

THE FARM MANAGEMENT LOAN
AS IT RELATES TO COMMERCIAL AGRICULTURE

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ABSTRACT

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The "financial services gap" presents a major problem to farm operators. This gap exists to the extent that the suppliers and the users of credit do not fully communicate with one another.

In light of the problem, a case study of two farms in the Carman District Farm Business Association was conducted with the following objectives in mind:

1. To determine how bankers can base loans to agriculture more on the productivity of the loan proceeds rather than on the security upon which the loan is based.
2. To determine the possibilities for more intensive involvement of commercial banking institutions in "line-of-credit" financing in agriculture.

In consideration of these objectives, it was hypothesized that the "Farm Management Loan" could be used as a more adequate means of meeting agricultural credit requirements of the future.

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CHAPTER I

INTRODUCTION

THE NATURE OF THE PROBLEM

The cumulative effects of the technological revolution in agriculture during the past one hundred and fifty years have caused dramatic changes in the economic and financial requirements of agriculture in the post-war period. A recognition of some of the important changes taking place in agriculture in the 1960's forms an important backdrop for the following research in the field of agriculture. There is a problem that has arisen from the "financial services gap". This gap exists to the extent that the suppliers and the users of credit do not fully communicate with each other. A Canadian agricultural economist has described the situation as follows:

The problems associated with credit for farmers can be due to the fact that the needs have not been stated explicitly by farm operators and have not been explored fully by the suppliers. The result is that primary agriculture has more limited access than do other industries to the general fund of savings in the community to finance its operations. This situation poses a basic question why the gap exists between need and availability.¹

The technological changes that have taken place have affected all the supply industries which serve the agricultural sector. For example,

¹Anderson, W. J., Fundamentals of Sound Credit., Paper presented to the Agricultural Institute of Canada, 45th Annual Convention, Vancouver, June 21 - 24, 1965, p. 1.

the major feed companies have been forced to adjust to these changes by offering additional services. They have hired men who are trained in agriculture to meet their needs. The fieldmen for these companies encounter problems which range from recommending feed rations to servicing the credit involved in the transaction. Other institutions which have had to adjust are the co-operatives. The banks are one of many such organizations which have been affected by dramatic changes in the agricultural industry.

The purpose of this thesis is to determine how the commercial banking institutions can serve to close the "financial services gap". The Canadian branch banking system can do so by offering a complete "package credit" service or a complete "line-of-credit" to farmers, including short-, intermediate-, and long-term credit. At the present time the system is not adequately equipped to provide the credit services to farmers that are needed.

The major banks in Canada are becoming aware of the changes that are taking place in agriculture. Several of the banks have established agricultural departments which are designed to offer specialized services in connection with farm loan requests.²

OBJECTIVES

The solution to the foregoing problem would be for the banks to provide the kind of specialized credit service farmers need. There

²The Royal Bank of Canada established a Prairie Agricultural Department in June, 1967.

would be much to be gained by farmers who were able to get a complete credit service from a single source that specializes in farm lending.

From the farmer's point of view, a single source of credit would provide him with pre-loan counselling from a staff who knew his business and were trained to give him sound financial advice along with a budget for advances and repayments. He could benefit from having a single schedule of repayment worked out in conjunction with his type of farm operation and a source of credit when additional credit was justified. On the lender's side, there would be an advantage in knowing at any given time what the complete debt position of the borrower was and to be in a position to discourage unprofitable borrowing or the over or under utilization of credit. This would tend to strengthen the security of the lender, in contrast with a system where credit is obtained in a piecemeal fashion by farmers from several sources. Frequently, these sources have little knowledge of the farmer's overall debt position.

In light of this, the primary objective of this study is to introduce a new technique whereby the commercial banks could better serve the needs of the agricultural industry. This technique would allow the banks to provide a complete credit service to farmers through their many rural branches.

The need exists for the banks to adopt a broader approach to farm credit needs. H. G. Halcrow stated the challenge effectively when he said:

Clearly the situation calls for close co-operation between the banker and the farm borrower. This means careful planning and budgeting, but----in many cases more liberal loaning policies

which will be required if the farm family is to develop the size and type of unit best suited to modern conditions----. Loans to farmers should be based on the productivity potential of entire unit rather than the security associated with an individual operation----. Successful banking requires a credit-line rather than piecemeal loaning with a series of short-term obligations---- the objectives (of a farm line of credit) should be to develop the capital structure of the farm up to the limit of the operator's ability consistent with his desire for income.³

It is this line of argument that will be explored in this thesis.

HYPOTHESIS AND METHODOLOGY

It is proposed that the "Farm Management Loan" can be used as a more adequate means to meet agricultural credit requirements of the future.

The specific objectives are:

1. The determination of how bankers can base loans to agriculture more on the productivity of the loan proceeds rather than on the security upon which the loan is based.
2. The determination of the possibilities for more intensive involvement of commercial banking institutions in "line-of-credit" financing in agriculture.

The preliminary assumptions are:

1. Agricultural producers aim to maximize profit.
2. Bank loans in a broad sense fall short of meeting farmer's needs.
3. A significant number of bank loans are based on security rather than on the productivity of the loan proceeds.
4. There exists a deficiency of "line-of-credit" financing in agriculture.

