AN INVESTIGATION INTO THE OPERATIONS OF THE CANADIAN EGG MARKETING AGENCY

By

SUSAN LEE BRADBURY

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ABSTRACT

This thesis examines the operations of the Canadian Egg Marketing Agency and its provincial boards and their effects on producers, consumers and the agricultural industry. The variables that were reviewed to achieve this objective were: producer and retail price levels, the stability of producer and retail prices, the price differences between the provinces, the amount of imports and exports, the role of supply and demand in determining price and the producers' share of the consumer dollar. Two techniques were used. One method was the before and after technique which compared two periods, 1961-71 and 1975-82, to identify what changes had occurred since the introduction of CEMA in 1973. The second method was a comparison to the United States which controlled for market structure changes.

The results of this study are as follows. Producers have benefited from CEMA's operations through greater price stability, a larger share of the consumer dollar and from a higher price level than in the United States. CEMA has affected consumers by stabilizing retail prices and equalizing prices across the country. However, CEMA's actions have redistributed income from consumers to producers. CEMA has had a positive effect on the agricultural industry by increasing exports while import levels have remained the same.

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Chapter 1

Marketing Boards: An Introduction

1.1 Aim

One of the most notable aspects of agricultural policy in Canada during the past ten years has been the introduction and operation of marketing boards. There are one hundred and eighteen agricultural marketing boards in Canada now, over twenty of which operate in Ontario. Fifty-five per cent of all Canadian agriculture produce comes under some sort of marketing board control (Agriculture Canada, 1983). One such commodity is eggs. In economic terms, the Canadian egg sector is not of great importance - accounting for only two per cent of the consumers' total food budget (Statistics Canada, 1978). However, this sector has considerable importance from the perspective of agricultural and food policy. Egg production and marketing is the most "organized" of any commodity in the food industry (Forbes, Hughes and Warley, 1982, p. 45). This method of agricultural regulation has been suggested for other commodities such as the beef and pork sectors. Before these models are extended to other commodities it is important to determine whether they perform satisfactorily.

Canadian egg producers were the first agricultural producers to apply for a national marketing agency and with majority producer support, the Canadian Egg Marketing Agency

(CEMA) was established in December, 1972 (Lane and MacGregor, 1979, p.22). Like all marketing boards it is not a public agency but a private producer organization run and financed by producers. The power granted to CEMA by Federal legislation includes the compulsory formation of provincial marketing boards across the country. A national system was set in place which had the authority to control supply, set prices, limit maximum farm size and control producer entry into the industry through the use of a quota system (Canadian Federation of Agriculture, 1982).

The establishment of such a powerful organization has sparked controversy and concern. The purpose of this thesis is to investigate the operations of the Canadian Egg Marketing Agency and the provincial boards and assess their effects on producers and consumers.

1.2 History of Marketing Boards

Initially marketing boards developed in Queensland, Australia in 1921 (Borcherding and Dorosh, 1981). They arose out of producer dissatisfaction with the prices and incomes they were receiving. In general, farmers claim that they face three kinds of problems. First, their incomes, on average, are lower than incomes in other sectors of the economy; secondly, their incomes tend to fluctuate widely over time; and thirdly, farm incomes are unevenly distributed among producers. In order to improve their position farmers petitioned the government to grant them the authority to organize and bargain collectively.

In March 1958 the Canadian Agricultural Stabilization Act was passed by the Federal Government. This gave marketing boards the legal authority to act as a bargaining unit for producers of certain commodities at the provincial level. It soon became apparent that there were real limitations to achieving the basic objectives on a provincial basis, because most of the commodities were national or international in scope. Thus in 1972 the Farm Products Marketing Agencies Act was passed which authorized the establishment of national marketing agencies for farm products. The National Farm Products Marketing Council has the job of co-ordinating, supervising and reviewing the various national boards' policies (Canadian Federation of Agriculture, 1982).

CEMA is a supply management type of marketing board. Supply management refers to the " centralized control over the quantity and/or price of one or more commodities of specialized quality coming from a specified group of producers to a particular market or markets in a given period " (Canadian Agricultural Task Force, 1969).

The main goal of supply management is to raise and stabilize farm incomes by:

1. - ensuring adequate prices and incomes to producers of the regulated product;
2. - stabilizing prices and incomes from the sale of that product by reducing severe fluctuations between high and low prices;

3. - arranging an adequate supply of quality product to meet the needs of the consuming public domestically and to fill export opportunities;
4. - providing uniform terms and conditions of sale for that product, as well as ensuring equity of payments to producers;
5. - arresting the growth of vertical and horizontal intergration in order to ensure the preservation of the efficient and viable family farm;
6. - improving efficiency in the marketing system;
7. - increasing demand and expanding markets through product promotion and market development.

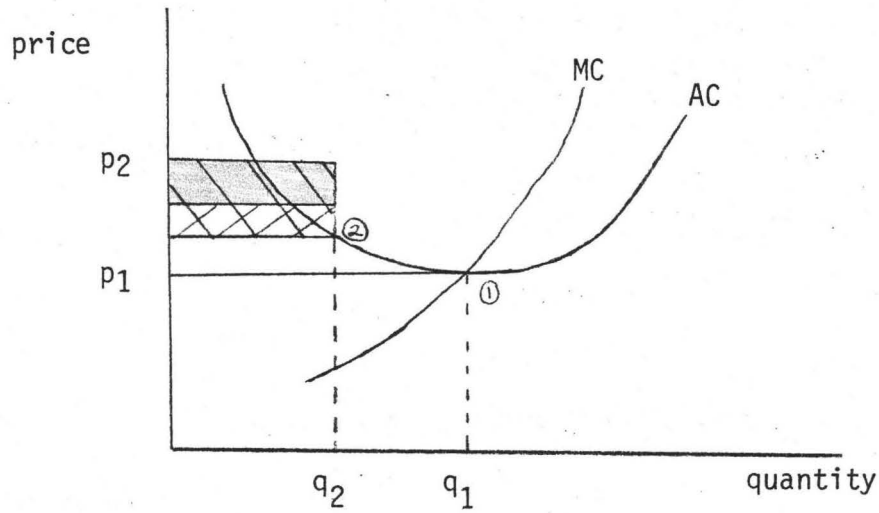
CEMA consists of a committe of twelve persons, one representing each of the ten provinces and two appointed by Federal Cabinet. CEMA sets a yearly national egg production quota and allocates it among the ten provinces. Each provincial board is responsible for allocating the provincial quota among the individual producers. Initial determination of a province's market share was determined historically and has remained unchanged since 1973. Ontario is Canada's largest egg producer with 38.2 % of the market share (CEMA, 1975). Each individual producer was allocated quota based on his maximum production capacity during the qualifying period of January 1969 to April 1972.

1.3 Economic Theory

The economic theory behind marketing boards or supply management is very basic. Under perfect competition the equilibrium between price and quantity in the market place would be determined by the position where supply equals demand. The demand for agricultural products is generally inelastic; small changes in quantity result in sharp swings in price. The inelastic nature of agricultural products and excess supply have in the past resulted in depressed prices. Thus, the problem that has caused farmers to turn to supply management is that the equilibrium price is not sufficient to cover expenses and that prices under the free market system are too unstable. Supply management offers a solution to this problem by restricting the supply of product available to the market through the use of a quota system. The net results of this quota system are: commodity output is reduced, the total number of producers declines and prices are artificially maintained above the free market level. The effect at the farm level can be seen in Figure 1.1 and at the industry level in Figure 1.2. One criterion for measuring the benefits to producers from supply management is the quota value; the excess average revenue over the average costs.

The results of the quota system in Ontario can be seen in Table 1.1. Overall production has been reduced by thirty per cent since 1973 and the number of producers has declined by thirty - seven per cent.

Figure 1.1 The Effect of Marketing Boards on a Farm



represents total profits from marketing board operations.

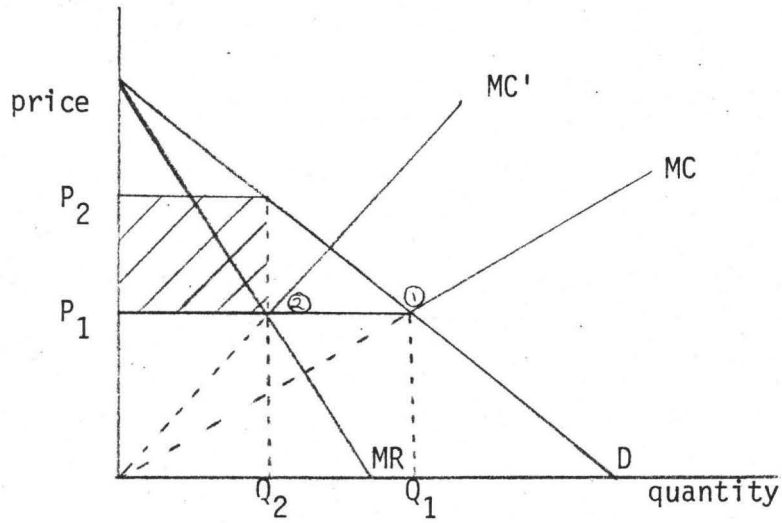
represents profits which the marketing board receives.

