

**ALTERNATIVES TO THE SUBSIDY ALLOCATION IN THE
AGRI-FOOD SECTOR:**

The Case of Vegetable Processing in Manitoba

by

Fay Abizadeh

**A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
for the degree of**

Doctor of Philosophy

in

**Agricultural Economics
and
Farm Management
University of Manitoba
Winnipeg, Manitoba
May 1991**



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ISBN 0-315-76622-0

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FAY ABIZADEH

A thesis submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
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Acknowledgements

The completion of my thesis would have undoubtedly been impossible without the valuable contribution of many individuals. I am particularly indebted to Dr. Louise Arthur, my major advisor, for her able guidance. Working under her supervision was a rewarding experience, which went beyond just formal education and learning.

Members of my Committee, Drs. Jim MacMillan, Ricard Lobdell, and David Freshwater were generous with their time and patience. They provided constructive criticism that compelled me to be more objective in my work.

Also, I would like to express my gratitude to Agriculture Canada for their financial support.

Finally, I wish to thank my husband Sohrab for his patience and continued support and encouragement, and our sons, Arash and Aram who have anxiously and patiently awaited the completion of my studies.

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ABSTRACT

The main purpose of this study is to investigate the impact of subsidy allocations on the Fruit and Vegetable Processing Industry (FVPI), and particularly potato processing, in comparison to direct subsidies distributed to farmers in Manitoba.

The impact of subsidy funds on growth and development is evaluated using a well defined theoretical model. The dynamic model for the FVPI is based on optimal control theory and the adjustment cost hypothesis, utilizing the duality approach. Further analyses and comparisons of different subsidy scenarios are based on an estimated investment/production model, rural consumption patterns, and regional Input-Output (I-O) model.

Based on the estimated results, when a subsidy is allocated to farmers less than 26 cents of each dollar will remain in the rural community. The total increase in value added will be approximately 40 cents for each dollar transferred to the farmers. Furthermore, each \$130,000 direct subsidy will likely create one domestic job.

However, when a subsidy is allocated based on production efficiency to the FVPI, one dollar spent has the potential of raising the domestic output by 80 cents,

and each \$58,000 subsidy creates roughly one domestic job. Conversely, if a subsidy is not allocated efficiently to the processors, the change in the value added and employment will be marginal and substantially lower than the direct subsidy to the farmers.

The main conclusions obtained from the study are:

- (a) Generally, a more detailed analysis of the production/investment and consumption relationship, prior to the allocation of subsidies, is needed for capturing the greatest economic benefit.
- (b) The FVPI in Manitoba is over-capitalized after the mid-1970s.
- (c) Capital expenditure in the FVPI is not sensitive to the cost of capital, due to different regional incentive programs.
- (d) The establishment of a price enhancing program for raw material, such as a supply management board, may substantially reduce the level of capital expenditure in the long-run.
- (e) Policies geared towards training and improving the productivity of human resources have a greater impact on enhancing rural growth and development.

CHAPTER 1

PROBLEM IDENTIFICATION

1.1 Introduction

Manitoba has been faced with the problem of slow growth over the past decades. For almost 50 years common indicators representing regional disparities, such as growth in employment, per capita income and population growth, have been below the national average. Continuous efforts of both the federal and provincial governments in promoting economic performance and in eliminating the disparity between Manitoba and the rest of Canada have not been particularly successful. Federal funds transferred to Manitoba in the 1980s have been around 40 percent of annual provincial revenues, second only to the Maritime provinces.¹

Per capita incomes in Manitoba in the early 1980s were seven percent below the national average. In addition a high disparity in terms of per capita income exists, particularly as a result of Manitoba's large native population. The rate of migration to this province has often been negative. While Manitoba's rate of unemployment has been consistently slightly below the national average, the

¹Statistics Canada, Economic Account, Catalogue No. 13 - 213.

explanation lies partly in terms of disguised unemployment and underemployment in the agricultural sector. After the Maritimes, Manitoba's labour productivity in the agricultural sector is the lowest in Canada.²

While some regional economists hold the view that slow growth and regional disparity can be interpreted as signs of economic adjustment (Courchane: 1986), others believe that slow regional growth is the outcome of *historical* Canadian economic development (although not denying the economic adjustment process in Canada). Slow growth is considered an inevitable process which cannot be totally eliminated even when there is a high degree of economic adjustment (North: 1955, Watkins: 1963, Drache: 1976, Hum and Phillips: 1981).

