a fair return. However, once the facility is built, the processor is put in a vulnerable position relative to producers. An investment specific to the processing of wild boar destined for the EU market will have been made and will therefore be a sunk cost. As a result, the processor faces the possibility of having to pay producers a high price to obtain product, since a certain volume of wild boar is necessary to keep the operation running and few alternatives exist. A lack of credible commitments on behalf of producers and the processor's fear of a potential hold-up could explain why such a facility remains to be built in Western Canada.

The ban on live imports of venison into the United States is another example of how contracts can be overturned, leading to a loss of economic benefits. As discussed, the ban effectively shut out 90 percent of the established markets to B.C. and forced PNVP to put their processing plans aside and redirect their resources towards suing the Director of Fish and Wildlife. Although the courts eventually ruled that the ban was illegal, PNVP's markets had collapsed in the meantime.

Such trade actions provide a basis for hold-up problems, since in the future companies may be less likely to develop markets if they know that these markets may disappear overnight.

The story of Saskatoon Specialty Meats provides an example of how contractual uncertainty can be overcome. SSM faced considerable uncertainty regarding product quality when the company choose to have wild boar meat processed on a contract basis. Once the wild boar were processed (a sunk investment) SSM faced few alternatives but to accept and try to sell the meat, regardless of the poor processing quality from the contractor. However, without adherence to the quality standards expected by SSM's customers, SSM ran the risk of losing its Japanese market. The problem was addressed through vertical integration when SSM purchased a processing plant to complement its marketing activities. By controlling the cutting themselves and by having a Japanese buyer as a partner, SSM was able to provide the quality assurances demanded by the Japanese export market. The success of SSM also outlines the importance of establishing an ongoing relationship with other industry participants, in this case producers and customers, and a willingness to be open and responsive to the demands of the market.

COLLECTIVE ACTION

The wild boar case also serves to illustrate some of the problems associated with collective action. The development of a unique brand of Canadian Wild boar could provide customers with assurances regarding product attributes and quality, aiding in the development of potential hunt and meat markets in the U.S. and Europe. However, the development of a brand of wild boar requires a considerable amount of resources, making it difficult for any one producer to undertake such an activity alone, and requiring a certain degree of coordination amongst producers. The efforts of the Western Canada Wild Boar Association (WCWBA) to undertake this initiative on behalf producers illustrates the impact of the free-rider problem. While some of the members of WCWBA do not feel that a special brand of wild boar would benefit their operations, others see it as having the potential to increase their future returns through the development of new markets for their product. However, as a WCWBA project, all members would be contributing resources to the initiative, through their dues in the organization, regardless of the benefit they receive. This creates a situation where those who benefit from the initiative are seen as "free-riding" on the resources contributed by those who do not benefit. In essence, the Canadian Wild Boar brand developed by WCWBA would be an "open-access" good within the industry. As a result of this characteristic, the level of support required for the project to go through has not been attained.

A number of fallow deer producers faced a similar situation—they recognized that developing a certain standard for product quality and preferred product attributes could provide the assurances necessary to expand the domestic market for venison. However, they also recognized that getting all the members of their producer association (BCFDA) to invest in such activities could take a long time. Instead, a group of producers who were interested and willing to invest in market development activities formed Pacific Northwest Venison Producers (PNVP). The organization enabled its members to collectively develop product brands over which the members maintained specific property rights. That is, only the members of PNVP could claim ownership rights to PNVP brands. In addition, PNVP enabled producers to act collectively to achieve the economies of scale associated with other marketing activities, such as distribution and promotion at the retail level. Northern Velvet is
a similar example of producers acting collectively to undertake market development initiatives. Both PNVP and Northern Velvet point to the importance of a group of individuals
who share the same goal and who are willing to provide credible commitments (i.e., through the contribution of resources) in achieving collective action and, as a result, industry development.

THE ROLE OF THE GOVERNMENT

PNVP also provides an example of the fragility of collective action and the importance of a supportive external environment. In particular, the moratorium on all deer imports into the U.S. which resulted in the downfall of the PNVP hits home the need for external government authorities to recognize of the legitimacy of collective efforts by industry participants. The abrupt change in local inspection regulations by the municipality of Vernon may also have a damaging affect on the industry, especially if other municipalities follow suit without fully understanding the consequences of their actions.

Examples of government authorities playing a more positive in the development of the fallow deer industry also exist. For example, the government played a crucial role in facilitating the development of trust and breaking down information asymmetries through the formation of the Game Farm Advisory Council. A clear set of regulations with government agents acting as monitors helped the industry provide the necessary assurances to the public and enabled producers to address the various concerns regarding game farming in the province. In addition, BCMAFF encouraged the development of the industry by funding research and the dissemination of production and market information.

THE DEVELOPMENT PROCESS

From the outset the fallow deer industry has faced a number of development challenges. These challenges required the coordination of interested parties to lobby the various governments for permission to farm fallow deer and to work with various interest groups in developing a set of regulations which addressed a broad range of concerns. Fallow deer producers have also worked together through their association to disseminate production information, set up production standards, and develop a market for byproducts. While the association has been less active in marketing, select producers have formed marketing organizations to pool their product, develop grading schemes, product brands and quality standards. Collectively, these initiatives enabled fallow deer producers to squeeze out New Zealand imports over the past 10 years, to the point where today almost the entire B.C. market for venison is met domestically. And, with the establishment of Northern Velvet, markets for B.C. venison are slowly starting to expand beyond high class restaurants and the farm-gate trade into the retail and export markets.

In contrast there has been limited coordination among producers within the wild boar industry. Wild boar is comparatively easy to produce and involves low levels of investment, and, since wild boar are not considered a game animal in Saskatchewan, there are few regulations which influence production practices. Producers selling into the hunt market have relied on industry groups in other provinces, such as Manitoba, to coordinate, pool, and market the volume necessary to warrant the high shipping costs to the U.S. Relative to venison, wild boar meat is an unknown product on the domestic market. A broader export market to Europe appears promising, but a lack of appropriate processing facilities has effectively blocked the development of this potential. To date the only market which has been developed to any extent is the Japanese export market. This development has been largely due to the efforts of one player, SSM.

Contrasting the development process of the two industries lends support to Ostrom's observation that participant-driven institutional change often occurs in an incremental and sequential manner, involving a series of small steps with low initial costs which progressively build upon one another. However, the nature of the complementarities involved in market development also suggest that the ability to evolve in the sequential way the fallow deer industry has, is perhaps somewhat of a luxury afforded by the fact that an established market for venison already existed. It would appear that in order to develop the markets for wild boar meat a number of factors be addressed in tandem, including quality assurance, assurance of product attributes,

assurance of supply, customer awareness of the product, price competitiveness, and access to appropriate slaughter and further processing facilitates. In essence, these activities have important complementarities associated with them—without appropriate and sufficient production, markets cannot be developed efficiently; without sufficient production, efficient processing ventures cannot be established; without processing facilities, markets cannot be developed; and so on. The near simultaneous nature of the complementarities among the activities required to develop new markets for wild boar meat suggest that industry participants should undertake a these activities within a short time frame to achieve the most efficient solution. Failure to do so likely means the full potential of the industry will go untapped.

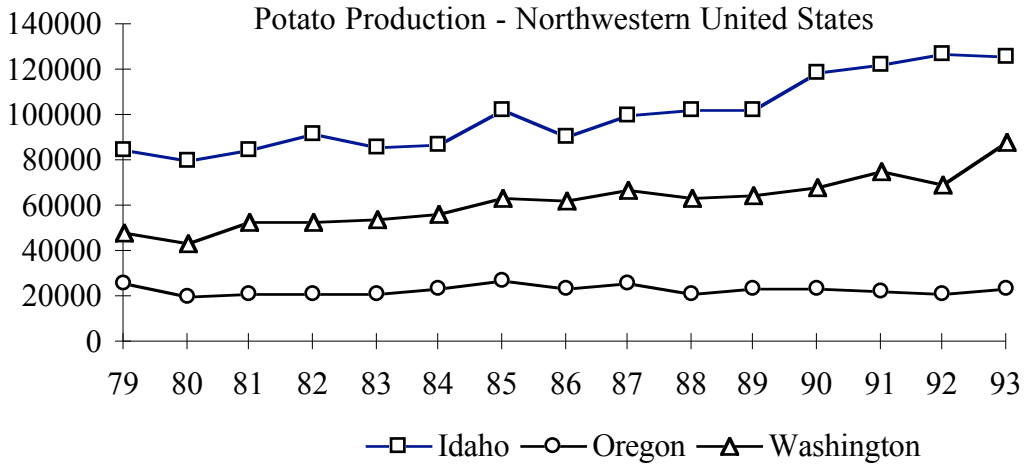
CHAPTER 7

THE SEED POTATO INDUSTRY

ALBERTA AND SASKATCHEWAN

THE CHALLENGES

Over the past 20 years, potatoes have represented a growing industry in Canada with total acreage increasing by 28 percent. In 1995 the marketed production of potatoes rose to 74 million cwt (100 pounds), an increase of 24 percent from 1985. This growth has been particularly significant in the Prairie provinces of Manitoba, Saskatchewan, and Alberta. Much of this growth has been the result of increased production of seed potatoes and the development of a lucrative



export market for these potatoes to the United States.

Figure 2 - Potato Production of Selected Northwestern States

The USA market is attractive to western Canadian seed potato growers because of the sheer size of its table and processed markets. The Northwestern States of Idaho, Oregon, and Washington alone produced 237 million cwt of potatoes in 1993. As is shown in figure 1, the production in Idaho and Washington has also been increasing steadily over the past 15 years. Washington, in particular, is a major market for seed potatoes because they only produce about 10 percent of their own seed requirements and import 90 percent. This market has traditionally been served by Montana, the major seed potato supplier for both Washington and Oregon. However, in recent years western Canadian growers have been able to penetrate this market.

The penetration of Canadian seed into the Northwestern States has not been accomplished through price competition. Canadian growers have in general not attempted to undercut Montana's prices, but instead strive for a price premium based on higher yield performance. "Northern Vigor" is the term coined to describe why, when comparing the performance of seed potatoes grown at different latitudes, northern-grown seed tends to outperform seed grown farther south in terms of greater yield. Although all of the factors involved in Northern Vigor are not yet completely understood, it is conceded that the combination of warm sunny days coupled with cool nights tends to slow the aging process in potatoes. Other important factors contributing to Northern Vigor is the relative isolation of northern grown seed, which helps create a disease-free environment, and young seed, which produces more vigorous plants that are slow to die back. Young seed can provide bigger yields provided the growing season is long enough to take advantage of this effect, an ideal feature for major potato growing regions in the U.S., where 200-day growing seasons are the rule (as opposed to a growing season of 120 days or less which is typical in Canada).

In this case study we examine some of the central features involved in the development of the U.S. seed markets by two western provinces: Alberta and Saskatchewan. The industry environments and development processes characterizing the Alberta and Saskatchewan seed sectors are very different. The Alberta potato industry has a long history of commercial processed, table, and seed production. The motivation to pioneer the development of U.S. seed markets grew out of experienced growers looking for new opportunities for existing production during the 1980s. This development also occurred within an environment of strong governmental support. In contrast, the Saskatchewan potato industry does not as yet have a processed potato sector and the number of experienced seed and table growers is relatively small. However, the

seed sector has, within the last few years, witnessed considerable growth reflecting producers efforts to diversify their operations. This growth has occurred within an environment of little direct support from government agencies, but strong support from non-governmental agencies such as existing firms and universities.

Despite these differences, industry participants in both provinces have, at different times, had to devise ways to address similar challenges associated with developing the U.S. export market. Specifically, to compete with existing suppliers from Montana, producers had to:
(a) guarantee a supply of premium quality seed of the varieties being demanded; and (b) ensure that the U.S. market was aware of this product. Both challenges needed to be addressed jointly for sales contracts to be completed and market development to occur, since promotion and marketing in the seed potato industry fundamentally rests on building a reputation for quality. Without a premium quality product, promotion would not have been sufficient in swaying American potato growers to switch from buying domestic seed at a lower cost with proven results. The same can be said for promotion — even if growers are producing the highest quality product available, if the people interested in purchasing this product do not know about it, the sale will not occur.

ALBERTA

INDUSTRY ENVIRONMENT

The history of growing potatoes in Alberta precedes the formation of the province, with the first recorded commercial growing dating back to 1899. Today there are 130 potato growers in the province, planting 28,500 acres and producing approximately 7.4 million
cwt of potatoes annually. About one quarter of these are produced as seed, with about half (841 thousand cwt) being exported to Washington, Oregon, Idaho and various other states each year. Seed potatoes not going to USA exports go primarily to Alberta commercial growers(Agriculture and Agri-Food Canada, Potato Growers of Alberta).

The Alberta commercial growers have a well-developed domestic processing market, as well as a fresh table market. Fifty percent of all potatoes grown in Alberta are destined for processed markets. Processing potatoes are almost exclusively grown under contract on irrigated land in Southern Alberta. There are five potato processing firms operating in the province: two French fry plants, two potato chip manufacturers, and one dehydrated granule processor. Together, these

firms have sales all over Canada and are currently exporting to the Pacific Rim and Mexico. Depending on production and prices some Alberta potatoes also move to Manitoba processors. Fresh market potatoes are grown all over Alberta under varying conditions, but the bulk of production is concentrated in Southern Alberta and around the city of Edmonton. Alberta fresh market potatoes are marketed throughout Western Canada with limited exports to the U.S.A. There are 12 packing houses in the province which pack fresh potatoes and usually sell to wholesalers who deal directly with retailers. Packers also sell to food service companies who sell to the hotel and restaurant markets (Potato Growers of Alberta).

PIONEERING THE DEVELOPMENT OF U.S. MARKETS

Alberta began to pioneer the development of seed potato markets in western U.S. during the 1980s as a result of experienced growers looking for new markets for their product. There are a number of interrelated reasons for their success. One important factor was that the varieties produced in the province matched those being demanded in the U.S. markets. Because Alberta has a domestic market for processed potatoes, many of the varieties of seed being grown for the domestic market were the same as those required in the Washington/Oregon market.