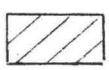
represents profits which producers receive (quota value).

At (1) under perfect competition the farm will produce at its most efficient level in order to remain in business. This is at the point where the marginal cost curve crosses the average cost curve. Here quantity of q_1 will be produced at price p_1. Zero profits will be made.

At (2) we can see the effects of introducing the marketing board monopoly. Quantity has decreased from q_1 to q_2 and at the same time price has increased from p_1 to p_2. The farm is now producing less and is producing at a less efficient scale. This can be seen by the fact that the point on the average cost curve is higher than that under perfect competition. Thus the farm is no longer producing at the lowest possible average cost. By limiting the amount of quota that maybe held the farm will remain producing at this inefficient level.

Figure 1.2 The Effect of Marketing Boards on the Industry



 represents the profits the industry will make due to the marketing board.

Under perfect competition (at ①) the industry is at equilibrium where marginal cost equals demand. The quantity produced will be q_1 at the price p_1. Zero profits will be made ($MC = P_1$).

With the introduction of the marketing board monopoly, in order to maximize profits the industry will produce where marginal revenue equals marginal cost (at ②). The quantity produced will decrease from q_1 to q_2, price will increase from p_1 to p_2 and the number of producers in the industry will decrease. (This is shown by the new MC curve MC'.) Profits will be made in the industry under the monopoly as shown by the shading. Thus, in comparison, perfect competition uses resources more efficiently then a monopoly would.

(Source: Mansfield, 1979. Microeconomics.)

Table 1.1 Structural Changes in Ontario

Year	Number of Producers	Market Quota (number of laying hens)
1973	1251	11,500,000
1974	1245	9,346,580
1975	1225	7,992,868
1976	1029	8,308,525
1977	951	8,271,000
1978	935	7,691,200
1979	938	7,993,444
1980	820	8,224,673
1981	796	7,928,370
1982	786	7,950,150

Source: Ontario Egg Producers' Marketing Board, Annual Reports, 1973-82.

The quota system also controls farm size and farm efficiency. In 1975 CEMA released a report which examined the egg production costs in Canada. More recent data are not available. The results can be seen in Table 1.2 below.

Table 1.2 Egg Production Farm Gate Costs By Flock Size For Canada

Flock Size	Total Farm Gate Cost
up to 12,000	51.5 ¢
12,000 to 24,000	54.8 ¢
24,001 to 48,000	56.0 ¢
48,001 and up	47.8 ¢

Source: CEMA and P. S. Ross and Partners (1975)

The most economically efficient farm size, in 1975, was 48,000 layers and over. Farm size regulations vary from province to province (see Table 1.3).

Table 1.3 Regulation Of Egg Producers

Province	Minimum Flock Size Regulated	Maximum Flock Size	Market Share
B. C.	500	20,000	12.1 %
Alberta	300	20,000	8.7 %
Saskatchewan	300	30,000	4.8 %
Manitoba	500	25,000	11.4 %
Ontario	500	30,000	38.2 %
Quebec	250	50,000	16.6 %
New Brunswick	200	25,000	1.8 %
Nova Scotia	500	50,000	4.1 %
P. E. I.	300	15,000	.6 %
Newfoundland	500	25,000	1.8 %

Source: Canadian Federation of Agriculture, 1982.

Only Quebec and Nova Scotia allow a producer to reach the most efficient farm size. Every other province limits farm size to a lower level of efficiency. Thus producers are forced to maintain production at a inefficient size. However, those operations that were in business before the introduction of the quota and exceed the maximum size allowed in a province may retain their size. But, if the farm is sold then the quota must be divided and reduced to fit the current regulations. Egg production is also held to a specific geographical location: the only way to buy quota and enter the egg business is to buy the whole farm - land, premises and quota.

In August 1975, CEMA adopted the cost of production

model developed by the accounting firm of Touche Ross and Partners as a basis for establishing producer prices for Grade A large eggs in Canada. This formula allows the farmer to secure expenses and provides him with a reasonable return on labour and investment. This cost of production model takes account of regional cost variations and is adjusted on a monthly basis. These price setting powers can only work if lower priced imports are restricted from the Canadian market. Therefore CEMA also controls imports and exports to and from the country and sets the incoming tariff rate.

1.4 Plan

Clearly, marketing boards have had a major effect on how eggs are produced and marketed in Canada. The purpose of this report is to reveal what changes have taken place since the introduction of the marketing board and what are the consequences of these changes with respect to producers, consumers and the agricultural industry. To achieve this objective several items will be examined. These include: the level of producer and retail prices, price stability, the price differences between provinces, the producers' share of the consumer dollar and the amount of imports and exports.

Chapter 2 reviews the existing literature on marketing boards. Chapter 3 outlines the hypotheses that will be examined in this study and the methods of analysis used. Chapter 4 discusses the empirical results and inferences and chapter 5 presents the summary and conclusions of this study.

Chapter 2

Studies on Marketing Boards

Although there has been concern over marketing board practices, it has been difficult if not impossible to actually assess their impact. There are two major problems: the lack of available data, and the marketing board schemes have been in existence such a short period of time that it is difficult to judge their long term effects. Most research on marketing boards and specifically the Canadian Egg Marketing Agency has one important characteristic - it lacks statistical analysis. The reason for this is that although the necessary data do exist, CEMA (a private producer organization) can maintain an unyielding hold on the data. As a consequence much of the literature is based on economic theory which is not verified. A broad indication of marketing board performance is the best one can hope to achieve from such studies. This chapter provides a brief review of the existing literature on the subject.

While the literature dealing with marketing boards can hardly be described as volumious, there is nevertheless, a growing body of reports questioning the operations of marketing boards. Concern has focused on whether or not marketing board interests are consistent with the long-term interests of consumers, producers, the agro-business, and other sectors of the economy.

Concern about the Canadian Egg Marketing Agency was first sparked by a report issued in January, 1974 by the Food Prices Review Board. The report stated that egg prices were the fastest rising component in the entire Comsumer Price Index in 1973. Egg prices increased by 54 % compared to an approximate increase of 17 % for all other food items during the same time period. What makes this sudden rise in the price of eggs so interesting is the fact that it was in January 1973 that Canadian egg sales came under the influence of the Canadian Egg Marketing Agency. In summary the report concluded that the increases experienced by consumers were at least partly due to the pricing policies of the marketing board. A second report was released in August 1974 because increasingly disturbing conditions were continuing in the egg industry. The report concluded that the long-term interests of producers and the health of the industry in Canada had been jeopardized by policies and activities of the egg board during its first year in operation. Consumers had been subjected to higher than warranted egg prices in order to maintain producer prices (Food Prices Review Board Aug. 1974, p.41). To further support this position a report by the Consumer Research Council (1974) concludes that CEMA is one of several marketing boards that fails to serve the consumer interest by setting unduly high prices. The high prices are attributed to CEMA's practice to restrict supply. Furthermore higher quota values are used as justification for higher prices,

this leads to ever-increasing production costs for new entrants. Inefficient production is fostered by tariff and import quotas which cause consumers to pay higher prices for domestic production and imports.

H. V. Walker (1968) appraised the quota policies pursued by Canadian marketing boards in terms of their potential positive and negative effects. He discusses the implications of marketing board power and questions the validity and direction of marketing board goals and policies with respect to the public interest. Walker suggests that there is sufficient evidence that some marketing boards have been effective in stabilizing the level of prices and incomes thus providing producers with a certain degree of economic security. Martin and Warley (1978) in contrast concluded that CEMA has been successful in stabilizing retail prices but producer prices and revenues had not changed significantly. On the negative side Walker (1968), Wilkinson and Walker (1979) argue the implications of limiting farm size, restricting entry to producers and constraining the location of production which will lead to inefficiency and increased operating costs. Furthermore Lane (1979) states the economic implications of resource adjustment which occurs in the farm sector through the use of quotas. By resource adjustment Lane is referring to changes in the distribution of incomes, efficiency of production, and stability of prices and incomes between the farm and non-farm sectors. Lane concludes that quotas negatively affect the rate and

nature of structural change, the level of efficiency and the rate of technological advancement. The extent of the resource adjustment will depend mainly on the commodity price level and the quota transfer system. Josling (1981) agrees with this position: government involvement can lead to distorted production patterns, international trade conflicts, increased prices to consumers, benefits concentrated on the larger farm business, and reliance on government support which dampens innovation in the industry. These conclusions are based on value judgements and theoretical considerations.

There is an obvious need for empirical research to test the validity of these statements. Despite the difficulties in obtaining data some statistical analysis has been conducted.

The major goal of Forbes, Hughes and Warley (1982) was to investigate the economic impact of government regulation in agriculture, with particular reference to the effect of marketing boards on the performance of the national food system. They outlined both the positive and negative effects of economic intervention in the egg sector. Positively the marketing board could claim that:

1. - production of eggs was now a profitable venture for producers whereas before it was not;
2. - returns from egg production had stabilized;
3. - the rate of vertical integration has been halted and farmers have substantially enhanced their bargaining power;

4. - egg production has remained as a predominantly family farm enterprise.