³Halcrow, H. G., A paper presented to the National Agricultural Credit Conference, Cincinnati, Ohio, November 10, 1959.

The "Case Study" method will be used on individual farms in the Carman District Farm Business Association in order to investigate the third hypothesis. Three years of farm records will be analyzed to determine the farm loan repayment ability on the basis of modern cash flow techniques. The cash flow analysis provides a unique method whereby banks can base loans to agriculture more on the productivity of the loan proceeds. It enables the banking community to judge the merits of its farm loans more and more on the uses for the funds and total capital requirements.

It is proposed that a greater emphasis could be placed on the farmer's skill as a manager, and his expected income rather than on the security of the loan. This lending technique implies certain important considerations. Firstly, it stresses the importance of farm records and accounts. Although taken by themselves they yield only a history of past performance, they do provide a basis for determining potential income under the present farm organization. Accurate records permit bankers to properly assess the overall financial position of the farm. An analysis of the records may indicate strengths or weaknesses in the past performance of management. Secondly, increased emphasis on a farmer's managerial ability would require them to submit well-conceived plans for the future (i.e. a budget). A useful technique in this regard would be the projected cash flow statement.

In line with the first consideration, a balance sheet and statement of profit and loss will be drawn up for three years of farm records. The financial statement will be examined item by item. A comparative

analysis also will be conducted, followed by a brief analysis using ratios.

Before the hypothesis can be further examined, however, it is necessary to explore the extent to which new technology has affected agriculture.

CHAPTER II

TECHNOLOGY IN AGRICULTURE

The rapid application of new technology in agriculture has made it possible to expand the size of farms which possess efficient management. Consequently, the larger investment per farm and per worker has made capital the key factor in farm success. From the view of capitalization in agriculture, it should be pointed out that there has been a definite relationship between the use of research and education inputs in agriculture and other inputs. As research and education inputs grew in importance, the tendency was for labor inputs to decrease sharply, land inputs to decrease moderately, and capital inputs to increase substantially. In other words, research and education have contributed to the substitution of capital inputs for labor inputs in agricultural production. The significance of this development in terms of banking needs and opportunities can only be comprehended after examining pertinent statistics and facts.

Increase in the Value of Farm Produce

Unprecedented advances in technology have enabled Canadian farmers to increase agricultural production about fifty per cent in the last two decades. The Canada Year Book--1966 takes note of this trend by reporting the value of all farm produce in 1964 at \$3,455,600,000 for Canada, excluding Newfoundland. This was a record high and exceeded the

demonstrated by the fact that in 1911, 54.5 per cent of our labor force was needed in agriculture, and in 1961 the percentage had declined to 10.0 per cent.⁴ As at October, 1966, only 7.5 per cent of the labor force was employed in agriculture.⁵ The increase in output per man-hour on the farm is at least as high as in industry. The Royal Commission on Canada's Economic Prospects reported that "when it is stated--as is true--that productivity in agriculture is lower than in any other sector of the Canadian economy, it must be remembered that output per man-hour on many Canadian farms is probably at least as high as in many manufacturing concerns. When attention is drawn--as it should be--to low average incomes in agriculture, it must be remembered that some Canadian farmers make with fair regularity an income that many of their fellow citizens would envy".⁶ A recent thesis completed at the University of Manitoba reveals that farm output in Canada has increased continuously during the period 1931-1961.⁷ Mackenzie stated that in the period 1947-1951 agricultural productivity rose 63 per cent.⁸

⁴Dominion Bureau of Statistics, Ottawa, Canada Year Book, 1966, p. 512; 1915, p. 71.

⁵Economic Surveys, Organization for Economic Cooperation and Development, Paris, 1967.

⁶Royal Commission on Canada's Economic Prospects, Final Report, November, 1967, p. 150.

⁷Kulshreshtha, S. B., Comparison of Farm and Non-farm Incomes in Canada 1926-1961, (Ph. D. Thesis) University of Manitoba.

⁸Mackenzie, William, Comparative Resource, Productivity, and Income Effects of Canadian and United States Farm Policies, J. F. E., Vol. #47, No: 5, Dec. 1965, p. 1137.

This decline in the size of the population found in the agricultural industry relative to the total population is a positive indication that Canada has a developing economy, characterized by a growing secondary industry. (Table I).

The total farm population has declined rapidly since 1941. According to the Census, during the period 1941-1961 the number of occupied farms decreased from 733,000 to 480,293 respectively (23 per cent). However, while the number of farms has decreased the physical volume of farm production has risen.

Increase in the Size of the Farm Unit

The reduction in the number of occupied farms in Canada has been associated with a consolidation of farm units. As a result, there has occurred a considerable increase in average number of acres per farm. (Table II). Although the average farm has extended its acreage by more than 50 per cent in the period 1941-1961, the largest increase has occurred on the Prairies.

