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The Role of Competitiveness in Shaping Policy Choices

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THE ROLE OF COMPETITIVENESS IN SHAPING POLICY CHOICES

I. Introduction

Popular and academic writers have been interested in the determinants and indicators of competitiveness for a long time. In recent years, the pursuit of improved competitiveness has attracted more attention than before and governments have begun more explicitly to deal with competitiveness concerns in policy development. The purpose of this paper is to explore how the notion of competitiveness can contribute to the development and reform of policies in the agri-food sector. The discussion is based on recent experience in Canada.

The paper is structured in essentially two parts. The first part reviews the Canadian government’s initiative to foster improved competitiveness in the economy in general and the agri-food sector in particular and discusses the forces giving rise to this initiative. It outlines concepts of competitiveness at the sector and national levels and examines determinants of competitiveness in the agri-food sector, and the links between these determinants and policy choices. The second part outlines the current agri-food policy agenda in Canada and the relationship between agri-food sector competitiveness and policy reform. This discussion considers sectoral structure and performance trends, the apparent objectives and impacts of current sectoral policy, and possible future agri-food policy directions.
II. The Policy Interest in Competitiveness

The fundamental reason for Canada's interest in competitiveness is the recognition that the world is changing, that the change is quicker than before, and that the effects of change elsewhere may now more than before be directly felt in Canada. Therefore, Canada's economy and the policies governing economic activities must also change. To resist and attempt to avoid change would be to forego the contributions to a rising standard of living which an economy that is modern and adaptive can make. Improving competitiveness through appropriate policies is a means to an end, not an end in itself.

The end to be achieved through improved competitiveness is the continuation and assurance of economic prosperity. Key elements of economic prosperity are a domestic market place that encourages competition and innovation, a stable and attractive economic climate that encourages investment, an ability to translate new scientific and technological knowledge into high quality products at internationally competitive prices, a system of lifelong learning that provides relevant skills, and, in response to globalization trends and to the integration of domestic and international policies, improved access to foreign markets (see, for example, Government of Canada, pp. 5-6).

Over the last few years, the Canadian government has explicitly brought the pursuit of improved competitiveness into its discussion of the appropriate orientation of public policy. In 1991, an extensive series of consultations at the national, sectoral and community levels were launched with the announcement of the Prosperity Initiative. The broad
objective of this Initiative is to explore how government and industry could work better together to ensure improved industry competitiveness and economic prosperity. Earlier work, which examined the nature and role of competitiveness in public policy, contributed to the focusing and articulation of issues in the "Prosperity Through Competitiveness" and other discussion papers which were prepared to help guide these discussions. The Canadian government also participated with a major private sector group in funding an examination of Canada, using the approach developed by Porter (1990).

An essential characteristic of improved competitiveness as a policy objective is that there is no one single policy instrument that will bring about improved competitiveness. Rather, the role of government policy is to ensure that the social and economic environment in which firms and sectors operate is conducive (or at least not detrimental) to improved competitiveness. This means that an improved understanding of competitiveness as a policy objective and of the determinants of competitiveness permeates the considerations of all policy - the reconsideration of existing policy frameworks as well as the development of new policy initiatives.

It also means that policy makers increasingly see government as a facilitator and stage-setter (as opposed to creator), they increasingly view competitiveness as something to be achieved over the long-term (as opposed to "buying" market share), and they are increasingly receptive to considering economic sectors in the traditional sense as parts of a more complex set of economic interdependencies, such as links in a whole chain of value-adding activities.
A major force that has brought the pursuit of improved competitiveness onto policy makers' agenda in Canada is concern about the slow-down of growth in real income since the mid-1970's, due to a slowing trend in productivity growth. The decline in rates of productivity growth in Canada is, in turn, associated with problems in such areas as developing and using new technologies, providing and taking advantage of training and education opportunities, making domestic markets work in ways that promote growth and employment, linking suppliers and users of investment capital, and building partnerships between governments, labour, and business (Government of Canada, p. 3).

In the area of international trade, specifically, there is concern about how Canada fares in the implementation of the trade agreement with the United States, and about lacklustre performance in exports in general (falling market shares in many export markets, especially outside the United States). Although not so much an issue in trade internationally, the existence of barriers to trade between provinces within the country is also a concern in Canada.

Other forces are also pushing the notion of competitiveness to the fore - the same forces that are making themselves felt in other countries. Important forces in this regard are the new exchange rate regimes adopted by many countries in recent decades, and the ease with which capital now moves between countries. They also include the accelerating pace of change brought on by improved communications and rapid scientific advancement, the creation of a more global economy, with transnational corporations increasingly shaping trade flows across borders through their production location decisions, and the growing importance of knowledge, rather than raw materials, to the creation of
wealth. Moreover, more attention is now paid to such indicators of economic performance as the extent of upgrading of skills and resources, in addition to traditional ones, such as the size, direction, and rate of change of the balance of trade.

In agriculture or, more appropriately, in the chain of value-adding activities in which farming is one link, there are more specific forces of change which require policy makers to reconsider both their objectives and their tools. The characteristics of market demand are changing (for example, increased demand for products with more value-added and falling demand for butterfat are important developments in the dairy sector). New methods and techniques using new inputs are being adopted both in farming and in food processing -- sometimes yielding productivity increases that are large in relation to demand increases but still low in relation to productivity increases achieved in other sectors or in other countries. The climate of fiscal restraint contributes to a renewed need to reconsider how much public funds are spent and how they are spent: public funds might be better used in facilitating adjustment to change than in helping to resist change.³

Agricultural trading patterns will change as a result of differences between countries with regard to rates of growth of population, income and productivity, differences between commodities in income elasticity of demand and differences between rich and poor countries in income elasticity of demand of a given commodity (McClatchy and Warley). Fundamental changes in the functioning of the economy in a number of countries (such as countries in Eastern Europe and the former Soviet Union) affect production, consumption and trade. Reform of agricultural and trade policies resulting from a conclusion of the Uruguay Round of
trade negotiations will further change the nature of the agri-food sector in all parts of the world. Trade liberalization and agricultural policy reform may also continue independently of the Uruguay Round, perhaps more as a result of change in the global economy than as the fundamental cause of change.

In order better to bring an appreciation of the consequences of change in the world to bear on the development of agri-food policy in Canada, the Canadian government launched an Agri-Food Policy Review in 1989. One of the government-industry task forces established under the review was the one on Competitiveness in the Agri-Food Industry. It was charged with assessing impediments to improved domestic and international competitiveness in the Canadian agri-food sector. While the recommendations of the task force focused mainly on changes that should be initiated by the agri-food industry itself, the role of government in nurturing competitiveness was acknowledged. The work of the Task Force led to the establishment of the Agri-Food Competitiveness Council, an all-industry group whose mandate is to advise federal and provincial agriculture ministers on ways to improve the competitiveness of the sector.