However, on the negative side, economic intervention has resulted in:

1. - a higher than necessary cost structure which has resulted from the underutilization of production facilities due to the policy of maximum limit on quota holdings;
2. - the income transfer caused by regulation in the egg sector from consumers to producers is estimated to be about 13 ¢ per dozen eggs;
3. - income transfers that accrue to producers in proportion to the size of their businesses rather than their need, a burden then falls on consumers according to their purchases rather than their ability to pay;
4. - there is concern that as time goes by, a high proportion of quota will have been purchased by new entrants, which will cause them to operate under higher cost conditions. Thus today's benefits will have been transferred into tomorrow's costs. It is feared that this will lead to a hopelessly uncompetitive and vulnerable Canadian market.

Argus (1981) examined the economic impact of marketing board regulation in the egg sector in Canada. He estimated that the cost of regulation in the egg sector was about $ 56 million per year. This cost is paid largely by consumers through higher prices for table eggs. He concluded that

higher prices have contributed to annual incomes being higher by amounts of $ 20,000 per producer. Michele Veeman (1982) has also attempted to estimate the social cost of the Canadian Egg Marketing Agency. She looked at two major aspects of social costs: losses in allocative efficiency and the aggregate income transfer resulting from the use of the quota system. She estimated the social costs to range from seven to twenty-four cents a dozen. Veeman concludes that current producers have benefited from significantly higher and more stable prices and incomes and that these benefits have been achieved at the expense of the consumer. These benefits have also been accompanied by losses in economic efficiency caused by distortion of production patterns, underutilization of existing productive capacity, non-capture of economies of scale and failure to take advantage of regional specialization or trade.

Borcherding and Dorosh (1981) have also attempted to substantiate the theoretical statements in a case study. They compared the British Columbia fresh egg price (per dozen) with the Washington State price. Interestingly up until 1968 the difference between the two was negligible; however between 1973 and 1978 the price spread began to widen. Since the introduction of the marketing board system prices in British Columbia have increased at a greater rate (almost 12 %) then those in Washington. (Washington was used as a comparison because it has a free market system.) In order to explain

this price divergence, Borcherding and Dorosh examined the relationship between farm size and farm efficiency. According to a report published by CEMA (1975) the most cost efficient flock size is 48,000 birds and larger. However it is the practice of provincial boards to limit farm size well below this level. In British Columbia 65.8 % of the eggs are produced by farms in the 10,000 - 50,000 flock range while in Washington 65.4 % of the eggs produced are done so on farms of 50,000 birds or more. Therefore one reason accounting for lower egg prices in Washington is the Americans' ability to take advantage of economies of scale. This particular study and the next one to be discussed are of importance because they demonstrate the reason why this thesis has been undertaken. The reports and analysis performed appear to be inconclusive because they contradict each other. As already stated Borcherding and Dorosh concluded that prices in British Columbia were increasing and were doing so at a faster rate than in Washington. On the other hand Cayer (1979) concludes that CEMA has since its introduction lowered the real cost of eggs to consumers by 27 %. This has been accomplished through gains in productivity and increases in efficiency. He further states that CEMA has had a positive effect on production stability, productivity increases, price competitiveness, stability and efficiency.

The method of study that will be used in this thesis has been modelled on work by Lane and MacGregor (1979) and

by Qudrat-I-Elahi (1982). Lane and MacGregor attempted to study the effects of supply management on stability, particularly variability in production, producer prices, retail prices and total marketing margins. Qudrat-I-Elahi examined the effects of supply management on the level of producer and consumer prices, stability of producer and consumer prices and the producers' share of the consumer dollar. One major fault of both studies is that they have failed to put their price variables into constant dollar terms. This has caused misleading results because data were compared that were not consistently defined.

Marketing boards have caused a vigorous debate among different interest groups. The analyses appears to be inconclusive because the reports contradict each other. Therefore it is not clear just what effects the marketing board does have on producers, consumers and the agricultural industry. Thus, this thesis will conduct a study similar to that of Qudrat-I-Elahi but correcting the fault in his analysis: the effects of CEMA will then be known.

Chapter 3

Analysis of Marketing Boards

The purpose of this thesis is to determine the consequences of the Canadian Egg Marketing Agency's operations. This objective will be accomplished by determining if CEMA has realized its goals (as outlined in chapter 1) and by defining what structural changes have occurred in the market system to achieve these goals. CEMA's marketing system concerns producers, consumers and the agricultural industry. Therefore, based on this approach the following working hypotheses have been formulated.

a) Supply management boards have increased the level of producer prices.
b) Supply management boards have increased the level of consumer prices.
c) Supply management boards have stabilized producer prices.
d) Supply management boards have stabilized consumer prices.
e) Supply management boards have increased the price differences between provinces.
f) Supply management boards have increased the producers' share of the consumer dollar.
g) The supply management price setting scheme has decreased the market influences of supply and demand in determining price.

h) Supply management boards have increased the level of imports into the country.

i) Supply management boards have decreased the level of exports out of the country.

All price variables will be converted into constant 1971 Canadian dollars before they are subjected to analysis.

These hypotheses will be tested by comparing two periods - before and after the introduction of the marketing board supply management scheme. The two periods are: from 1961 to 1971 and from 1975 to 1982. The year 1972 was omitted from the first period because the expected development of the marketing board caused abnormal fluctuations in the market. Also the years 1973 and 1974 have been omitted from the second period because the supply management system was not effectively in place. It was not until 1975 that the national pricing scheme was introduced. This analysis assumes that the two time periods differ only with respect to the absence or presence of marketing board control. This assumption fails to take account of the possibility that the market structure may have changed over this time period. Therefore, the United States, where marketing boards do not exist, is used as a control; in this way the effects of the marketing board can be separated from the changes in the market structure. Now the controlling assumption is that the market structure of the United States is similar to the market

structure Canada would have had if the marketing board had not been introduced. In addition, similar analyses will be conducted for Ontario and Minnesota. Minnesota's climate, market conditions and net production of eggs is approximately the same as Ontario's.

The hypotheses that the marketing board has caused higher prices to (a) producers and (b) consumers were chosen because of the conflicting evidence from other reports. Cayer (1979) claims that egg prices have decreased while Borcherding and Dorosh (1981) claim that they are rising. These hypotheses will be tested using average monthly prices and a simple t-test.

One of the main objectives of the marketing board was to stabilize prices and so the two stability hypotheses (c) and (d) have been included to evaluate CEMA's performance to achieve this objective. The variation between monthly prices was calculated and analysed using a t-test.

The hypothesis (e) concerning the price differences between the provinces will be examined because it was thought the introduction of the cost of production pricing formula would lead to greater price differences (Veeman, 1982). The three major inputs in the formula (feed, labour and pullet costs) vary greatly across the country and these price differences could be further preserved by the practice of allowing very little trade between provinces. This hypothesis will be analysed by calculating the price differences between the provinces and conducting a t-test.

Hypotheses (f) concerning the producers' share of the consumer dollar and (g) concerning the effect of supply and demand on price, were selected to determine the changes that have occurred in the market structure with the introduction of CEMA's cost of production pricing formula. Hypothesis (f) was examined by dividing the producer price by the retail price to find the producers' share as a percentage of final price. These percentage figures were then subjected to a t-test. For hypothesis (g) a regression analysis was used to determine the relationship between price and supply and demand. This method has been used by Tegsjo and Oberg (1964) to determine the regional price of eggs in Sweden. They determined that the regional price of eggs is a function of supply and demand. A supply potential was defined as a function of the supply of eggs in that particular region divided by the market area of that region plus the sum of all other region's supply divided by the distance between the regions. The demand potential was defined in a similar fashion but was based on population and distance. But, because in this case the per capita consumption of eggs has changed dramatically over this time period (1961-82) the population was multiplied by the per capita consumption in order to obtain a more accurate demand potential. The data were only available for seven provinces (British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and Nova Scotia) which were substituted as

regions. The supply and demand potentials will then be regressed against the dependent variable price to determine the strength of the effect of supply and demand on price.

The hypotheses regarding the level of (h) imports and (i) exports were selected because some feared (eg. Consumer Research Council, 1974) that the introduction of the marketing board would decrease the supply of eggs, push prices up, causing Canada to lose her export opportunities and make lower cost imports more attractive. These hypotheses will also be tested using a t-test.

The research objective of the rest of this thesis is to test and discuss the implications of these hypotheses and their results. From the results it will be possible to infer what effect the Canadian Egg Marketing Agency has had on producers, consumers and the agricultural industry.

Considerable research was conducted in order to develop these hypotheses. The major problem was the lack of available data. Much time and energy was wasted in contacting CEMA in an attempt to obtain information on farm size and farm efficiency. It was a futile endeavor to convince CEMA's Communication Manager, Mr. Ian Elliott, to release the data. CEMA did however provide cost of production sheets which contained producer prices. Surprisingly the McMaster library contains very little in terms of agricultural statistics. The only source that was helpful was Statistics Canada -

Production of Poultry and Eggs. Many weekends were spent in the Guelph library which provided two very valuable sources: Canadian Department of Agriculture - The Poultry Market Review, monthly edition, and the United States Department of Agriculture: Poultry and Egg Situation. Agriculture statistics for Minnesota were obtained by writing to the Minnesota Department of Agriculture who were very helpful in sending what was required.

