# AGRICULTURAL CREDIT UTILIZATION AND PROJECTED NEEDS IN CANADA



A Research Paper

Submitted to the Michigan State University

in Partial Fulfillment of the Requirements

for the Degree of

Master of Science

in the

Department of Agricultural Economics

by

André Charland

October, 1975

# ACKNOWLEDGEMENTS

Many people have assisted in the development of this study, however the author wishes to recognize the special contribution of the following:

Professor W.H. Vincent, major advisor, for his most patient guidance, contribution and stimulating influence, both to the study and the author's graduate program.

The Farm Credit Corporation for providing financial support. Also the individual members of their staff, with whom the author contacted during employment, for providing a basic knowledge of agricultural credit.

My wife, Madeleine, for her continued moral support and confidence throughout this project.

To these people I am most sincerely grateful.

. . . /ii

TABLE OF CONTENTS



. . . /iii

TABLE OF CONTENTS (cont'd)

# CHAPTER I

# INTRODUCTION

## 1-1 The Historical Situation

P.M. Raup characterized very well the conditions under which settlement took place in North America when he wrote "The right to land, in that day, was the right to a job", (Raup, 1972, p. 5). In fact, early in the twentieth century agriculture could be described more as a way of life than as a way to earn a living for a family (Quebec Government, 1967, p. 9). The principal objective of production was to produce what the family needed and only the surplus was sold. The inputs purchased for the family and the farm were kept to a bare minimum.

The technological and economic development at the beginning of the century started to disrupt that pattern but the real revolution took place after the Second World War. During the past 20 years, the pace of change in agriculture accelerated (Ackerman, 1966, p. vii) and this trend will probably continue to accelerate during the seventies (Daly and all, 1972, p. 315). One of the results of this revolution is a tremendous need for capital which cannot be generated internally by the farm business.

Therefore, farmers have to rely more and more on credit. In Canada, the principle provider of long-term funds for the farmer is a crown agency, the Farm Credit Corporation.

The important changes we saw in the past years are not heading toward a stop or a pause. On the contrary, the acceleration of the last years seem to continue. Consequently, we could forecast an increase in borrowing capital by 1981 because it will be more difficult for a family to generate the capital needed to finance a farm enterprise. This assumes that the family farm will still be the predominant type of farm.

## 1-2 The Objective of the Study

The objective of this study is to forecast the need for capital in 1981 and to forecast the size of the loan that the F.C.C. should make if it wants to play the same role in the financing of Canadian Agriculture as it played during the past years.

This topic is very important for an organization like the F.C.C. Given that the F.C.C. is a crown agency and responsible to a political body (Canadian Government), the adjustment to the needs of

the clientele is not easily accomplished. Therefore, it is of prime importance to have an understanding of what is needed if the demand is to be met.

The objectives will be met by going through the following steps: First, the F.C.C. will be described in terms of past policies and procedures for the purpose of understanding contributions and consequences to the farming sector. Next, a forecast of the capital needs of the farming sector in 1981 will be made with a look at the implications of this forecast for the F.C.C. It should be note that because the same forces appear to be working in both Canada and U.S.A., it is deemed appropriate to base some of the analysis on U.S. experience.

# CHAPTER II

## THE FARM CREDIT CORPORATION

### 2-1 Legal Status

The Farm Credit Corporation (F.C.C.) is a Crown agency established by the Farm Credit Act of 1959 as a successor to the Canadian Farm Loan Board. Under that Act, "its primary objective is to provide long-term mortgage credit under suitable terms and conditions to assist Canadian farmers to organize viable family farm businesses and to promote the development of a sound and competitive farming industry". (F.C.C., 1974, p.1) In addition, the F.C.C. administers the Farm Syndicates Credit Act (1964) and the "Land Transfer Plan (1972)". However, this study will be concerned only with the operations under the Farm Credit Act.

The F.C.C. is a national organization. The Head Office is located in Ottawa, within the country there are seven Branch Offices, one for each province except for the four Maritime provinces which constitute one Branch Office. Each Branch Office is divided into districts and each district into fields. The field staff consists of about 250 credit advisors located in 118 offices across the country. In addition, there is a staff of about 170 technical workers and 280 clerical workers located at the Head Office and the Branch Offices.

. . . /5

2-2 Financing

The financing of the F.C.C. is done in the following ways: The government of Canada provides the F.C.C. an amount of money which constitutes the capital of the Corporation. On March 31, 1975, this capital was $63,600,000. The balance of the monies needed for the purpose of lending is borrowed from the Minister of Finance at the current interest rate.

Operating losses, which were $6,561,505. for the fiscal year 1973-74, are recovered from the Government of Canada through a grant. These operating losses are partly due to the fact that the interest rate paid on the money borrowed is only slightly lower than the interest received for the money loaned. To be specific, the average rate paid to the Minister of Finance in 1974-75 was 6.35% while the average interest rate received from the farmers was 6.62%. However, the operating costs are about 0.7% of the yearly average principal amount outstanding. This problem is a consequence of the 5% statutory interest rate in effect before November 1968 and the political decision to keep the interest rate below what it should be. According to the regulation, the interest rate should be adjusted every six months at

one per cent above the yield on Government of Canada Bonds due to mature in 5 to 10 years. However, the cabinet can overthrow this regulation by an "order in council" each time the interest rate adjustment is made.

## 2-3 F.C.C. Procedures

Every Canadian or landed immigrant who has reached the legal age and who is principally occupied in farming, or who expects to be principally occupied in farming in the next five years (must be less than 35 years of age) could be eligible for a loan. Also eligible are farming corporations and co-operative farm associations.

As implied in the above statement, the F.C.C. does not pay attention to part-time farming except for those young persons who intend to farm on a full-time basis in the next five years after the loan.

As a matter of policy, the prospective borrower must demonstrate the need for a loan. In other words, if he has large savings or investments outside his farm, he has to use it before a loan could be granted. In addition, if the size of the farm is such that another source of financing could be easily obtained, a loan could be declined.

As stated in the lending policy manual, "the intent of this regulation is to ensure that funds available to the Corporation for lending are mainly directed to farmers who require credit to develop their farms to the point where they will provide a reasonable livelihood rather than to farmers who have reached that point and have access to other sources of credit for further expansion (F.C.C. 1972, p. 4/103 -1-3)".