This increase in the size of the average farm and the increase in the efficiency of farmers together with a declining farm labor supply has been made possible by the following developments:

1. Large-scale mechanization
2. Better farm methods
3. Better crop varieties
4. Greater production per animal due to improvement in breeding and increased feeding efficiency

TABLE I
TREND OF THE FARM POPULATION
AND IT'S RELATION TO CANADA'S TOTAL POPULATION

Year	Rural farm	Rural Non-farm	Urban	Farm population as per cent of total	Total
1911	N.A.	N.A.	3,272,947	54.58	7,206,643
1921	N.A.	N.A.	4,352,122	50.48	8,787,949
1931	N.A.	N.A.	5,572,058	46.30	10,376,786
1941	N.A.	N.A.	6,252,416	45.66	11,506,655
1951	2,827,732	2,553,444	8,628,253	20.18	14,009,429
1961	2,072,785	3,465,072	12,700,390	11.37	18,238,247

Note: Rural population is defined as that part of the total population which resides outside cities, towns and incorporated villages. Separate farm and non-farm figures are not available for the period 1911-1941. The rural population figures were 3,933,696; 4,435,827; 4,804,728; and 5,254,239 for the four decades respectively. Here, the rural population excluded all cities, towns and villages of one thousand or more population, whether incorporated or not, for the decade 1951-1961.

TABLE II
AVERAGE FARM SIZE
IN SELECTED PROVINCES AND CANADA
1931-1961
(in acres)

Province	1931	1941	1951	1961
Nova Scotia	109	116	135	178
Ontario	119	126	139	153
Manitoba	279	291	339	420
Saskatchewan	296	432	550	686
Alberta	287	434	527	645
Canada	224	237	279	359

5. Improved non-farm inputs--commercial fertilizers, chemical pesticides, insecticides, etc. Farmers have responded to these inputs. For example, fertilizer sales on the prairies increased from \$6.3 million in 1956 to \$62 million in 1966.

This has resulted in a widespread substitution of capital for farm labor leading to an agricultural industry which has been transformed from a labor-intensive to a capital-intensive activity. The average capital investment was \$27,383 per farm in 1961.⁹ Of the 140,260 farms with sales of \$5,000 or over, the capital investment per farm was almost double this amount. (Table III). Specifically, 30 per cent of the commercial farms produce almost 70 per cent of the total agricultural output, their average investment being \$50,423, as compared to \$17,904 for the "non-commercial" farmer. The average capital investment per farm in 1961 was almost five times the 1941 investment.

This trend toward fewer farms using more capital and producing a larger quantity of products has definite implications for all segments of the Canadian economy. From the viewpoint of the individual farmer, the ability to acquire sufficient capital is becoming crucial. The farm manager, in addition to being confronted with more complex operation problems, must be flexible enough to reorganize his business constantly as techniques change. This frequently means that he must acquire substantial additional amounts of capital.

Thus the commercial farm has changed over the past one hundred and fifty years from a self-sufficient type of operation to a complex

⁹Dominion Bureau of Statistics, Ottawa, Canada Census, 1961.

TABLE III
ECONOMIC CLASSIFICATION OF FARMS
CENSUS 1961

<u>Type of Farm Sales</u>	<u>Number of Farms</u>	<u>% of Total</u>	<u>Ave. Investment Per Farm \$</u>
Over \$25,000	9,507	2.0	122,570
15,000-24,999	14,411	3.0	73,175
10,000-14,999	25,923	5.4	54,906
5,000- 9,999	90,419	18.8	37,925
3,750- 4,999	49,754	10.4	27,782
2,500- 3,749	69,023	14.4	22,597
1,200- 2,499	94,256	19.6	17,098
<hr/>			
All Commercial Farms	353,293	73.6	32,908
<hr/>			
<u>Small Scale Farms</u>			
Part-Time Farms	37,645	7.8	12,100
Other Small Scale Farms	45,301	9.4	11,365
Residential and Other Small Farms	43,850	9.1	10,516
Institutional Farms, etc.	814	-	139,719
Total Other Farms	127,610	26.4	12,109
Total - All Farms	480,903	100.0	27,383

Source: Dominion Bureau of Statistics Census of Canada, Agriculture, 1961
Ottawa: Queen's Printer.

specialized enterprise. Whereas the farmer used to produce all his food and clothing needs and sell little of his produce, now the modern commercial farm family sells nearly all of its produce. The typical Canadian farm today may be a grain farm in Saskatchewan with an average farm size of 825 acres, a tobacco or hog farm in Ontario, an egg factory in Nova Scotia with flocks of 200,000 birds or more, or a fruit farm in British Columbia. It becomes evident that the commercial farm today is not merely land, machinery, livestock, and inventory items, along with enough labor to operate, but a business requiring top-flight management. The top one-third to one-half of our commercial farms require high level managerial ability to co-ordinate the resources into a profitable operation.

THE CHALLENGE OF A CHANGING AGRICULTURE TO COMMERCIAL BANKING

Today's commercial farming operation is a business and one that is challenging agricultural lenders to treat farm credit on a "business" basis. It has been estimated that the demand for credit by farmers increased from approximately one billion dollars to 2.9 billion dollars during the period 1951-1965. (Table IV). It is consistent with the dramatic changes in the economic position and financial requirements of agriculture that farmers have come to depend on credit to an increasing extent. The nature of the agricultural industry places credit in a position of particular importance in agricultural finance.