Chapter 4

Results of Analysis

This chapter presents the results of the analyses and draws the main inferences that emerge from the analyses. The chapter is organized into four sections. Section 4.1 discusses the results of the producer related hypotheses, section 4.2 discusses the consumer related hypotheses and section 4.3 the agro-business related ones. The final section 4.4 summarizes the effects of the Canadian Egg Marketing Agency.

4.1 Producers

Three hypotheses focused on the effects CEMA has had on producers. The tests of hypothesis (a) that supply management boards have increased the level of producer prices, are summarized in Table 4.1. All price variables have been converted into constant 1971 Canadian dollars. Ontario producer prices from 1961-71 and 1975-82 have decreased by 13.4 %. In comparison Minnesota producer prices have declined by 16.3 % over the same period. For Canada producer prices have increased by 6.3 % while in the United States producer prices declined by 17.4 %. Contradictory results have appeared with Canada's producer prices rising while in the United States prices are declining. In comparison with Minnesota, Ontario producer prices have declined but not to the extent as in

Table 4.1

Test of Producer Price Hypothesis (a)

Area	1961 to 1971	1975 to 1982	% change
Ontario	mean = 44.7 s.d. = 8.4 n = 132	mean = 38.7 s.d. = 3.8 n = 96	- 13.4 %
	significance level = .01		
Canada	mean = 37.4 s.d. = 8.6 n = 132	mean = 39.9 s.d. = 3.1 n = 84	+ 6.3 %
	significance level = .01		
Minnesota	mean = 34.4 s.d. = 7.3 n = 132	mean = 28.8 s.d. = 4.3 n = 96	- 16.3 %
	significance level = .01		
USA	mean = 44.9 s.d. = 7.3 n = 132	mean = 37.0 s.d. = 4.6 n = 84	- 17.6 %
	significance level = .01		

(Source: Tables 1-4 of Appendix.)

Minnesota. The reason for this could be due to the ability of producers in the United States to take advantage of economies of scale (Borcherding and Dorosh, 1981). Farm size in Canada is constrained to a inefficient level which results in higher production costs. Conflicting results have also arisen between Canada and Ontario. However from the results of hypothesis (e) which will be reviewed later, it was discovered that Alberta, Saskatchewan and Manitoba have all experienced price increases during this period, thus forcing Canada's producer prices upward. This reduction in producer prices experienced by Ontario, Minnesota and the United States has been caused by technological advancement during the 1960s

and 1970s (Forbes, Hughes and Warley, 1982). Increased mechanization and the development of better farming methods has led to a dramatic reduction of costs.

Another hypothesis which concerns producers is (c) that supply management boards have stabilized producer prices. The results are summarized in Table 4.2. In Ontario producer prices have stabilized by 79.7 % while in Minnesota price stability increased by 65.5 %. In Canada producer prices have been stabilized by 81.9 % and in the United States by only 60.5 %. All stability tests were significant at the .01 level.

Table 4.2

Test of Producer Price Stability Hypothesis (c)

Area	1961 to 1971	1975 to 1982	% change
Ontario	mean = 44.7 variance = 70.4 F ratio = 4.9	mean = 38.7 variance = 14.3 significance level = .01	79.7 %
Canada	mean = 37.4 variance = 72.9 F ratio = 5.5	mean = 39.9 variance = 13.2 significance level = .01	81.9 %
Minnesota	mean = 34.4 variance = 53.3 F ratio = 2.9	mean = 28.8 variance = 18.4 significance level = .01	65.5 %
USA	mean = 44.9 variance = 53.9 F ratio = 2.5	mean = 37.0 variance = 21.3 significance level = .01	60.5 %

(Source: Tables 1-4 of Appendix.)

The third hypothesis involving producers is (f), that supply management has increased the producers' share of the consumer dollar is summarized in Table 4.3. This hypothesis

could only be tested for the United States and Canada because a complete listing of retail prices for Ontario and Minnesota could not be found.

Table 4.3

Test of Producers' Share Hypothesis (f)

Area	1961 to 1971	1975 to 1981	% change
Canada	mean = 56.3 s.d. = 5.5 n = 132 significance level = .01	mean = 70.3 s.d. = 2.5 n = 84	19.9 %
USA	mean = 63.2 s.d. = 3.9 n = 132 significance level = .01	mean = 68.1 s.d. = 3.1 n = 84	7.2 %

(Source: Tables 1 & 5 and 3 & 6 of Appendix.)

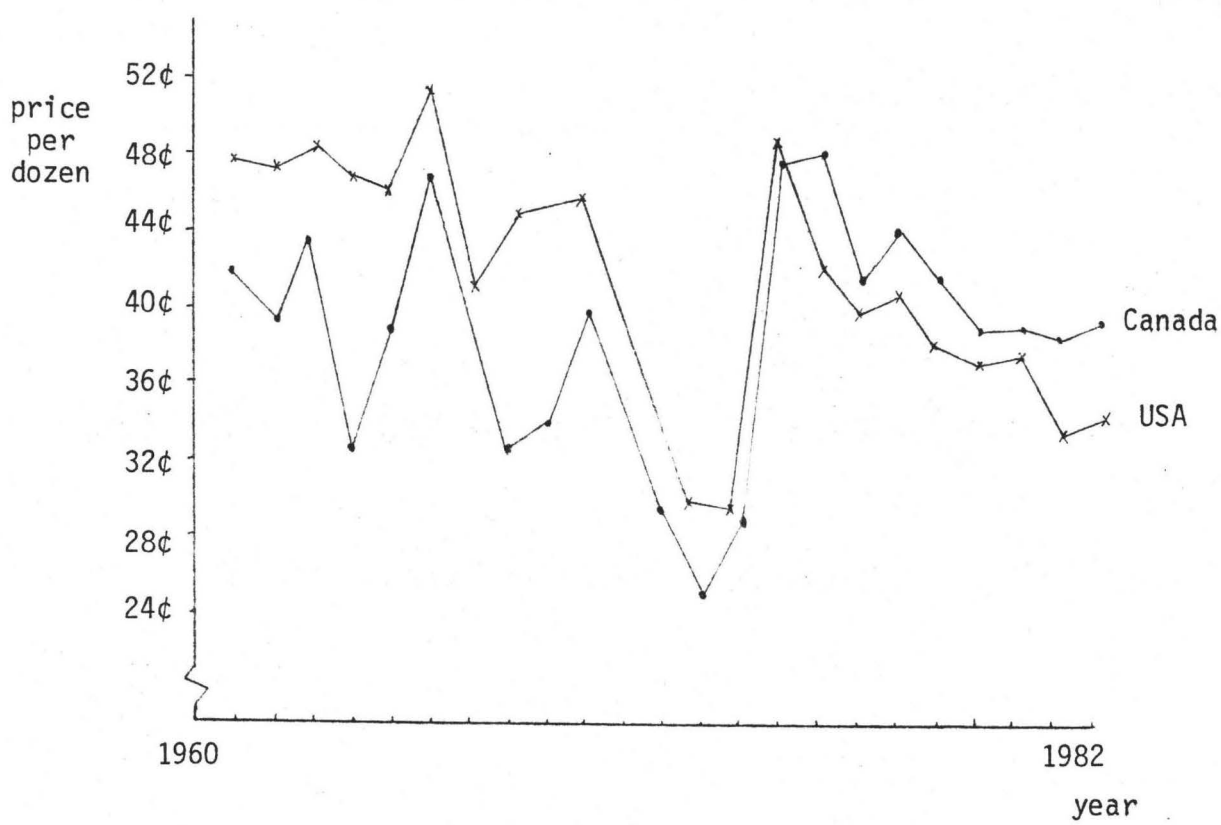
In Canada the producers' share of the consumer dollar has increased by 19.9 % during the specified period. In the United States the producers' share increased by 7.2 %. During the period 1961-71 Canada's producer share was significantly smaller than that in the United States (Canada - 56.3 % ; USA - 63.2 %). However for the period 1975-81 Canada's share had increased to 70.3 % while the United States' share was 68.1 %. In both cases the producers' bargaining power has increased but in Canada the increase is considerable and could be linked to the introduction of the marketing board.

Thus overall since CEMA was introduced several pronounced

changes have taken place. Producer prices have stabilized and the producers' share of the consumer dollar has increased. Producer prices have decreased but prices in Canada have not dropped as greatly as in the United States. Prices in Canada during 1961-73 were lower than in the United States but from 1974-81 prices in Canada increased to be greater than prices in the United States - see Figure 4.1. Producers have benefited from higher prices, increased share of the consumer dollar and price stability.

Figure 4.1

Producer Prices



(Source: Tables 1 and 3 of Appendix.)

4.2 Consumers

Three hypotheses pertain to the effect of CEMA on consumers. The results of hypothesis (b), that supply management boards have increased the level of consumer prices, are summarized in Table 4.4 below.