The deliberations of the Task Force on Competitiveness in the Agri-Food Industry centered on the four pillars established for the Agri-Food Policy Review:

1. more market responsiveness,
2. greater self-reliance in the agri-food sector,
3. a national policy which recognizes regional diversity, and
4. increased environmental sustainability.
The Task Force also considered basic changes in the role of government from that which had become expected or accepted over the last few decades. The pillars amount to a set of de facto policy objectives, although they are more conceptual than operational. As policy objectives, they provide some of the dimensions in which policy initiatives should be assessed. Government interest in competitiveness, in many ways, represents an integration of these policy objectives into a comprehensive statement of the policy direction to be followed. Such a policy direction provides a common aim for the further evolution of policies specific to or related to the sector.
III. The Concept of Competitiveness

If competitiveness is to be meaningfully addressed by policy initiatives, all participants in the policy development process must have a reasonably precise and common understanding of the concept at the sectoral and national level. The following two definitions are relevant.

The first definition (from a working definition developed by the Task Force on Competitiveness in the Agri-Food Industry) states that a competitive industry is one that has the sustained ability to profitably gain and maintain market share in domestic and/or export markets. This definition highlights not only profitability but also, through its emphasis on market share, the relation between the size of the market and the size of the industry measured in terms of output. Policy priority is often linked to changes in output of an industry because many factors affecting output also affect value-added, or the industry’s contribution to the economy. However, a definition emphasizing market share must be used carefully. For example, in a situation where an industry’s output is increasing, but total markets are increasing more rapidly, the industry’s market share declines. Applying the market share definition to this industry would thus identify it as not competitive.

The second definition is derived from a number of definitions proposed over the last few years (Appendix 1): an internationally competitive industry or sector is one that has the sustained ability to deliver goods and services in the form and at the time, place, and price which together form a package at least as attractive to buyers in domestic and
international markets as that offered by potential foreign suppliers, while earning at least opportunity costs on resources employed.

This statement of what competitiveness means puts the emphasis on the package of price and other attributes of the product. It emphasizes the conditions that must be satisfied in order to be competitive, especially the need to meet buyer preferences for various attributes of the product and the relationship of cost to other uses of the inputs, while retaining the elements of sustainability and profitability. This definition thus helps to identify determinants of competitiveness. It also avoids some of the issues in using a market share definition, such as the one arising when markets grow faster than output. However, other problems remain, for example, the issue of how government programs and barriers to trade affect indicators of competitive performance.

For industry, competitiveness implies the ability to adapt, to innovate, and to identify and exploit business opportunities. This dynamic sense of the concept is clear from the common elements in a number of definitions developed for analysis at the sectoral or national level (Appendix 1). It becomes particularly clear when the definitions are paired with the explicit recognition that changes are taking place ever more rapidly in the national and global economy of which the agri-food sector is a part.

For governments, facilitating the improvement of competitiveness in a sector requires putting in place policies that do not overly stifle individual initiative but rather enable or even encourage individuals and firms to deploy and redeploy resources in response to economic, market-driven incentives. Fostering competitiveness is a means to achieving a higher
standard of living. As such, it requires a long-term planning horizon and recognition of the essential role played by structural adjustment, in the economy and within individual economic sectors, in contributing to economic growth (see, for example, Organization for Economic Cooperation and Development).
IV. Determinants of Competitiveness and Policy Choices

The Porter exposition and analysis of competitiveness in relation to government policy and the work of others, such as D'Cruz and Rugman and the International Institute for Management Development (IMD) and the World Economic Forum, attempt to address points that traditional economic theory (such as partial equilibrium analysis) approaches only with difficulty, if at all. For example, it draws attention to the roles played by upgrading of factors, development of new products, and clusters of industries. This is the result of a coming together of insights from traditional and new trade economics, strategic business management, and industrial organization. Theories focusing on transaction costs and public choice have potential to further clarify important linkages, such as those between sector structure, government policy and competitiveness.

In highlighting the determinants of competitiveness, some recent work (e.g., Porter and D'Cruz and Rugman) moves beyond analysis of size of market shares and how market shares change over time to focus explicitly on why change has occurred. It sheds more light on the whole set of factors that determine competitiveness and on the explanations for particular competitive performance than can be derived from analysis of single factors alone, such as cost comparisons or analysis of changes in trade policy.

Analysis of various measures of domestic and export market shares, performance measures (e.g., rates of growth of output, value-added, exports and investment) and
other indicators of competitive performance is of course useful in getting a perspective on where an industry is doing well and not so well in the first place. Some such analysis shows promise in linking competitive performance with particular policy directions, but overall it appears difficult to come up with clear policy priorities on the basis of analysis of competitive performance indicators alone. A major hurdle in doing so is the need to take into account the influence of trade barriers and subsidies at home and abroad. For example, market share data for the highly protected Canadian dairy and poultry industries provide no information on their competitive performance nor any indication of policy changes needed.

For policy purposes, the issue is not so much how competitive an industry is but how it might be made more competitive. Assessments of competitive performance can be helpful in identifying those parts of the sector that may require particular attention in the development of policy. Analysis of the determinants of competitiveness provides the understanding that is crucial to the development of policy to improve competitiveness. The understanding is more fruitful when it comprises all the significant determinants, as opposed to being limited to one determinant.

The following discussion is provided as an illustration of how some elements of the determinants of competitiveness help to define a framework within which to consider agri-food policy. This framework is based on the work of Porter, D'Cruz and Rugman, Martin et al., and others; it represents an approach that attempts to draw upon the key contributions of each so as to provide a common basis for public policy analysis.
Cost and Product Competitiveness

Determinants of competitiveness have been put into four categories by Porter (1990), with the definition of categories being such that any important issue in relation to competitiveness and policy choices would find a place in one or several of the categories. However, policy issues are often expressed, in practice, not in terms of determinants of competitiveness but in the more narrow terms of cost comparisons. While cost measures are important as indicators of competitiveness, they do little by themselves to further the understanding of improved competitiveness as a policy issue.

In order to make comparisons of cost measures more useful to policy decisions, it is necessary also to explain the differences in such a way that the implications for any policy response become clear: for example, if particular cost differences can be traced to differences in productivity, would it be possible and desirable to reduce these differences by policy measures affecting, say, size of plants or firms, spending on research and development or other determinants of productivity? Similar questions would be asked with regard to comparisons of other indicators of competitiveness, such as evaluations of non-price characteristics (quality) of products.