Manitoba serves as an appropriate example of a region where slow growth is explained by past trends in economic development. Manitoba's past growth was heavily influenced by staple production, mainly wheat. In the decade from 1901 to 1911, the number of farms increased by 272 percent (Phillips: 1981, p. 19) and the value of agricultural production almost doubled between 1926 to 1950.

In the post-staple-led period, almost all regions in Canada, including Manitoba, have been faced with structural changes and slow growth of exogenous demand for staples (Hum and Phillips: 1981). Furthermore, the differential in the productivity growth rate between the staple and non-staple sectors (the latter

²Statistics Canada, National Income and Expenditure Accounts, Catalogue No. 13-10.

primarily produced in urban areas) has caused the relative price of non-staples to increase over time. In regions where staples are the leading sector, productivity increases in favour of the staple. Therefore, the relative cost of producing non-staple products increases over time. In addition, the labour force and general population become urbanized, and the overall rate of growth of rural regions witnesses a combination of rising unemployment, falling relative income and a consequent rural-urban migration (Baumol: 1967; Hum: 1984, pp. 5-8). For example, at the beginning of the twentieth century, the proportion of the Canadian labour force employed in agriculture was approximately 42 percent; by 1951 this was down to 20 percent and the current figure is less than seven percent.³ In the prairie regions, the urban population increased at an average rate of eight percent per decade from 1930 to 1970. The rural population declined at an average of about two percent per decade from 1941 to the present.

The tendency towards declining growth and stagnation in rural areas (staple regions), according to most growth theories and hypotheses, is inevitable and endogenous as the staple enters its mature phase.⁴ This suggests that the ability of a staple-led region to escape stagnation, without government intervention or long-run economic planning, is limited.

³Statistics Canada, Census data, 1986.

⁴Examples of these are staple, growth pole and export-led theories.

Although government intervention can be justified on these grounds, the nature, direction and extent of the intervention policies have always been a matter of great controversy in Canada. These policies emerge from the complex interaction of different social values, goals and objectives. Even though policy decisions should be based on social and economic values, a third dimension, political values, often makes the process and outcome more complex and sometimes inefficient.

Since the early 1930s, various policies have been implemented by authorities to promote social welfare and maintain balanced growth in rural and urban regions.

The most widely practised policies include:

1. increasing the volume of staple production;
2. diversifying the economic base of the region which relies heavily on the export of staples (as suggested by the Western Transition Conference in June of 1985 and the current Western Diversification Initiative);
3. direct subsidies to low income rural residents (e.g., to farmers; the 1986-88 Special Grains payments and 1989 Drought Assistance Payments);
and
4. broadening the economic base of the rural areas via: (a) staple processing and encouraging import-substitution in the staple region, and
(b) investment in infrastructure in order to attract more private

investment into the region (e.g. ring dikes for flood control; sewer and water systems).

Each of these policy approaches can produce problems. Policy concentration on increasing staple production for exports which are pro-trade biased, while exogenous demand is not expanding, can intensify the stagnation problem (Hum and Phillips: 1981, p. 19). Diversification away from staple exploitation is difficult; one has to consider the market opportunities and the geographical location of urban and rural areas at a given time (McCann: 1979, p. 79). Direct subsidies to farmers are politically appealing because of the speed of delivery; however, often, they may have political motivations rather than being an instrument to generate growth in a region (MacMillan: 1987, p. 19). Often, while the ultimate objective is to use the funds for promoting political objectives, the stated justification for the allocated funds is enhancing agricultural productivity and efficiency as well as protecting low income farmers. An attempt will be made, in this study, to further evaluate such phenomena and analyze the pertinent hypotheses developed accordingly.