As well as having the right varieties for the market, Alberta also had identifiable, high quality seed because of a stringent grading system, mandatory field inspections, and an established seed program. Various government agencies have featured prominently in the operation of these systems. The Provincial Government, in co-operation with the Federal Government, established compulsory grading regulations in the 1940s. The Canadian seed certification program is administered at a national level by the Food Production and Inspection Branch of Agriculture and Agri-Food Canada, which holds regulatory authority regarding certification under the Seeds Act. The program is designed to regulate the variety purity and health of seed stocks and consists of a classification system, multiple field inspections, laboratory testing, and post-harvest testing (Harvest Foods).

The Alberta seed program began in 1970, which operated out of the Regional Crops Laboratory in Olds, Alberta with greenhouse space and seed increase plots located at the Olds College. Disease-free nuclear stock and pre-elite stock was produced at this facility. Tubers were then distributed to approved growers for multiplication. In 1986 the cost to the grower was $0.50 per tuber but the estimated cost of production was estimated at about $4.00 per tuber or a

$200,000 annual budget for the Olds operations (Harvest Foods).

A part of Alberta's success in U.S. markets can also be credited to the promotion of Alberta seed potatoes by the Alberta Potato Commission and other quasi-government bodies. The Alberta Potato Commission was formed in 1966 with its major responsibilities being promotions and industry liaison. In 1988, the Commission evolved into the Alberta Potato Marketing Board (later changed to Potato Growers of Alberta) which was established to maintain a minimum price on all potatoes at the farm gate, except those for processing, sold in Alberta. Today, the Potato Growers of Alberta also fund the Alberta Potato Research Association, whose mandate is to provide direction and funding for research in the areas of potato production, quality, and storage, and the development of new potato products.

During its time, the Alberta Potato Commission worked with the Market Development Division of Alberta Agriculture to undertake promotional activities on behalf of the seed sector. These activities included working with key growers to maintain a display booth at both the Oregon and Washington annual potato conferences. Alberta Agriculture has also sponsored missions of growers to and from Washington and Oregon and Alberta Potato Commission fieldmen arranged and monitored seed lot tests and grower plot tests of Alberta seed potatoes in Washington and Oregon. Generic ads were also sponsored in trade journals such as the *Potato Grower* and *Spudman* and "thank-you dinners" were put on for American customers (Harvest Foods). These activities focused on building and maintaining the perception that Alberta's northern climate insures hearty vigorous seed resulting in greater returns per acre than the seed offered by their U.S. competitors. At that time, little scientific research had been done to quantify the affects of "Northern Vigor", so promotional efforts focused on endorsements from U.S. farmers who had used Alberta seed and experienced higher than average yields.

In developing U.S. markets, Alberta growers were also able to take advantage of back haul rates on trucks moving produce from California, Washington and Canada's West Coast, keeping their transportation costs competitive. However, transport costs are also a factor in constraining the expansion of Alberta seed potato export to the Northwest USA, due to the limited availability of backhaul trucking and the need for reefers or heater-vans (although some loads have gone in hopper bottoms when temperatures have been above normal). Scheduling of trucks is also important as many of the growers do not have undercover loading facilities and

loading must be done when the weather permits. Unloading at the destination can also be a problem. Although the broker/cutters may have van unloaders, individual growers often do not.

EDMONTON POTATO GROWERS

A major factor in Alberta's success in the northwestern States has been Edmonton Potato Growers (EPG), a major shipper of Alberta seed potatoes to the northwestern U.S. In 1986, this one company handled 80 percent of seed potato exports to the United States (Harvest Foods). EPG was formed in 1971 by a group producers interested in acting collectively to jointly market their potato crop. Rather than each producer trying to get customers separately, the group hired a manager to market their combined production. The organization also owns and operates a wash plant for table potatoes, a seed storage unit in Edmonton, leases a seed storage unit in the U.S., and maintains two portable unloaders in Washington
for use of their customers.

EPG was formed when an existing co-operative was rolled into an incorporated company. At that time members committed to selling only through EPG and purchased shares based on $100 per acre of production. Members were given 10 years to pay off this purchase. The shares entitled them to the services of the organization. For seed growers, the organization acts as a brokerage committed to marketing the shareholders' potatoes by establishing contracts and arranging the shipping. Regardless of the number of shares owned, each member is entitled to one vote within the organization and is expected to take a turn sitting on the board of directors. Membership within EPG is limited as the sale of shares has only occurred amongst the membership or when producers have left the organization. However, EPG will market for non-member producers if there is a market for their product. In addition, the EPG packaging plant handles packaging of non-member table potatoes and other fresh vegetables and fruits on a contract basis.

This type of arrangement helps members to alleviate some of the cashflow problems associated with seed potato marketing. Normally preliminary orders for seed potatoes are placed in November and confirmed in January with a downpayment of 20 percent. Shipment takes place in February, March and April with the buyer invoiced after delivered weight is confirmed. Members of EPG are paid the market price at the time of delivery, and, as a rule, there is little price pooling among members. However, payments are often not received by EPG until much

later, and occasionally require legal action to collect. Through EPG, cash receipts and difficult to collect accounts are spread over a broader base, minimizing the impact on individual members.

In 1995 the membership of EPG was composed of 9 seed producers with 2,800 acres of production and 9 table producers with just over 2,000 acres. Many feel that it is the degree of cooperation among this group that has attributed most to the organization's success. All of EPG's members are part of the Dutch community and have been long time producers and acquaintances. The group therefore shares cultural, social, and philosophical viewpoints, as well as a solid knowledge of the industry. These factors have led to a high degree of commitment to the organization and a strong basis of trust between the members.

The basis of trust between members has played a crucial role in effectively implementing practices necessary to successfully build EPG's export trade. Pivotal practices have included the hiring of a skilled general manager, promotional efforts, and strict quality control. EPG's general manager is involved in taking orders from U.S. growers and brokers, collecting payments from previous sales and promoting future sales. Up until recently the position of manager was filled by Bill DeVoss, an individual (not a producer) with a strong knowledge of the industry and excellent industry contacts. Responsibility for promotional efforts are also shared amongst the membership as it is company policy that each member take a turn at advertising and acting as a company liaison at trade shows.

EPG's influence extends beyond marketing and is very evident at the production level as well. Members of EPG must subscribe to strict production methods dictated to them by the management of the company. Appropriate production methods are clearly outlined in a manifesto which states when, what, and where to spray for debilitating diseases such as late blight diseases and pests. EPG brings in semi-loads of spray and chemicals for its members to use. Members benefit from purchasing these supplies in this manner, not only because they can buy the product a lot cheaper than elsewhere, but also because environmental restrictions limit the amount and how such chemicals can be stored on the farm.

SASKATCHEWAN

INDUSTRY ENVIRONMENT

The Saskatchewan potato industry is a much smaller and more narrowly developed when compared to the Alberta industry. However, it too has witnessed significant growth in recent years, primarily through the development of a healthy export trade in seed potatoes. In 1986, 468 acres of land were devoted to seed potato production destined to satisfy the demand of Saskatchewan table potato growers. Today there are over 30 seed potato growers in the province with 2,410 acres passing inspection in 1996, representing close to half of the 5,300 potato acres harvested. Much of this growth has happened only very recently, with seed acreage nearly doubling in size from 1,200 acres in 1995 to 2,300 in 1996 alone. Most of the growth in seed production has occurred to take advantage of export markets in Northwestern U.S., where Saskatchewan is currently selling five times more seed potatoes than are used in province. The shift in markets for Saskatchewan seed potatoes is reflected by a change in the major seed varieties grown. Today varieties such as Russet Burbank and Shepody, used principally in the processing industry, are the majority among the seed varieties grown in the province (Saskatchewan Seed Potato Growers Association).

While there is still no processing sector in Saskatchewan, there has been extensive interest in developing one by encouraging the building of a processing facility in the province. With a local processor in place, the demand for potatoes within the province would automatically more than double, as it requires an average of 4,000+ acres of potatoes to serve a single processing facility. This proposition is being promoted primarily by the Saskatchewan Water Corporation, the provincial crown corporation responsible for the administration of the extensive irrigation systems within the province. The corporation hopes that the development of a domestic market for processed potatoes will provide the incentive for producers to use and maintain the existing irrigation systems more efficiently.

The proposed development of a processing sector has met with various reactions from existing potato growers within the province. For existing table potato producers, such a development poses a considerable threat to their operations. It is estimated to take approximately 10 years for producers to gain the knowledge and experience necessary to grow potatoes of consistently good quality. This means that the new growers of processing potatoes will run a

fairly high chance of not meeting the quality standards for processors for a number of years. Such events are of deep concern to producers currently meeting fresh market requirements, since potatoes which cannot be sold to the processor will end up on the table market. Hence, it is possible that the continued commercial production of table potatoes will be severely challenged by such a move.

The reaction from seed producers has been mixed. On the one hand, the development of a processing sector in the province could translate into an enormous increase in the demand for domestic seed. On the other hand, the increased production of potatoes in the province would jeopardize one of the natural advantages that has been enjoyed thus far: the low commercial potato production in the province has provided excellent isolation from disease, crucial in the production of seed potatoes. The risk for disease is even higher than normal as it is expected that much of the increase in production required to meet the needs of a processor will likely be undertaken by producers with little or no experience in growing potatoes.

INCREASING PRODUCTION

An increase in the volume of seed potatoes grown in the province represents one of the challenges facing the Saskatchewan seed potato sector in developing export markets. Given that many of the established producers had already reached their desired production capacity and had traditionally produced seed for table markets, new growers were required to achieve the volume necessary to secure long-term export markets. However, the production of seed potatoes is not an easy, inexpensive, or risk free activity. As was mentioned above, it is estimated to take approximately 10 years for producers to gain the knowledge and experience necessary to grow potatoes of a consistent quality. Irrigation infrastructure and significant capital outlays are also required, particularly in the building of storage facilities.

Sask-Ida Farms and Riverhurst Agricultural Products are two examples of different ways in which external agents and collective action have played a central role in increasing seed production in the province. Sask-Ida Farms Inc. is the largest seed potato production facility in the province, with 850 acres around the Lucky Lake area in southern Saskatchewan. The impetus for Sask-Ida Farms came from two American growers who were looking to expand their operations to supply the Idaho potato industry, as well as markets in Washington and Mexico. Southern Saskatchewan appealed because of the low levels of existing potato production,

proximity to Idaho markets, irrigated land, the availability of government grants based on bringing value-added activity into irrigated regions, and a strong desire by local communities and development officers to diversify into new markets and minimize rural decline. In the early 1990s the two American investors approached a number of communities in the area with their development proposal and finally reached an agreement with the community of Lucky Lake.

Sask-Ida (the company owned by the two investors from Idaho) rents land from local residents and uses it for the production of seed potatoes. Sask-Ida supplies the seed, plants it, covers all input costs, and does all of the harvesting and the marketing of the potato crops grown. Hence, the farmers who rent the land do not make any of the production decisions. They do, however, receive income from the rental of their land which is subject to a bonus if there are higher yields than anticipated. Because much of the labour required by Sask-Ida is hired locally, farmers and residents also benefit from extensive on-site training in potato production and marketing. In return, the community of Lucky Lake agreed to provide Sask-Ida with state-of-the-art storage facilities.

The building of potato storage facilities was facilitated through the Coteau Hills Potato Corporation. This organization was originally made up of 25 shareholders, principally irrigation farmers in the area, who contributed capital (a minimum of $5000 each, for a total of $200,000) and raised further funds through government grants ($200,000) and loans ($400,000) to build the $800,000 storage complex required to entice Sask-Ida into their community. Sask-Ida has exclusive use of these facilities through a ten year lease. This rental agreement represents income generated by the Coteau Hills Potato Corporation.

Since the first seed potato crop three years ago, the Sask-Ida project has evolved well beyond the initial agreement for leased land and storage. Today the Coteau Hills Corporation is made up of 36 shareholders who own $1.5 million worth of equipment and buildings. Plans to increase Sask-Ida's production to about 1,500 acres by next year are underway. Sask-Ida is also a part of a number of other joint-ventures with local farmers and business people, including the purchase of a six quarter parcel of land and a hotel. The hotel was built to fit into the marketing strategy of Sask-Ida Farms which involves flying customer-growers into the area to see the fields directly. This strategy eventually spawned the building of an air strip in the community as well.

The same two investors from Idaho, now in charge of Sask-Ida, also provided the impetus behind Riverhurst Agricultural Products, a 200 acre seed potato operation in the Riverlake region of southern Saskatchewan. Like producers from Lucky Lake, Riverhurst producers were also given the opportunity to meet with Sask-Ida to discuss the potential for potato production in the area. However, unlike the Lucky Lake producers, they were unable to reach a mutual agreement. Nonetheless the idea for seed potato production was sown and a group of eight producers in the area decided to try it on their own. The group had already been successfully involved in the joint farming of 800 acres of dry beans despite having no previous experience with the commodity. Hence, they believed they could apply the same formula to growing seed potatoes.

The group's initiatives were heavily supported by the Riverhurst Water Users Association, the body which administers the Riverhurst irrigation project, and the Riverlake Rural Development Corporation (RDC). These two organizations were working to try to bring economic development into the area which would complement the new irrigation systems. This mandate was fostered by having watched other communities bring in irrigation without having the value-added activities in place to go with it, resulting in a large debt burden for the community.

The Riverhurst Water Users established and managed a fund initially composed of government contributions in the form of waved charges for use of the irrigation system during the first year of operation. Rather than returning this fund directly to producers, which many other communities did, Rivershurst Water Users decided to use the fund as seed money for bringing value-added projects into the community. They also decided to continue adding to the fund through a levy system for irrigated farmers. The availability of this fund, coupled with the commitment of the Riverhurst Water Users to build on the strength that they had in the community — irrigation, played a key role in the diversification of Riverhurst Agricultural Products.