Concerning type of loans available, it should be pointed out that the F.C.C. is a long-term lender only. Therefore, it is normal that it takes a mortgage as collateral. For young farmers (less than 45 years old) the F.C.C. could take a chattel mortgage as security. Nevertheless, a loan must always be associated with a mortgage.

Age provides a convenient criterion for describing the types of loans available from the F.C.C. Using this criterion three kinds of loans can be described:

1) If the borrower is less than 35 years old, he could get a loan of up to 100% of the market value of the real estate, cattle and equipment up to a statutatory maximum of $150,000.

2) If the borrower is between 35 and 44 years old, he could get a loan of up to 75% of the productive value of the real estate and the value of the cattle and equipment, up to a statutatory maximum of $100,000. (Productive Value will be defined later).

3) If the borrower is over 45 years old, he could get a loan of up to 75% of the productive value of the real estate only.

As stated in the lending policy manual, "Agricultural Productive Value" or A.P.V. reflects the amount that a typical, well informed farmer would, under normal conditions, be willing to pay, and be justified in paying, for the property as a whole for agricultural and supplementary non-farm uses, including farm home advantages, with the expectation of receiving fair compensation for his labour and management and a satisfactory return on the capital invested (F.C.C. Field Manual 1972, p. 4/100 -1-3). Consequently, the A.P.V. is based primarily on the income approach to value, but there is now a tendency to give some weight to the market approach to value.

This approach should be a realistic one because it tries to relate value to income generating ability. However, it is based on average crop yields, on average price, and on an average operator, therefore there is no necessary relation to a particular operator; only with an hypothetical farmer.

Some other weakness were described by Patrick J. Clift in his M.S. thesis entitled "An Analysis of Factors Influencing Long Term Credit Repayment Capacity of Saskatchewan Farms". (Clift 1971, p. 13) He wrote "Systems or methods based on the Income Approach to Value, although a definite step in the right direction, do not appear capable of handling the problem of imperfect knowledge and dynamics. For once the estimates with respect to income, expenses, capitalization rates, etc. have been determined the system has been reduced to one of static theory of production. Alternatively, anticipation of the future are single valued and assume then to occur with certainty".

We could conclude on this topic that the idea was good in principle. However, in practice, it is not workable. The repayment capacity of poor managers is over estimated and the one of good managers is under estimated.

F.C.C. should be more usefull to the canadian farmers if that concept is dropped. Thus the available loan could be limited by the security offered and the repayment capacity of the prospective borrower.

## 2-4 Importance of the F.C.C. in Canadian Agriculture

The Principal outstanding was $1,441,444,000,00 on March 31, 1974, and the number of active loans was 68,104 (F.C.C. 1974 p.30-31). More important than those statistics is the increasing relative role of the F.C.C. with regard to long term credit. For example, in 1960, 42.6% of the long term credit to the canadian farmers was loaned by the F.C.C. (Rust, 1968, p.15) but increased in 1972, to 64.1% (Rust, 1974, p.40)

Look also at the outstanding credit figure. In 1960 the F.C.C. had 10.1% of the outstanding debt of agriculture (Rust, 1968, p.16). In 1969, this percentage had increased to 25.1% (Rust 1974, p.41). Relative to the long term credit alone this figure went from 34% in 1960 (Rust 1968, p.16) to 63% in 1969 (Rust 1974, p.41).

Another important fact demonstrates the increasing role played by the F.C.C. in Canadian Agriculture. Based on the 1971 census, the dividing line between the contracting and expanding sector was $10,000. of gross income. During the fiscal year 1971-72, only 3.7% of the loan had a proposed gross income of less than $10,000. after the loan. However, 29.4% of the loans were granted to farms with a gross income of less than $10,000. before the loan (F.C.C. 1973, p.43).

Based on statistics published in the "Federal Farm Credit And Related Statistics" it is very revealing to see the situation for the average borrower. Before the loan he had a gross income of $21,177. with a return to labour, management and land (L.M.C.) of $6,144. and an off-farm income of $1,119. After the loan, the proposed gross income is $32,833. with a L.M.C. of $10,162. and an off-farm of $892. Before the loan, he owned 423 acres of which 319 were improved and leased, 217 acres of which 132 acres were improved. After the loan, those figures are respectively 596 ac, 453 ac, 218 ac, and 120 ac. The assets situation of that borrower is the following: after the loan: $60,978. in real estate, $18,021. in equipment; $14,479. in livestock and $14,954. in other assets. His total liabilities are $42,527. or 39.2% of the total assets. However, the real estate in security for a loan of $28,600. was $55,339. In other words, the loan as a percentage of the market value is $52%.

# CHAPTER III

## CHANGING FARM CHARACTERISTICS

### 3-1 Introduction

This chapter will deal with the changing agriculture for the last forty years. All the data used here are in current value. We are aware of the shrinking purchasing power of the money during that period. However, we are living with current dollar value and this is why we use it in this chapter. But in chapter IV, we will look at the effect of inflation.

### 3-2 Number of Farms

One of the more evident consequences of those transformations in both Canada and the U.S. is a drastic reduction in the number of farms coupled with a large increase in the size of the average farm. Table 1 shows that in the last 40 years; the number of farms decreased by more than half while the average size of farm doubled. However, when we break down the time into two twenty year periods, the acceleration of the rate of change is well demonstrated.

. . . /13

Table 1: Change in the number of farms and in the average size of farms in Canada for the period 1931-71 and in the U.S.A. for the period 1930-70.

| | 1931 (1930) | 1951 (1950) | Annual Average Rate of Change | 1971 (1970) | Annual Average Rate of Change |
|---|---|---|---|---|---|
| No. of Farms (thous) | | | | | |
| Canada | 729. | 623. | -0.7% | 366. | -2.1% |
| U.S.A. | 6,546. | 5,648. | -0.7% | 2,924. | -2.4% |
| Average No. of Acres Farm | | | | | |
| Canada | 224 | 279 | +1.2% | 463 | 3.3% |
| U.S.A. | 151 | 213 | +2.1% | 383 | 3.9% |

Source: Statistics Canada
U.S.D.A.