An alternative policy to that of direct subsidy allocations at the farm level is the use of funds for broadening the economic base. For a mature staple-led region such as Manitoba, this latter policy may be more effective in promoting regional economic growth than the direct subsidy option. In the early stages of staple development, the rate of growth of a region depends on the exogenous

demand for staples, measured by the rate of growth of trade (e.g., of wheat in the Manitoba case). However, in the mature stage, the dampened growth of staple production, due to lower exogenous demand, has to be offset by increasing and promoting the production of other industries, preferably those which can process staples in the agricultural sector in the region. As McCann (1979) points out, lessons can be learned from the experience of staple-led regions in Canada. He hypothesizes that slow and restricted growth in Nova Scotia can be attributed primarily to the fact that this province did not engage in a staple processing policy as other provinces such as British Columbia.⁵

Recently there has been some controversy regarding the allocation of development funds in slow growth rural regions. The dispute is centred on whether the government assistance funds should go directly to the farmers or if they should be directed to alternative projects, such as broadening the economic base, which promote economic growth in the region. While funds allocated to the latter policy programs are generally designed and implemented based on economic efficiency criteria, income stabilization programs and other short-term subsidies generally result in inefficient resource allocations (MacMillan: 1987).

⁵As McCann points out, unlike the salmon catch of B.C which was usually canned before export, much of the Nova Scotia fishery was exported. Furthermore, Nova Scotia's locational disadvantage and ownership regulation did not engage in the forestry product processing. Consequently, Halifax did not benefit from the industrial stimuli offered by the regional staple economy. Since McCann's study, however, B.C. has lost its ability to require processing before export.

Recent studies show that often farm subsidy programs direct most of the money to a small number of farmers who are already well off. These subsidies widen the distribution of income within the agricultural sector and lead to unfair competition in international markets. Most regions in Canada and the U.S. which are heavily dependent on farming have generated higher per capita incomes in the last 20 years than other rural regions, largely because of farm subsidy programs. But it is doubtful that high incomes of farmers can support a declining rural economy, even in those farm-dependent regions.⁶

In recent years there has been an ongoing effort to replace the Crow Benefit grain transportation subsidy program with a direct farm subsidy program.⁷ Since the determination of federal payment of Crow Benefits to the railways in 1983,

⁶For example see:

- (1) J. Spriggs and G. C. Van Kooten: "Rationale for Government Intervention in Canadian Agriculture: A Review of Stabilization Programs", *CJAE*, Vol 36, 1988, pp. 1-21.
- (2) R.D. Knutson and D.U. Fisher, "Fragmentation, Moving toward Consensus ", based on the National Government's Task Force on Rural Development, U.S.A., Choices, published by American Agricultural Economics Association, Second Quarter, 1988.

⁷For more details on this see:

- (1) D. F. Kraft, "Grain Transportation Refund (GTR) and the Freight Rate Structure For Grain and Grain Products", Department of Agricultural Economics, unpublished paper, 1986.
- (2) The Hall Commission Report "The Report of the Committee of Inquiry on Crow Benefit Payment", March, 1985, Winnipeg, Manitoba.

debate has been generated over alternative subsidy allocations, namely direct subsidy to the grain producers instead of the present payment to the railways.

In light of this and other controversies, the main objective of this study is to assess and evaluate the effects of alternative methods of allocating government funds to a selected food processing industry (e.g., fruit and vegetable) in Manitoba, as opposed to the general food production sector. It will be argued that greater investment in value-added industries contributes to the growth of GDP/income, on-farm and off-farm job opportunities and consequently overall economic growth. Additionally, processing industries located in rural areas are considered as major source of income for both farm and non-farm residence. The analysis involves development of an instrument for evaluating alternatives to stimulating long-run growth and will be applied to the southwestern Manitoba (Winnipeg Region, Figure 1.1). The study will focus on long-run benefits namely a higher level of employment and income.

Manitoba offers a suitable case for the evaluation of the above situation because (a) Manitoba is in its post-staple-led or maturing phase, and is experiencing a relatively slow rate of economic growth (Artibise: 1975); (b) in its rural regional portfolio Manitoba does not have the variety of staples that Alberta and Saskatchewan have, (e.g., oil, gas, uranium and potash), and (c) in recent years, a significant amount of direct subsidies has been transferred to Manitoba's farmers. The level of federal subsidy in 1987-88 was close to \$782 million. The details and