The necessity for farmers to command larger amounts of capital

has brought about innovations in financing. To illustrate, capital today is often made available to farm producers through suppliers, processors and speculators. In many commercial feeding operations, the operator may finance his land, buildings, and equipment through a financial institution, but have a large part of his operating capital provided by suppliers and processors. Such arrangements make it possible for the individual operator to obtain more capital and, in many instances, to help spread risks. Various types of vertical integration and contract arrangements have been developed to enable farm operators to obtain large amounts of capital that are frequently necessary for efficient operation. These developments also have been responsible for the use of more merchant and dealer credit by farmers.

The changing character of Canadian agriculture indicates that, in the future, management will become the key to successful farming. Therefore, it becomes imperative that the banking institutions adopt a lending policy whereby management is emphasised. Such a lending policy would result from the adoption of the Farm Management Loan. This loan as illustrated in Chapter V provides a means whereby bankers could lend to agriculture more on the productivity of the loan proceeds. The traditional concept of collateral security assumes a secondary position--important but not sufficient.

The Farm Management Loan was proposed as a means whereby farmers would receive a single source of credit, which would provide short-, intermediate-, and long-term financing. Therefore, a thorough examination into these three types of financing will be conducted.

CHAPTER III

A REVIEW OF THE EXISTING TYPES OF CREDIT IN AGRICULTURE

The primary obstacle to the "packaged credit" service or complete "line-of-credit" offered under the Farm Management Loan will be reluctance of the chartered banks to re-enter the area of long-term credit. Consequently a major portion of this chapter will be devoted to an extensive discussion of this field. The feasibility of the banks moving into long-term lending will be assessed in view of the credit institutions already in this area.

Farm credit is generally classified under the heading of three categories based on the purpose and maturity of the loan: short-, intermediate-, and long-term credit.

Short-term Credit

Short-term loans are those which mature in one year or less from the time the loan is granted. They are designed to provide the funds necessary to pay the operating costs of producing farm crops and livestock. Bankers have long supplied farmers with operating loans for seasonal farm production. The maturity dates on these loans run from simple ninety-day, to six month, or one-year notes. The funds are transferred to the use of the borrower when a note is approved, and the note requires a lump-sum repayment at maturity. Such loans, being productive in nature and possessing short maturities, seem to be a welcome part of the bank's loan portfolio. Loans of this nature service such items as feed, seed, fertilizer, feeder cattle, hogs, poultry, machine

operation, repairs, and other current expenses. There are three general reasons why short-term funds are required by farmers:

1. To pay current operating expenses.
2. To make intermediate-term capital investments.
3. To consolidate and pay other debts.

To the extent that there is heavy farm borrowing on short terms for intermediate-term purposes there would appear to be some weakness in the bank farm lending policies. Loan repayments should be spread over the productive life of the asset. The maturity of the loan must be timed with the marketing of the crop or livestock with which the loan is associated and repayment should be made with the specific funds from the venture which was originally financed. For example, the maturity of a loan to purchase feeder cattle should coincide with the proposed time the cattle are to be marketed. "Since every loan is for a specific purpose, the repayment terms should be in line with operating income and the time when it will be available".¹

The principal sources of short-term credit in Agriculture are shown in Table IV. Along with commercial banks, credit unions, finance companies, dealers, and private individuals comprise the major sources for short-term loans. The volume of short-term credit has shown a continuous increase and reflects the increasing volume of inputs per

¹American Bankers Association, Intermediate-Term Bank Credit for Farmers, Agricultural Commission, American Bankers Association, New York, N.Y., 1957, p. 23.