Between 1931 and 1951, the number of farms dropped in Canada from 729,000 units to 623,000 units, which is an annual average rate of decrease of 0.7%. Between 1930 and 1950, the number of American farms went down from 6,546,000 units to 5,648,000 units or at an annual average rate of 0.7%.

From 1951 to 1971 in Canada, and from 1950 to 1970 in the U.S.A., there was a drastic increase in the diminution of the number of farms. In Canada, that number dropped from 623,000 to 336,000, or by an annual average rate of 2.1%. In the U.S.A., the decline was even greater from 4,648,000 units to 2,924,000 units, an annual average rate of 2.4%.

## 3-3 Size of Farms

On the other hand, the average size per farm followed an inverse pattern. From 1931 to 1951, the average number of acres per farm increased from 224 to 279 in Canada, which is an annual average rate of increase of 1.2%. In the U.S.A., the average size of farm increased from 151 acres to 213 acres for the same period or an annual average rate of 2.1%. During the second period, those rates are respectively for Canada and the U.S.A., 3.3% and 2.9%, or an increase from 279 acres to 463 acres in Canada, and 213 acres to 383 acres in the U.S.A.

It is important to note that the net result of the decrease of the number of farms and the increase in the size of farms is not pushing, as some would affirm, the farming sector toward an agriculture of hired employees, at least, not yet.

Radoje Nikolich reported that in the U.S.A. family labour accounted for 76% of total farm employment during 1930-39 and still 75% in 1969. (Radoji, 1972, p. 257). On the same topic, Ball and Heady reported that the number of hired labourers dropped by 46% between 1960 and 1969 while the number of family labourers dropped by only 35.4%. (Ball and Heady 1972, p.45). However, the past is not always a guarantee for the future.

## 3-4 Use of Capital

Another area where important structural changes are going on is the capital used in the farming sector. The total capital used (nominal value) in agriculture in the aggregate and on a per farm basis has increased at a tremendous rate. (Table II)

In Canada, the total capital used in agriculture increased from $5,248 million in 1931 to $9,471 million in 1951, an annual average increase of 4.0%. In the following 20 years, it went up to $24,068 million or an annual average increase of 7.7%. In the U.S. between 1930 and 1950, the capital used in agriculture increased from $56,976 million to $132,500 million, or an annual average rate of 6.6%. However, the annual average rate of increase was about the same for the period 1950 to 1970 - 6.7%. In absolute value, the capital used went from $132,500 million to $311,400 million.

Table II: Total capital used in agriculture and average per farm for the years 1931, 1951 and 1966 in Canada and for the years 1930, 1950 and 1970 in the U.S.A.

| | 1931 (1930) | 1951 (1950) | Annual Average Rate of Change | 1971 (1970) | Annual Average Rate of Change |
|---|---|---|---|---|---|
| Total Capital ($ Mill) | | | | | |
| Canada | 5,248 | 9,471 | +4.0% | 24,068 | 7.7% |
| U.S.A. | 56,976 | 132,500 | +6.6% | 311,400 | 6.7% |
| Average Cap/Farm | | | | | |
| Canada | $ 7,200 | $ 15,200 | 5.5% | $ 65,700 | 16.6% |
| U.S.A. | $ 8,700 | $ 23,400 | 8.4% | $106,500 | 17.1% |

Source: Statistics Canada
U.S.D.A.

The above aggregate figures are less dramatic than the changes that have occurred on a per farm basis. Note that the average value of a farm in Canada increased ninefold between 1931 and 1971. Between 1930 and 1970, it increased twelvefold in the U.S. However, these figures are more significant when broken down into two periods. In Canada, the average capital per farm doubled between 1931 and 1951, going from $7,200 to $15,200, or an annual average increase of 5.5%.

But in the following 20 years, 1951 and 1971, it quadrupled, going from $15,200 to $65,700, or an annual average increase of 16.6%. In the U.S., this increase of capital per farm was growing at an annual average rate of 8.4% for the first period (from $8.700 in 1930 to $23,400 in 1950) and that rate increased to 17.1% for the second period (from $23,400 in 1950 to $106,500 in 1970).

## 3-5 Value of Real Estate

One important source of increase in the average capital used by farm borrowers is the increasing value of the real estate. Table III shows these figures. In Canada, that value went from $5,600 in 1931 to $8,900 in 1941, which gave an annual average rate of 3%. From 1951 to 1971, it increased at an annual average rate of 21.2% (from $8,900 to $46,700). The same thing occurred in the U.S.A. Between 1930 and 1950, the annual average rate was 4.1% (value went from $7,300 to $13,300) but between 1950 and 1970, that rate increased to 21.8% (increase in value from $13,300 to $71,400).

One interesting point to note is that in both countries, the annual average rate of increase was greater for total capital used by the farm than the value of real estate in the first period, (5.5% vs. 3.0% in Canada and 8.4% vs. 4.1% in the U.S.A.),

Table III: Average value of land and buildings for Canada in 1931, 1951 and 1971 and for the U.S. in 1930, 1950 and 1970.

| | 1931 (1930) | 1951 (1950) | Annual Average Rate of Change | 1971 (1970) | Annual Average Rate of Change |
|---|---|---|---|---|---|
| Canada | $5,600 | $ 8,900 | 3 % | $46,700 | 21.2% |
| U.S.A. | $7,300 | $13,300 | 4.1% | $71,400 | 21.8% |

Source: Statistics Canada
U.S.D.A.

but the inverse happened during the second period (16.6% vs. 21.2% in Canada and 17.1% vs. 21.8% in the U.S.). In other words, between 1930 and 1950, the increase in real estate value was going at a lower pace than the total value of capital used by farms but between 1950 and 1970, the increasing rate of total capital used by farms was greater then the other.

## 3-6 Indebtnedness

The indebtnedness of farmers increased at a more rapid rate than their use of capital and nothing indicates that this trend will be reversed in the future.