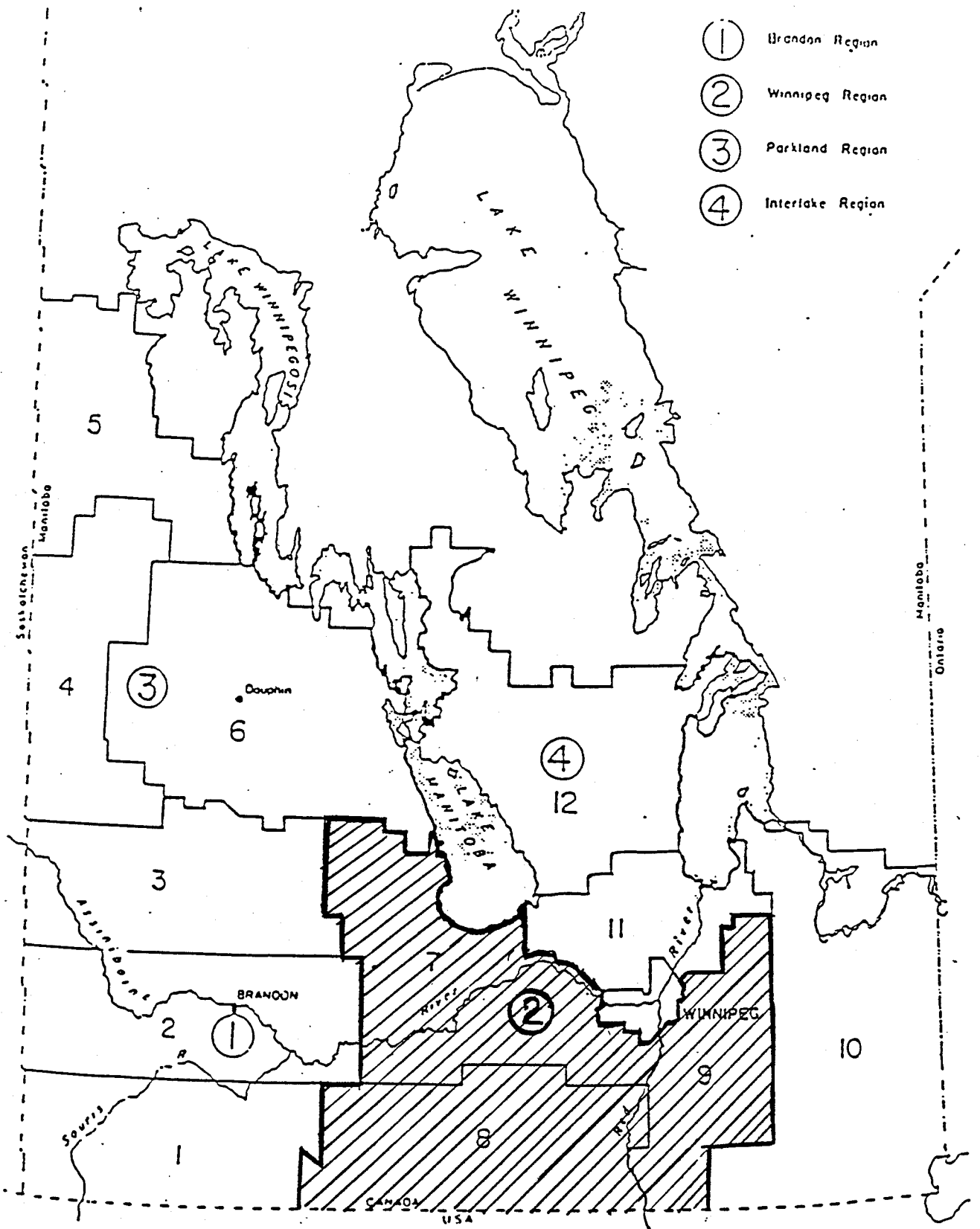


Figure 1.1 Manitoba Crop Districts and Regions , Manitoba Department of Agriculture

breakdown of both the federal and provincial agri-food expenditure in Manitoba for recent years are given in Tables 1.1 and 1.2.

Most regional development studies have adopted either short-run benefit-cost analysis (e.g., used for evaluating most development projects of the federal and provincial governments) or long-run benefit-cost analysis. Simple short-run benefit-cost analysis is politically appealing; however, there are several major weaknesses involved in this approach. First, it concentrates on short-run and direct effects only. Second, it does not provide a multiple-objective planning framework (Schulze 1985, p. 1036). Third, it focuses entirely on consequences, rather than placing value on the process used to move from the initial state to the final state (Kneese *et al.*: 1985).