Factor Conditions

Meeting the challenges of improving the competitiveness of the agri-food sector requires a continuing effort to upgrade all factors of production, i.e., making them more productive. In some cases, the challenge may be to
address the issue of a factor becoming less productive, e.g., in the case of declining soil fertility. With regard to the labour factor, policy makers face a number of questions in the area of training: are enough resources available for different types of training, is the mix of types of training appropriate, are the resources used as effectively as possible, and do students have the right knowledge and incentives to enter appropriate training programs?

The performance of the agri-food research complex is central to the upgrading of productive factors, be they land, labour or capital assets. Improving the performance of the research complex requires policy decisions on organizational structure, level and type of funding, and incentives for private sector research, such as intellectual property rights.

**Demand Conditions**

Domestic demand for the products of Canada's agri-food sector has some characteristics (e.g., high per capita income and multicultural society) that are favourable to product innovation and differentiation. However, the size of the Canadian market is relatively small and consumers are geographically dispersed. Aggregate demand growth is largely limited to population growth, although demand for convenience can provide opportunity for growth in value-added. These conditions increase the risk of and limit the rewards to new product development. Moreover, the protected nature of the Canadian market for some food and beverage industries may have reduced the pressures for innovation normally associated with firm rivalry. Export markets dominate over domestic markets for some Canadian agri-food products, particularly at
the commodity level, such as wheat. The export market where some segments of Canada’s agri-food sector have most experience is the United States.

Given these characteristics of the market for agri-food products, policy decisions to improve competitiveness through changing demand conditions could take the form of trade policy initiatives. For example, achieving access to markets that have not been available to Canadian exporters or increasing access where it has been limited would allow competitive segments of the Canadian agri-food sector to grow. Likewise, reducing barriers to trade might change the demand conditions under which some segments of the industry operate - consumers might develop tastes and preferences for products otherwise not available. This might be a step towards stimulating more sophisticated demand in the domestic market.

Other examples of policy decisions affecting demand conditions are those relating to government procurement (e.g., Canada does not have large government expenditures on programs such as some of the domestic food assistance programs in the United States) as well as tax policy decisions that shift demand differentially within the agri-food sector or between agri-food and other sectors (e.g., Canada’s Goods and Services Tax - a value-added tax - adds to the price to the consumer of most goods and services, including food eaten away from home, but not the price of most food sold for home consumption).
Related and Supporting Industries

Supporting industries for the agri-food sector include input suppliers (feed, seed, fertilizer, fuel, electricity, veterinary services), transportation and communications services, financial services, equipment suppliers, ingredient suppliers and packaging firms. The concept of a "cluster" of industries, i.e., a set of industries with complementary activities, is useful in understanding the way in which pursuit of improved agri-food competitiveness affects policy decisions. In this case, it means that policy decisions directly affecting the related and supporting industries are made such that they also, or perhaps primarily, are conducive to improved competitiveness of the agri-food sector.

Examples of situations where regard for the competitiveness of the agri-food sector may have affected decisions on policy for related and supporting industries are provided by changes in the rules for importing and registering certain pesticides. Apart from the short-run considerations of costs of inputs in farming, consideration of the structure and performance of the pesticide industry as a supporting industry in the long run influences policy decisions. Another example is concern about the competitiveness of the crop sector in Western Canada, which plays a role in making decisions about such issues as rail transportation subsidies and trucking regulations.

Adequate provision of capital to the agri-food sector is a concern that might be discussed under "factor conditions" and under "supporting industries". Given that the financial sector is heavily regulated, attempts to improve competitiveness can be made by decisions in such areas as
monetary policy, the roles of public and private sector farm lenders, and the specific rules governing the activities of credit institutions.

**Sector Structure, Linkages and Strategies**

How firms, industries and markets are structured affects the way in which firms compete or cooperate with each other, and industry conduct, such as pricing practices, can affect industry structure. An important element of the structure of an industry is also the extent to which it is open to foreign suppliers or has access to foreign markets. Vertical linkages through parts of the value-added chain and horizontal linkages, such as marketing boards and joint ventures, constitute additional structural dimensions of the agri-food sector. High market concentration as well as the small size of the Canadian market perhaps limit the degree of rivalry and process and product innovation that might characterize other industry structures.

Decisions to pursue improved competitiveness in the sector by means of changing its structure and linkages can take the form of changes in policies such as those governing competition, incorporation and bankruptcy rules, intellectual property rights, tax structure and inward foreign investment. For example, policy decisions in the area of competition can concern what is to be considered the appropriate structure to best foster a desired level of rivalry among firms in the domestic market. In some cases, it might be argued, the domestic market is large enough for only one domestic firm if that firm is to benefit from the size advantages enjoyed by foreign competitors. Decisions can also concern to what
extent, if at all, the agri-food sector should be treated differently from other sectors with regard to competition policy. Any decision designed to affect the competitiveness of the agri-food sector would need to consider its implications for the vertical and horizontal structure of the whole sector, as well as the linkages to other sectors.

**Chance**

“Chance events are occurrences that have little to do with circumstances in a nation and are often outside the power of firms (and often the national government) to influence” (Porter, 1990, p. 124). Examples include the advent of major new technologies such as biotechnology, discontinuities in the evolution of input costs (such as an energy crisis), financial market upsets, foreign government decisions and wars. At least in the short term, weather is a major chance event for the agri-food sector.

While most chance events are outside the powers of government to influence, it can help the sector prepare for, adjust to or absorb their effects, for example, by providing "early-warning" systems, providing for hedging mechanisms, tax averaging provisions and income safety nets. Also, appropriate research and development policies could help the sector benefit from technological advances.
V. Pursuing Improved Competitiveness

If improved competitiveness was the only policy objective to pursue, making policy choices in the agri-food sector would be relatively simple. However, macro-economic, social, regional development and competition policy objectives, for example, provide further direction when making choices in agri-food policy. Moreover, because of the connections and interdependencies between economic sectors, any particular policy objective (including that of improved competitiveness) set for another sector will have consequences for the policy choices in the agri-food sector.