In the U.S.A. the Balance Sheet of the U.S. Agriculture gave us some revealing figures (Table IV). Between 1940 and 1950, the indebtedness was growing at a slow pace relative to the increase of net worth for both the farming sector and the average farm. This is seen by the fact that the indebtedness increased by 24% and 29% for the farming sector and for the average farm while the increases in net worth were respectively 180% and 215%. In the fifties and sixties the situation was reversed. The indebtedness increased in percentage terms more rapidely than the net worth for both the farming sector and the average farm. During the fifties, those percentage increases were respectively 100% and 185% in indebtedness, and 49% and 112% in net worth. For the sixties period, we divided the period in two to show the trend. In both periods, 1960-65 and 1965-70, the percentage increase in indebtedness was still greater than the percentage increase in net worth for both the farming sector and the average farm. However, the percentage increase for net worth, between 1960 and 1965 was 12.5% and 33.5% and the increase for indebtedness was 51% and 79%. During the period 1965-70, those figures were respectively 27% and 44% and 54.5% and 77%.

Table IV: Percentage of increase in indebtedness and in net worth for the farming sector and per farm for different periods.

| | indebtedness | | net worth | |
|---|---|---|---|---|
| Period | Farming Sect. | Per Farm | Farming Sect. | Per Farm |
| 1940-50 | 24% | 39% | 180% | 215% |
| 1950-60 | 100% | 185% | 49% | 112% |
| 1960-65 | 51% | 79% | 12.5% | 33.5% |
| 1965-70 | 54.5% | 77% | 27% | 44% |

Source: Balance sheet of the U.S. agriculture; U.S.D.A.

In Canada, we do not have valid figures before 1960. However, figures from 1961 and 1971 could give us a good insight of what is going on. (Rust, 1975, p. 41) reported that the indebtedness as a percent of total assets was 13.6% in 1961 but increased to 19.6% in 1971. The total investment in agriculture grew from 13,171 million to 24,068 million during that period but, the indebtedness went from 1,785.1 million to 4,714.3 million. That was an increase of 82.7% in investments and an increase of 164.1% in debts. However, as for all other figures these transformations are more apparent on a per farm bases. Between 1961 and 1971, the total investment on the average farm increased from $27,400 to $65,700 or by 140%. In the same time, the debt load went from $3,700 to $12,900 an increase of 249%.

# CHAPTER IV

## FACTORS EXPLAINING CHANGE IN AGRICULTURE

### 4-1 Substitution of Labour For Capital

It is customary to explain transformations of the type described by concepts of technological and economic development.

The basic condition which makes econimic development possible is, as stated by E.O. Heady, that it becomes increasingly profitable to substitute capital inputs for labour (Heady and all, 1965, p. 4) and land (Heady, 1970, p. 47). In other words, the introduction of new techniques, new equipment, and new ameliorated inputs such as fertilizers or pesticides, make it possible to increase the produced outputs per man and per acre drastically. As an example, a farmer in the U.S. was producing food and fiber for 27 persons in 1960 but in 1969, he was producing enough for 43 persons (Orazem, 1972, p. 63).

There are several implications worth noting regarding this increasing use of capital and land, combined with a decreasing use of labour. The total assets needed to generate a given level of net income has increased tremendously and will continue to increase.

. . . /22

Ball and Heady reported that in 1944, the ratio of assets per dollar of net income for American agriculture was $4.73 but in 1963, it was $14.13. (Ball and Heady, 1972, p. 51). This is due to the fact that new technology forces farmers to buy more inputs from outside the farm. Ball and Heady reported that between 1944 and 1963, the cash expenditure as a percentage of cash farm income in the U.S.A. went from 50.8% to 79.1% (Ball and Heady, 1972, p. 51).

## 4-2 Specialization of the Farming Sector

On the other hand, this increasing productivity on the farm is not necessarily a net gain for the society as a whole. The farmer is now specializing himself to the production of raw material for a market. On one hand, he buys more and more inputs outside the farm and on the other hand, he sells his production more and more as raw material to agro-business firms which transform it into consumer goods.

P.G. Helmberger figured that in 1910-14, the value added on the farm was 73% of the value of farm output but in 1966-68, it was only 51% (Helmberger, 1972, p. 117).

P.M. Raup reported that the farmers received in 1969 only 6% of the disposable personal income in the U.S. and that value added on farms in now less than 1% of the gross national product in the U.S.A. (Raup, 1972, p. 9).

## 4-3 Importance of Inflation

Everybody is aware of the importance of inflation. Inflation would have a direct impact on the value of capital used in agriculture and on the value of real estate. In order to have a more meaninful insight into what had taken place, we deflate those figures. Therefore, we used the Canadian wholesale price index and the U.S. wholesale price index to convert those rates of increase on a constanct dollar value. For Canada, that exercise decreased the annual average rate of change of total capital and real estate value respectively from 16.6% and 21.2% to 12.9% and 16.8% for the period 1951-71. For the U.S., in the same order, the decline was from 17.1% and 21.8% to 11.8% and 14.8% for the period 1950-70.

Therefore, it is not an overstatement to say that in the last 20 years a revolution took place in the farming sector. The number of farms decreased drastically, the size of farm, the value of real estate and the total assets per farm increased drastically. More important these transformations took place at an increasing rate.

# CHAPTER V

# INSIGHTS INTO THE INCREASE IN VALUE OF REAL ESTATE

## 5-1 Introduction

In Canada the index of farm land value per acre went up from 100 to 345 between 1949 and 1973 (F.C.C., 1974, p. 40). How is this tremendous increase explained? Barlowe listed three important components which determine the value of a property: 1) It must have utility to the owner or user; 2) It must be scarce in supply to command a price; 3) It must have futurity - a basis for an expected future flow of return or satisfaction to the user (Barlowe, 1958, p. 184). If we dig further into what makes the value of a property, we will have to look at the concept of economic rent. It may be defined as "the surplus of income above the minimun supply price it takes to bring a factor into production" (Barlowe, 1958, p. 51). Consequently, the value of a property should be equal to the sum of its future economic rents (assuming that the satisfactions of owning a piece of land could be quantified discounted back to the present (Barlowe, 1958, p. 169).

. . . /25

## 5-2 Why farmers want to buy land

Somebody will buy a farm or become a farmer for two reasons: 1) the income he will make and 2) the advantages and amenities involved in farming. It probably explains, at least in part, why the farmers have a tendency to underestimate the return of their labour and management as reported by Auer (Auer, 1969, p. 58). Consequently, we would think that the return imputed to the real estate will be greater than it should be, or more precisely, the return to real estate (economic rent) is composed of income from farming and the satisfaction of being a farmer quantified in income. In addition, the appreciation of land over time is a return to real estate. In conclusion, the return to real estate, which is the basis for the land (property value) is the sum of three factors: 1) income from farming; 2) income imputed to amenities of being a farmer; 3) the discounted value of the capital gain.