TABLE IV

ESTIMATED FARM CREDIT EXTENDED AND OUTSTANDING 1951, 1955 AND 1961-1965

Source and Term of Credit	Amount Credit Outstanding 1951	Amount Credit Extended 1955	Amount Credit Outstanding 1961	Amount Credit Extended 1961	Amount Credit Outstanding 1961	Amount Credit Extended 1963	Amount Credit Outstanding 1963	Amount Credit Extended 1964	Amount Credit Outstanding 1964	Out- Standing As % of 1964 Total	Amount Credit Extended 1965	Amount Credit Outstanding 1965	Out- Standing As a Per- cent of Total
LONG TERM													
- Federal Govt. Agencies	220.2	270.0	89.0	305.5	111.6	451.2	154.4	559.2	212.2	21.2	223.9	712.0	24.2
- Provincial Govt.	82.3	128.7	40.0	183.7	41.4	228.6	49.5	254.0	9.6	9.6	61.5	253.4	9.7
- Private Indiv.	281.4	357.9	31.5	315.3	40.0	316.0	40.0	316.0	12.0	12.0	50.0	353.0	12.0
- Insee., trust loan, & rfwy. cos.	36.5	21.7	4.9	21.8	12.0	71.1	15.0	80.0	3.0	3.0	10.0	70.0	2.4
Ind. Dev. Bank					4.8	8.0	5.9	12.0	5.5	5.5	14.4	12.0	3.5
Total Long-	620.4	788.3	165.4	826.3	209.8	1074.9	264.8	122.12	46.3	46.3	359.8	1439.4	48.9
Intermediate Term													
Banks (F.I.L.A.)	N.A.		108.1	193.8	136.0	241.3	150.8	273.1	10.4	10.4	202.7	340.9	11.6
Credit Unions	N.A.	N.A.	5.0	15.0	68.0	100.0	75.0	122.4	4.5	4.5	36.1	80.0	2.7
Priv. Individuals	F.A.	N.A.	20.0	50.0	20.0	77.0	22.0	82.0	3.1	3.1	10.0	46.0	1.5
Prov. Govt.	N.A.	N.A.	-	-	.4	1.2	.6	1.3			2.1	2.6	
Supply & Finance Co.'s	N.A.	N.A.			200.0	250.0	200.0	250.0	9.5	9.5	221.0	250.0	9.5
	N.A.	N.A.	133.1	258.8	424.4	669.5	448.4	728.8	27.6	27.6	471.9	749.5	25.1
Short-Term													
Banks (non F.I.L.A.)	N.A.	N.A.	345.0	290.7	406.6	305.0	577.5	433.0	16.4	16.4	610.0	459.5	15.5
Sup. ly Co. Finance	N.A.	N.A.	507.5	334.5	300.0	200.0	300.0	200.0	7.6	7.6	300.0	200.0	6.8
Credit Unions	N.A.	N.A.	64.9	60.4	30.0	21.0	34.0	22.0	0.8	0.8	87.5	76.6	2.6
Private Individuals	N.A.	N.A.	3.0	3.0	3.0	2.0	3.0	2.0	0.1	0.1	5.0	3.0	.1
Treasury Branches	N.A.	N.A.	9.5	6.3	14.2	10.1	12.5	9.3	0.3	0.3	0.6	1.3	
Finance Co.'s, dealers stores, etc.	N.A.	N.A.	23.8	23.8	55.0	22.0	50.0	23.0	0.9	0.9	40.0	17.0	5.5
	N.A.	N.A.	953.7	718.7	803.8	560.1	987.0	689.3	25.1	25.1	1,043.1	757.4	25.7
Total Outstanding Credit	1,030.3	1,242.4	1,802.5	1,803.8	1,412.0	2,301.5	1,700.3	1,874.8	100	100	2,016.3	1,030.0	100.0

Sources: 1951 and 1955 data by E. C. Moga in Ch. 6 of "Progress & Prospects of Can. Agric.", 1951-1963 and 1964 estimates by R. S. Rust, 1961-The "Economic Analyst", Vol. XXIII, No. 1, Apr., 1966, p. 23-26. 1961-1963 and 1964 estimates by R. S. Rust, 1961-The "Economic Analyst", Vol. XXIII, No. 1, Apr., 1966, p. 23-26.

producing acre. "The transformation in farming has expanded greatly the demand for operating credit. A sharp increase in cash operating capital was inherent in the adoption of technological improvements including mechanization and specialization. Mechanization involved new cash requirements for fuel and repairs. The increased use of fertilizers, pesticides, antibiotics, and prepared foods all added to the cash or credit needed to carry on the year to year operations of modern farms".²

Intermediate-term Credit

Intermediate-term credit is that extended for purchases of assets that have a productive life in excess of one year (usually payable within three to ten years). These loans may be made for such purposes as acquiring livestock breeding herds and herd replacements, machinery and equipment, drainage, pasture restoration, and to provide for other needs that involve credit for more than one year's duration.

The Federal Government was encouraged to enact legislation which would induce the chartered banks to enter the intermediate-term credit field. Preceding the adoption of the Farm Improvements Loan Act, there was a lack of interest in this area by the banks. The reason for this attitude resulted from a lack of qualified personnel on the bank staff which could properly assess the risk in granting loans to agriculture. This conclusion is supported by the following testimony:

²American Bankers Association, Agricultural Production Financing, Agricultural Commission, New York, N.Y., 1951, p. 11.

----In the postwar period, these commercial short term lenders (chartered banks included) had expanding opportunities in non-farm lending which appeared more profitable and less risky than farm loans. They tended to give these non-farm loans priority in their postwar expansion----banks were uncertain about farm lending as a result of their experience in the 1930's.³

It should also be pointed out that up until the recent revision in the Bank Act, the commercial banks were not permitted to accept farm real estate as security for a loan. Statutory restrictions of this nature may have resulted in a rationing of intermediate-term credit to farmers.

The Farm Improvements Loan Act was passed in 1944 to encourage the commercial banks to extend a greater quantity of intermediate-term credit to farmers. In 1961, the Industrial Development Bank also began granting this type of credit to farmers. The definition of "industrial enterprise" was broadened to include the agricultural sector. Dr. Gilson indicates, "in addition, that part of the credit extended under Part III of the Federal Farm Credit Act may be classed as intermediate-term credit in the sense that the portion of the loans secured by chattel mortgages are repayable within ten years".⁴

Intermediate-term loans are usually loans secured by a chattel mortgage, a sales contract, or other form of security agreement. Commercial banks in Canada are permitted to make loans to agriculture under

³D. W. Carr & Associates, Farm Credit In Canada, Working Paper prepared for the Royal Commission on Banking and Finance, Ottawa, November 1962, p. 53-4.

⁴Gilson, J. C., Farm Credit--The Current Situation in Canada, prepared for presentation to the 5th National Farm and Business Forum sponsored by the Agriculture Bureau of Winnipeg Chamber of Commerce, March 19, 1964.