For example, when faced with the task of having to raise equity for potato storage facilities, Riverhurst Agricultural Products contemplated the two conventional options: the bank or the government. The group was unable to meet the banks' requirement for 50 percent financing up front. While the provincial government may have been willing to provide the equity, it demanded a partnership in the project. The group was reluctant to form such a partnership due to the difficulties in assessing and aligning the government's agenda with their own. Riverhurst

Agricultural Products therefore turned to the Riverhurst Water Users and were able to finance the project with their help, while also having the benefit of having a partner which knew about, and was involved in, the community and its development process.

The development process at work in the community was spearheaded by the Riverlake RDC. The RDC concept was based on evaluating the strengths and weaknesses of the communities involved and building a development plan based on this inventory. This grass roots focus provided Riverhurst Agricultural Products the supportive environment they needed to try new things. One of the biggest strengths associated with the RDCs was the economic development officer for the Riverlake area, Gail Zimmerman. Zimmerman played the role of linking people together in the communities who wanted to work on similar projects. She is seen as instrumental in putting the potato project together because she was able to find out what was required to take producers' ideas from the idea stage to the action stage. Most importantly, she, unlike the farmers who were busy farming, had the time and the connections within the community to find out where and what information and resources were available to help the group. Furthermore, she acted as a central contact person, which again none of the group members could be since they had other commitments. Once the group was able to figure out how to reach their goal, Zimmerman's role became obsolete. In fact, Zimmerman worked on several projects where she never even got to see them start-up.

The Riverhurst group is made up of eight producers and was organized as a corporate structure. In the beginning all of the producers invested equal amounts of capital and the organization operated as a co-operative. However, as the operation expanded and members were interested in different levels of involvement in business activities, the group moved to a corporate structure. The corporate structure allowed them to align different levels of investment with the amount of control in the operation. Despite the change in corporate structure, the organization still operates in a "co-operative" fashion as there is a high level of member involvement and each member contributes equipment, expertise, and time to the operation. The group began by planting 800 acres of beans and the following year they planted 65 acres of seed potatoes. The corporation now has just over 200 acres devoted to seed potatoes with half of this production (30 truckloads) heading south to U.S. markets.

By accessing the community based resources available and building on their previous experience of jointly farming dry beans, the Riverhurst group was able to duplicate the

production of seed potatoes proposed by Sask-Ida, but on a smaller scale and with full community control. However, this achievement was not without challenges. One of the biggest barriers facing Riverhurst Agricultural Products as new entrants was a lack of experience in production and marketing. Without an experienced partner such as Sask-Ida, Riverhurst Agricultural Products had to invest significant time and capital in acquiring the knowledge and making the contacts necessary to successfully enter the market. As their venture into dry bean production had taught them, this process involved spending a lot of time talking to other growers throughout western Canada and the U.S., attending conferences, and networking to find brokers to market their product.

DEVELOPMENT OF AN EMERGING INDUSTRY

In Saskatchewan, at least three factors have played an important role in helping new entrants, such as Riverhurst Agricultural Products, and experienced growers overcome the barriers associated with increasing the production and marketing capacity of the emerging Saskatchewan seed potato industry. The first is the University of Saskatchewan. The Department of Horticulture Science and the Extension Division have worked closely with producers to disseminate production information regarding issues such as disease control and proper storage methods. Having access to this type of non-biased information is invaluable to new producers interested in a complicated crop such as seed potatoes. The Department of Horticulture Science has also been actively involved in undertaking research to confirm the added vigor of seed potatoes grown in a northern climate. The proper documentation of this claim through the collection of quantitative data from Saskatchewan grown seed has provided a more solid basis from which to demand a price premium for Saskatchewan seed in comparison to U.S. seed. Branding this characteristic as "Northern Vigor" also allows for clearer identification of the product offered by Saskatchewan producers.

The second factor is the solid reputation of western Canadian seed potatoes established by Alberta and Manitoba growers and the increasing number of brokers in the Northwestern U.S. The existence of broker/cutters familiar with the benefits of western Canadian seed offers a distinct advantage to a new supplier as these brokers have a continued presence in the market and have well-established grower contacts. Operating through a broker allows a new supplier to start on a relatively small scale and expand as seed quality and reliability of supply are established. Brokers also sometimes provide bulk unloading facilities and custom cutting and treating. This

opens the export market to smaller commercial growers who could not afford the costs associated with marketing and delivery on their own product.

In this vein, a number of Saskatchewan growers have also benefited from Alberta's extensive marketing experience through the former manager of Edmonton Potato Growers, Bill DeVos. DeVos recently left EPG and is now an independent broker and potato consultant serving Alberta and Saskatchewan seed growers. His services are available either on a contract or non-contract basis. This past year he handled an estimated 16 percent of the seed produced in Saskatchewan through contracts with growers for their full crop. DeVos also sells on a non-contract basis for growers who are interested in marketing only a part of their crop through him. For non-contract growers DeVos will try to sell their product but at a higher cost than those who have an ongoing relationship with him and who have committed their production to him in advance.

The third factor which has played a role in aiding producers achieve quality production and in promoting and marketing Saskatchewan seed is the existence of the Saskatchewan Seed Potato Growers Association (SSPGA). The SSPGA is a voluntary, open organization representing seed potato growers in Saskatchewan. Two of the principle benefits that the association provides its members are the publication of a annual directory and funding to travel to seed sale seminars. The directory is used as an advertising and marketing tool and lists the associations' members. It also catalogues the varieties of seed available from each of the growers. The association has also put together a travel fund to underwrite growers to attend seed sale seminars in the United States and other areas. At these meetings the SSPGA puts up a display booth which represents and promotes the industry as a whole. Members then take turns staffing the booth. These events provide growers with the opportunity to make sales contacts, network, and build on the personal trust relations which are so crucial to the industry.

With respect to production, the SSPGA works closely with potato experts and extension personnel from the University of Saskatchewan to educate growers regarding appropriate production practices. Although new comers represent competition to existing members, SSPGA has a policy to provide new entrants with the information they require to produce a quality product. Although the boundaries of this policy are still being tested, it is recognized by association members that information sharing and a degree of openness is required in order to minimize the risk of new growers jeopardizing the sector's reputation for quality. However, in

contrast to Edmonton Potato Growers, the approach used by SSPGA is entirely voluntary. Rather than dictating appropriate production practices to their members, the association has decided to tackle this issue through education.

SSPGA also provides a number of other benefits to its members. Of great importance is its ability to act as a representative of the sector. The SSPGA has tried to position itself to be a spokesperson for the entire seed potato sector and to be recognized as such by government officials and other external agents. This provides members an advantage because if any initiatives are proposed to sponsor or promote further industry development, these initiatives will involve the people associated with the SSPGA. This role is likely to become more important as proposals to set up a processing industry in the province continue. The SSPGA also administers the Advanced Payment Program for Potatoes. Under this program producers are eligible for 30 percent of the value of the crop as a no interest repayable loan. The program is designed to eliminate some of the cash flow problems as a result of expenses being incurred in the spring, but the crop not being sold until the following spring. Currently about 20 percent of growers take advantage of the program.

In the future SSPGA is also planning to become involved in the inspection of farms and will offer this as a service to its members. Currently, as in Alberta, it is the Food Products Inspection Branch of Agriculture Canada which provides this service. However there is some indication that within the next 2 to 5 years the agency will be withdrawing and this function will be privatized. In anticipation of such an event, SSPG is positioning itself to act as a self-policing inspection service. This would have the added benefit of encouraging greater membership for SSPGA, as it will be very expensive for a producer to otherwise locate a certified inspector.

In contrast to the Potato Growers of Alberta, SSPGA is an entirely voluntary organization and does not have the legislative power to collect levies or check-off fees. However, an organization with such powers did exist in Saskatchewan in the past. The Vegetable Producers of Saskatchewan (VPS) was an organization composed of commercial vegetable growers, the majority being seed and fresh potato producers. Membership was mandatory for vegetable growers with over six acres of production. A mandatory check-off of about $20 per planted acre was levied by VPS. The check-off was implemented in 1988 when the association was established to help producers gather market information. However, in early 1996 members voted to remove the levy and VPS essentially ceased to exist soon after. Part of the reason for its

dissolution were the troubles associated with meeting the needs of such a diverse group of producers with a very broad range of interests. Because the group was made up of seed potato producers, fresh market potato growers, and a handful of cabbage, carrot, and other root crop growers, each group had different needs. Therefore many members felt that the dollars they were contributing were being utilized to the needs of other sectors than their own. Producers with well-developed local markets were also reluctant to fund development activities that could potentially provide competition or that focused on export opportunities.

Before its demise, VPS was able to benefit seed potato growers by funding several studies on the potential for seed potato exports to the U.S. and other countries. These studies provided valuable information to seed growers regarding some of the steps required to access these markets and provided examples from other areas, such as Alberta, as to how to take these steps. By providing this information, the Saskatchewan seed sector was able to learn directly from the Alberta experience.

The experiences of VPS played a strong role in helping SSPGA identify how it could best meet the needs of seed producers and hit home the importance of having strong member buy-in in order to keep the organization healthy. SSPGA plans to maintain member loyalty by focusing on the delivery of member benefits and to be as cost effective as possible.

WHAT HAVE WE LEARNED?

The industry environments and development processes characterizing the Alberta and Saskatchewan seed sectors are very different. The Alberta potato industry has a long history of commercial processed, table, and seed production. In pioneering the Northwestern U.S. seed potato markets during the 1980s, Alberta seed potato growers faced a number of distinct advantages. These features included: previous experience in growing seed for processed potato markets; identifiable, high quality seed because of a stringent grading system, mandatory field inspections, and an established seed program; and the availability of backhaul shipping rates to the U.S. However, these features alone do not guarantee the successful penetration of markets. The key to Alberta's success lay in the ability of industry players and external agents to recognize these advantages and exploit and build on them in developing new markets.

Unlike Alberta, the export of seed potatoes is a very recent development in Saskatchewan. Rather than evolving through the development process of a maturing industry searching for new markets, much of recent growth in the Saskatchewan seed potato sector has occurred as a result of efforts by producers to diversify their operations, with a focus in maintaining viable agricultural communities. One of the greatest advantages facing Saskatchewan producers in this process was the ability to learn and benefit from the development activities already pursued by the Alberta seed potato growers. In particular, Saskatchewan growers benefited from U.S. growers familiarity with the higher yield properties of seed grown in northern regions and the reputation for quality control established by Alberta. This is not to say, however, that Saskatchewan growers were able to develop markets for seed potatoes solely by free-riding on Alberta's reputation. Like Alberta, various industry players and external agents have been instrumental in exploiting the advantages facing the seed potato sector and turning them into development opportunities.

Therefore, despite the different context, industry participants in both Alberta and Saskatchewan have had to devise ways to address similar challenges associated with developing the U.S. export market for seed potatoes. These challenges were significant not only because these markets were already being served by existing U.S. suppliers, but also because of the high degree of contractual uncertainty and cost economies involved.

As was outlined in the previous chapters, many of the problems associated with contractual uncertainty can be attributed to information costs and asymmetries, and the potential for high transactions costs. Each of these aspects is relevant to the negotiation of contracts between the seed producers of Alberta and Saskatchewan and the buyers of seed potatoes in the Northwestern United States.

Significant information is required in marketing a product. In the seed potato sector examples include the information needed to: identify and assess the needs of potential markets, such as the varieties of seed being demanded; contact and inform potential buyers about the product being offered; negotiate contracts among participants outlining the terms of agreement such as price, transportation, handling, and delivery. Acquiring this information is not only costly, particularly if the markets are distant, but there are significant economies of scale involved as well.

In addition to the costs involved in acquiring the information necessary to market seed potatoes, one can expect differences to exist with respect to the type and amount of information

acquired by each participant. In this case, information asymmetries regarding production practices and their affect on product quality are particularly important. Independent producers vary in terms of their production knowledge and experience. The ability for potential buyers to correctly assess these differences and anticipate their impact on product characteristics is difficult and costly. Yet without forehand knowledge about seed quality, processed and table producers place their operations in considerable risk. The uncertainty involved in assessing the quality of seed potatoes without knowing the production practices involved leaves potential buyers in a vulnerable position vis-a-vis the producers. The theory of transactions costs suggests that in such a situation contracts between participants will be difficult to achieve due to high transactions costs and the potential for hold-up problems. That is, American potato producers may be reluctant to purchase Canadian seed for fear of paying a premium price for seed which proves to be of poor quality only after they have completed the sale and planted their crops.

However, despite the high information costs, information assymetries, and transactions costs involved in producing and marketing seed potatoes, producers in both Alberta and Saskatchewan have been able to tap the U.S. market. No one overriding initiative by industry participants in either province can be said to be responsible for this development. Rather a combination of industry characteristics and collaborative initiatives undertaken by producers and external agents were required.

For purposes of discussion the industry initiatives outlined in this case can be grouped into those concerned with quality production and with promotion and marketing. However, significant complementarities exist between these initiatives and the issues relating to quality production and promotion needed to be addressed jointly for sales contracts to be completed and market development to occur in either province. Promotion and marketing in the seed potato industry fundamentally rests on building a reputation for quality, since seed represents risks and cost to the buyer. Without a premium quality product, promotion would not have been sufficient in swaying American potato growers to switch from buying domestic seed at
a lower cost with proven results. The same can be said for promotion; even if growers are producing the highest quality product available, if the people interested in purchasing this product do not know about it, the sale will not occur.

This case illustrates a number of ways for an industry to lower the costs and realize the economies of scale associated with promotion and obtaining market information. One way is for an external agency, such as the Alberta Potato Commission and the Vegetable Producers of Saskatchewan, to undertake promotion and marketing activities on behalf of producers. I refer to these organizations as external agents because they are quasi-governmental with legislative powers pertaining to mandatory membership and the collection of levies. The benefit of this type of organization is that the "collective good" of industry promotion and general market information can be provided to producers in a relatively non-biased fashion. The drawbacks are that the market information that is provided to producers is usually fairly generic. That is, specific time and place information is often not exploited by such agencies, as they are commonly not directly involved in the marketing of the product. Some producers may also resent forced membership or may be unable to agree on what the funds should be used for.