## 5-3 Factors Pushing the Price of Land

What has made the value of land increase rapidly in the last twenty years? There are two major reasons which are inter-related.

First, it is well known that every factor which improves the income situation of farmers is capitalized at least in part in the real estate value. One good example is the quota of production attached to the land. In Ontario, land with a tobacco quota is worth 8 to 12 times as much as equivalent land without a quota (Federal Task Force on Agriculture, 1969, p. 330). In a study on the tobacco allotment in the U.S., Seagraves concluded that "Government programs that reduce the risks of farming are almost bound to increase the value of assets" (Seagraves, 1969, p. 333). Those results hold for the increase in productivity which increases the net return to farmers.

The second factor is more complex. Very often, technological development creates under-employment in the farm if other aspects are held constant. In addition, often, technological developments bring the possibility of economy of scale. A farmer placed in those conditions would be willing, and it would be a good move, to pay a higher price for additional land. Because of the tremendous decline in the number of farms coupled with a fairly stable supply of land used in agriculture, the farm land market is greatly influenced by the sales for enlargement.

In a study of farm sales in the U.S., published by Gesh in 1969, he reported that 52% of the land sales became part of other farms, 35% were operated as independent farms and 13% were operated as part-time farms. (Gesh, 1969, p. 31).

The discounted value of the capital gain is certainly an important factor in the price of land. We saw that in Canada, where in the index of farm land value went up from 100 in 1949 to 305 in 1971. In the U.S.A., Baker reported that between 1940 and 1959 capital gains were positive in 17 years out of 20 and averaged more than 40% of the average net income. (Baker and Holcomb, 1964, p. 1203). Dale M. Hoover did the same computation but in deflating the value by the purchasing power of the dollar (Hoover, 1965, p. 82), he found that the gains were positive in 15 out of 20 years. Woods reported that in the sixties the index of average value of farm real estate rose at an annual rate of 5.3% a year in the U.S.A. (Woods, 1970, p. 32).

There are some other factors pushing up the value of land, but we do not think that their influence is as important as those described above. They are; demand for non-farm uses; demand by non-farm investors; and, demand of land as an inflationary hedge or for tax shelters.

# CHAPTER VI

## FORECAST OF THE SIZE OF FARM

### 6-1 Literature Review: American Agriculture

Most of the economic forces which have brought about important transformations in the farming sector during the last 20 years are still present with no sign of relaxation. There is no reason to doubt that the nomber of farms will decrease rapidly and the capital stock in farming will increase drastically. Baker and Hopkin estimated that non-land capital will increase in the U.S. by 96% and land by 253% between 1959 and 1980 (Baker and Hopkin, 1969, p. 1055). In 1967, H.M. Prumm predicted that the average U.S. farm's assets should be around $155,000 by 1980 (Prumm, 1967, p. 4).

The most interesting study we found is the one done by Rex F. Daly, J.A. Dempsey and C.W. Cobb, entitled "Farm Numbers and Sizes in the Future" (Daly and others, 1972, p. 314-332). Of particular interest in this study is the fact that they forecast the size distribution of farms, not only the average farm. They forecast that by 1980, there will be 1,900,000 in U.S.A. with an average total assets of $170,500. However, the line dividing the expanding and

. . . /29

contracting sector would be $40,000 of sale a year. We should note that in 1964 that line was $10,000 and $20,000 in 1970. The average total assets per farm for the expanding sector will be $694,000. Even if we include the class of $20,000 to $40,000 of sale, the total assets per farm still will be $440,000 per farm. The number of farms forecast in the expanding sector is 293,000 and if we add the class of $20,000 to $40,000 of sales, this number increases only to 581,000 units. The authors wrote about their approach: "This profile is probably pedestrian and conservative relative to the potential for ajustment".

## 6-2 Literature Review: Canadian Farming

About canadian agriculture, we found two studies forecasting what will be the farming sector in 1980. The first one, by John Brake (Brake 1971), develops a model to project the credit needs for 1980. He used two different sets of assumptions, the first one assuming a decrease in the rate of change of the sixties during the seventies, the second one assuming the same rates of change in the seventies as in the sixties. With the first set of assumptions, he predicted that the total capital used in the farming sector would be $35,016 millions or an average total assets per farm of $111,100. With the second set of assumptions, that total capital used would be $54,857 millions by 1980 or total assets of $173,977 per farm.

The second study was done by M.E. Andal (Andal, 1969). He forecast that the total capital used would be $36,787 millions but the capital owned by the farming sector should be $34,000 millions because more equipment would be rented and more familial capital would stay in agriculture even if those persons are earning their living outside the agriculture. In addition, he forecasted that the total assets of a commercial farms would be in the order of $200,000 to $300,000 or more.

Those forecasts give us a good idea of what is coming. However, these studies did not project the tremendous inflation that the North American economics knew during the last three years. As a consequence, in current dollar terms these forecasts will be well below the target by 1980.

## 6-3 Objectives

As stated in the objectives of this paper, we want to forecast the size of loan the FCC should make by 1981 if it wants to play the same role in the financing of Canadian agriculture. We will not tackle the problem of how much money the FCC will lend in 1981. Therefore we will forecast the average real estate value and total assets by farm for our clientele or

for the commercial farmer. In order to accomplish that objective, we will determine the rate of net growth for the sixties. Then, we will index this rate by a rate of inflation for the seventies. That will give a good idea how much the maximum loan should be. However it should not be forgotten that the real estate value and the total assets of a farm could vary widely from the average.