Given that several policy objectives can be in place to guide the policy choices for the agri-food sector, all such choices will not be on a convergent course towards increased competitiveness at all times. Changing policy objectives and different weights given to particular objectives at different times make the convergence of policy choices an illusory expectation. Progress in a generally desired direction may follow a zig-zagging path: policy choices at times being pulled more towards one objective and at other times pulled more towards another objective. Setting a common direction for many sectors and policy areas, such as the direction of improved competitiveness under Canada’s Prosperity Initiative, facilitates making policy choices such that they do converge on a common path.
Pursuing improved competitiveness requires a focus on the agri-food sector as a whole and on the relationships between its component parts. Concentrating on just one part of the sector, such as production of commodity X in region Y, may improve the performance indicators of that part but only at the expense of some other part of the sector. This approach tends to foster antagonism between sector segments and to impede change. A more fruitful approach to improving ability in the sector to respond to a changing environment might be to reduce unnecessary frictions between parts of the sector, to avoid creating new ones and to firmly keep a focus on the competitiveness of the agri-food sector as a whole, while recognizing that it is only one part of the overall economy.
VI. A Discussion of the Agri-food Policy Agenda in Canada

The following discussion provides a snapshot of the agri-food policy agenda in Canada by highlighting recent structural and performance trends, current policy objectives and impacts, and possible future policy directions. An attempt is made to illustrate the contribution of competitiveness in shaping policy choices.

Evolution of the Agri-food Sector: Structural and Performance Trends

The agri-food sector in Canada, as in many other countries, has shown its capacity to respond to the stimuli generated by the combination of markets and public policy. Appendix 2 highlights some examples of changes in both the farm and processing segments of the sector over a number of years.

The agri-food sector in Canada has been, and continues to be, an important part of the overall economy. The farm production and food processing segments of the agri-food sector contribute about $24 billion or almost five percent of Canada’s total gross domestic product. Agriculture is the second largest primary sector behind the mining, quarrying and oil well sector, while food and beverage processing is the second largest manufacturing sector behind the transportation equipment sector.
The nature of the agri-food sector continues to change. Productivity-enhancing technological advances serve over time to reduce commodity prices. They also increase the set of resources that one person can manage, which, in the absence of new markets opening up, implies a need for ongoing sector adaptation, including the out-migration of labour and businesses. The alternative to such adaptation would, in most circumstances, be an income problem: it would not be possible to maintain the business revenue levels required to adequately remunerate all resources. With fewer and larger firms, and a much reduced farm population, agriculture could not sustain the viability of many smaller, rural communities. Nor will small, regionally oriented processing plants easily achieve the kinds of efficiency needed to respond to market demand in terms of price, quantity, quality and variety. While there is a wide range in firm size, Canadian firms tends to be much smaller than their U.S. counterparts.

This is not to suggest that there is no place for small or specialized farms and processors. But in light of increasing international competition, smaller operations will have to be extremely innovative if they are to remain competitive and earn sufficient income from the market. Such innovation may take many forms, from specializing to exploit niche market opportunities to diversifying product mix or income sources so as to exploit regional, seasonal or other opportunities.

As a country that is small in terms of population but rich in natural resources, Canada’s economic well-being has been closely tied to exports of its resource industries and resource-based manufacturing industries. For example, in 1989, such exports accounted for about half of total Canadian
exports, compared with about one-third in both the United States and the European Community (Economic Council of Canada, p. 11).

The agri-food sector itself is also heavily oriented towards exports. Exports of processed food and beverage products represent about ten percent of total production, in value terms, and the corresponding share for primary agriculture products is almost fifty percent. It is, therefore, simply not feasible to close Canada’s borders to all agri-food imports and have the agri-food sector serve only the domestic market (and this is apart from any other trade policy considerations such a move would entail). A larger market than just the domestic one is necessary to sustain a Canadian agri-food sector of the current size or even of a smaller size.

The importance of export markets for the agri-food sector will further increase as new productivity-enhancing technology continues to reduce the quantity of inputs needed to produce the same quantity of output. This is of course significant in terms of the labour resource, but there are also other advances that can have further implications for industry structure. For example, use of growth stimulants for hogs yields more saleable meat per hog. With fewer hogs needed to meet unchanged or even strengthened demand for pork, the number of hog producers might also decline, ceteris paribus.

Relatively stagnant domestic food consumption in Canada (due to the relatively high income and modest rate of population growth) will require fewer and fewer producers and processors as the output of each firm increases. On the other hand, there are substantial opportunities for exports to regions, such as parts of Asia, where population and income growth combine to create increasing demand.
While the agri-food sector has shown an ability to adapt, further change in the sector is inevitable and desirable. A key question to be addressed by governments is how public policy should be designed to facilitate such change.

**Current Agri-food Policies and Programs**

Direct government expenditures by departments of agriculture in Canada on food and beverage processing are relatively minor compared with such expenditures directed to farms. However, general services provided by governments to processors, such as food inspection and research and development, can be significant. Various other departments and agencies provide financial assistance to food processors in the form of grants, contributions, loans and tax incentives. The magnitude of these expenditures relative to the size of the industry is not clear.

Various measures of government intervention at the farm level indicate clearly that current public efforts are focused primarily at supporting farm incomes and that support levels vary substantially across commodities and across sizes of farms.

Analysis of public accounts data shows that approximately 66 percent of federal spending on agriculture in Canada can be described as directly supporting farm incomes, 21 percent of spending is related to research and inspection services, six percent to development and adjustment assistance, and eight percent to administration.
A more complete perspective than that given by data on government expenditures alone is given by data underlying more inclusive measures of support, such as Producer Subsidy Equivalents (PSE). PSE accounts for both government expenditures and the transfers to producers generated by regulations (such as border measures) that raise domestic prices above those prevailing in international trade. Figure A shows the evolution of major components of PSE for Canada from 1979 to 1991.

There are two striking features to the evolution of PSE components (Figure A). One is the variability from year to year in government expenditures on what is called direct payments (for Canada, this category includes such programs as stabilization programs and crop insurance) and ad hoc income support programs. The other striking feature is the distribution of support between types of programs: various kinds of income transfers, such as market price support and direct payments, account for the overwhelming majority of transfers to producers (about 90 percent) while transfers in the form of expenditures on general services account for very little of the total transfer (about ten percent).
STRUCTURE OF SUPPORT TO CANADIAN AGRICULTURE
1979-91

millions of dollars

- Developed from OECD Producer Subsidy Equivalent (PSE) data dated March 25, 1992.
- Ad hoc payments consist of Special Canadian Grains Program I&II, Special Income Assistance Program, Farm Support and Adjustment Measures II, Canadian Crop Drought Assistance Program.
“General services” consist of expenditures on such items as research, training, extension, inspection, and development of infrastructure in agriculture: in other words, expenditures expected to contribute to improved competitiveness of the agri-food sector by improving its capability to innovate, adapt and exploit emerging new opportunities. That so little, relatively speaking, is spent on such programs, compared to the large amounts spent on supporting incomes directly in the short run, is a concern that is being translated into the way agri-food policy issues are discussed in Canada. 8

The following discussion concentrates on program payments and does not deal with market price support from regulations. (Data are from Agriculture Canada.)