An alternative is to jointly coordinate the efforts of numerous producers through a voluntary industry association such as the Saskatchewan Seed Potato Growers Association. This type of organization requires a high degree of member buy-in, but can allow for members to pool their resources to engage in promotional activities and garner information about potential markets. However, like the Alberta Potato Commission, some of this information may not be maximized since SSPGA is not involved directly in the marketing of seed potatoes.

Riverhurst Agricultural Products offers an example of an organization which allows producers to pool their resources and take advantage of the economies of scale associated with both production and marketing. Edmonton Potato Growers also jointly markets producers' seed, acting as a brokerage for members and undertaking promotional activities on their behalf. This type of umbrella agency avoids duplication of effort in handling the paperwork, negotiating contracts, arranging shipment and collecting payments. It can also be very efficient in producer-specific promotion and marketing However, this type of organization also requires an extremely high level of support from its members to operate smoothly. And, although voluntary, membership is closed within these organizations. Closed membership means that if other producers wanted the same arrangement they would have to overcome the problems associated with collective action and form their own organization.

From these examples we can conclude that external agents can play a varied role in helping industry participants lower the information costs and realize economies of scale associated with the marketing and promotion of a product. Direct involvement by providing general industry-wide promotion and information may be appropriate depending on the motives of the external agent and the degree of cohesion and development within the industry. In a way, industry promotion and information can be considered a form of common good;
of benefit to everyone in the industry but without specific ownership rights attached to it. Incidentally, another example of such a good and one aspect of external agent involvement which was not touched upon in the text, but has had (and continues to have) an important impact on the seed potato industry is the influence of government bureaucrats in international trade negotiations. Indirect involvement can occur by helping industry groups facilitate the formation of organizations to collectively, yet specifically, promote and/or market their members products.

QUALITY ASSURANCE

Hold-up problems due to high transactions costs can be overcome if assurances and credible information limit the ability for the parties within an agreement to behave opportunistically. In the seed potato industry there is substantial uncertainty and risk associated with purchasing seed potatoes. Examples from the seed potato industry offer
a number of initiatives by producers and external agents to provide the assurances and information required to overcome this uncertainty.

The role that external agents have played in providing assurances as to the quality of Alberta and Saskatchewan seed potatoes cannot be overstated. Producers can provide some assurance to buyers if it is clear that they are interested in establishing a long-term supply relationship. With this motive it would not be in the producers' best interest to behave opportunistically and shirk on quality. However, this assurance is likely not enough given that once the seed has been planted the buyer stands to lose a huge investment—his crop!
For this reason, credible information regarding the quality of seed is paramount.

The Canadian seed certification program provides credible information to producers regarding quality and characteristics of seed potatoes. The program is administered at a national level by the Food Production and Inspection Branch of Agriculture and Agri-Food Canada, which holds regulatory authority regarding certification. It is designed to regulate the variety purity and

health of seed stocks and consists of a classification system, multiple field inspections, laboratory testing, post-harvest testing. Certification, therefore, provides assurances as to the particular class (generation) of seed potatoes and lowers the risk regarding the potential for disease and variety impurities. The certification program is an example of a public service provided for the industry by an external agent. Each of the activities associated with the program would be very costly and difficult to administer on a local level within the industry. Industry administration would also compromise the credibility of the program. A non-biased external agent is likely required to provide this service to maintain legitimacy.

Another example of a collective good provided to the seed potato industry is research regarding Northern Vigor. Again, to maintain the legitimacy of the research results, such research should be undertaken by a non-biased agent removed from direct involvement within the industry (although this does not limit the industry's ability to fund such research). The confirmation of increased vigor and yield in Saskatchewan grown seed potatoes by the Horticulture Department of the University of Saskatchewan gave Saskatchewan seed growers a strong endorsement of product quality.

Not all activities associated with quality assurance in the seed potato industry have been left to external agents. Indeed, industry participants in both provinces have played an active role in assuring quality production. In Saskatchewan, the SSPGA, with help from external agents associated with the University of Saskatchewan, is active in promoting sound agronomic practices through grower education. These educational efforts have been particularly geared to the many new producers in the area, who do not have experience with the technical aspects of growing seed potatoes. Experienced growers within the industry recognize that a lack of information at the producer level can hurt the entire industry by jeopardizing Saskatchewan's reputation for quality. In Alberta, this philosophy is taken further by EPG members who subscribe to mandatory production practices outlined by professional management team. While these practices are not unusually strict, instituting them as a "manifesto" provides a signal to customers as to EPG's commitment to quality production. At the end of the spectrum lies Sask-Ida. Sask-Ida is an example of an existing firm vertically integrating, through long-term lease agreements for land and storage, to maintain direct control over production. In this way, the Idaho investors are able to assure themselves of the quality of the seed produced in Saskatchewan.

As with promotion and marketing, the role of external agents in providing quality assurance ranges from direct activities, through the provision of goods which benefit the entire industry, such as a grading and certification program and scientific research, to more indirect ones, such as helping to facilitate collective arrangements between industry participants.

CHAPTER 8

NEW GENERATION CO-OPERATIVES

NORTH DAKOTA AND MINNESOTA, USA

THE CHALLENGE

At the end of the 1980s, North Dakota and Minnesota were experiencing many of the same challenges familiar to other agricultural based, prairie economies. Poor commodity prices and drought were accelerating the decline of farm numbers as farmers sold out to larger, more mechanized enterprises. As the farm population dwindled and services were centralized, rural businesses folded. Communities once the hub of service were no longer needed in that capacity. People were leaving the rural areas for jobs in larger cities and many were leaving the state for opportunities further afield.

The combination of unstable raw commodity prices, increasing transportation costs, and concentration of processors in urban, rather than rural, areas meant that producer costs were on the rise while the returns from raw products were inconsistent at best. For many producers it became clear that unless they were prepared to become directly involved in the marketing and processing of their commodities, the return on raw products would likely not be enough to continue with their operations. However, becoming involved in marketing and processing activities requires numerous resources: a substantial amount of capital is necessary to cover the financing of physical assets and the purchase of technical and management expertise; quality standards to ensure uniformity of raw inputs and the production of a high quality processed product are required to break into the competitive consumer food market; and access to a consistent supply of raw product is needed to allow for the efficient operation of a processing plant. With a minimal possibility of attracting outside investors and few producers having enough

resources required to engage in these activities alone, the challenge before producers was to coordinate their production and investment such that they could achieve the necessary economies of scale and jointly become involved in the marketing and processing of value-added food products.

Outside of the farm community, governments and existing firms were also becoming painfully aware of the need to diversify and rejuvenate their agricultural industries. People in rural areas began to recognize that unless the rate of farm closures and out-migration was reduced their livelihoods were also threatened. The challenge was to increase the number of jobs available, increase the per capita income of rural residents and stop the decline of the rural economy.

NEW GENERATION CO-OPERATIVES

To meet the challenges facing the farmers and their communities in North Dakota and Minnesota, a concerted development process was embarked upon. As a result of this process a number of agricultural processing ventures were undertaken. However, unlike other processing firms, these ventures are based in rural communities and are in the form of grower-owned, closed membership processing co-operatives. These ventures have been given the term "New Generation Cooperatives" (NGCs) and have sprung up in virtually every sector of agricultural production in the region (Egerstrom). They are being formed by producers involved in emerging niche markets, such as bison processing, tilapia production, organic milling, and specialty cheese processing, as well as in more traditional value-added activities such as corn sweetener production, sugar beet processing, pasta production, and hog operations.

The formation of NGCs has been a instrumental in meeting the development objectives of rural residents by returning more of the food dollar to producers, creating job opportunities, and diversifying and stabilizing the farm economy. The impact of these new ventures is beginning to show in the statistics. From 1990 to 1994, per capita disposable income rose 11 percent (in one year, 1993 to 1994, per capita income rose from 82 percent to 88 percent of the national average), the population increased by 4,000, and manufacturing jobs increased by 3,500 (Egerstrom).

The rapid rise of New Generation Co-operatives in North Dakota and Minnesota over the last six or seven years is an example of industry development through collective action. Collective

action takes place on multiple levels but two are most visible and easily identified: (1) farmers co-operating to process their farm products; and (2) external agents coordinating their efforts to provide support and encouragement to this grassroots development. This case study outlines the process associated with the development of New Generation Co-operatives in North Dakota and Minnesota and highlights the role of the external agents involved in this process. First we define and describe New Generation Co-operatives and discuss how these unique organizations have allowed producers to meet their development goals. We then outline the process involved in developing NGCs and describe the role of the various external agents involved in this process. The chapter ends by tying together what we have learned from the case with the theoretical framework developed in part I of this study.

ORGANIZATIONAL STRUCTURE

The New Generation Co-operatives are fundamentally different from other forms of processing ventures because they are co-operative businesses. They are therefore owned and controlled by the producers who supply the raw product processed at the plant and any of the profits generated by the business are returned to producers on the basis of patronage. However, NGCs also differ from traditional co-operative structures because of the use of delivery right shares. The delivery right shares used by NGC's essentially link producer capital contributions and product delivery rights. Operationally, the sale of membership equity shares is used to raise capital to finance the processing facility. The membership equity share also acts as a contract between the members and the co-operative; the contract stipulates the member must deliver the contracted quantity (producers must fulfill their contract obligations with their own product or purchase product elsewhere for delivery) and the co-operative must purchase the product (subject to the product meeting quality requirements). As with other contractual agreements, contingencies are incorporated into the NGC contract to account for unusual occurrences, such as crop failure.

The quantity and price of delivery right shares issued by the NGCs are determined according to the amount of product needed for efficient operation of the co-operative's processing facilities and the amount of capital required to purchase these facilities. In general, the NGCs have followed recommendations to raise between 30 and 50 percent of their total capital requirements through the sale of delivery right shares. Remaining capital requirements are met through debt or

the issue of preferred shares. Preferred shares enable equity contributions to be obtained from the community or other interested parties, but the holders of preferred shares do not have voting rights and receive a limited return on these shares (for example, in North Dakota this limit is legislated at 8 percent).

The initial price of each share is generally determined by taking the total amount of capital the co-operative wishes to raise for start-up and dividing it by the number of units of farm product that can be absorbed by the processing facility. Equity drives are held to solicit support and sell shares to future members. Because equity shares are in the form of a delivery contract, membership is restricted to producers who wish to deliver a portion of their production to the proposed processing facility.

After the initial equity drive, shares can be traded amongst producers pending board approval. The share prices during the operation phase reflect the returns members expect to receive from the co-operative over time. In valuing the returns, members can be expected to examine the difference between the cost of producing the farm product and the revenue generated from processing this product and selling it to a further downstream market.

Regardless of the number of shares purchased by a member, the principle of one-member, one-vote still applies when electing a board of directors and when deciding on major co-operative policy issues. It is the responsibility of the board to set the co-operative's strategy, goals, and objectives, and to hire a manager. The manager, in turn, is responsible for conducting activities to achieve the goals and objectives of the co-operative, evaluating performance, and reporting to the board. The board and management have a collective responsibility to report to the membership. The success of any co-operative is therefore directly related to the confidence the membership places in its elected representatives and management team and the ability to maintain continuous communication between all three parties.

The organizational structure of NGCs has enabled producers to address a number of the challenges and opportunities arising from their involvement in marketing and processing ventures. In particular, it has enabled them to:

- increase the returns available to producers;

- realize economies of scale and raise the substantial capital required for value-added processing ventures;
- address quality concerns and coordinate supply;
- take advantage of local knowledge and overcome information asymmetries.

MEMBER RETURNS

NGC membership entitles farmers to a guaranteed market for a portion of their production, a share of the earnings generated by the co-operatives' processing operations, and any change in the value of the tradable shares. Upon delivery of the raw product members can expect to receive a percentage of the market price for the product (the exact percentage will vary depending on the type of product produced). Producers receive an additional payment at the end of the year which represents their portion, based on their patronage, of the earnings generated by the co-operative's operations. If members decide to sell their shares and forgo the right to deliver to the co-operative, they will receive a capital gain or loss, depending on what has happened to the price of the shares. In this way members of NGCs are able to realize a greater share of the consumer food dollar through their involvement in value-added processing activities. In fact, one can think of the operations of the co-operative as being extensions of farm enterprises and a form of vertical integration for producers.

Though most of the new generaion co-operative development has occurred in the last six or seven years; one co-operative, American Crystal Sugar, has operated since 1974 and stands as an example for the new generation. In 1974 the company which operated the sugar beet processing plant was preparing to shut down operations in the state. The sugar beet producers were about to lose the market for their product. To prevent this and to stabilize the processing and marketing of their commodity, local producers formed a co-operative and purchased the processing plant. The result, American Crystal Sugar, is seen as the first of the new generation of selected membership, high equity, co-operative processing facilities.

CAPITAL ACQUISITION

The pooling of capital among NGC members has allowed them to become involved in activities which they could otherwise not engage in due to the limited capital base of their primary operations. Substantial capital is not only required to invest in the physical assets of a processing plant, but also to ensure that the human capital needs are met. In general, most NGCs in North Dakota and Minnesota have been diligent in ensuring that enough capital is raised to be able to hire the top caliber technical, production, and management expertise necessary to allow them to compete with existing processors. Up-front equity provides a significant equity base which allows the weathering of business cycles. The acquisition of debt financing is also made easier because banks are given a solid indication of producers' commitment to the project. Furthermore, because members have financed a substantial portion of the capital of the co-operative up-front with an equity infusion, a significant portion of the profits realized can be returned to the members.

QUALITY AND SUPPLY ASSURANCE

Many marketing cooperatives have traditionally had a policy to accept all member deliveries. With this type of cooperative arrangement, members have an incentive to shirk on quality, as the individual producer does not carry the full liability of such behaviour. The problem is made more pronounced by fluctuations in commodity prices or product quality. Members may view their co-operative as a clearinghouse for product during periods of low prices and quality, but may bypass the co-op in favour of other marketing channels when prices and/or quality are high. Such behaviour often limits the ability of the cooperative to control the quality and quantity of the output it sells, making it difficult to meet market needs or become involved in value-added processing activities.