## 6-4 Description of our clientele

With the help of the published FCC statistics, it is possible to determine which classes of the census farm were the clientele in 1971-72. In fact, only 0.1% of the FCC borrowers had a predicted gross income of less than $5,000. However, 11.8% had that income the year before the loan (FCC, 1973, p. 43). However, we should not forget that included in that group are the young farmers who start farming. On the other hand, the real estate value and the total assets of the FCC borrowers were respectively $60,978 and $93,478 in 1971-72 (FCC, 1973, p. 46). According to the census, those figures were $64,282 and $93,421 for those farms with more than $5,000 of gross income in 1970. The difference between the two real estate values could be explained by the following point: In the agricultural census, farmers are asked what their land, buildings, livestock and machinery are worth. The FCC value are the result of the work of well trained appraisers. It is normal that farmers overestimate the value of their real estate even if they are normally conservative on the figures they give to Statistic Canada.

Therefore, we could conclude that the FCC clientele in 1971-72 were the group of farmers having a gross income of more than $5,000 in 1970. The average real estate value and total assets were respectively $64,282 and $93,421 in 1971. From there, it is possible to forecast those figures for 1981. Our model will take in account two factors: The real economic growth and the inflation.

## 6-5 Price indexes

In order to find the real growth rate, it is important to have appropriate price indexes because the date should be deflated. However, there are no published price indexes which suit the needs of this paper. But the components of "Farm input price indexes" could do the job. We deflate the real estate value by the use of the "Land and Farm Buildings" price index and the total assets value by a composite of "Land and Farm Building", "Farm Machinery and Motor Vehicule" and "Feeder Cattle". We weighted each categories of assets by their relative importance in 1961. Based on 1961, our Real Estate price index was 156 in 1971 and our "Total Assets price index" was 151. In 1974, those indexes were respectively 211 and 200.

## 6-6 Rate of net growth

The economic development has resulted in an increase in the value of real estate and total assets. However, the increase assessed by the census is the result of the growth and the inflation. Thus, in order to have only the result of the economic growth, we deflate the census figures.

In 1961, the average real estate value was $17,930 and in 1971, it was $46,326. On the other hand, the "real estate price index" went from 100 to 156. Therefore, the deflated value for 1971 was $29,696. Consequently, the real growth was 65.6% or 6.56% a year.

Between 1961 and 1971, the average total assets in Canada went from $27,389 to $65,430 while the "total assets price index" went from 100 to 151. Thus, the deflated value for 1971 was $43,331 and the real growth of the total assets per farm was 58.2% or 5.82% a year.

## 6-7 Rate of inflation

A price index could give us the rate of inflation. Thus, the average annual rate of inflation between 1961 and 1971 was 5.6% for the real estate value and 5.1% for the total assets value.

However, since 1971 the rate of inflation has increased drastically. The "real estate price index" went from 156 in 1971 to 211.2 in 1974, an annual rate of inflation of 11.8%. In the same time the "total assets price index" went from 151 to 200, and annual rate of influation of 10.8%.

There is no sign that those rates will ease in 1975. However, the future seems brigther but that rate should not be lower than during the sixties. We will assume that the inflation rate for 1975 will be the same as that existing between 1971 and 1974 and it will the same between 1976 and 1981 as existing during the sixties. Therefore, the rate of influation for the real estate value will be 8% a year (4 years x 11.8% year + 6 years x 5.6% year) and for the total assets value 7.4% (4 years x 10.8% year + 6 years x 5.1% year).

## 6-8 Forecast

A percentage change of 8% is in fact a multiplier of 1.08. If we have two of these multipliers acting conjointly on a figure their composite action will be multiplicative rather than additive. Thus the rate of change of the real estate value between 1971 and 1981, will not be the rate of inflation of 8% plus the rate of net growth of 6.56%. Rather it will be 1.08 times 1.0656 for a total

of 1.151 or an average annual rate of 15.1%. The rate of change of the total assets will be 13.7% a year. Therefore, between 1971 and 1981, the average real estate value will increase by 151% and the average total assets by 137%.

We assume that the same rate of change could be applied as well to the census population as to the FCC clientele. We know that the FCC clientele had a real estate value of $64,282 and total assets value of $93,421 in 1971. Therefore we could forecast that the real estate value of the FCC borrowers in 1981 will be $161,000 and their total assets will be $221,000.

This approach is fairly consistent with what happened between 1971 and 1974. Using the same approach with the corrected figure, the real estate value of the 1974-75 borrowers should be $101,000. In fact the real estate value of the FCC borrowers was $98,985 in 1974-75. The discrepancy is around 2%. This is also true for the total assets value (less thant 4% of discrepancy).

In conclusion, we forecast that the group of farms with which the FCC was doing business in 1971 will have a real estate value of $161,000 and total assets value of $221,000 in 1981 compared with $64,500 and $93,500 respectively in 1974.

However, it is very important to keep on mind that those figures are averages only and the distribution will vary greatly among farms. For example, note the distribution of total assets the FCC borrowers in 1971-72 as shown in table V.

In this table, other assets including quotas, feed, etc., average $14,954. While more than 50% of the borrowers had less than $100,000 of total assets before the loan, more than 50% had more than $100,000 after the loan. Also, 15% of the borrowers had more than $200,000 of total assets.

Table V: Total assets FCC borrowers before and after loan in 1971-72 in percentage.

| Total assets | before loan | after loan |
|---|---|---|
| less than $50,000 | 15.0% | 5.0% |
| $50,000 to $99,999 | 40.6% | 37.3% |
| $100,000 to $149,999 | 22.9% | 27.5% |
| $150,000 to $199,999 | 11.3% | 15.4% |
| $200,000 and more | 9.6% | 14.3% |

Source: FCC

Assuming that the "after loan" distribution would hold for the adjusted asset categories and given that our forecast would multiply the 1971 total assets value by 2.3, we should have around 15% of the borrowers in 1981 with more than $460,000 of total assets. We could conclude that the FCC will have a proportion of its borrowers with more than $500,000 as large as the proportion of borrowers with more than $200,000 in 1971 if it intends to serve the same clientele.

# CHAPTER VII

## IMPLICATION FOR THE FCC

### 7-1 Introduction

As we saw in the previous chapter, a good proportion of the FCC clientele may have more than $500,000 of total assets by 1981. What size of loan will individual clients need? It is very hard to predict because there are other factors than the total assets value. But we could assume that the group of farmers which will need more credit will be the ones in the process of establishing themselves. Given that the society wants to maintain the family farm, the problem of financing during the transfer from one generation to the other will be more and more serious.