Over the past five years, farmers received a total payment of between $15,000 and $85,000, depending on farm size. Over the same period, spending to assist farm families, who decided to leave agriculture due to financial difficulties, averaged about $4,500.
Comparison of average farm income support by size of farm is even more informative (Figure B). In 1989, farmers' cash income was boosted by program payments totalling $2.9 billion. In that year, the five percent of Canadian farms (almost 13,000), which had sales per farm over $300,000, had 37 percent of all sales and received 17 percent of all program payments. Their average net farm family cash income (the sum of wages to family members, off-farm income, program payments and net market income before depreciation) was $84,000 per family, including $17,000 per family in program payments. These farm families are well above the income of the average Canadian family (even after accounting for depreciation). The total program payments to this group in 1989 amounted to some $475 million.

At the other end of the spectrum, there were 94,000 farms in 1989 with sales under $25,000. They represented 37 percent of all farms but had only four percent of sales. They typically reported significant farm losses. Nevertheless, they received ten percent of program payments. Program payments, which totalled about $300 million, contributed only $3,200 on average per farm to family revenue. Average net farm cash income per family was only $1,500, including the program payment. These families on average had off-farm income of $26,000. For the most part, the business viability of these farms tends to hinge on the tax benefits of farm losses in connection with off-farm income.

Farms with sales between $25,000 and $50,000 comprised 45,000 farms, representing 17 percent of all farms but only seven percent of sales. They received 14 percent of program payments, or $400 million, an average of $8,400 per family. The result was an average net farm family cash income of $30,000, of which net farm cash income was
AVERAGE NET FARM FAMILY CASH INCOME, BY LEVEL OF FARM SALES, CANADA, 1989

SALES LEVEL

<table>
<thead>
<tr>
<th>SALES LEVEL</th>
<th>UNDER $25,000</th>
<th>$25,000-$49,999</th>
<th>$50,000-$299,999</th>
<th>$300,000 AND OVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>% OF FARMS</td>
<td>37/4/10</td>
<td>17/7/14</td>
<td>41/52/59</td>
<td>5/37/17</td>
</tr>
<tr>
<td>% OF SALES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% OF PAYMENTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NET MARKET INCOME BEFORE DEPRECIATION
WAGES TO FAMILY MEMBERS
PROGRAM PAYMENTS
OFF-FARM INCOME

SOURCE: AGRICULTURE CANADA - 1990 FARM FINANCE SURVEY
$12,000 (including the $8,400 in program payments), and off-farm income was $17,300. Without program payments these families would, on average, be making very little from their farm operations.

The 140,000 farms with sales under $50,000 included two clearly defined sub-groups: what might be called the agricultural poor and the true hobby-farmers. The agricultural poor can be characterized as the 46,000 families with net farm cash income less than $3,500 and off-farm income less than $6,000, placing them below the poverty line. Another group, totalling 59,000 families, had average off-farm income of $44,000 but had, on average, no net farm cash income. Like those with sales below $25,000, these might be thought of as hobby-farmers. They received, on average, $2,600 in program payments or $150 million in total.

The group with sales of between $50,000 and $300,000 consisted of 104,000 farms. These farms made up 41 percent of all farms, accounted for 52 percent of farm sales and received 59 percent of program payments. Net farm cash incomes per family ranged from $36,000 (for farms with sales of between $50,000 and $100,000) to $63,000 (for those with sales between $200,000 and $300,000). As farm sales increase, the importance of off-farm income declines and income from off-farm sources tends to be more from passive sources (investments, pensions) than from employment.

In summary, most of the support to producers of supply managed commodities (milk, poultry meat, eggs) is by way of regulations, which maintain prices at some desired level above that otherwise available. Support is therefore proportional to output. In the case of grain and oilseeds producers, beneficiaries of the bulk of government support are
large, higher income producers; smaller, lower income producers benefit less relative to their proportion of the farm population but more relative to their proportion of output. Little incentive is provided to encourage producers to adapt to changing market and economic conditions, compared to the support designed to maintain incomes in the short term.

Agri-food Policy Reforms: Possible Strategic Directions

The structure and performance of the agri-food sector in Canada today reflect policies, institutions and attitudes that have evolved over many years. A desire to serve the domestic market, along with goals of self-sufficiency in production and processing in particular provinces or regions (sometimes related to maintaining or creating employment) have characterized much of the public involvement in dairy, poultry meat, eggs, horticulture and, to a lesser extent, red meat industries. The grains and oilseeds sector shows, in large part, the effects of policies that see the prairies in Western Canada as a major world supplier of essentially unprocessed agricultural commodities.

Continuing structural and performance problems in the sector, despite industry adjustments that have taken place, are evidenced by the considerable and increasing reliance of the sector on public income and price supports. Moving away from this situation will require changes to many traditional policies, institutions and attitudes in Canada.
A key objective of future agri-food policy might be to facilitate the efforts of the sector to adapt to changing economic and market circumstances so as to improve international competitiveness. Policy to achieve this objective would be characterized by more market responsiveness, greater self-reliance in the agri-food sector, recognition of regional diversity and increased environmental sustainability. To achieve this objective, a two-track approach might be appropriate:

1. **gradual reform of major existing sectoral policies, including a gradual shift in type of government expenditure away from income support and towards initiatives that support adaptation and improved competitiveness;** and

2. **introduction of complementary new measures that assist industry efforts to improve profitability and rely less on policy support.**

Policy reforms would thus focus on removing impediments to adaptation and improved competitiveness, including the impediments that have been created by governments. The following outlines broad policy areas and possible future directions that might be pursued in these areas. It must be emphasized that any changes are directional and are considered here for discussion purposes only.
Farm Income Support and Safety Nets

Government expenditures to support farm incomes are channelled through a variety of measures -- some of these are financed jointly by federal and provincial governments and farmers, including the Gross Revenue Insurance Program (Revenue Protection Component and Crop Insurance), the National Income Stabilization Account and the National Tripartite Stabilization Program. In recent years, ad hoc income support payments have also been used extensively.