Delivery contracts like those used by NGCs allow for efficient levels of production to be achieved for processing operations and achieve a steady supply of processed product. The restriction of deliveries through clearly defined quality control mechanisms can enable the processing cooperative to develop brand reputations based on quality and specific attributes. Such contracts may be particularly important for emerging industries where the development of a processing plant is only feasible if it is assured a given quantity or quality of a product. For

farmers, delivery contracts provide an assured market for their product and enable planning efficiencies.

CO-ORDINATION OF KNOWLEDGE AND INFORMATION

Communicating information regarding the characteristics of agricultural products and the preferences of the final consumer is key in matching supply and demand. NGCs have the potential to exploit information more efficiently than other forms of businesses for two reasons. First, both members and the cooperative face a greater incentive to gather and transmit information. Cooperative members have more incentive to track and communicate product characteristics to an enterprise in which they have an ownership stake and a claim on the residual earnings. NGCs have a greater incentive to acquire information regarding the consumer preferences since their investors, the producers, will capture the benefits which accrue from such research.

Second, NGCs represent a way of obtaining the benefits of scale economies while at the same time retaining knowledge of basic agricultural production. Contrast, for instance, a cooperative formed by farmers vertically integrating forward into processing activities and an investor-owned production/processing firm formed by vertically integrating backward into agricultural production. Although both institutions are an example of vertical integration, they differ fundamentally in the way they are organized. The foundation of the cooperative consists of numerous independent farm enterprises, while the core of a large corporate farm structure is typically an investor-owned agribusiness. This difference in organizational struc-ture can allow the co-op to exploit the specific farm management skills possessed by the farmer members while maintaining processing scale (Staatz (1987b)).

Preliminary evidence on American Crystal Sugar suggests the vertical integration of beet growers has had significant efficiency consequences, particularly in terms of increased quality of sugar beets. Koenig (1995) reports that the integrated ownership of the supply of beets and the processing company reduces the transaction costs of the complex contracting that is required to achieve these production efficiencies.

INDUSTRY DEVELOPMENT AND NGC'S

The features of the New Generation Co-operative model have allowed producers in a wide range of industries to address a variety of opportunities and challenges. There are examples of commodity producers forming NGCs to produce traditional value-added products as well as specialty niche products. NGCs are also be found in emerging industries processing and marketing new consumer products. What follows is a brief description of but a few of the NGCs operating in North Dakota. Although the specific opportunities identified may be different, in each case these enterprises have allowed producers to capture a greater share of the consumers food dollar and achieve the economies of scale associated with processing activities, without having to relinquish control over the enterprise.

DAKOTA GROWERS PASTA COMPANY

In 1993 a group of durum producers, frustrated with boom and bust price cycle for their crop, were transformed from commodity producers into processors and marketers of a finished, value-added food product when they opened a $40 million pasta processing plant in Carrington, North Dakota. The members of the Dakota Growers Pasta Company (DGPC) raised $12 million in equity capital to build the facility through the sale of equity shares. Each share entitles members to deliver one bushel of durum to the pasta processing facility. The initial share price was $3.90 and farmers were given the opportunity to purchase a minimum of 1,500 shares at the initial share price during the co-operative's equity drive.

A year after start-up shares in DGPC were valued at approximately $7, reflecting the benefits members expected to receive from the co-operative. These benefits are twofold. Members receive 60 percent of the current market price when they deliver their durum to the plant. At the end of the year producers receive a second payment incorporating the returns generated in processing durum for pasta products under their own DGPC label and under private label for other food companies (Campbell). Future expansion of the co-operative will be financed in the same way as the co-operative was originally financed. Existing members or new members will provide 30 to 50 percent of the capital required for the expansion through the purchase of delivery shares.

DAKOTA DAIRY SPECIALTIES COOPERATIVE

In the past, dairy producers in southwest North Dakota sold their milk to the Hebron Creamery Cooperative, which in turn sold it to larger cooperatives who dictated the price paid to producers. Returns to southwestern dairy producers were lower than average, as shipping charges to finishing markets were considerable. In an effort to gain control over their product and increase the price producers receive, dairy producers in the area formed the Dakota Dairy Specialties Cooperative.

The results of an extensive feasibility study indicated that specialty cheese production was a profitable venture given the region's resources. Dakota Dairy Specialties replaced the Hebron Creamery with specialty cheese production facilities as an addition to the former creamery building. In the beginning, sixty dairy producers joined the cooperative by purchasing shares which give them the right to deliver to the cooperative, providing a stable market for their milk. They will be paid according to the market price for milk and will share in the profits from cheese production. Board members see the new generation cooperative structure as a way to ensure member loyalty and high quality production, an essential ingredient in developing niche markets for specialty cheese.

NORTH AMERICAN BISON COOPERATIVE

In the late 1980s and early 1990s, bison producers across North America were confronted with a variety of problems common to many of the newly emerging specialty livestock sectors (see Chapter 6): a lack of marketing channels; the need for product and market development; quality control issues; a lack of processing facilities; and the absence of grading standards. Overcoming these challenges provided the impetus behind the formation of the North American Bison Cooperative (NABC) in New Rockford, North Dakota. The $1.6 million processing plant and office building in New Rockford, N.D., is the result of 180 bison producers purchasing 5000 shares of stock in the co-operative (a minimum of 10 shares is required, with a maximum allowable stake of 500). Each share represents a commitment by the member to deliver one animal per year for slaughter at the plant. In return, the co-operative provides producers with an association that: coordinates the industry to enable the development of grading standards; pools resources to fund research and development in production, processing, product and markets; and provides state of the art federally inspected processing facilities.

NABC buys and processes only the bison produced by its members and markets specialty cuts and frozen product into Europe and the upscale restaurant trade on the east coast of the USA. Currently, NABC is the only USDA approved bison processing facility. Federal inspection status has allowed penetration of European markets. Health conscience diners are increasingly demanding bison which is said to be low in fat and cholesterol and therefore healthier than beef. The NABC, which started operation in 1993, is planning an expansion to meet the growing demand for bison and to allow the entry of new producers as members.

THE DEVELOPMENT PROCESS

Although the organizational structure of NGCs provides members with numerous benefits and allows producers to meet a variety of challenges to industry development, the success and proliferation of NGCs in North Dakota and Minnesota cannot be solely attributed to the organizational features of these new enterprises. NGCs rose out of the concerted efforts of a number of key players committed to the growth and development of the rural economy. In this section we introduce the key players involved in the development of NGCs and provide an overview of the roles that they played in the process.

PRODUCER-MEMBERS

New generation co-operatives are a form of participant driven institutional change. Hence, at the core of any of the successful NGCs lies a group of producers who recognize that they face a common problem or opportunity and who are prepared to work cooperatively to address a common goal. This core group has spent many hours exploring options, arranging for feasibility studies and business plans, talking to other producers, and dealing with financiers. It is the producers themselves who also draw in the support and commitment of other producers and of external agents. Without producers driving the project, the efforts of others to create industry development through NGCs will be unsuccessful, since the success of these ventures fundamentally revolves around producer commitment.

PARTNERS IN DEVELOPMENT

The presence of a core group of committed producers with common economic or social issues is a necessary condition for NGC development. However, it is not necessarily a sufficient condition. Producer-members of co-operatives in North Dakota tell us that the process of forming

NGCs is aided by external agents and they stress the importance of this "network of support" in bringing a group of producers together and encouraging the group to pursue their goals. The roots of this network emerge from external agents with a vested interest in rural economies. Although there are numerous programs and agents involved in the development process, four of the principle partners in the process are: (1) the government; (2) existing co-operatives, in particular the rural utility co-operatives, and co-operative alliances; (3) financial organizations, such as the St. Paul Bank for Cooperatives and the Farm Credit Service; and (4) research centres, such as the universities. The following section examines these external agencies and their agents in further detail, outlines the services provided to developing projects, and describes the philosophy behind their actions.

GOVERNMENT

An essential ingredient in the successful development of NGCs has been the support provided by various government agencies and programs. It is important to note however that the governments involved—local, state and federal—do not drive the development process directly. Rather the governments have focused on creating an environment which fosters a broad range of rural development initiatives including, but not limited to, agricultural processing co-operatives. Government representatives such as Sarah Vogel, state agriculture commissioner, are vocal and enthusiastic supporters of development projects but maintain an arms length, detached position. Along with providing information and creating programs and funds which are flexible enough to be applied to a broad range of initiatives, government representatives encourage a positive attitude by maintaining and portraying enthusiasm for local development initiatives.

North Dakota State Agriculture Department

The North Dakota State Agriculture Department provides support to development through a number of programs and works with other institutions to promote and encourage collective solutions. *Growing North Dakota*, the North Dakota Future Fund and Technology Transfer Inc., AgPUC, and *Marketplace* are examples of government programs implemented to foster industry development.

- *Growing North Dakota* is the state's economic development program. Implemented in 1991 the program's priorities include farming, agricultural pro-

cessing and co-operative development. The program serves as an agenda for rural development, assists communities in developing projects, and provides financing through private and public funding sources. The North Dakota Department of Economic Development and Finance administers the program.

- The North Dakota Future Fund provides equity investment for developing projects and is credited with creating 5,100 new jobs between 1990 and 1995. Technology Transfer Incorporated (TTI) assists the commercialization of technology. Both the Future Fund and TTI emerged from the Growing North Dakota program and are used extensively in the startup of new business ventures.
- The Agricultural Products Utilization Commission (AgPUC) is a state agency which provides grants in the form of matching dollars to cover legal fees, feasibility studies, and initial organizational expenses of new business ventures including co-operatives.
- *Marketplace* is an annual event providing a forum where farmers and innovators can share their ideas and experiences with others. Projects in various stages of development use Marketplace to promote their ideas and products and recruit new members. This showplace of innovation is one way of spreading the positive attitude and encouraging the startup of new projects.

United States Department of Agriculture

The federal department of agriculture supports co-operative development through a variety of informational publications. Government publications such as *How to Start a Cooperative* outline the development process and draw attention to key issues. Publications of this type are produced and distributed by the Agricultural Cooperative Service.

Rural Business and Cooperative Development Service, USDA publishes a magazine, *Rural Cooperatives* formerly called *Farmer Cooperatives*. This monthly magazine carries reports on new development as well as reports on the status of long established co-operatives such as Land o' Lakes. The content of the articles ranges from news reports to summaries of scientific papers analyzing co-operative performance. Publications such as this are important vehicles of information transfer. They help to keep everyone informed of the activity and to foster a positive attitude and enthusiasm.

The rural utility co-operatives and associations of existing co-operatives recognize that their existence depends on a healthy rural economy and a stable rural population. The continued existence of organizations and institutions serving rural populations is dependent on maintaining a rural population; therefore those organizations have been instrumental in developing the common goal of rural revitalization and creating the focus and determination to achieve that goal. Dennis Hill of the North Dakota Association of Rural Electric Cooperatives (NDAREC) says this realization was the impetus behind the allocation of substantial resources to rural development strategies.

Rural Utility Co-operatives

The North Dakota Association of Rural Electric Cooperatives (NDAREC) and the North Dakota Association of Telephone Cooperatives (NDATC) are key participants in the development process and have been instrumental in gathering support and enlisting the services of many other institutions. In 1990 both associations committed to implementing a formal rural development program, to providing financial support to a rural development director, and to becoming involved in *Growing North Dakota*. Dennis Hill, Executive Vice President and General Manager of the North Dakota Association of Rural Electric Cooperatives (NDAREC) and co-chairperson of *Growing North Dakota* says "The rural electric co-operatives decided they were in the best position to take action, so we adopted a new economic development philosophy that emphasized rural development through co-operative development" (p 13, Campbell, 1995). NDAREC worked with many other organizations to develop a comprehensive package of programs aimed at fostering rural and economic development in the state. Presenting a united front helped them to lobby the government and have the package implemented in legislation.

The NDAREC and NDATC are members of North Dakota Coordinating Council for Cooperatives (NDCCC) along with Farm Credit Services, North Dakota Farmers Union, North Dakota Credit Union League and other co-operatives. One of the strategies adopted by the rural utility co-operatives to meet their development goals was to work with the NDCCC in the creation of a Centre for Cooperative Development. The Center is funded by private support augmented by funding from the USDA's Rural Development Administration through an agreement with the Cooperative Development Foundation. The Center's goal is to establish co-operatives and to use co-operation as a development strategy. Although co-operatives are the focal point, the center encourages other organizational structures such as strategic alliances,

networks, and associations which employ collective activities in problem solution. The Centre houses a Rural Development Program Director and a Co-operative Development Specialist; both are high profile, highly visible actors in the development process.

The Rural Development Program Director and Co-operative Development Specialist provide technical advice, encouragement and help groups sort out their differences. They work with producer groups to formulate common solutions to common problems, with the "ability to keep people talking" (Karaim). Bill Patrie, director of the Co-operative Development Centre and the Rural Development Program, is referred to as "the leader of the co-operative renaissance" (Karaim). During the past seven years he has traveled throughout North Dakota and beyond, spoken to thousands of farmers and made presentations to many conferences and meetings about co-ops and their ability to address common economic goals. Patrie and Jack Piela (former co-operative development specialist) were instrumental in the start-up of dozens of New Generation Cooperatives including the Dakota Growers Pasta Company, Dakota Dairy Specialties Cooperative and North American Bison Cooperative.

Before his current position, Patrie spent four years in the North Dakota Economic Development Commission attempting to lure industries to North Dakota. "He came to believe that there was a better way for rural Americans, and that was to take responsibility for their own economic future" (p 20, Karaim). Patrie points out there are several important aspects to his abilities and actions: a knowledge of economic and co-operative development; acting as an advocate not as champion; and independence from political pressure. He notes that "there are two levels of expertise needed. The first level in rural development is in general economic development. Co-op development doesn't work if you don't understand economic development. If you can't get the numbers right and make a project fly on paper, who cares what your organizational skills are. You need them both." (p 21, Campbell, 1995).