Section 86 and 88 of the Bank Act. Section 86 permits the bank to acquire and hold any warehouse receipt or bill of lading as security for the payment of any debt incurred in its favor, or as security for any liability incurred by it for any person, in the course of its banking business. Section 88 of the Bank Act permits advances to be made to farmers upon the security of:

Section 88 (I)

(c)--crops growing or produced upon the farm.

(d)--to any farmer

1.--for the purchase of seed grain or seed potatoes, upon the security of which the seed grain or the seed potatoes and any crop to be grown therefrom

2.--for the purchase of fertilizer, upon the security of the fertilizer and any crop to be grown from land on which, in the same season, the fertilizer is to be used, and

3.--for the purchase of binder twine and the crop in the harvesting of which the binder twine is to be used;

(e)--to any farmer or to any person engaged in livestock raising upon security of livestock, but the security taken under this paragraph is not effective in respect of any livestock that at the time the security is taken is, by any statutory law that was in force on the 1st day July, 1923, exempt from seizure under writs of execution;

(f)--to any farmer for the purchase of agricultural implements, upon the security of such agricultural implements;

(g)--to any farmer for the purchase or installation of agricultural equipment or a farm electric system, upon the security of such agricultural equipment or farm electric system

(h)--to any farmer for

1.--the repair of an agricultural implement or of agricultural equipment,

2.--the alteration or improvement of a farm electric system,

3.--the erection or construction of fencing or works for drainage on a farm,

4.--the construction, repair, or alteration of, or making of additions to, any building or structure on a farm, and

5.--any works for the improvement or development of a farm for which a farm improvement loan as defined in the Farm Improvement Loans Act may be made, upon the security of agricultural implements, but security taken under this paragraph is not effective in respect of any agricultural implements, that, at the time the security is taken, are by any statutory law that was in force on the 1st day of September, 1944, exempt from seizure under writs of execution".⁵

The availability of credit under these sections of the Bank Act has contributed greatly to the development of the farm enterprise and the farm-service industries. Along with commercial banks, supply companies, credit unions, and private individuals furnish the bulk of the credit necessary to handle these loans. The commercial banks through their Farm Improvement Loans are the largest source for intermediate-term credit, loaning approximately 45 per cent of the total in 1965.

(Table IV).

The factor of fundamental importance in the success of this type of loan is the correlation of the payment program with the repayment capacity of the borrower. Loan payments are characteristically made in annual or seasonal instalments over the term of the loan. It is desirable that the term be consistent with the life of the item purchased and repayment completed before the item is no longer serviceable.

⁵Government of Canada, The Bank Act, Chapter 87 assembled to 23rd March, 1967, p. 67-68.

The funds for making payments could come from depreciation allowances or the net profit derived from the productivity of the item for which the loan was advanced.

The need for intermediate-term credit is the result of large-scale mechanization of farms and a more extensive size to the farm unit.

More capital is required and to the extent that it has been forthcoming it has contributed greatly to the mechanization of agriculture. It allows the farmer to maintain and manage his working capital while acquiring the capital items needed in his operation. The increasing importance of intermediate-term credit in modern agriculture is described by R. S. Rust in the following quotation:

Opportunities for banks to provide better overall farm financial programs are increasing and rapidly changing. Dynamic developments in mechanization, expansion of livestock enterprises, and higher cash operating expenses are clear evidence that banks will be charged with the responsibility of serving farmers with more credit on an intermediate-term repayment basis in the future.⁶

Commercial bank policy is not alone responsible for the existing gap between the demand for, and the supply of short- and intermediate-term credit. Banks have been frustrated by certain statutory restrictions. Firstly, the interest rate charged on a loan should reflect the risk involved in making the loan. Formerly, under Section 91 of the Bank Act, a bank could not charge a rate of interest or discount higher than 6 per cent per annum on any loan or advance payable in Canada.

⁶Rust, R. S., How Much Farm Credit in Canada, The Economic Annalist, February, 1963.

This 6 per cent ceiling may have precluded the banks from attractive lending business in agriculture. However, this obstacle has been removed by the recent revision of the Act. Secondly, the maximum rate of interest banks can charge on loans granted under the Farm Improvements Loan Act of 1944 is 5 per cent. This Act was introduced as "an Act to encourage the provision of Intermediate-Term and Short-Term Credit to farmers for the Improvement and Development of Farms, and for the Improvement of Living Conditions thereon".⁷ Its original purpose was designed to encourage a high level of employment and income after World War II. Many argue that the 5 per cent interest rate is unrealistic when in periods of "tight money policy" the bank rate exceeds the rate of interest the banks can charge their customers. For example, during November 1967, the bank rate was increased to 6 per cent. Hence, it is not too surprising that the banks are somewhat hesitant to lend money at one per cent below the rate which is designed to reflect the financial climate in the country. In periods of "tight-money" the banks have been loaning to farmers under the farm improvement loan, to maintain goodwill. It is interesting to note that during the early 1950's the 5 per cent interest rate was feasible. The bank rate did not exceed 3 per cent until April 4, 1956. It was as low as $1\frac{1}{2}$ per cent during 1955. However, at present interest rates in the money market the commercial banks have no particular incentive to make these guaranteed loans.

⁷By-Laws, The Canadian Bankers Association, Statutes of Canada, The Bank Act, and Related Statutes, Chapter 48, p. 42-43.