With the traditional credit arrangements, the person who wants to start farming has to have a large equity. In the past, it was possible for a young man to save enough money to start a farm and build a viable farm business overtime. However, during the sixties it became evident that "the climbing of the agriculture ladder" way was something of the past. Family help with the use of credit became the way of getting started (Brake, 1972, p. 151). However, as the total assets increased the family farm became more and more

subject to the tax laws (capital gains taxes, gift taxes, succession taxes, etc.). Consequently, those taxes restrain the amount of family help a young man could receive. In addition this help coupled with the saving of a prospective farmer are and will be proportionally less and less important in regard to the total assets needed.

Therefore, if the family farm is to survive, it will have to use a new approach to transfer the farm from one generation to another. In addition to an increasing indebtedness, the farming sector could partly adjust itself to its increasing capital need by the following ways: renting, incorporation, or part-time-farming.

## 7-2 Farm renting

A way to get started in farming could be renting the capital needed for a time sufficient to build an equity. However, that has not been a very popular way to start farming in the recent past. John F. Timmons reported that tenant operators have decreased from 42.4 to 17.1 percent of all farm operators between 1930 and 1964 (Timmons, 1972, p. 237). In canada, Statistic Canada reported 12.9 percent of the farm operators were tenants in 1941 comparatively to 5.2 percent in 1971 (Can. Dept. of Agri. 1974, p. 16). We think those figures speak by themselves. But

renting is an important way to adjust to a larger unit. In U.S.A. farmers who rent part of the land, they operate increased from 10.4 percent in 1930 to 24.7 percent in 1964 (Timmons, 1972, p. 236). In Canada, those figures went from 11.6 percent in 1941 to 26.2 percent in 1971 (Can. Dept. of Agri. 1974, p. 16).

These figures clearly demonstrate that renting the whole farm has not been a preferred way to adjust to new conditions, n the other hand, renting along with ownership has been an important way to adjust to a larger unit. Will it be the same in the future? It is very hard to predict. According to our experience, farmers rent land on a temporary basis. Their goal is still to own the land they farm and, as soon as they can secure the necessary capital, they will buy it.

## 7-3 Corporate farming

The incorporation of large family farms is a current trend. In the U.S., a U.S.D.A. study found 14,500 corporate farming operations; from that, only 3,700 were classified as non-family corporations (Ottoson and Vollmar, 1972, p. 294). In Canada, Statistic Canada reported 7,992 corporate farming operations in 1971 but only 911 were non-family corporations (Stat. Canada 1972, p. 31-1). Harl reported that many studies found that the major reasons for

incorporating a family farm are estate planning and property transfer from one generation to the other (Harl, 1972, p. 273). In a study entitled "Farm Tax Management Today" published after the new tax law in Canada, Anderson suggested that careful consideration be given the incorporation of the farm for a sole proprietor of a farm with more than $100,000 in total assets and $15,000 of net income (Anderson, 1972, p. 6).

The incorporation of the farm does not permit avoidance of all taxes (it helps to avoid some) but it makes it easier to make the transfer of the farm to the next generation because it permits an orderly and progressive transfer of ownership and management. In addition, it could avoid a drain of capital outside the farm. Shares could go to other members of the family when the farm passes from one generation to the other. However, it brings two problems. The return on capital invested should be competitive with other forms of investment otherwise, the family members would be tempted to withdraw their capital. Secondly, if an important part of the capital is owned by other members of the family, a share of the management will be shifted outside the farm.

## 7-4 Part-time farming

Part-time farming could be another way to start farming. Part-time farmers tend to direct their efforts to farming activities which are less labor intensive, perhaps more needful of capital, or which are only financially viable on a part-time basis. Some of them are older farmers easing into retirement but some of them are young farmers on the process of establishing themselves. However, part-time farmers are not eligible for many of the government aids and incentives available to farmers.

In its last legislation (May 1975), the FCC partly modified its policies toward part-time farmers. Now, the FCC can make a loan to a young person who intends to farm on a full-time basis in the next five years after the loan. The need for this new credit is apparent by the large number of loan applications. But we think the FCC should go further. It should make credit available to all persons who could produce food efficiently, even if it is used by those engaged in part-time farming.

7-5 Low equity borrowing

Long term credit will become more and more important to get started in agriculture if the family farm is to remain the main farming institution. As we saw, total assets value of $500,000 will be common by 1981. If an equity of 25 percent were still required before a loan could be make, a young farmer in those conditions would need an equity of $125,000. This is an unworkable proposition. Therefore, lending institution will have to make loans on very low equity. The FCC is making a very important step in that direction with its new legislation. It could now lend up to 100 percent of the security for a young farmer.

However, the maximum loan is only $150,000 for a young farmer. Even today, that celling will limit many young farmers who need more that $150,000 to start their farming operation. In 1981, FCC will have to make loans of more than $500,000 if it wants to serve the same clientele as in the sixties. We think the FCC should not have only one maximum loan limit because that limit will always discriminate again a group of farmers.

## CHAPTER VIII

## CONCLUSION AND RECOMMANDATION

This paper demonstrate that the capital need of the farming sector will continue to grow. The most privileged source of capital will remain credit. In Canada, the most important long term lender is the FCC. We saw that it should prepare itself to make some loans of more than $500,000, in current value, on very low equity by 1981 if it wants that the family farm survive.

However, this study raise more questions than it answers. In fact, the prospect of making loan of $500,000 and more is somewhat appalling. Many studies should be done by the FCC in order to prepare itself and to make a better contribution to the Canadian Agriculture. We believe than some priorities should be given to the following topics.

1- Presently, the maximum loan limit does not take in account the number of persons involved in the enterprise. As result of this fact, it is less attractive for farmers to regroup themselves in multiple-men enterprise. Could the multiple-men enterprise save some capital and thus reduce the effective demand of credit?

. . . /45

2- There is a great divergence in capital needs between different production systems and between different regions and it seems that this divergence is expanding. The FCC should study the possibility of replacing the loan limits as a way to make sure that the tax payer money is not used to finance big conglomerate concerns.

3- Given the low equity of farmers in the future, the FCC should examine closely the merits of the age limit for low equity loans.