Patrie and others working to establish NGCs stress the use of practical tools: feasibility studies, business plans and equity drives. They consider it crucial that a thorough feasibility study be conducted to determine the most appropriate response in any development situation and feel that a solid business plan is vital in the promotion and development of any business, including NGCs. They believe that these factors are essential in fueling the enthusiasm and motivation to conduct a successful equity drive. Patrie also believes that the ability to allow and encourage leadership from within the group is an essential skill for a person in his position. Projects must

stand on their own when the co-operative development specialists and other agents move on to other tasks. “We are never the champion of the project. People want us to be, but that would be a terrible mistake. It depends on local, credible leaders. Farmers listen to other farmers, not economic analysts” (p 22, Karaim).

Dennis Hill, Executive Vice-president of North Dakota Association of Rural Electric Cooperatives (NDAREC) provides some insight into the importance of independence in co-operative development. Hill comments that developing projects need hands-on technical assistance and an independent development specialist has many advantages in providing the appropriate assistance. Universities are too tied to research and teaching, which leaves no time for development assistance. Many projects involve politically sensitive issues such as the location of plants and bringing in Canadian members. Politicians and civil servants are restricted by concerns of offending voters. Housing the rural development position (Patrie) within the NDAREC overcame these concerns. NDAREC is a non-profit organization with a presence throughout the state. It lends support to Patrie’s position but does not limit his actions. Patrie has the freedom to be fair and truthful in working with groups. Autonomy and freedom allow him to devote adequate time to projects and to offer sound advice without the restrictions of political considerations—“I’m hired now by the private sector, and I’m an advocate for projects. I meet with bankers and I can twist arms. Now if USDA is a player in financing, can they also play the advocacy role? I think probably not.” (p 21, Campbell, 1995).

FINANCIAL INSTITUTIONS

The co-operative and state banks have played an important role in the development process by providing technical expertise and debt capital to NGCs in North Dakota and Minnesota. The ND State Bank and the Farm Credit system also lend money to members for the members’ equity contributions.

Farm Credit System

The Farm Credit System was created in 1916 by Congress to insure a source of credit for agriculture and rural America. The system’s banks and associations do not take deposits, but raise funds through the sale of bonds and notes in the capital markets. These funds are available to loan to rural customers through 236 Farm Credit lending institutions. Farm Credit supplies about 25

percent of the credit needs of agriculture and has made about $US 55 billion in loans to half a million borrowers (Farm Credit Services of Mandan).

The Farm Credit System consists of six regional Farm Credit Banks, two of which are specialized to work with co-operatives: the St. Paul Bank for Cooperatives and CoBank. The St. Paul Bank for Cooperatives offers credit and related financial services to agricultural co-operatives, rural utilities, and other eligible customers. The St. Paul BC has four regional offices located in St. Paul and Mankato, Minnesota, Stoughton, Wisconsin, and Fargo, North Dakota. CoBank is an Agricultural Credit Bank with eleven regional banking centers which makes loans to agricultural co-operatives, rural utility co-operatives, and other rural businesses. Both the St. Paul Bank for Cooperatives and CoBank have national charters (Farm Credit Services of Mandan).

The Farm Credit System will lend to producers to enable them to invest in co-operatives. Due to a recent broadening of their mandate, the FCS is also able to provide debt to the co-operative. This service will be implemented in co-operation with the St. Paul Bank for Cooperatives. According to Michael O'Keeffe, Executive Vice President, FCS, the Farm Credit Act was interpreted in a manner that gave the FCS this broader mandate. The realization that they would "not exist if not for the farmers" has encouraged them to develop a relationship with rural customers that would be mutually beneficial. The common focus of revitalizing rural economies led FCS to extend loans to co-operative ventures as well as the traditional loans for production and operation at the farm level (Farm Credit Services of Mandan).

The St. Paul Bank for Cooperatives

The St. Paul Bank for Cooperatives has a long history of working with NGCs. The bank was involved in the creation of American Crystal Sugar in the early 1970s. At that time, the private company which operated the sugar beet processing plant was preparing to shut down operations in the state. The sugar beet producers were about to lose the market for their product. To prevent this and stabilize the processing and marketing of their commodity, local producers formed a co-operative and purchased the processing plant. The result, American Crystal Sugar, is seen as the first of the new generation of selected membership, high equity, co-operative processing facilities.

Sugar beet co-operatives were the forerunners of the New Generation Cooperative movement. The long term success of these first ventures contributed to the confidence of both the farmers and the Bank in their approach to new ideas. The lengthy involvement of the Bank with farmer co-operatives has created a kind of institutional memory. Long term employees draw on many experiences as they guide groups through the start-up of new enterprises. Representatives of the Bank and farmer groups were able to develop a checklist of important points to consider in new ventures. The Bank is willing to take risks that other financial institutions are not willing to take because their mission is to "build sound, well-managed co-operative associations, and sound rural communities." This mission enables them to look at different factors than commercial banks and to play an active role in the development process (Johnson).

Lee Estenson, Vice President of the St. Paul Bank for Cooperatives, describes the Bank's role as having three major components:

1) A business planning resource: providing advice on developing business plans, lending money for the initial feasibility study, linking groups with other consultants or resources;
2) Front end guidance: identifying factors (potential problems or critical elements) to watch for and educating group members in the essentials of good business planning.
3) A source of capital: the bank lends money to farmer co-operatives but, according to the banks' philosophy regarding farmer co-operatives, this is not their primary role. Estenson notes that "money is secondary, the first concern is to create a viable, successful venture that will improve the situation of members, not contribute to their debt load".

Because its mission is to build co-operatives and communities that will benefit rural people for the long term, the St. Paul Bank stresses the need to exercise caution and to insist on commitment from the members before agreeing to provide debt financing. The mission focusing on building strong co-operatives is an incentive to provide groups with information and guidance even though the Bank is not making loans to the venture. They have been involved in projects where no debt financing is provided but Bank representatives have been active in providing information to members. This service helps farmers feel comfortable

with their decision to participate by outlining the risks and opportunities involved in these projects.

RESEARCH INSTITUTES

The Quentin N. Burdick Center for Cooperatives

The Quentin Burdick Center for Cooperatives is an endowed program at the North Dakota State University and provides leadership in education and research at state, regional, national, and international levels. “The mission of the Quentin N. Burdick Center for Cooperatives is to conduct, promote, and coordinate university education and research on co-operatives, to strengthen co-operatives’ operation, and to work toward expanding employment and economic opportunities through co-operatives” (Quentin N. Burdick Center for Cooperatives). The center offers courses in co-operative philosophy, principles, and man-agement strategies to university students and delivers co-operative management training programs. The Center plays a role in new co-operative development through the delivery
of a training program for the boards and management of new and emerging co-operatives.

North Dakota State University Extension Service

The North Dakota State University Extension Service and the High Value Irrigated Crops Task Force jointly fund the position of Area Extension Specialist. The position is currently held by Rudy Radke who provides information on production of irrigated crops and helps to coordinate the development of business projects. Radke provides a linkage between commodity groups and rural development agents, university, government and other resources.

WHAT HAVE WE LEARNED?

The growth of New Generation Co-operatives in North Dakota is an impressive example of industry and rural development brought about by participant-driven institutional change.

OVERCOMING DEVELOPMENT BARRIERS—EXTERNAL SUPPORT

The process at work in North Dakota is a clear illustration that external agents play a critical role in promoting and facilitating participant-driven institutional change. Without the support of external agents, co-operative development in the region would not have occurred to the degree

that it has. Many agents actively participate in the network of support and provide financial, advisory, and moral support to new co-operatives. However, one can think of this support as occurring on two separate levels: a "micro" level, which provides direct support to producers groups interested in forming a new generation co-operative; and
a "macro" level, which provides support for regional development initiatives in general and creates an environment conducive to collective action.

"MACRO" SUPPORT

Representatives of various organizations in the state have created an infrastructure which provides the resources and the machinery for development. This network of support functions in a manner that:

- creates the environment within which development can occur,
- coordinates development efforts to avoid duplication,
- provides a variety of resources and expertise to serve the varying information and service needs of producer groups,
- creates an atmosphere of enthusiasm,
- acts as a network linking producers, resources, funding, facilitators, government, and other co-operative projects.

The roots of this network emerge from institutions with a vested interest in rural economies. The rural utility co-operatives and the Farm Credit System recognize that their existence depends on a healthy rural economy and a stable rural population. The continued existence of organizations and institutions serving rural populations is dependent on maintaining a rural population; therefore those organizations have been instrumental in developing the common goal of rural revitalization and creating the focus and determination to achieve that goal.

The impetus for development comes from producer groups and the government plays the role of advocate, encouraging a positive attitude and supporting projects by helping to remove some of the barriers. Government and quasi-government organizations do not drive the development, they support it. Government funding programs are designed to be flexible enough to meet a broad range of development needs. This environment creates conditions for the growth

of many different kinds of industry and enterprise development, including co-operatives.

"MICRO" SUPPORT

Within this environment of "macro" support, many factors contribute to building viable, sustainable enterprises. At the core of each NGC lies a group of producers dedicated to working together to address a common challenge. Co-operative and rural development specialists, sponsored by firms in related industries (i.e., the rural utility co-operatives) work as facilitators of collective action. These agents act as project coordinators and are an important link between producer groups and outside resources. They meet with producer groups to offer ideas and encouragement while guiding them through the development process. Bill Patrie, Rural Development Director, North Dakota described his role in this way: "The servicing of economic development involves a lot of spontaneity and response opportunities. It's like growing corn. You can't make it grow. You can help it grow." He explains that although each situation is different his actions in "growing" development include meeting and talking to various groups:

- to determine how to help the members work together,
- to assist the group in defining the problem,
- to explore the available alternatives, and
- to determine what resources and information are required (Karaim).

Although the appropriate facilitator is a key element, they too work in conjunction with other agents, such as representatives from financial institutions and a range of consultants and advisors. Representatives from the co-operative banks work directly with producer groups to develop business plans and equity drives, in addition to providing funding for feasibility studies and start-up capital. Independent consultants, such as accountants and lawyers, work with producer groups to undertake specific tasks, such as conducting a feasibility study or developing a set of bylaws and incorporation documents. To provide these services, these agents draw on technical skills as well as extensive experience working with other farmer co-operatives. The widespread adoption and familiarity of the NGC model has likely contributed to lowering the costs associated with forming this type of institutional arrangement between producers.

The importance and effectiveness of external support, both at the "macro" and "micro" level, in the development of new generation co-operatives and in reversing a trend of rural decline cannot be overstated. The immediate and lasting impressions of co-operative development in North Dakota are these:

- All external agents involved have a common goal: to improve rural economies and rural communities.
- Representatives of these organizations understand the co-operative model and are enthusiastic about the social and economic advantages of this structure.
- Information is constantly flowing among the organizations and the rural population.
- The needs specific to each group can be identified and addressed by an extensive resource pool.

OVERCOMING DEVELOPMENT BARRIERS—ORGANIZATIONAL STRUCTURE

In addition to the supportive external environment, the organizational structure of NGCs is a key element in enabling producers to overcome potential hold-up problems and contractual uncertainty (Harris, Stefanson and Fulton). The use of delivery right shares allows producers to make credible commitments regarding their product and capital contributions to the processing venture. The idea behind delivery right shares is also to provide clear information to producers regarding the quantity and quality of product to be purchased by the processing co-operative. The shares provide producers with a guaranteed market for their product, enabling them to avoid opportunism on behalf of other purchasers. The shares also protect the co-operative processor from opportunism on behalf of farmers. In this way, the delivery shares alleviate the uncertainty involved in achieving a contractual agreement between producers and the processor.

The organizational structure of NGCs also addresses some of the concerns associated with collective agreements among the producers themselves. The purchasing of delivery right shares is a form of credible commitment to investing in a collective asset—the co-operative processing facility. Conducting a feasibility study, developing a business plan, and undertaking an equity drive all contribute to providing assurances to producers to allow them to commit to the project.

LONG-TERM COLLECTIVE ACTION

One way to sum up what we have learnt from this chapter is to consider the eight design principles outlined in chapter 4 and offered by Ostrom as essential elements to the long-term governance of collective assets and to compare these principles with the development process at work in North Dakota. We can think about new generation co-operatives as assets owned and controlled collectively by the producers who supply the inputs to the processing facility. We can also think of the organizational structure of NGCs as a specific set of rules which enable producers to make long run credible commitments to one another.

1) Clearly Defined Boundaries: The delivery right shares used by NGCs clearly define who has the right to use and benefit from the facility (the members).

2) Well-Tailored Appropriation and Provision Rules: The delivery rights shares specify how the benefits from using the facility are derived (on the basis of patronage) and what responsibilities correspond to using the facility (the delivery of a stated quantity and quality of product). Members appropriate the services of the NGC in direct accordance to the amount of capital they have provided to the enterprise.

3) Collective-choice Arrangements: NGCs are governed by the principle of one member, one vote. Rules can be modified according to democratic processes legally incorporated into the structure of the enterprise (set out in the NGCs bylaws, in accordance with cooperative legislation).

4) Monitoring: Agents who are accountable to the members (the management and staff of the processing facility) monitor the behaviour of members (through quality control systems) and the condition of the asset (through financial and other performance indicators). The price of the NGC delivery shares provide an additional tool with which to evaluate the condition of the business. Because the profits generated by the NGC are returned to the members, members have a "built-in" incentive to deliver high-quality products to the NGC.

5) Graduated Penalties: The contract between producers and the processing facility (i.e., delivery right shares) clearly outlines the penalties to be paid by members who do not meet the delivery requirements (for example, they are responsible for purchasing product from elsewhere for delivery, or the processor will purchase

product on their behalf and deduct the cost from their patronage dividends). Members are expelled from the co-operative if they repeatedly fail to deliver as per their contract. However, contingencies are incorporated into the contract to account for unusual circumstances, such as crop failure.