Long-run analyses, on the other hand, have concentrated on providing a framework for estimating the indirect, as well as direct, impacts. They also involve the implementation of a multiple objective planning framework (such as higher levels of income and employment, and improvement in quality of life and income distribution). The Interlake project (MacMillan *et al.*: 1977) serves as one example which utilizes regional input-output (I-O) accounts for predicting direct and indirect impacts.⁸ While this procedure overcomes some of the limitations referred to

⁸MacMillan, J.A and S. Lyon (1977), "The Interlake Experience: A Description and Evaluation of Rural Development Program", Department of Agricultural Economics, University of Manitoba, Occasional Series No.9, 1977.

Table 1.1
Federal Government Expenditures in Agriculture, Manitoba
1982-1988

Federal	1982/83	1983/84	1984/85	1985/86	*	*
-- \$'000 --						
Direct payments through community programs	29,335	37,125	42,393	32,703	273,600	558,893
Crop Insurance	13,012	11,986	16,412	21,390	23,100	19,367
Financial Assistance	3,405	5,016	5,669	11,772	30,300	51,301
Transportation	95,673	115,408	118,908	151,368	175,100	150,248
Regional & Industrial Economic	17,733	15,565	21,616	9,047	14,900	2,936
TOTAL	159,158	185,100	204,998	226,280	517,000	782,745

* Preliminary data under revision

Source: Public Accounts of Canada, Agriculture Canada

Table 1.2
Manitoba Department of Agriculture Expenditures

DIVISION	ACTUAL EXPENDITURES						MAIN ESTIMATES
	1984-85	1985-86	1986-87 - \$ 000 -	1987-88	1988-89	1989-90	
Administration and Finance	2,217.5	2,432.3	2,459.0	3,015.9	3,015.9	3,945.5	
Man. Crop Insurance Corp.	4,140.7	5,525.7	5,372.8	4,664.3	4,795.6	5,167.0	
Man. Agricultural Credit Corp.	12,503.9	11,090.3	7,542.6	16,063.4	21,885.2	16,454.0	
Ag. Development & Marketing	10,739.7	10,690.3	11,022.3	11,606.5	11,998.1	12,997.2	
Farm and Rural Development	11,207.6	11,510.7	11,481.0	12,215.7	10,790.3	11,005.4	
Policy and Economics	1,812.2	1,841.5	1,940.2	2,539.7	2,719.2	2,943.4	
Federal-Provincial Agreements	1,402.2	1,448.6	1,301.5	1,311.0	657.5	1,057.5	
Income Insurance Fund	6,265.3	9,121.8	14,144.7	11,255.9	11,031.2	10,773.5	
Drug and Semen Purchases	4,431.1	4,811.2	6,147.2	6,130.4	7,912.5	7,290.7	
Education Tax Reduction Program	--	--	--	12,000.0	12,000.0	15,400.0	
Emergency Interest Rate Relief	2,608.2	1,384.5	1,036.5	1,100.0	2,232.9	1,250.0	
Emergency Drought Relief Program	1,999.6	--	--	--	18,300.0	--	
Expenditure Related to Capital	3,004.6	3,956.9	5,343.5	4,150.0	4,850.0	--	
TOTAL	62,332.6	63,813.8	67,791.3	86,053.8	112,188.4	88,824.2	

** The total does not include the expenditure related to Capital.

Source: Supplementary Information For Legislative Review.

earlier, it suffers from several other shortcomings including the non-testability of the predicted results and the assumptions of constant prices, constant returns to scale and linear and static production relations. The I-O accounts also require a comprehensive definition of the notion of a sector, particularly of a service sector (Mason: 1987). Alternatively, these accounts can be used in conjunction with other disaggregated analyses or as a special case of a more general model.

At the present time, a more comprehensive procedure for assessing and evaluating the short-run as well as long-run benefits of agri-food expenditures, which focuses on a particular industry at the disaggregated level is not readily available. Therefore, the attempt in this study will be to develop a more comprehensive and general framework or model for assessing the impact of development funds on the agricultural sector over time. Different subsidy and development scenarios will be used in order to examine the predicted results on growth and development in Manitoba.

In order to develop relevant hypotheses, define objectives and establish the theoretical background for this paper, a brief review of the present state of the farm support program and the economic performance of the fruit and vegetable industry in Manitoba will follow.