Table 4.4

Test of Consumer Prices

Area	1961 to 1971	1975 to 1981	% change
Canada	mean = 65.8 s.d. = 11.0 n = 132	mean = 56.8 s.d. = 4.2 n = 84	- 13.7 %
	significance level = .01		
USA	mean = 70.8 s.d. = 9.6 n = 132	mean = 54.3 s.d. = 6.0 n = 84	- 23.3 %
	significance level = .01		

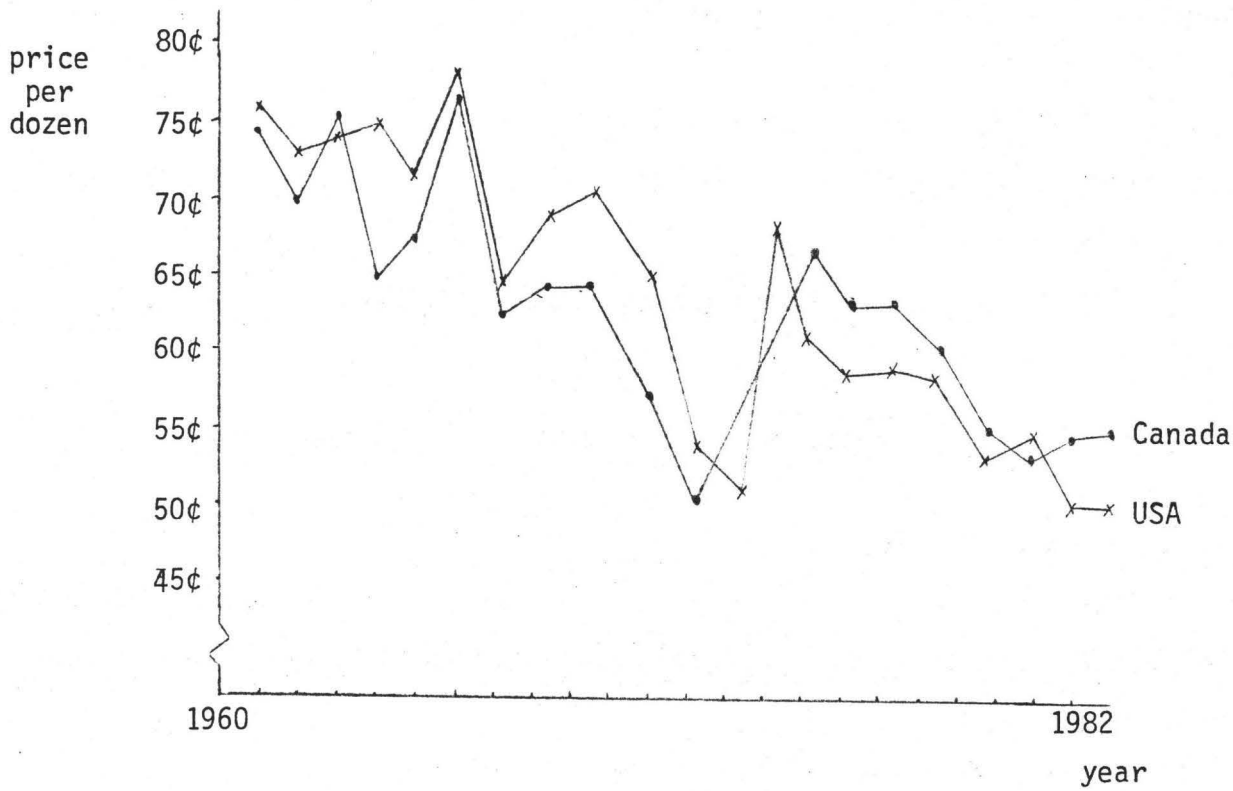
(Source: Tables 5 & 6 of Appendix.)

This particular hypothesis could only be tested for Canada and the United States because complete retail data were not available for Ontario and Minnesota. Canada's retail price has decreased by 13.7 % while in the United States retail prices have declined by 23.3 %. Canada's retail price for 1961-71 was lower than the price in the United States but for the period 1974-81 Canada's retail price was slightly greater than the United States price - see Figure 4.2. It would appear that

retail prices have decreased since CEMA but the reduction was not as great as in the United States where no marketing boards have been introduced.

Figure 4.2

Consumer Prices



(Source: Tables 5 and 6 of Appendix.)

Table 4.5 summarizes the results of hypothesis (d), that supply management boards have stabilized consumer prices. Canada's retail prices have stabilized by 81.3 % while in the United States retail prices stabilized by 60.3 % over the same period. Therefore Canada experiences greater price stability.

Table 4.5

Retail Price Stability

Area	1961 to 1971	1975 to 1981	% change
Canada	mean = 65.8 variance = 121.7 F ratio = 5.37	mean = 56.8 variance = 22.7 significance level = .01	+ 81.3 %
USA	mean = 70.8 variance = 92.7 F ratio = 2.5	mean = 54.3 variance = 36.8 significance level = .01	+ 60.3 %

(Source: Tables 5 and 6 of Appendix.)

Hypothesis (e), that supply management has increased the price differences between provinces, contains implications for both producers and consumers. Price differences between the provinces have decreased over the period 1964-82 (see Table 4.6 below).

Table 4.6

Price Differences Between Provinces

Area	1964 to 1971	1975 to 1982	% change
Canada	mean = 9.8 s.d. = 6.7 n = 56 significance level = .01	mean = 6.3 s.d. = 4.6 n = 56	35.7 %

(Source: Table 8 of Appendix.)

During this time period Ontario's prices decreased, Alberta, Saskatchewan and Manitoba prices increased while the other provinces' price levels remained unchanged. Overall equalized

prices across the country means a more equitable distribution of incomes amongst producers.

Therefore since CEMA began operations consumers have benefited from lower retail prices, however prices have not dropped as greatly in Canada in comparison to the United States. Equalized prices across the country and greater retail price stability have also been experienced during this period.

4.3 The Agricultural Industry

One of the three hypotheses that focus on the agricultural industry is (g), that the supply management price setting scheme has decreased the influences of supply and demand on price. The supply management price setting scheme has indeed reduced the influences of supply and demand in determining price. When supply and demand potentials were regressed against price for the seven provinces, (B.C., Alta., Sask., Man., Ont., Que., & N.S.) for the period 1962-71, the t-ratios for both supply and demand potentials were significant at the .025 level. The signs were also correct with demand being positively related to price and supply negatively related. The F statistic was significant at the .01 level (see Table 4.7 below). For the period 1975-81 the t-ratios were not significant although the signs were correct. The F statistic was not significant at the .05 level. Therefore since the introduction of CEMA, the role of supply and demand in determining price has decreased.

Table 4.7

The Role of Supply and Demand in Determining Price

Area	1962 to 1971	1975 to 1982	Tabulated F
Canada	F = 4.87 df = 2, 67	F = 2.25 df = 2, 46	$F_{.01}$ = 4.89 $F_{.05}$ = 3.23

(Source: Tables 8, 9 and 10 of Appendix.)

The other two hypotheses concerning the agricultural industry are that supply management has increased the amount of imports (h), and decreased the level of exports (i). During the period 1960-82 the level of imports coming into Canada has not changed significantly. On the other hand Canada has increased its level of exports slightly over the same period (see Table 4.8 below).

Table 4.8

Import and Export Levels of Canada

	1960 to 1971	1975 to 1982
Imports	mean = 6181376 s.d. = 3590222 n = 12 not significant at	mean = 6761416 s.d. = 2523021 n = 8 the .05 level
Exports	mean = 2319274 s.d. = 2820460 n = 12 significance level = .05	mean = 5836692 s.d. = 3977843 n = 8

(Source: Table 7 of Appendix.)

Therefore it would appear that since the introduction of CEMA Canada's egg industry has remained competitive which has enabled it to capture a greater share of the export market.

4.4 Summary of Results

According to the hypotheses and the methods of analysis, dramatic changes have occurred since CEMA was introduced. Producer and retail price levels have decreased although not to the extent as in the United States. Both producer and retail prices have stabilized and the producers' share of the consumer dollar has surpassed the level in the United States. Prices have equalized across the country and the role of supply and demand in influencing price has decreased. Internationally Canada has remained competitive by increasing its exports while maintaining import levels. Chapter 5 will relate the results of the hypotheses to the actions of the Canadian Egg Marketing Agency.

Chapter 5

Conclusions on Marketing Boards

The operations of the Canadian Egg Marketing Agency are geographically related and significant. CEMA controls the production and marketing of eggs in Canada. The geographical implications of its operations are revealed when one considers that (1) CEMA has allocated production among the ten provinces according to their particular market share in 1971-72 ; (2) each province sets its own minimum and maximum size requirements which determines the efficiency of production ; (3) production is fixed in space, because the only way to get into the business is to purchase a farm already in operation ; and (4) the cost of production pricing formula is based on geographical differences. The three major input costs, feed, labour and pullet, are all determined individually for each province. In this way egg production and marketing is restricted at three geographical levels: the individual farm, the province and the country.