6) Conflict-resolution mechanisms: Regular meetings of the membership, the board of directors, and appointed committees provide NGCs with a low-cost mechanism for resolving conflicts and dealing with unforeseen events. The rural and co-operative development officers also act as a resource to facilitate conflict resolution. The existing court system maintained by the state can be used to resolve serious disputes and conflicts.

7) Recognition of the Rights to Organize: External government authorities have been very supportive of the development of New Generation Co-operatives and have recognized the legitimacy of this form of business. For example, governments have recognized NGCs as co-operatives under the laws of incorporation, qualifying these organizations for preferential tax treatment.

8) Nested Enterprises: The development of NGCs is only a part of an overall plan for rural development in North Dakota. Funding programs and other resources devoted to achieving this goal have been made flexible enough to cover a broad range of development initiatives, including, but not limited to, NGCs.

Using Ostrom's eight design principles helps to highlight some of the features which have contributed to the success of NGCs and the development strategy of North Dakota. It is interesting to note that this approach has been used successfully to overcome barriers to the development of a broad range of agriculture based industries, including both newly emerging and traditional commodity-based industries. Newly emerging industries have used NGCs as a way to implement the quality standards and coordinate the supply necessary to develop new markets. Producers of traditional commodities have developed NGCs to add value to their products and to access a greater share of the consumer dollar, thereby reducing their reliance on prices determined in commodity markets and eliminating some of the fluctuations in their income.

Regardless of the stage of the industry, NGCs have allowed producers to achieve economies of scale and to develop opportunities which they could not have achieved on their own. The

economic spin-offs from this type of collective action have meant the revival of several rural communities across the state. That said, there is no fool-proof recipe or blueprint for the creation of NGCs. Therefore, the strategies and the people involved must be open and flexible. The process, the options and the decisions will be different in each situation. Nor are NGCs always the best alternative. NGCs will only be successful if they are chosen by producers as the preferred and the appropriate organizational form.

> *George Sinner, vice president of public and government relations for American Crystal Sugar Co., emphasizes the five Cs that are regarded as the building blocks of successful co-operatives, "putting* **capital** *together to achieve a purchasing or marketing advantage. Allowing members to exercise* **control** *over the way they are treated in their contracts and markets.* **Communicating** *to make sure everyone in the organization understands what's happening. Establishing* **continuity** *with the past. Sustaining and improving the* **community**."

PART 3

CONCLUSION

CHAPTER 9

PULLING IT ALL TOGETHER

The objective of this study is to determine the role that external agents and organizations can play in fostering the development of agriculture-based industries. Specifically, the study is concerned with the role that external agents, such as governments and firms in related industries, can play in fostering development initiatives that involve multiple participants within an industry working together to realize opportunities that could not be achieved independently. For the purposes of this study, one can think about agricultural industry development as occurring when the institutional, or economic, arrangements within the industry are changed to facilitate any activity that aids in stabilizing it. By stabilizing an industry we are referring to the activities involved in moving an agriculture-based industry from simply involving production to one characterized by elements such as well-defined markets, regulatory bodies, value-added, and ongoing product innovation. Industries develop in some situations and not in others. This research set out to test the hypothesis that industry development is more likely to occur when external agents provide services that encourage industry participants to coordinate their behaviour and work together to achieve development goals.

To meet the objective of this study we first developed a conceptual framework from which to understand and analyze industry development in agriculture and the possible role of external agents in this process. In the second part of the study we presented a number of case studies of agriculture-based industries. The case studies allowed us to apply the theories discussed in the first part of the study to our understanding of specific development challenges and industry development initiatives. This, the third part of the study, completes our research by combining the conceptual framework developed in part 1 with examples from the case studies in part 2 to identify development barriers common to agricultural industries and to summarize the role that external agents can play in helping industry participants to overcome these barriers.

INDUSTRY DEVELOPMENT ACTIVITIES

The cases presented in part 2 of the study serve to outline a number of important activities which can help to address a broad range of development challenges. For purposes of illustration these activities can be thought of as occurring along three levels: production; processing; and marketing.

Production level: development activities include developing production standards, disseminating information regarding proper production practices, undertaking research to determine efficient production methods, and securing suppliers of needed inputs.

Processing level: development activities include establishing processing facilities, developing grading standards for raw products, developing quality control measures for final products, securing required inputs, and ongoing product development.

Marketing level: development activities include setting up wholesale and distribution networks, creating awareness of products available and their attributes, developing brand names, promotion and advertising, securing transportation services, and soliciting consumer/customer feedback.

All of the activities listed above require a certain level of investment of resources (time, money, skills) and many have economies of scale and scope associated with them. All of the activities listed above are also highly interrelated. The particular goals being pursued as a result of these activities frequently span the entire production, processing and marketing chain. For example, developing consumer-ready food products at the processing level requires market level information regarding consumer tastes and preferences. In addition, information needs to be filtered down to the production level to ensure that desired product attributes are cultivated and input quality is maintained. In other words, significant complementarities exist among these activities. This is not surprising given that the three categories of production, processing and marketing are also complementary—without sufficient production, markets cannot be developed efficiently; without sufficient production, efficient processing ventures cannot be established; without processing facilities, markets cannot be developed; and so on.

This complementarity between all the activities in the product chain means that the three approaches to industry development identified in Chapter 1 are also complementary. The effectiveness of expanding demand, expanding supply, and reducing marketing margins by

lowering transactions costs depends not only on the resources devoted to each of these activities, but also to the resources devoted to the other activities. The result is that coordination is required to maximize the potential benefits from these three methods of industry development. No single method of industry development is sufficient on its own to maximize the development of an industry (Lysyshyn).

The economies of scale and scope and the complementarities inherent in many development activities, combined with the reality that industry participants, in particular producers, are not equally endowed with the resources required to undertake development activities, highlight the need for industry participants to coordinate their efforts in order to undertake industry development initiatives.

BARRIERS TO DEVELOPMENT

Standard neoclassical economics suggests that economic agents will co-ordinate their actions and engage in industry development activities whenever the benefits from doing so outweigh the costs. However, there exist many real world examples where, regardless of the potential net gains, individuals and firms are not able to coordinate their activities to take advantage of these gains. The theoretical portion of this study focused on answering the following two questions:

1) What barriers exist which limit the ability of industry participants to coordinate their actions?

2) What role can external institutions play in helping participants overcome these barriers?

Contrary to the assumptions of neoclassical theory, the bulk of real-life economic behaviour is complex and is characterized by uncertainty, differentiated products, and multiple interdependent agents with different long-run interests. Information is costly, and the information-processing capabilities of economic agents are limited. Therefore, the institutional arrangements that agents use to interact with one another and coordinate their activities are a critical component in understanding economic behaviour, and hence, industry development. New institutional economics (NIE) represents an attempt to modify and extend neoclassical theory by incorporating the concepts of institutions and institutional arrangements into economics. Alternatively, NIE is concerned with how economic agents coordinate their actions.

Unlike neo-classical approaches, NIE tries to take into account the strategic behaviour of firms and individuals in situations where the incentives and information generated by competitive markets cannot be guaranteed (Ostrom, et. al.). Dropping the assumption of inherent rationality enables institutional economists to study a range of issues associated with uncer-tain and complex situations where market information does not flow freely and where economic actors, in pursuing their self-interest, make decisions and interact with other agents strategically. It is these types of situations which best describe the problems associated with economic and industry development (North, 1994; Toye). Thus, a central component of our analysis concentrates on two prominent themes examined by new institutional economists: contractual uncertainty and collective action.

The difficulties associated with contractual uncertainty highlight the problems involved in coordinating behaviour when information is limited, costly or asymmetric and transactions costs are high—ie., when the potential for *ex-post* hold-up is great. The problems associated with collective action illustrate the difficulty in coordinating behaviour when individuals face an incentive to free-ride, particularly when securing or managing open access goods. Both sets of problems point to market imperfections which can lead to market failure—a situation where the best attainable outcome is not achieved. In other words, certain factors (such as costly and asymmetric information, differential market power, and negative externalities) can cause the market to fail in coordinating the economic decisions of independent industry participants. A lack of coordinated action can prevent industry participants from (a) completing the transactions required for the efficient allocation of resources within the industry; or (b) supplying themselves with collective goods which can benefit the entire industry.

THE ROLE OF EXTERNAL AGENTS

Standard theoretical viewpoints offered to explain how the actions of independent economic players can be coordinated under complex, uncertain conditions where the potential for market failure is high can be grouped according to two contrasting perspectives: privatization and centralization. The proponents of privatization stress the role of the market in coordinating activity and argue that a lack of coordination between industry participants is linked to a misspecification of property rights. Under this perspective the role of external agents in fostering industry development is minimal and limited to the state developing a property rights system and

specifying property rights in such a way as to allow the smooth operation of the market. Examples of industry coordination based on the specification of private property rights include:

- the use of explicit contracts between Sask-Ida and the residents of Lucky Lake, Saskatchewan to secure production for Sask-Ida's marketing operations;
- the vertical integration of Saskatoon Specialty Meats (SSM) to put quality control measures in place at the processing level.
- the specification of delivery rights in new generation co-operatives

In contrast the proponents of centralization see a much more expanded role for the state in overcoming market failure, either by providing public goods directly, establishing regulations to coordinate industry behaviour, or by redistributing resources. Examples of industry coordination based on the centralization of decision making include:

- the public provision of seed potato inspection services by the federal government to coordinate product quality;
- the use of mandatory levies on seed potato production to fund marketing activities; and
- the regulation of the fallow deer industry to coordinate production and marketing practices.

An alternative to the standard theoretical viewpoints is participant-driven institutional change which involves industry participants developing their own institutional arrangements, as opposed to institutional change which is organized externally by a central governing body. This alternative is based on observations which suggest that narrow self-interest is not the only factor motivating firms and individuals. Other factors such as notions of fairness, the ability to make credible commitments and provide assurances regarding future behaviour, the existence of a critical mass, and the frequency with which participants interact with one another are also important. These factors can have a positive influence on the ability of participants to act collectively to take advantage of industry development opportunities. In addition, the existence of well-tailored governance structures which clearly define the penalties associated with breaching commitments and a system which monitors *ex post* behaviour can add to the longevity of agreements between participants. Based on this understanding we can begin to identify ways in which external agents can foster industry development which go beyond the standard policy solutions offered by neo-

classical economists by focusing on promoting and facilitating participant-driven institutional change.

Although we focus on the role of external agents in promoting and facilitating participant-driven institutional change, we do not believe that this type of change is the only way to address the challenges associated with industry development. Indeed, we acknowledge that in many development situations policies based on either privatization or centralization may be the key to efficiently solving market failure. The purpose of this report is not to advocate one form of policy prescription over another. Rather the purpose is to add to the standard repertoire of policy strategies an additional way in which industry development can be encouraged.

The examples of participant-driven institutional change within the case studies point to a broad range of roles played by external agents. Examples of participant-driven institutional change include:

- the information dissemination services provided by the B.C. Fallow Deer Association;
- the establishment of potato production by Riverhurst Agricultural Products;
- the establishment of processing facilities by the members of New Generation Co-operatives (NGCs) in North Dakota;
- the coordination of production practices to ensure quality standards by Edmonton Potato Growers;
- the collective marketing activities of Pacific Northwest Venison Producers and Northern Velvet;

The efforts of the B.C. Fallow Deer Association illustrate how external agents, specifically the provincial government, can facilitate participant-driven development activities by providing flexible funding and credible production and market information. The process of getting potato production established in Riverhurst, Saskatchewan illustrates the importance of an external agent as a facilitator; developing relationships among key participants, keeping communication lines open and defining the resources available to the community.

Perhaps the clearest example of the positive role that external agents can play in larger-scale industry development initiatives is illustrated by the development of New Generation Co-

operatives in North Dakota. In this case a wide variety of external agents played a range of roles in fostering the development of a broad range of agriculture-based industries. Representatives of various organizations have created an infrastructure which provides support for regional development initiatives and creates an environment conducive to collective action. This network includes various government agencies which provide flexible funding programs, sponsor forums for industry participants to meet and exchange ideas, and portray enthusiasm for local development initiatives. Financial institutions, in particular the co-operative banks, provide industry participants with business expertise and start-up capital. The rural utility co-operatives and co-operative associations fund the positions of a rural development and a co-operative development specialists. These specialists act as facilitators of collective action and work directly with industry groups to identify common needs and goals, develop strategies to meet these goals, and coordinate the resources available to undertake development strategies.

However, it is important to note participant-driven institutional change does not necessarily require that external agents play an active role in industry development. For example, Edmonton Potato Growers, Pacific Northwest Venison Producers, and Northern Velvet are all examples of collective organizations which developed without direct external aid of any sort. However, while direct help from external agents is not necessary for participant-driven institutional change, a recognition by external government authorities of the legitimacy of such an effort is essential. This point is clearly illustrated by the collapse of the industry development initiatives undertaken by Pacific Northwest Venison Producer. Therefore, while external agents, in particular the government, can have a positive affect on industry development, they can also be a barrier to development initiatives.

CONCLUDING COMMENTS

We conclude that external agents do have a meaningful role to play in fostering industry development. Specifically, they can aid industry participants in overcoming market failures due to contractual uncertainty and the "open-access" nature of many industry development initiatives, and by promoting and facilitating participant-driven institutional change.

All industries operate within a larger external environment. This environment can have either a positive or negative impact on the success of participant-driven institutional change. There are a number of ways in which external agents can contribute to creating an environment which fosters

cooperation among industry participants. Cooperation amongst industry participants can be made easier and less costly if forums for participant communication exist and if participants have access to reliable, relevant information and/or the technical expertise to gather such information. The longevity of contractual or collective agreements can be enhanced if a low-cost mechanism for monitoring behaviour and an arena for conflict resolution are available.