The long-term aim might be a national, resource-neutral and commodity-neutral safety net that stabilizes income (without permanently replacing part of market income) and that is equitably cost-shared amongst governments and farmers. A first step towards a revision of safety net programs and supply management schemes could be the assignment of a small portion of tripartite safety net premiums and supply management levies to create an industry controlled fund to support adaptation and competitiveness enhancing initiatives. Such a change would parallel recent changes to Canada’s Unemployment Insurance (UI) system and the reallocation of some UI monies from passive income support to active training and job development measures. The approach would send a clear signal to industry, placing both the problem and the solution more in its hands.
Supply Management

Current policies in Canada limit domestic production or marketing through quotas, control imports, regulate the setting of prices, and provide more stable returns for producers and primary processors of a group of five commodities (milk, chickens, turkeys, eggs, and broiler hatching eggs). This group represents about one quarter of farm cash receipts.

The long-term aim might be a system that better responds to changes in market demand as they are conveyed through the chain of consumers, distributors and processors. This might be achieved through institutional changes to provide for more equitable representation of all links in the chain and to increase policy transparency. Introducing more flexible pricing procedures for products destined for further processing and more opportunity for transferring production (or marketing) quota across regions in response to changing market demand might also be appropriate steps towards increasingly responsive supply management schemes. New measures to encourage sector adaptation and improved competitiveness could be funded by supply management levies.
Compensation and Adjustment Policy

In the absence of an explicit adjustment policy, government has responded to various commodity pressures (for example, from producers of tobacco, grapes and wine) with initiatives to encourage adjustment out of the production of these commodities. Some such initiatives have involved government expenditures that appear large in relation to the size of the target group.

The long-term aim might be a clear and transparent policy that, in the case of structural or long-term performance changes in the agriculture sector, provides appropriate support to aid in the transition to new farm or non-farm means of earning income. Measures tailored to the needs of specific commodities or industry segments might be developed while keeping in mind such guidelines as maintaining a perspective on the agri-food sector as a whole and not introducing new, unnecessary distortions.

Grain Transportation Policy

Current policies compensate the railways for a portion of the cost of shipping eligible crops from Western Canada’s prairie region to Eastern Canada and other export points. The effect is an upwards shift of the supply curve faced by users of these commodities in Western Canada, with consequent less value-adding (livestock feeding, processing) in that region than otherwise would be the case.
The aim might be to reduce disincentives to using grain in Western Canada, while maintaining the benefit of current spending levels for the grain economy in that region and improving transportation system efficiency. This might be achieved through development of a package of reforms with broad acceptance across industry and governments. A number of options are being actively pursued by governments.

**Regulation**

A review of Agriculture Canada regulations, encompassing food standards and safety and the operation of the Canadian Wheat Board and the Canadian Grain Commission, was initiated in the spring of 1992.

The long-term aim is less and better (more efficient and more effective) regulation, including greater industry involvement in monitoring and enforcement. This could involve removing regulations that are obsolete or that clearly and unnecessarily constrain industry ability to compete effectively and developing an effective framework for screening possible future regulations. The application of a "competitiveness test" as a component of the screening process is part of the review of regulations.
Research, Development and Technology Transfer

Public research and technology transfer efforts in Canada focus on environmental sustainability, food safety, food and non-food product diversification, improved production practices and methods, and application of new technologies. Industry funds only about 16 percent of research and development in the agri-food area.

The aim is to ensure rapid and effective technology transfer, to ensure research priorities are more market driven, and to build, over time, the interest and ability of the private sector to increasingly carry out its own research. Quicker and more widespread use in industry of available technologies, developed at home or abroad, might be facilitated, without reducing the incentives for industry to generate technological advances. Enabling producers collectively to generate funds to be used for new research and development activities might be another priority.

Trade Policy

Trade policy strives to secure improved access to global markets and a strengthened framework of equally applied international trade rules. In the face of accelerating change in the global environment of Canada’s agri-food sector, the importance of continuing this pursuit, in multilateral and other fora, is clear.
Complementary Measures

A number of measures could be designed to complement the above examples of policy reforms and further enhance the sector's ability to adapt and to compete more effectively. Funding for these measures could be provided from monies set aside from established safety net programs and supply management schemes. Such a reorientation of spending is clearly more desirable than only an increase in spending.

Setting monies aside for initiatives to foster adaptation and improved competitiveness would facilitate the development of two types of measures. First, national level programs could provide the essential support services that are needed across the country, and across the sector, if components of the agri-food sector are to be better equipped to adapt and to compete. Second, regional level programs could provide more specific support targeted to commodity or geographical areas where major adjustments are needed or where major development opportunities arise. In practice, of course, national and regional programs tend to both complement and overlap each other.

The following outlines some possible initiatives at the national level to provide essential support services. Additional measures might be considered in light of circumstances prevailing for specific commodities, industry segments, regions or provinces.

A renewed effort in the area of Human Resource Development might improve skills, knowledge and abilities among managers and workers. At the farm level, the
variability in returns among otherwise similar operations gives evidence of the need and potential for improved management. At the processing level, slow technology adoption and low rates of productivity growth demonstrate a need for development of knowledge and skills amongst management and labour. But perhaps of most interest would be the provision of assistance to low-income families for business development and for training and seeking employment. Such assistance would enable them to improve income from non-farm sources. Off-farm (or non-farm) income is the only realistic option for many families on small farms, whether they remain farming part-time or eventually give up farming.

Initiatives to improve Business Linkages and Business Arrangements might improve the economic performance of the sector. The efficiency and effectiveness of vertical linkages are a function of how well information, services and products are transferred up and down the system. As market demands change, and the technological capacity of parts of the value chain to respond also changes, vertical coordination systems may need to adapt as well. Assessing current and possible new business arrangements and institutions might be a priority, leading to policy proposals that would facilitate the emergence of new and more adequate arrangements and institutions.

Canada's export performance is declining in many regions outside the United States and particularly in markets for higher value agri-food products. Steps might be taken to facilitate industry efforts to serve appropriate export
markets. A Trade Development Initiative might be designed to strengthen industry trade associations, obtain and better use foreign market intelligence, improve exporter-customer relations and, generally, increase the trade readiness of the private sector.

The risk of developing and testing new products, new uses for products, and new processes at the farm level (for example, new varieties and new cropping or breeding systems) and at the processing level (for example, new packaging, new further processed products, and new non-food uses for traditional commodities) could be reduced through some type of Innovation Program. The objectives could be to diversify farm level production and to stimulate value-added activities in response to an identified market demand. Assistance could take the form of technical advice or venture capital.
VII. Conclusion

Improving international competitiveness is an important policy issue in Canada. Although income levels remain high by world standards, income growth rates have declined, trade performance has been weak, productivity growth has been relatively low, and various economic and business reports have highlighted perceived weaknesses in Canada's resource industries, research and development performance, education systems, and so on. These concerns are heightened by global trade liberalization and, in particular, by the implications of Canada's free trade agreements with the United States and Mexico.