4- The FCC should look at the possibilities to train its field-men and to give them the necessary tools to assess the capacity of repayments of a prospective borrowers in order to drop the use of the "Agricultural Productive Value" concept.

5- Part-time farming is more and more important in Canada. FCC should look at the implications of offering the same services to those farmers that it offers to the full-time farmers.

6- Given that the FCC is taking less and less collateral to secure its loans, it should investigate the possibilities to impose crop insurance or other ways to insure a minimum income to a prospective borrower as a condition to a loan.

BIBLIOGRAPHY

Ackerman, J. "Summary", in Structural Changes in Commercial Agriculture, Proceedings of a Conference held in Chicago Ill. April 12-14, 1975, Iowa State University Press, Ames, Iowa, 1966.

Andal, M.E. "Economic Guidelines for Present and Future Capital Use in Canadian Agriculture" Canadian Journal of Agricultural Economic, 17: 3 pp. 9-19, 1969.

- - - "Prévisions Agricoles pour les Années 1970" unpublished paper presented at the Annual Conference, FCC Quebec Branch, March 1970.

Anderson, M.S. "Farm Tax Management Today", The Agricultural Economic Research Council of Canada, 1972.

Auer, L. "Canadian Agricultural Productivity" Economic Council of Canada, Staff Study no 24, Queen's Printer, Ottawa 1969.

Baker, C.B. and J.M. Holcomb "The Emerging Financial Problems in a Changing Agriculture" Journal of Farm Economic, 46: 4 pp. 1200-1209, 1964.

Baker, C.B. and J.A. Hopkin "Concepts of Finance Capital for a Capital-Using Agriculture" American Journal of Agricultural Economics, 51: 5 pp. 1055-1064, 1969.

Ball, A.G. and E.O. Heady "Trends in Farm and Entreprise Size and Scale" in "Size, Structure and Future of Farms" ed. A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 40-58, 1972.

Bamford, G. "Farming Has a Future" in "The 70's/ Challenge and Opportunity" ed. National Farm Institute, Iowa State University Press, Ames, pp. 87-91, 1970.

Barlowe, R. "Land Resource Economics" Prentice - Hall Inc. Englewood Cliffs, 1958.

Brake, J.R. "Future Capital and Credit Needs of Canadian Agriculture" Publication AE 70/3 Department of Agricultural Economics, University of Guelph, Guelph 1970.

- - - "An Assessment of the Credit Recommandations of the Federal Task Force in Agriculture" Canadian Journal of Agricultural Economics 19: 2 pp. 86-89, 1971.

- - - "Capital and Credit" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 123-143, 1972.

Cliff, J.P. "An Analysis of Factors Influencing Long-Term Credit Repayment Capacity of Saskatchewan Farms" unpublished M.S. Thesis, University of Saskatchewan, Saskatoon, 1971.

Daly, R.A. and J.A. Dempsey and C.W. Cobb "Farm Numbers and Sizes in the Future" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 314-332, 1972.

Direction de l'Economie, "Données Statistiques Agricoles Canadiennes" Publication 74110E, Canadian Department of Agriculture, Ottawa 1974.

Farm Credit Corporation, "Federal Farm Credit and Related Statistics" Farm Credit Corporation, Ottawa, 1970.

- - - "Field Manual part I: Lending Policy", unpublished material, Farm Credit Corporation, 1972.

- - - "Federal Farm Credit and Related Statistics" Farm Credit Corporation, Ottawa 1974.

- - - "Annual Report 1973-74" Farm Credit Corporation, Ottawa 1974.

Federal Task Force on Agriculture "Canadian Agriculture in the Seventies" Queen's Printer, Ottawa 1969.

Gouvernement du Québec "Le Crédit Agricole au Québec" Rapport sectoriel de la Commission Royale d'Enquête sur l'Agriculture au Québec, Québec 1967.

Gesh, R. "Agriculture will continue to Change" "Journal of American Society of Farm Managers and Rural Appraisers" 33:1, pp. 31-36, 1969.

Harl, N.E. "The Family Corporation" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 270-289, 1972.

Heady, E.O. and all "Roots of the Farm Problem" Iowa State University Press, Ames 1965.

Heady, E.O. "Program Alternatives" in "The 70's/ Challenge and Opportunity" ed. by The National Farm Institute, Iowa State University Press, pp. 46-58, 1970.

Helmberger, P.G. "Market, Farm Size and Integration" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 108-122, 1972.

Hoover, D.M. "The Computation of Returns in Agricultural Real Estate", 1940-1960, "Land Economics" 41: 1 pp. 81-86, 1965.

Johnson, B. "Return to Farm Real Estate" "Agricultural Finance Review", 31: 1 pp. 27-34, 1970.

Nikolitch, R. "The individual Family Farm" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 248-269, 1972.

Orazem, F. "Economic Status of Income Group by Farm Size" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 59-77, 1972.

Ottoson, W.H. and G.J. Vollmar "The non Family Corporation in Farming" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 290-313, 1972.

Quance, L. and L.G. Tweeten "Policies, 1930-1970" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 19-39, 1972.

Prumm, H.M. "Evaluating the Farmers Management Ability", "Journal of American Society of Farm Managers and Rural Appraisers" 31: 2 pp. 3-8, 1967.

Raup, P.M. "Societal Goal in Farm Size" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O Heady, Iowa State University Press, Ames, pp. 3-18, 1972.

Rust, Sir "Panorama du Crédit Agricole", "L'Economie Agricole au Canada" 3: 4 pp. 13-18, 1968.

- - - "Crédit Agricole" "L'Economie Agricole au Canada" 10: 1 pp. 38-45, 1975.

Statistics Canada, 1966 Census of Canada (96-609), Queen's Printer, Ottawa vol. 5, no. 2, April 1968.

- - - "Agriculture: Advance Bulletin, 1971 Census of Canada" Queen's Printer, Ottawa, catalogue 96-722 (AA-5), 1972.

Seagraves, J.A. "Capitalized Values of Tobacco Allolments" American Journal of Agricultural Economics, 31: 2 pp. 320-333, 1969.

Timmons, J.F. "Tenure and Size" in "Size, Structure and Future of Farms" ed. by A.G. Ball and E.O. Heady, Iowa State University Press, Ames, pp. 232-247, 1972.