However, even within a supportive external environment, the actual process of undertaking development activities can remain difficult due to the problems associated with collective action. Often some form of credible commitment is required to provide industry players with the assurances necessary to ensure participation. The existence of a critical mass can also have a positive influence on collective activities. An external agent can help in rallying together a critical mass of participants, by identifying enthusiastic and goal-oriented individuals within the industry, and by connecting them with like-minded counterparts. An outside agent can also help groups to develop institutional arrangements which can address assurance and credible commitment issues. These activities require the external agent to work directly with participant groups in particular industries as a facilitator.

The role of the external agent as a facilitator of collective action involves assisting industry groups with: (a) the identification of the problems and the needs of the group; (b) the development of strategies to address these problems or needs; and (c) the mobilization of resources both from within and outside of the group. To be effective, an external agent acting as a facilitator requires: credibility and fair mindedness; a solid knowledge of the industry; the ability to link this knowledge with an appropriate institutional arrangement; and the ability to foster mutual trust and interdependence among participants.

The services identified in this study as being beneficial to the development of industries can be provided by external agents other than the state. For example, firms in related industries can contribute to industry development initiatives by providing funding, technical expertise, and related experience. In fact such agencies and their agents can have an advantage over government agencies in that they can remain non-partisan, can act independently and may have access to a broader base of relevant information.

REFERENCES

Agriculture and Agri-Food Canada. 1995. *Potato Market Review 1993/1994*. Market Information and Intelligence Unit, Agriculture and Agri-Food Canada. Ottawa, Ontario.

Axelrod, R.M. 1984. *The Evolution of Cooperation*. New York: Basic Books.

Bates, R. H. 1995. "Social Dilemmas and Rational Individuals: An Assessment of the New Institutionalism" in J. Harriss, J. Hunter and C. M. Lewis, eds. *The New Institutional Economics and Third World Development.* London: Routledge.

Boehlje, M. 1995. "The "New" Agriculture." *Choices*. Fourth Quarter, p 34–35.

Bryant, C. 1980. "Manufacturing in Rural Development" in D.F. Walker, ed. *Planning Industrial Development*. Toronto: John Wiley & Sons Ltd.

Calvert, R. 1995. "The Rational Choice Theory of Social Institutions: Cooperation, Coordination, and Communication" in J.S. Banks and E.A. Hanushek, eds. *Modern Political Economy: Old topics, New Directions.* Cambridge: Cambridge University Press.

Campbell, D. 1995. "Look in the Mirror Ignited Rural Development." *Farmer Cooperatives.* Vol. 62, No. 5.

Campbell, D. 1995. "Temperature Rising: Co-op Fever is Still Sizzling Across North Dakota But Will the First Failure Cause it to Dissipate?" *Farmer Cooperatives.* Vol. 62, No. 5.

Campbell, D. 1995. "The Carrot and Stick: A Conversation with Bill Patrie, the Man Who Helped Spark Co-op Fever." *Farmer Cooperatives*. Vol. 62, No. 5.

Canadian Venison Council - Homepage: http://www.cybercervus.com/assoc/cvc.html

Coase, R.H. 1960. "The Problem of Social Cost." *Journal of Law and Economics* 3, 1–44.

Coase, R.H. 1937. "The Nature of the Firm" Reprinted in O. E. Williamson and S. G. Winter, eds., *The Nature of the Firm: Origins, Evolution, and Development.* New York: Oxford University Press. 1993.

Cooperative Foundation. 1995. *Working to Build Cooperatives: 1945 to 1995*. St. Paul, Minnesota.

Cooperative Information Report No. 7. 1993. *How to Start a Cooperative.* Agricultural Cooperative Service. United States Department of Agriculture.

Davis L. and D. North. 1971. *Institutional Change and American Economic Growth*. Cambridge: Cambridge University Press.

Durlauf, S.N. 1993. "Nonergodic Economic Growth." *Review of Economic Studies*. 60(2), no. 203: 349–66.

Estenson, L. 1994. "Working With Financial Leverage." *St. Paul Bank Extra.* St. Paul, Minnesota.

Fairbairn, B., M. Fulton, L. Hammond Ketilson, P. Krebs and M. Goldblatt. 1993. *Co–operative Enterprise Development in Canada: An Action Plan,* Centre For the Study of Co-operatives, University of Saskatchewan, Saskatoon, Saskatchewan.

Farm Credit Services of Mandan. 1995. *Special Financing Program for Grower Stock.* Mandan, North Dakota.

Farm Credit Services of Mandan. 1996. *Farm Credit System Information Guide.* Mandan, North Dakota.

Fischer, M. A. 1989. "The Practice of Community Development." Christenson, J. A. and J. W. Robinson, Jr., eds. *Community Development in Perspective.* Iowa State University Press. Ames, Iowa.

Frank, R. H. 1988. *Passions Within Reason: The Strategic Role of Emotions.* W.W. Norton and Company: New York.

Gabriel, T. 1991. *The Human Factor in Rural Development.* Belhaven Press: New York, New York.

Grossman S.J. and O.D. Hart. "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration." *Journal of Political Economy*, 94(4): 691–719.

Harris, A., B. Stefanson, and M. Fulton. 1996. "New Generation Cooperatives and Cooperative Theory." *Journal of Cooperatives* 11:13–28.

Harvest Foods Ltd. 1986. *Potential for Saskatchewan Seed Potato Exports to the Northwest United States*. Final report: Saskatchewan. Agriculture Development Fund: no R–86–12–0178.

Hardin, G. 1968. The Tragedy of the Commons. *Science* 162:1243–8.

Hill, D. 1994. "Coop Fever Getting Hotter" *North Dakota REC/RTC Magazine*. North Dakota REC/RTC. Mandan, North Dakota, May.

James, C. L. 1995. *Spanning Boundaries: Rethinking Community, Competitiveness, and Cooperation.* The Cooperative Development Forum. Washington, D.C.

Johnson, D. A. 1994. “Financing The New-Venture Cooperatives.” *St. Paul Bank NEWS*, Number 29, September/October

Karaim, R. 1995. “Preacher on the Plains: The story of Bill Patrie and North Dakota’s Cooperative Renaissance.” *Rural Electrification Magazine*, September, 1995.

Klein, B., Crawford, R.G., and A.A. Alchian. 1978. “Vertical Integration, Appropriable Rents, and the Competitive Contracting Process.” *Journal of Law and Economics* 21: 297–326.

Koenig, J.R. 1995. “Contracting for Quality.” *Farmer Cooperatives* Volume 62, Number 5, August.

Koss, P.A. and B.C. Eaton. 1995. “Co-Specific Investments, Hold-up and Self-Enforcing Contracts.” *Journal of Economic Behaviour and Organization*.

Kotler, P. and G. McDougall. 1985. *Marketing Essentials*. Scarborough, Ontario: Prentice-Hall Canada, Inc.

Kreps, D.M. and R. Wilson. 1982. “Reputation and Imperfect Information.” *Journal of Economic Theory*. 27, 253–79. Reprinted in “Industrial Organization” O.E. Williamson, ed.

Lang, R. 1988. “Planning for Integrated Development.” In *Integrated Rural Planning and Development*, Dykeman, F. W., ed. Sackville, New Brunswick: Rural and Small Town Research and Studies Programme, Department of Geography, Mount Allison University.

Lipset, S.M. 1950. *Agrarian Socialism*. The University of California Press. Berkeley, California.

Lipsey R. G., Purvis D. D. and P. O. Steiner. 1985. *Economics—Fifth Edition*. New York: Harper and Row.

Lund, M. 1996. “Building Better Borrowers.” *Year In Cooperation,* Spring. St. Paul, Minnesota.

Lysyshyn, D.P. 1998. *Coordination And Industry Development: The Wild Boar Industry*. Unpublished Msc Thesis, Department of Agricultural Economics, University of Saskatchewan. Saskatoon.

Marwell, G. and P. Oliver. 1993. *The Critical Mass in Collective Action: A Micro-Social Theory.* Cambridge University Press. New York, New York.

Marwell, G., and R. Ames. 1981. “Economists Free Ride, Does Anyone Else?: Experiments on the Provision of Public Goods IV.” *Journal of Public Economics.* 15: 295–310.

Milgrom, P. and J. Roberts. 1990. “The Economics of Modern Manufacturing: Technology, Strategy and Organization.” *American Economic Review*. 80(3): 511–528.

Milgrom, P., Y. Qian and J. Roberts. 1991. “Complementarities, Momentum, and the Evolution of Modern Manufacturing.” *American Economic Review*. 81(2): 84–88.

Minnesota Association of Cooperatives. 1994. *Year in Cooperation: A Cooperative Development Magazine,* Volume 1, Number 1. St. Paul, Minnesota.

Molder, P.J. and G.D. Funk. 1995. *Specialized Livestock Needs Assessment Questionnaire Report*. Submission to the Saskatchewan Agriculture and Food Specialized Livestock Committee. September. Department of Agricultural Economics, University of Saskatchewan. Saskatoon, Saskatchewan.

Nabli, M. and J. Nugent. 1989. "The New Institutional Economics and Its Applicability to Development." *World Development*. Vol. 17, No. 9.

North Dakota Association of Rural Electric Cooperatives. 1995. *Rural Development Program Report.* Mandan, North Dakota.

North, D. C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.

North, D. C. 1993. *The New Institutional Economics and Development*. Working Paper - Washington University, Department of Economics. http://netec.wustl.edu/WoPEc/data/Papers/wopwuwpeh9309002.html.

North, D.C. 1995. "The New Institutional Economics and Third World Development." In *The New Institutional Economics and Third World Development,* Harriss, J., Hunter, J. and C. M. Lewis, eds. London: Routledge.

Northcountry Cooperative Development Fund. 1994. *Annual Report. "Cooperation among Cooperatives"*. Minneapolis, Minnesota.

Northern Plains Premium Beef. 1996. *Premium Source*. March Newsletter. Mandan, North Dakota.

Olson, M. 1971. *The Logic of Collective Action: Public Goods and the Theory of Groups.* Harvard Economic Studies, Cambridge: Harvard University Press.

Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press. New York, New York.

Ostrom, E., Schroeder, L., and S. Wynne. 1993. *Institutional Incentives and Sustainable Development: Infrastructure Policies in Perspective*. Colorado: Westview Press, Inc.

Pacific Northwest Venison Producers. 1990. *PNVP: Background Information*. Pamphlet. Acme, Washington.

Patrie, B. 1995. *CED Industrial Projects*. Presented at Building Our Future International Forum on Co-operatives and Change. June 12 to 14. Saskatoon, Saskatchewan.

Potato Growers of Alberta—Homepage: http://www.potatonet.com/

Prentice , B. and G. Storey. 1988. *Flaxseed: Victim of Crowding Out or Potential Cinderella Crop*. Presented at the Canadian Agricultural Economics and Farm Management Annual Meeting, July, McGill University, Montreal.

Quentin N. Burdick Center for Cooperatives. 1994. *NEWS*. North Dakota State University, North Dakota, May.

Rogers, A. 1992. *Adults Learning for Development*. London: Cassell Educational Limited.

Runge, C.F. 1984. "Institutions and the Free Rider: The Assurance Problem in Collective Action." *The Journal of Politics,* Volume 46.

Runge, C.F. 1985. "The Innovation of Rules and the Structure of Incentives in Open Access Resources." *American Journal of Agricultural Economics*, Volume 67, Number 2.

Runge, C.F. 1986. "Common Property and Collective Action in Economic Development." *World Development*, Volume 14, Number 5.

Saskatchewan Agriculture and Food. 1994. *Wild Boar Production: Economic and Production Information for Saskatchewan Producers*. December. Available at http://www.gov.sk.ca/agfood/live/wborcont.htm

Saskatchewan Agriculture and Food. 1996. *The Economics of Fallow Deer Production in Saskatchewan*. June. Available at http://www.agr.gov.sk.ca/saf/

Saskatchewan Seed Potato Growers Association. 1996. *1995–1996 Saskatchewan Seed Potato Directory*. Saskatoon, Saskatchewan.

St. Paul Bank for Cooperatives. *Keeping Faith with Rural America: Annual Report 1994*. St. Paul, Minnesota.

Staatz, J. 1987. "The Structural Characteristics of Farmer Cooperatives and Their Behavioural Consequences." In *Cooperative Theory: New Approaches,* Royer, J., ed. ACS Service Report Number 18, United States Department of Agriculture. Washington, D.C.

Stefanson, B., M. Fulton, and A. Harris. 1995. *New Generation Co-operatives: Rebuilding Rural Economies.* Centre for the Study of Co-operatives. Saskatoon, Saskatchewan.

Stein, H. 1995. "Institutional Theories and Structural Adjustment in Africa." In *The New Institutional Economics and Third World Development*, Harriss, J., J. Hunter and C. M. Lewis, eds. London: Routledge.

Sudom, B. 1994. *Wild Boar Production: Economic and Production Information for Saskatchewan Producers.* Saskatchewan Agriculture and Food: Regina, Saskatchewan.

Toye, J. 1995. "The New Institutional Economics and its Implications for Development Theory." In *The New Institutional Economics and Third World Development,* Harriss, J., J. Hunter and C. M. Lewis, eds. London: Routledge.

View West Marketing. 1990. *Market Assessment and Marketing Strategy Development for the British Columbia Deer Farming Industry*. Canada-British Columbia Agri-Food Regional Development Subsidiary Agreement (ARDSA 1985–1990), B.C. Ministry of Agriculture and Fisheries. December.

Wehrmann, H. 1997. “Trade mission to Japan-March 9–20, 1997: Wild Boar Federation of Canada.” *Wild Boar Banner*. Spring/summer.

Williamson, O. E. 1987. *Markets and Hierarchies: Analysis and Antitrust Implications*. New York: The Free Press.

Williamson, O.E. 1989. “Transaction Cost Economics.” *Handbook of Industrial Organization (Volume 1)*, Schmalensee R. and R. D. Willig, eds. Amsterdam: Elsevier Science Publishers B.V.

Williamson, O.E., 1993. “The Logic of Economic Organization”. In *The Nature of the Firm: Origins, Evolution, and Development,* Williamson O. E. and S. G. Winter, eds. New York: Oxford University Press.