The current policy interest in competitiveness of the agri-food sector is a forward-looking one -- given ongoing changes in world supply and demand, in what areas will the sector best be able to satisfy future market needs in terms of price and non-price product attributes? How can governments help to better position industry, now, to effectively exploit its advantages and compete in a freer trade environment in the future?
To address these questions, research and analysis is needed to better understand:

- How the sector, or parts of it, is performing and might perform in the future as technology changes, markets shift, trade barriers erode, and so on. Indicators of performance (and competitive potential), however, measured, can be useful to suggest areas where the sector has a development problem or opportunity.

- The determinants of industry competitiveness -- why the sector, or parts of it, performs (or might perform in the future) well or poorly, better or worse, relative to competitors and relative to its own current or previous performance.

- The impacts of existing sectoral and non-sectoral policies, and alternative new policies, on the determinants of competitiveness and on the ability of the sector, or parts of it, to adjust and respond effectively to changing market and economic signals.
Research and analysis must move quickly beyond measuring indicators of competitiveness towards explaining why some parts of the sector become more or less competitive, how a competitive strength was or can be achieved, and how a competitive weakness could be dealt with. Agri-food policy must increasingly aim to re-orient efforts away from just passive farm income support and towards enabling industry to adapt and exploit its strengths relative to emerging economic opportunities.

Improving competitiveness brings a new and perhaps more applied perspective to the debate on agri-food policy change. It helps to set direction, by emphasizing the importance of industry self-reliance and of all parts of the sector working better together to respond, profitably, to market demands; it embraces change and innovation, built on sectoral strengths and economic opportunities; and it recognizes the role of government in establishing the broad operating environment for business, but places the onus on industry itself to act.

Development of the social and economic environment in which Canada’s agri-food sector can best realize its competitive capability, internationally, will require substantive shifts in attitudes and approaches. This will not happen overnight. But we can begin by developing a mix of public policies and programs that provide incentives to the sector to adapt to changing market and economic conditions and also improve the sector’s capability to do so. The ultimate aim is not increased competitiveness for its own sake; the aim is sustainable income and employment growth, and improved living standards for Canadians.
1. "Agri-food" is used here as a contraction of agriculture and food, i.e., the sector is taken to encompass both farming and food processing, with associated upstream and downstream activities. It is not synonymous with just that part of the food processing industry which gets its raw material from agriculture.

2. Some examples of writings that have been instrumental in giving currency to competitiveness issues as a public policy concern in Canada are the following: D'Cruz and Rugman; Economic Council of Canada; Industry, Science and Technology Canada; Porter (1991); Purchase; and Science Council of Canada.

3. In 1983-84, there was $1.23 of program spending by the Government of Canada for every dollar of revenues collected (program spending is all expenditures other than that to service the government debt). In 1991-92, because of an increase in debt servicing cost, there was only 90 cents of program spending for every dollar of revenues (Clark).

4. Of particular interest to the study of competitiveness in the agri-food sector is the suggestion by D'Cruz and Rugman that business involved with farmers and farm products in Canada's prairie provinces form a cluster to jointly improve their international competitiveness.
5. Such as the work of Haley and Krissoff, Paarlberg et al., Vollrath (1987, 1989) and Vollrath and Vo.

6. Resource based manufacturing industries include food, beverages and tobacco; wood; paper products; primary metals; non-metallic minerals; and refined petroleum.

7. Other measures are, for example, the Aggregate Measure of Support developed for use in the Multilateral Trade Negotiations, and the Net Benefits Measure developed in Canada to measure policy benefits in individual provinces.

8. It is interesting to note that the transparency provided by PSE measures has contributed to a reassessment of Canadian policy for the agri-food sector as a domestic policy priority, while a major motivation behind the OECD’s estimation of PSE has been the need to facilitate comparisons between countries of levels and types of support to agriculture in the context of assessing trade distortions.

9. The discussion is based on data for 1989, a year when disbursements were made under a major ad hoc program based mainly on 1988 acreage. While this reflects the particular magnitudes and proportions in 1989, the generality of the conclusions is not likely to be impaired.
References

Agriculture Canada (1990), Farm Finance Survey, unpublished tabulations, Farm Finance and Stabilization Division, Policy Branch.


A few definitions of competitiveness that appear to relate to issues at the national or sectoral level are the following:

- Competitiveness is “the ability of a nation to produce, distribute, and service goods in the international economy in competition with goods and services produced in other countries and do so in a way that earns a rising standard of living.” (from Scott and Lodge [1985], quoted in White, 1987, p. 8)

- Competitiveness is the “... ability to deliver goods and services at the time, place and form sought by overseas buyers at prices as good as or better than those of other potential suppliers whilst earning at least opportunity cost returns on resources employed”. (Freebairn [1986, p. 2], quoted in Sharples and Milham, 1990, p. 1)

- Competitiveness is “a nation’s ability to produce and market products in international trade while earning a level of returns to the resources (both human and physical) used to produce those products which is at least comparable to what those resources could earn in alternative activities”. (Langley [1986], quoted in White, 1987, p. 9)
... the measure of U.S. agriculture's international competitiveness may not necessarily be whether the peak market shares of the 1970s can be regained. Rather, the focus for the future may revolve around whether U.S. producers can profit from their exports.” (U.S. Congress, Office of Technology Assessment, 1986, p. 7)

"For a firm, competitiveness is the ability to design, develop, manufacture and market products at home and in other nations in competition with other firms. For a nation, it means doing all this without a decline in the real standards of living of its citizens.” (U.S. Congress, Office of Technology Assessment [1988, p. 25], quoted in Industry, Science and Technology Canada, 1991, p. 3)

"Competitiveness [...] is a statement about differences in market prices, government interventions and everything else factored in.” (Dunmore, 1989, p. 18)

"Competitiveness can be broadly defined as the ability to sell commodities to overseas buyers at prices as low as or lower than those of other potential suppliers while earning at least opportunity cost returns on domestic resources used to produce and market these commodities.” (Vollrath, 1989, p. 18)
• Competitiveness is the "... ability to design, produce and market goods and services, the price and non-price characteristics of which form a more attractive package than those of competitors". (IMD and the World Economic Forum, 1990, p. 8)