1.2 Farm Support Programs

Between 1984 and 1988, federal outlays for farm price support programs and related direct payments to Canadian farmers averaged \$3 billion per year.⁹ Over the same period, *direct subsidy* payments to farmers have increased significantly. For Canada as a whole, these payments have increased from \$0.3 billion in 1981-84 to an estimated level of \$2.8 billion in 1988 (Figure 1.2). In Manitoba, in 1986-88, the average contribution of the federal and provincial governments has been \$651.5 million and \$76.9 million, respectively (Figure 1.3).

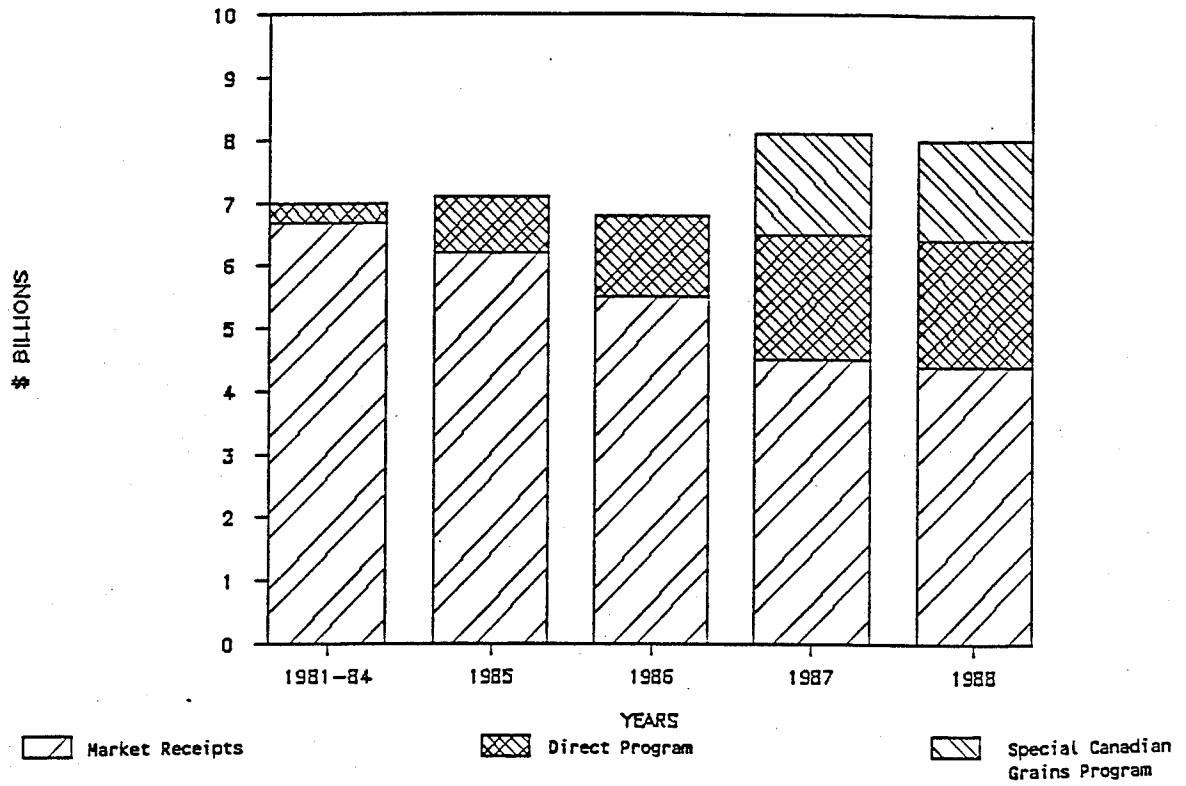
In recent years, there have been significant efforts to evaluate the effectiveness of such programs on the welfare of recipients and on the economic performance of the agricultural sector.¹⁰ Government involvement in Canadian agriculture programs is justified on the grounds that the market either overlooks or

⁹Federal Agri-Food Expenditure, Policy Branch, Agriculture Canada, Various years.