Since its introduction the Canadian Egg Marketing Agency has elicited two conflicting responses - either all-out praise or total condemnation. The primary objective of this thesis was to investigate the effect of CEMA and its provincial boards on producers, consumers and the agricultural industry. From this an accurate evaluation will be made of the role

of the Agency. Based on this objective nine hypotheses were formulated. Three hypotheses dealt with CEMA's effect on producers: supply management boards have (a) increased the level of producer prices; (b) stabilized producer prices and (c) increased the producers' share of the consumer dollar. Three hypotheses evaluated CEMA's effect on consumers: supply management boards have (d) increased the level of consumer prices, (e) stabilized consumer prices and (f) increased the price differences between provinces. And three hypotheses determined how the egg and agricultural industries have been affected by CEMA: supply management boards have (g) increased the amount of imports, (h) decreased the level of exports and (i) the price setting scheme has decreased the market influences of supply and demand on price. These hypotheses were tested in two ways. One method was the before and after technique which involved the comparison of two periods 1961-71 and 1975-82. Changes have occurred since CEMA was introduced; producer and retail price levels have decreased, producer and retail prices have stabilized, prices have equalized across the country and the producers' share of the consumer dollar has increased. Furthermore, imports have remained at the same level while exports have increased and the influences of supply and demand have decreased in determining price. In order to control for changes in the market structure since the introduction of CEMA the hypotheses

were also tested and compared to the United States. In this comparison, in Canada producer and retail prices have not decreased as greatly, producer and retail prices have experienced greater stability and the producers' share of the consumer dollar has increased significantly. The only difference between the two time periods and between the two countries which can account for these results is the introduction of the Canadian Egg Marketing Agency. Therefore these changes that have occurred are the result of CEMA's actions. Thus producers have benefited from CEMA's operations through greater price stability, a larger share of the consumer dollar and a higher price level than would have been achieved without CEMA. Also there is a more equitable distribution of income amongst producers across the country. CEMA has had a positive effect on consumers by stabilizing prices and equalizing prices across the country. Negatively however, a redistribution process is taking place whereby more of the consumers' income is allotted to producers. In this way there is a trade-off effect for consumers. Consumers benefit from stable and equitable prices, an ensured supply of product and a healthy agricultural industry but must pay for these benefits through higher prices. Finally, as far as the agricultural industry is concerned Canada has remained internationally competitive and has increased its export opportunities. In conclusion, based on this analysis, the operations of the Canadian Egg

Marketing Agency and its provincial boards have benefited producers and the agricultural industry. The benefits that acrue to consumers must be paid for through higher prices. Therefore CEMA has not had a positive effect on consumers.

APPENDIX

Table A.1

Canada

Producer Price for eggs - cents per dozen in constant 1971 Canadian dollars.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1961	34.4	37.7	39.3	35.8	36.8	39.8	46.7	45.1	49.5	51.1	51.0	37.2
1962	34.8	39.1	40.1	38.4	31.9	31.1	32.3	45.1	43.7	48.2	51.2	40.4
1963	35.1	42.9	46.4	44.6	39.1	38.6	43.0	44.6	54.3	53.5	44.2	40.3
1964	36.3	36.4	36.1	32.7	27.7	28.1	30.7	38.0	38.7	32.4	32.1	31.9
1965	27.0	27.5	31.6	34.2	33.9	32.5	34.0	41.5	45.6	56.8	55.8	55.2
1966	38.3	40.7	45.0	49.6	43.7	38.4	41.7	52.9	53.9	54.4	55.2	53.8
1967	40.8	34.5	34.6	34.6	30.5	27.5	27.5	32.8	32.7	33.8	32.7	33.5
1968	28.9	28.8	31.0	31.8	29.6	28.9	31.4	37.1	44.7	44.6	43.4	46.9
1969	43.7	38.4	39.1	40.8	37.0	34.1	35.0	34.5	38.5	42.5	48.6	50.3
1970	42.8	38.1	33.6	29.9	29.8	26.7	27.4	26.9	27.6	27.6	27.6	27.1
1971	24.8	23.8	23.3	26.6	26.2	22.2	22.1	24.4	25.5	25.1	28.8	32.3
1972	26.3	22.1	24.5	26.4	26.2	25.4	30.3	32.8	34.7	32.8	34.9	41.2
1973	40.2	37.9	40.3	42.3	42.5	48.0	48.0	53.5	54.5	54.8	55.4	57.7
1974	49.8	49.4	50.9	50.2	47.8	47.1	46.2	46.2	46.7	48.2	46.8	49.2
1975	42.2	39.6	40.0	37.1	34.5	36.3	40.2	42.9	45.2	46.6	47.6	47.7
1976	44.1	44.3	44.3	44.3	44.0	43.9	44.4	45.0	44.7	45.2	45.4	44.8
1977	41.4	42.1	42.4	42.4	42.7	43.0	42.2	40.9	39.6	39.6	39.5	39.6
1978	36.8	37.2	37.2	37.6	38.3	38.5	38.5	38.4	38.2	38.4	38.4	38.9
1979	36.4	36.7	37.1	37.3	37.3	37.6	38.3	38.8	39.0	39.3	39.6	39.3
1980	36.3	37.0	36.7	36.7	36.4	36.0	36.4	36.8	37.8	39.1	39.9	40.8
1981	37.4	37.9	38.0	38.2	38.2	38.2	38.6	39.1	38.8	38.7	38.2	37.4
1982	33.5	33.3	33.2	33.0	32.8	33.0	33.4	33.9	34.2	33.9	33.1	32.5

Source: Canadian Department of Agriculture, Poultry Market Review - monthly edition, 1961-1982.

Table A.2
Ontario Monthly Average Producer Price for eggs - cents per dozen in constant 1971 Canadian dollars

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1961	41.7	44.9	45.0	43.0	43.7	45.8	51.7	50.7	58.5	59.5	61.4	49.7
1962	42.3	43.5	45.6	46.2	41.4	40.8	40.4	53.4	52.6	55.9	58.6	49.7
1963	43.8	47.8	52.6	52.1	46.6	47.4	49.4	51.3	58.7	60.9	56.7	54.7
1964	45.5	46.8	45.0	44.9	38.8	37.9	37.7	45.8	48.9	41.7	41.9	41.0
1965	33.4	33.4	36.6	38.9	39.6	39.3	38.5	46.6	47.3	58.0	60.5	62.6
1966	47.7	47.4	48.5	53.9	51.9	47.9	49.7	60.6	61.1	62.9	62.8	62.5
1967	52.3	45.2	42.9	44.3	41.3	39.0	37.5	42.8	42.1	43.2	42.0	42.1
1968	38.8	37.3	38.0	38.7	37.2	37.2	37.3	41.2	46.7	49.4	48.4	48.8
1969	48.6	44.5	43.6	45.5	44.1	42.3	43.2	43.3	45.9	47.8	50.8	54.6
1970	50.2	45.7	42.9	40.3	39.4	43.3	36.3	36.8	36.7	36.3	34.8	33.7
1971	32.8	31.0	30.1	28.6	29.9	27.3	27.0	29.0	31.5	30.1	33.4	33.2
1972	28.5	30.4	29.7	28.3	34.3	28.1	33.1	35.3	44.2	38.9	38.4	45.8
1973	43.5	46.2	43.1	42.4	43.4	45.5	48.6	58.8	59.8	59.8	58.2	60.7
1974	50.0	51.1	51.2	52.4	50.1	48.8	48.4	48.7	49.0	50.3	48.8	52.0
1975	45.0	44.0	46.3	35.5	36.1	34.2	37.3	41.2	44.0	46.3	47.6	46.9
1976	43.9	44.1	43.9	43.9	43.7	43.6	43.2	44.5	44.1	44.4	45.3	44.5
1977	40.4	41.0	41.7	41.9	41.6	41.2	41.7	40.3	37.8	38.9	38.7	40.4
1978	36.3	36.7	35.8	37.4	38.4	37.8	37.7	38.1	37.6	37.8	38.0	38.6
1979	35.8	36.6	36.9	37.2	37.0	37.4	38.5	38.4	38.6	39.2	39.0	39.0
1980	36.6	36.3	36.0	36.4	35.8	35.9	36.5	36.7	37.5	39.2	39.4	40.7
1981	37.0	37.1	37.2	37.8	37.5	37.7	37.3	38.6	38.1	37.5	37.5	36.6
1982	32.8	32.7	32.7	32.8	32.8	32.8	33.1	33.1	33.5	33.0	32.4	31.6

Source: Canadian Department of Agriculture, Poultry Market Review - monthly edition, 1961-1982.