• "... comparative advantage applies to a world of efficient well-functioning, undistorted markets, and competitiveness applies to the world as it actually is." (Barkema, Drabenstott and Tweeten, 1990, p. 254)

• "The only meaningful concept of competitiveness at the national level is national productivity." (Porter, 1990, p. 6)

• "Competitiveness is the ability to profitably gain and maintain market share in the domestic and/or export market." (Task Force on Competitiveness in the Agri-Food Industry, 1990, p. 3)

• "... being competitive is the ability to deliver goods and services at the time, place, and form sought by buyers, in both the domestic and international markets at prices as good [as] or better than those of other potential suppliers, while earning at least opportunity costs on resources employed." (Cook and Bredahl, 1991, p. 1472)
• "Competitiveness is a structural quality built into [a country's] public and private institutions and ultimately woven into its social, economic and political fabric. [...] Competitiveness depends on competition, and economic efficiency and innovation are the result." (Purchase, 1991)

• "National competitiveness is better defined by reference to broader indicators that show the extent to which a country's involvement in global markets through trade, investment, and technology flows leads to growth in real incomes." (Economic Council of Canada, 1992, p. 6)
A. Food and Beverage Processing

(Source: Barkman)

- The number of plants has been on a clear downward trend since 1970; from 1982-87, this trend slowed considerably in Canada while it continued in the U.S.; the decline in number of plants in Canada then accelerated in 1991 (Figures 1 and 2).

- Between 1972 and 1987, real output per plant doubled in Canada and increased 68 percent in the U.S.; on average, plant size remains larger in the U.S. (Figure 3).

- In both Canada and the U.S., plants with nineteen or fewer employees account for about 50 percent of all plants but just five to six percent of output (Figure 4).

- In Canada, plants with five hundred or more employees represent just 1.2 percent of all plants but account for 16 percent of output; in the U.S. they represent 2.6 percent of all plants and 31 percent of output (Figure 4).
• There is a wide range in firm size; U.S. firms average sales of $27 million (Cdn) and Canadian firms average sales of $18 million; large U.S. firms are much larger than large Canadian firms (Kraft General Foods has gross sales of $35 billion, while Canada's largest firm, Seagram's, has gross sales of $7 billion).

• The sector remains an important and profitable one but contributes less to the economy than it has historically (as is the case for several other manufacturing sectors) *(Figure 5)*.

• The return on capital in food manufacturing continues to be above that for all manufacturing and also more stable *(Figure 6)*.

• Over the 1986-88 period, exports as a percentage of production in Canada fluctuated around 14.3 percent and imports as a percentage of the domestic market fluctuated around 12.5 percent (nine percent and 11.5 percent excluding fish). The comparable figures for the U.S. were only about 4.1 percent and 3.8 percent, respectively.

• Labour productivity growth in food and beverage processing between 1973 and 1987 was about average for Canadian manufacturing but lagged behind that of the U.S. food and beverage industry. There has been little growth in total factor productivity since the mid-1970's, less than in nearly all other Canadian manufacturing sectors *(Figures 7 and 8)*.
Employment in food and beverage processing increased somewhat in the last half of the 1970's and declined in the early 1980's. After a few years of growth, it fell again by 5.9 percent (14,000 jobs) between 1988 and 1990 (Figure 9).

B. Primary Production

(Sources: Statistics Canada, Census of Agriculture and unpublished data)

- The number of farms has declined from the peak of 730,000 in 1941 to 280,000 in 1991.
- The share of population on farms declined even more than farm numbers, from 27 percent of the total population in 1941 to below four percent in 1991.
- This decline was concentrated among smaller farms: the number of farms with sales over $50,000 (in 1990 dollars) increased from 68,000 in 1971 to 118,000 in 1991.
- Between 1971 and 1991, total annual farm cash receipts increased from about $4.7 billion to over $22.4 billion, in nominal terms.
- Operating costs increased from about sixty-two cents per dollar of revenue in 1971 to about seventy-four cents in 1991.
• Total farm debt increased from $4.6 billion in 1971 to $24 billion in 1991, but the debt to asset ratio changed relatively little: 19.3 percent in 1971 versus 18.4 percent in 1991.

• Output per farm, in both nominal and real terms, continues to increase: nominal value of production increased more than fourfold from 1971 to 1991, while farm numbers declined by 23 percent.

• Total factor productivity in agriculture grew at an annual rate of 1.1 percent in the 1970's, increasing to 2.4 percent in the 1980's (but still lower than the annual rate of growth of 3.0 percent in the 1960's).
Figure 1

TREND IN NUMBER OF ESTABLISHMENTS

FOOD AND BEVERAGE PROCESSING IN CANADA AND THE U.S.

Index: 1972 = 100

Source: Calculated from Statistics Canada, Census of Manufactures and U.S. Bureau of the Census, Census of Manufactures
Figure 2

PLANT CLOSURES AND OPENINGS IN CANADA
Food and Beverage Processing

Source: Agriculture Canada, Agri-Food Development Branch,
Food Industry Investment Tracking (from Media Reports)
Figure 3

REAL OUTPUT PER ESTABLISHMENT
FOOD AND BEVERAGE PROCESSING IN CANADA
AND IN THE U.S.


Source: Calculated from Statistics Canada,
Census of Manufactures and U.S. Bureau of the
Census, Census of Manufactures
Figure 4
FOOD PROCESSING PLANTS, 1987
SHARE OF ESTABLISHMENTS
BY EMPLOYMENT SIZE CATEGORY

SHARE OF SHIPMENTS
BY EMPLOYMENT SIZE CATEGORY

Source: Statistics Canada, Census of Manufactures
U.S. Bureau of the Census, Census of Manufactures
Figure 5

MANUFACTURING SHARE OF TOTAL GDP
BY INDUSTRY GROUP IN CANADA
(constant dollars)

Source: Industry, Science and Technology
Canada (1991), p.5
Figure 6

RETURN ON CAPITAL
FOOD, BEVERAGES AND ALL MANUFACTURING IN CANADA

Figure 7

LABOUR PRODUCTIVITY GROWTH IN CANADA
RELATIVE TO ALL MANUFACTURING
1973 TO 1987

Source: Industry, Science and Technology
Canada (1991), p.5
Figure 8

LABOUR PRODUCTIVITY GROWTH IN CANADA
RELATIVE TO THE UNITED STATES
1973 TO 1987

Figure 9

EMPLOYMENT IN CANADIAN FOOD AND BEVERAGE PROCESSING, 1970-1991

Source: Statistics Canada, Employment, Earnings and Hours, unpublished data