Long-term Credit

Long-term credit is usually designated by farm loans secured by real estate mortgages, the repayment of which may extend up to twenty-five years or longer. Most loans require annual payments which include payment of interest plus a portion of the principal.

The most common suppliers of mortgage loans are:

1. The Federal Government, through legislation under the Farm Credit Act, and the Veteran's Land Act.
2. The Provincial Governments.
3. The life insurance companies.
4. Private individuals.

Table IV shows the amount and proportion of real-estate loans supplied by each. Long-term credit to farmers by private individuals (mostly farmer owners of the land) is supplied when the latter sell their lands under Agreement for Sale, or for some, a down payment plus a first mortgage on the land to be purchased.

A BRIEF HISTORY OF LONG-TERM CREDIT IN CANADA

Historically, farmers in Canada were dependent upon credit institutions that were specialized mainly in non-farm lending. Long-term lending was initiated during the latter part of the 19th century with the formation of building societies and later the trust and loan companies. During this early era, any public credit was limited to land grants and assistance to aid settlement. This period was characterized by high interest rates on mortgages, limited funds and unreasonable repayment terms.

The early 20th century marked a change in the attitude of investors in farm mortgages. Domestic and foreign sources directed ample funds to the lenders of mortgage funds. By 1914, more than \$200,000,000 in farm mortgages were outstanding in Canada by trust, loan and insurance companies.⁸ However, the conditions and terms of such credit proved to be incompatible with the ability of farmers to repay the loans. For example, any loan funds invested in agriculture came at high interest rates ranging from eight to fifteen per cent. The best repayment period to be obtained was five years. As a result, farmers either lost their farms along with any down payment or were forced to refinance the loan at an additional cost. Spokemen for the farmers began to urge that the government should come to their assistance.

The mortgage and trust companies continued to dominate the mortgage lending field in the 1920's. It was not until the farm depression of the 1930's that their enthusiasm became dampened. Their losses were indirectly the result of failing to understand the nature of the agricultural industry. The outstanding farm mortgages and agreements for sale, held by the mortgage companies, declined steadily between 1928 and 1952, falling from \$183,000,000 in 1928 to \$35,000,000 in 1952.

The first intrusion by the government into the commercial lending field came in 1917. This development was recommended by a Commission on Agricultural Credit in Saskatchewan. The Province of Manitoba,

⁸Easterbrook, W. J., & H. G. J. Aitken, Canadian Economic History, Toronto, 1958.

closely followed by Saskatchewan and Alberta, passed legislation designed to protect farmers from foreclosures. Manitoba and Saskatchewan actually put the legislation into operation under Loan Boards, while Alberta never put it into force. Active loan operations were carried out by these two provinces until 1923. After 1923 lending declined until its cessation at the beginning of the depression. All loans made have since been liquidated.

In 1927 the federal government passed legislation to create the Canadian Farm Loan Board but due to the depression it was not established until 1929. The purpose of the Board was to make long term mortgage loans to farmers on the security of farm land. The operations of this agency's successor, the Farm Credit Corporation, will be discussed later.

No history of long-term farm credit would be complete without reference to the Dominion Soldier Settlement Board established after World War I. It was designed to aid in the settlement of ex-servicemen on farmland. In addition, it helped finance the purchase of livestock and equipment used to work the land. This Board was replaced by the Veteran's Land Act in 1942.

SOURCES OF LONG-TERM CREDIT

Provincial Farm Credit Program

During the depression the provincial farm credit agencies gradually ceased operations. By 1940, only the Province of Quebec remained in the farm lending field. However, it did not enter until 1936 with

the passing of the Quebec Farm Credit Act. This late entry allowed the province to escape the low yields and prices which had characterized farm income since 1929.

The rapid changes following World War II outlined in Chapter I put increasing internal pressure on the provincial governments for greater participation in the long-term (mortgage) credit field. Consequently, by 1959, nine of the ten provinces were once again actively engaged in extending mortgage credit to farmers. "New farm credit legislation was passed by Ontario in 1952, Newfoundland in 1953, Nova Scotia in 1954, Alberta in 1957, Manitoba in 1958, Prince Edward Island and Saskatchewan in 1959. Amendments to existing farm credit legislation were made by both New Brunswick and Quebec during this period."⁹

Manitoba

In 1958 the Province of Manitoba enacted legislation which provided credit to farmers under the Agricultural Credit Act. This act was subsequently amended in 1959, 1963 and again in 1965. The Act is administered by the Manitoba Agricultural Credit Corporation and was intended to serve the following purposes:

1. To provide for long-term loans to farmers.
2. To assist farmers in establishing and developing family farms as economic units.
3. To aid in the transfer of family farms from father to son.

⁹Rust, R. S., Farm Credit Legislation in Canada, The Economic Annalist, Volume XXXIV, No's. 5-6, Oct. to Dec., 1964.

4. To assist in the rehabilitation of family farms that are uneconomic into units that are economic.
5. To consolidate outstanding liabilities incurred for productive agricultural purposes.^{10, 11}

Loans made by the Corporation to the farmer are extended under Part I and Part II of the Act. The corporation is not permitted to make loans of an annual nature (short-term).