Table A.3

USA Average Monthly Producer Price for eggs - cents per dozen in constant 1971 Canadian dollars.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1961	52.4	53.5	49.8	45.4	43.5	41.8	46.3	47.5	48.1	50.2	48.9	47.8
1962	50.2	51.3	46.8	44.7	41.0	40.3	42.0	46.4	51.6	51.5	51.9	51.6
1963	52.5	53.7	51.9	46.1	42.1	42.3	44.4	46.9	51.5	50.6	51.3	50.3
1964	53.9	49.8	47.8	44.2	42.0	42.8	44.5	48.5	48.8	48.4	47.6	46.0
1965	43.0	42.6	42.2	45.1	40.4	41.4	43.3	46.9	49.6	50.7	52.1	56.4
1966	50.5	55.7	55.8	51.4	44.5	44.1	47.4	52.9	56.9	55.0	55.7	54.6
1967	48.5	42.0	44.9	38.8	37.5	35.5	38.8	38.7	41.1	37.9	38.5	45.0
1968	42.8	40.7	41.2	39.0	36.7	41.0	44.2	46.1	57.8	50.8	52.6	56.8
1969	50.7	45.5	46.6	43.0	35.6	36.9	44.2	41.9	47.4	47.2	57.5	63.8
1970	57.5	51.1	45.5	37.5	32.3	33.1	39.1	35.8	41.6	34.9	38.5	40.9
1971	35.4	32.5	32.0	31.9	29.3	28.3	28.5	31.3	30.7	28.8	30.0	34.1
1972	28.5	27.8	30.3	26.4	26.1	26.4	29.1	28.4	32.3	29.4	35.2	41.1
1973	45.2	38.7	42.4	42.4	41.1	45.6	46.9	62.1	57.8	53.6	53.6	57.7
1974	53.1	51.1	45.1	40.2	33.5	31.4	34.4	37.6	43.8	44.2	44.2	47.0
1975	43.4	41.1	41.1	36.0	35.7	34.6	35.3	38.6	42.4	40.2	44.2	48.1
1976	42.5	40.7	37.2	36.6	38.0	37.0	38.3	41.7	42.7	41.9	45.5	48.3
1977	45.8	46.6	41.4	38.9	34.6	32.9	35.7	36.3	37.0	33.3	36.1	37.4
1978	34.5	38.4	38.5	36.3	34.5	30.7	34.8	37.0	38.2	37.0	40.7	43.2
1979	39.8	39.6	42.3	39.2	36.7	36.3	35.0	34.5	35.8	34.7	37.6	41.5
1980	32.5	29.3	31.5	29.8	27.0	27.9	29.1	32.9	35.2	33.6	37.5	41.4
1981	34.3	33.1	32.2	34.1	29.8	30.2	30.9	31.4	34.2	33.8	36.8	34.7

Source: United States Department of Agriculture, Poultry and Egg Situation, 1960-1981.

Table A.4

Minnesota Average Monthly Producer Price for eggs - cents per dozen in constant 1971 Canadian dollars.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1961	38.0	42.1	40.7	35.3	35.3	32.6	36.7	39.4	35.3	38.0	36.7	34.0
1962	38.3	39.7	35.5	35.5	29.8	31.2	31.9	37.6	41.8	39.7	41.1	39.0
1963	38.9	41.6	41.7	32.4	30.4	31.1	31.8	36.8	40.9	37.9	37.8	36.2
1964	42.3	34.9	34.9	32.1	31.2	33.5	35.6	41.2	38.4	35.6	35.6	31.4
1965	28.8	30.1	30.1	35.6	28.8	30.1	32.9	36.3	39.7	39.7	40.4	47.3
1966	39.3	46.6	47.3	43.3	34.0	33.3	37.3	43.3	49.3	45.3	44.0	42.6
1967	37.6	29.2	33.7	28.5	25.9	25.3	28.5	27.2	29.2	25.3	27.3	31.1
1968	29.0	29.0	29.7	31.0	24.9	31.0	35.0	36.4	51.2	37.7	42.5	47.2
1969	42.4	37.1	36.0	34.8	24.8	27.7	34.8	33.0	39.5	37.1	50.1	53.6
1970	49.1	42.6	36.7	27.5	23.7	24.8	29.1	25.9	35.1	27.5	28.6	28.6
1971	26.5	22.5	22.0	22.5	20.5	19.0	20.0	24.0	22.5	18.5	20.5	23.5
1972	18.1	17.1	20.0	17.1	16.6	18.6	19.5	20.5	22.4	19.5	24.7	27.6
1973	35.3	32.5	33.4	35.3	35.7	39.3	41.6	60.6	52.9	48.4	44.3	49.7
1974	45.0	41.8	39.5	35.9	30.3	25.9	26.7	31.9	36.7	35.1	33.9	37.0
1975	36.5	30.3	28.1	26.5	27.2	23.9	25.4	28.7	33.8	32.1	32.7	35.1
1976	30.8	30.0	28.4	27.4	28.5	27.6	27.6	29.1	33.3	33.6	36.8	38.9
1977	34.5	36.9	35.5	33.9	28.3	24.7	25.5	29.1	29.9	26.4	29.4	30.5
1978	26.7	30.2	32.5	30.2	26.9	26.7	27.9	28.4	29.8	29.6	31.9	38.3
1979	33.6	32.3	35.9	34.2	32.7	30.6	29.5	28.8	30.9	28.0	31.3	34.8
1980	27.2	21.9	25.3	24.6	20.1	21.4	22.2	27.0	28.0	26.6	31.2	37.6
1981	28.5	26.3	26.0	27.5	22.5	24.3	24.9	25.6	28.3	29.0	31.6	26.2
1982	26.1	27.6	28.2	26.7	22.3	21.8	22.5	20.1	23.1	23.9	25.1	21.0

Source: Minnesota Department of Agriculture.

Table A.5
Canada Average Monthly Retail Prices for eggs - cents per dozen in constant 1971 Canadian dollars.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1961	71.4	66.0	69.7	65.8	55.9	68.1	73.6	79.3	87.3	88.0	90.9	75.7
1962	64.2	65.6	69.5	68.2	63.9	59.4	63.7	73.7	75.2	83.4	81.0	74.9
1963	68.8	64.6	76.3	73.2	68.8	67.8	69.2	79.4	85.8	91.2	85.0	77.1
1964	70.6	66.0	65.3	62.3	59.9	55.2	59.0	69.2	75.2	63.7	67.6	60.1
1965	57.3	53.8	59.5	60.5	61.6	59.9	60.9	68.6	70.4	82.1	86.6	88.2
1966	70.4	66.7	69.1	76.3	75.7	68.6	66.9	81.4	87.4	86.7	85.6	86.2
1967	75.7	63.2	60.3	63.1	59.3	55.8	54.5	63.7	63.2	65.3	63.2	62.5
1968	58.9	55.0	54.1	57.2	56.9	55.0	54.6	62.2	68.8	75.0	70.6	73.7
1969	71.5	64.9	59.8	64.3	64.1	59.9	58.4	62.2	62.6	69.6	71.9	78.1
1970	70.7	66.2	58.2	57.9	53.6	53.4	52.5	56.1	55.9	55.4	52.5	51.7
1971	49.7	47.9	45.3	46.4	50.7	46.5	46.2	47.0	51.6	50.9	47.6	45.2
1972	*	*	*	*	*	*	*	*	*	*	*	*
1973	*	*	*	*	*	*	*	*	*	*	*	*
1974	68.2	68.6	70.3	69.9	67.8	67.9	68.1	68.6	68.5	69.7	68.7	70.2
1975	61.2	58.8	58.8	57.0	58.0	58.5	61.8	65.1	65.9	66.5	66.9	66.4
1976	61.8	60.5	61.5	61.5	61.5	61.2	62.0	63.5	62.3	63.6	63.3	62.7
1977	58.2	58.7	58.4	58.6	59.0	60.1	59.9	58.8	57.7	57.5	57.3	57.2
1978	52.8	52.8	52.9	53.5	54.8	55.3	55.9	55.7	54.8	55.3	54.9	55.8
1979	50.1	50.9	51.6	51.2	52.2	52.8	53.8	54.7	54.9	55.6	55.6	48.2
1980	51.2	52.3	52.3	52.4	53.0	52.6	53.0	53.9	54.1	55.5	56.8	57.1
1981	52.1	52.7	53.4	53.3	53.8	54.2	54.5	55.7	55.3	54.9	55.3	54.2
1982	48.0	48.3	48.5	47.9	48.3	48.4	49.3	49.9	49.9	50.1	49.4	48.5

* values which were not available

Source: Canadian Department of Agriculture, Poultry Market Review -monthly edition, 1961-1982.

Table A.6

USA Average Monthly Retail Price for eggs - cents per dozen in constant 1971 Canadian dollars.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1961	84.3	80.7	71.3	70.6	68.2	67.2	73.2	71.3	75.6	78.9	74.7	90.0
1962	78.4	79.5	74.7	70.2	67.2	63.2	65.8	68.3	78.6	79.5	76.9	77.0
1963	81.2	79.6	78.5	75.6	67.0	65.2	68.7	69.9	78.5	78.9	75.6	78.9
1964	84.0	80.4	73.9	71.8	67.5	66.0	69.6	74.2	83.0	79.4	78.0	75.1
1965	71.2	67.0	64.9	69.0	68.1	65.2	67.8	70.4	76.7	80.6	79.9	85.4
1966	79.3	82.3	81.9	79.9	74.6	67.3	70.9	83.4	84.3	87.6	81.4	84.4
1967	78.2	67.2	68.0	63.8	60.4	57.6	58.2	64.3	67.6	69.1	66.2	56.8
1968	63.8	66.7	64.4	67.1	61.2	62.7	66.5	74.1	81.8	86.7	76.7	83.8
1969	78.3	75.9	70.9	71.7	63.5	60.5	62.5	74.7	74.3	74.7	79.9	91.8
1970	85.5	84.2	73.2	61.8	58.4	54.8	62.8	61.6	66.9	63.4	59.1	63.0
1971	60.6	55.1	54.3	53.6	51.9	48.3	51.2	53.4	49.9	52.0	50.3	53.8
1972	50.0	47.0	49.8	47.6	47.1	43.6	47.2	48.6	52.8	53.0	52.6	59.3
1973	66.8	62.2	60.0	61.2	61.2	64.6	66.7	87.5	83.1	79.0	74.5	80.5
1974	74.1	75.3	68.2	62.2	51.7	49.8	49.7	56.7	63.0	66.9	64.6	67.0
1975	63.9	63.7	56.8	58.6	53.6	50.8	53.6	56.0	60.6	59.0	59.3	65.3
1976	61.9	62.6	54.3	53.9	52.3	51.7	55.6	59.6	61.9	60.9	60.7	65.7
1977	69.4	72.8	62.7	57.2	53.1	48.4	57.0	57.7	57.5	53.6	54.6	51.0
1978	51.4	54.5	56.1	54.3	49.4	46.2	53.9	56.9	56.2	53.7	56.2	60.4
1979	57.3	57.1	58.7	56.3	51.7	53.5	53.0	53.5	52.9	51.5	54.8	58.3
1980	50.4	45.1	46.5	45.9	40.5	42.6	49.2	49.0	50.6	49.3	52.2	58.0
1981	49.9	49.1	46.7	48.1	44.5	45.1	46.0	46.2	49.2	48.5	50.6	51.8

Source: United States Department of Agriculture, Poultry and Egg Situation, 1960-81.