¹⁰For example see:

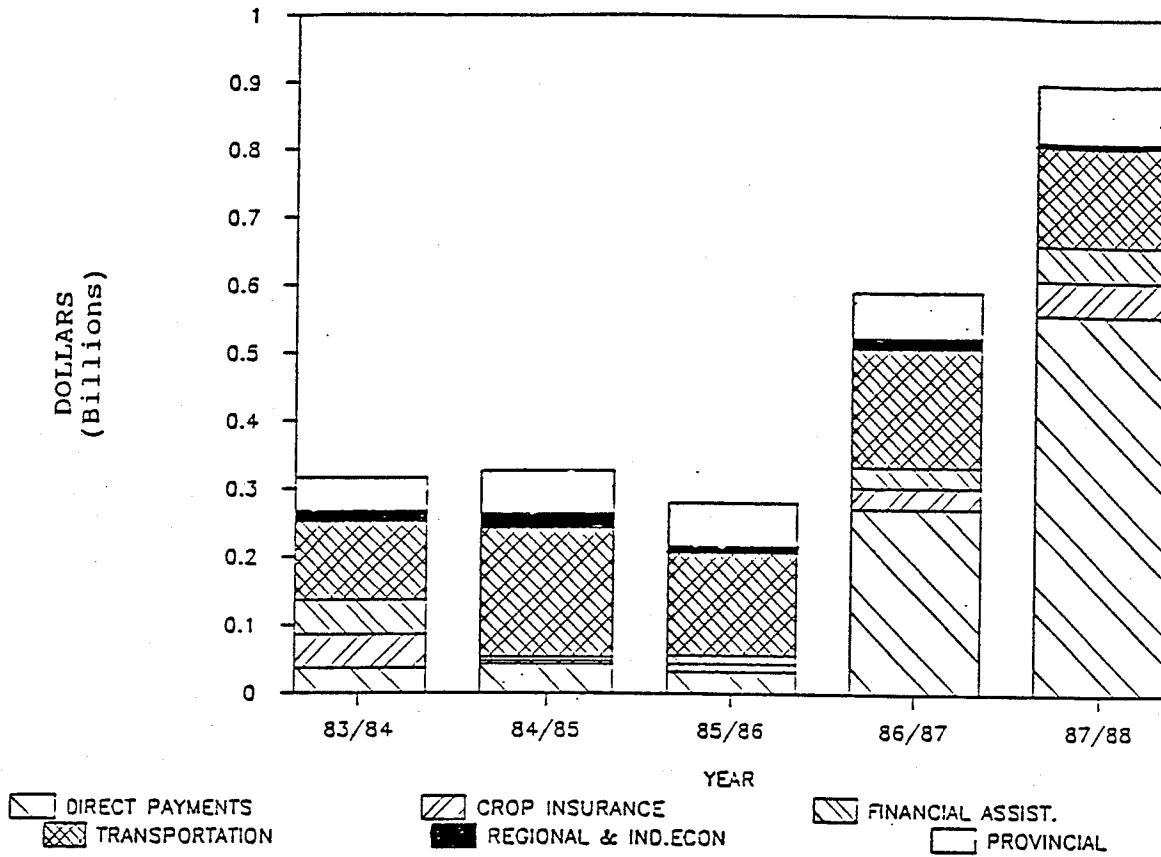
- (1) C.S. Webber, J.D. Graham, and R.J. MacGregor, "A Regional Analysis of Direct Government Assistance Programs in Canada and Their Impacts on the Beef and Hog Sectors," Working Paper, Agriculture Canada, 1988.
- (2) G.C. Van Kooten, J. Spriggs, A. Schmitz, "The Impact of Canadian Commodity Stabilization Programs on Risk Reduction and the Supply of Agricultural Commodities", Working Paper 1989, Agriculture Canada.
- (3) "A Report on the Evaluation of the Special Canadian Grains Programs Phase III", Deloitte, Haskins & Sells, Dec. 1987.
- (4) Agriculture and Food Development Nova Scotia, "Mid-term Evaluation Canada/Nova Scotia Agriculture and Food Development Agreement, 1982-1987", Sept. 1985.

Figure 1.2
 Grain and Oilseeds Receipts
 Canada 1981/84-1988



Source: Agriculture Canada
 Federal Agri-Food Expenditures,
 Agriculture Canada, Policy Branch

Figure 1.3
 Government Expenditures in Agriculture
 Manitoba 1982-1988



Source: Agriculture Canada and Manitoba Department of Agriculture