Table A.7

	Imports of Shell Eggs to Canada (doz.)	Exports of Shell Eggs to Canada (doz.)
1960	1,118,286	8,220,814
1961	3,855,406	5,525,618
1962	2,878,173	902,056
1963	8,106,738	990,398
1964	1,898,017	1,614,069
1965	4,348,956	348,680
1966	10,601,821	300,669
1967	12,300,033	118,969
1968	8,671,929	160,291
1969	9,015,356	402,653
1970	6,858,113	6,408,357
1971	4,523,678	2,838,715
1972	6,909,268	1,061,766
1973	1,246,853	11,013,698
1974	6,175,815	13,408,015
1975	5,816,309	8,646,155
1976	8,209,000	849,910
1977	3,767,319	6,199,514
1978	6,433,244	8,001,567
1979	11,886,910	107,500
1980	6,152,779	7,671,026
1981	4,426,739	11,527,680
1982	7,399,025	3,690,187

Source: Dominion Bureau of Statistics

Table A.8
Average Annual Producer Price for eggs - cents per dozen in constant 1971 Canadian dollars.

Year	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.S.
1964	39.8	32.6	32.7	30.9	39.4	39.8	38.9
1965	45.2	43.0	39.1	38.0	43.5	44.1	45.1
1966	47.8	45.0	46.0	45.7	54.4	54.4	53.4
1967	34.9	33.8	33.9	31.1	38.6	41.0	42.0
1968	43.2	38.8	35.4	32.8	40.0	42.1	41.2
1969	47.0	46.1	43.3	38.9	45.9	47.4	44.2
1970	42.0	39.2	33.0	28.1	32.5	40.3	37.1
1971	41.0	37.9	29.1	22.0	25.3	33.7	29.7
1972	43.8	41.4	35.5	29.0	30.7	33.0	33.7
1973	53.8	52.7	50.2	48.9	51.8	52.9	51.2
1974	60.0	57.2	53.8	47.7	49.4	51.2	53.6
1975	51.0	51.0	47.0	41.3	43.9	45.1	52.6
1976	51.2	49.9	49.7	44.5	47.2	47.4	50.8
1977	47.7	46.5	45.8	41.5	44.0	45.8	47.1
1978	43.7	42.6	42.0	38.0	40.6	42.0	43.5
1979	43.2	42.2	41.6	38.0	40.6	41.5	43.2
1980	42.7	41.7	41.3	37.9	40.3	40.2	42.7
1981	43.0	42.2	41.7	39.2	40.9	41.7	43.2
1982	37.4	36.7	36.7	34.4	35.5	36.5	37.8

(Source: Canadian Department of Agriculture, Poultry Market Review - monthly edition, 1964-82.

Table A.9

Annual supply of eggs for the provinces.

Year	N.S.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1962	17,178	70,844	182,384	36,998	30,351	39,370	43,406
1963	19,305	66,182	170,032	37,560	29,142	36,938	45,309
1964	18,278	71,520	177,023	42,878	28,089	38,574	47,752
1965	18,450	77,013	170,701	42,584	25,379	36,654	48,881
1966	18,854	71,368	159,267	40,257	22,562	37,432	51,135
1967	18,757	78,962	169,324	48,645	19,759	39,309	54,814
1968	20,340	78,249	176,331	50,967	20,972	39,189	56,050
1969	20,596	76,658	179,589	52,642	20,856	40,438	58,286
1970	19,918	78,813	185,206	60,301	24,839	43,482	58,334
1971	17,441	80,026	193,985	57,451	26,335	43,896	59,045
1972	17,373	64,490	191,091	52,068	23,931	41,315	57,324
1973	18,443	58,897	190,728	53,622	21,914	41,437	56,873
1974	19,297	64,613	189,323	50,498	21,019	40,769	54,942
1975	17,756	67,986	175,794	49,313	21,557	42,376	53,232
1976	16,134	75,035	165,506	48,871	18,635	39,964	55,096
1977	16,760	69,706	167,075	48,349	19,788	39,187	56,443
1978	16,330	73,800	180,381	49,377	20,851	41,646	58,290
1979	16,801	74,838	180,204	48,943	20,562	44,097	58,653
1980	18,622	79,171	190,029	51,214	21,136	46,800	62,693
1981	18,759	84,472	188,397	51,618	22,989	46,784	62,242

Source: Canadian Department of Agriculture, Poultry Market Review - monthly edition, 1962-81.

Table A.10

Annual demand multiplied by per capita consumption for the provinces.

Year	N.S.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1962	910,836	6,594,514	7,848,502	1,143,396	1,144,935	1,669,913	2,063,115
1963	874,827	6,423,996	7,669,277	1,102,302	1,101,136	1,626,537	2,028,894
1964	879,298	6,546,566	7,838,875	1,112,025	1,108,224	1,657,343	2,086,366
1965	875,550	6,607,098	7,933,975	1,111,313	1,104,936	1,672,517	2,123,896
1966	846,929	6,475,813	7,797,696	1,078,844	1,070,194	1,639,107	2,098,924
1967	883,476	6,754,147	8,235,930	1,121,517	1,099,995	1,733,230	2,242,639
1968	895,307	6,843,485	8,447,561	1,132,669	1,098,408	1,779,738	2,325,603
1969	919,928	7,030,561	8,782,230	1,159,912	1,112,135	1,852,215	2,443,019
1970	927,735	7,089,119	8,958,256	1,165,884	1,105,232	1,891,268	2,516,764
1971	918,298	7,015,922	8,965,910	1,150,255	1,078,085	1,894,739	2,542,756
1972	892,682	6,798,719	8,754,932	1,114,504	1,036,491	1,870,661	2,510,430
1973	853,180	6,444,340	8,404,175	1,061,754	979,832	1,814,842	2,435,512
1974	843,815	6,387,087	8,347,460	1,046,767	958,608	1,821,002	2,443,850
1975	829,618	6,260,793	8,241,289	1,025,945	932,387	1,815,633	2,436,552
1976	864,793	6,506,989	8,625,753	1,066,162	961,599	1,918,388	2,574,438
1977	845,990	6,378,110	8,473,259	1,039,215	945,979	1,949,416	2,563,527
1978	836,119	6,316,028	8,408,722	1,023,400	940,119	1,995,912	2,577,752
1979	867,432	6,565,240	8,758,911	1,057,932	980,649	2,141,844	2,719,663
1980	862,109	6,537,450	8,739,929	1,047,705	979,875	2,198,821	2,747,670
1981	852,073	6,473,586	8,672,239	1,031,849	973,604	2,249,952	2,759,464

Source: Canadian Department of Agriculture, Poultry Market Review - monthly edition, 1962-81.
and The Canada Year Book, 1963-83.

Table A.11

Year	Consumer Price Index[1] Canada 1971 = 100	Consumer Price Index[2] U.S.A. 1967 = 100	Price of U.S.[3] dollar in Canada
1961	74.9	1.116	1.013
1962	75.8	1.104	1.069
1963	77.2	1.091	1.079
1964	78.6	1.076	1.079
1965	80.5	1.058	1.078
1966	83.5	1.029	1.077
1967	86.5	1.000	1.079
1968	90.0	.960	1.077
1969	94.1	.911	1.077
1970	97.2	.860	1.044
1971	100.0	.824	1.010
1972	104.8	.799	.991
1973	112.8	.752	1.000
1974	125.0	.678	.978
1975	138.5	.621	1.017
1976	148.9	.587	.986
1977	160.8	.551	1.063
1978	175.1	.512	1.141
1979	191.2	.461	1.171
1980	210.6	.406	1.169
1981	236.9	.367	1.199
1982	262.5	.348	1.234

1. (Source: Department of Finance, 1983. Economic Review.)

2. (Source: United States Department of Commerce, 1983. Statistical Abstract of the U.S. National Data Book and Guide to Sources.

3. (Source: Department of Finance, 1983 Economic Review.)

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