Under Part I, loans may be extended for the purchase of land, erection, or improvement of farm houses and other buildings, permanent improvements such as the clearing, breaking, draining or fencing of land; the discharge of debt; the purchase of livestock and agricultural implements. Loans extended under Part I of the Act are of a long-term nature.

Under this part of the Act, the Corporation may make loans up to eighty per cent of the appraised value of the security to a maximum of \$30,000. The security on the loan is a first mortgage on all the land in respect of which the loan is made.

The interest rate is set by the Corporation and is based on the rate of interest at which the Manitoba Government would borrow money on the security of its debentures.¹² A special provision is made for

¹⁰The author is grateful to Mr. Lorne Leggat of Manitoba Agricultural Credit Corporation, Winnipeg office, for information on the operation of the Corporation.

¹¹An economic farm may be defined as one or more farms forming a single unit. The revenue from this new unit is sufficient to enable the owner to support a family adequately, to maintain the soil productivity, to provide for the upkeep of the buildings and meet his obligations.

¹²On. cit., 8

young farmers (21 - 35 years of age) whereby the rate of interest charged is one and one-half per cent less than the established rate at the time the loan is granted. In addition to a lower interest rate of $4\frac{1}{2}$ per cent, the young farmer is granted an additional five year period to discharge the debt. At present, the loan is to be repaid in the way of equal annual instalments of principal plus interest sufficient to discharge the debt in not more than 30 years.

There are certain conditions under which the loans are granted. The applicant must be a resident of Manitoba and have resided in Manitoba for three years preceding the date on which his application was received. He must have been engaged in farming in the province during three of the five years preceding the date of the application. Under exceptional circumstances the Corporation may waive this stipulation if it is of the opinion that the applicant's knowledge of farming is sufficient. The directors also consider such qualifications as a person's past record, credit rating, long-run plans, etc.

In contrast to Part I of the Act, loans under Part II are of an intermediate-term nature. The purpose of such loans is the expansion and improvement of beef cattle herds in the province. Under this Part, the Manitoba Agricultural Credit Corporation may make loans up to a maximum of \$10,000 for a period of up to ten years. The interest rate at present is six per cent and is to be paid each year along with a portion of the principal. There is no reduction in interest rate for farmers between the ages of 21 and 35 years under this part of the Act.

Saskatchewan

Long-term credit is available in Saskatchewan under the Family Farm Credit Act, 1959, whose purpose is to provide a source of credit for the establishment and development of family farms as economic units.

The Act is administered by the Co-operative Trust Company which finances farm loans by selling securities backed by the Saskatchewan Government and yielding a $4\frac{1}{2}$ per cent interest rate.

The maximum loan is established at \$25,000 or eighty per cent of the value of the asset whichever is greater for the loan is a first mortgage on the land. These loans are available only to farmers with assets of less than \$35,000. The farmer is given up to thirty years to repay the loan provided he is less than forty years of age. The interest rate is stipulated at $6\frac{1}{2}$ per cent and includes a life insurance coverage.

The provincial government guarantee provides remuneration of up to ten per cent of the total loans made by the Trust Company.

Alberta

Alberta's Farm Purchase Credit Act, passed in 1957, provides for long-term loans to farmers from a revolving fund administered by a Municipal Purchase Board. The purpose and conditions of the loans are similar to those of Manitoba and Saskatchewan.

Any loan extended under this Act must provide for an economic farm unit as judged by the Board. Under the terms of the Act, the person selling the property must finance at least 30 per cent of the selling

price. Furthermore, the person buying the land must contribute a minimum of 20 per cent of the purchase price of the land. The provincial government advances the remaining 50 per cent or \$24,000, whichever is the lesser amount. The loan must be repaid within twenty years.

The interest rate to the purchaser is 5 per cent and includes life insurance for the amount of the liability. No loan can exceed twenty years duration or until the lender's sixty-sixth birthday, whichever occurs first.

Ontario

Long-term financing is available to qualified young farmers in Ontario under the Ontario Junior Farmers Establishment Loan Corporation. This body which became active in 1952, suspended operations in 1959, but was re-established in 1962 as a measure of support for the family farm.

In order to qualify for a loan under the Act an applicant must be between 21 and 35 years of age and a resident of Ontario for at least three years preceding the time of application. He must have at least three years of farming experience. All loans are secured by a first mortgage on the lands farmed by the borrower and must not exceed eighty per cent of the appraised value of the security, or \$40,000 whichever is the lesser.

The interest rate is 5 per cent, payable in instalments along with a portion of the principal. Payment of principal is waived on the first installment. No loan is to exceed thirty years.

Life insurance is also required under the provisions of the Act on loans over \$20,000.

Quebec

Mortgage credit is available to farmers in the Province of Quebec under the Quebec Farm Credit Act of 1936, administered by the Quebec Farm Credit Bureau. The Bureau has set up a rather elaborate organization including several Branch offices and a large field staff in order to carry out its functions effectively.

The Quebec Government decided to enter the field of mortgage credit at a time when the depression was ending. Their objective was to strengthen the weakened agricultural economy of the province. Large investment, required to purchase modern machinery and other equipment in order to again make farming a profitable business, was not forthcoming from the private sector. Hence, the government began extending long-term loans with very low interest rates and liberal terms for repayment of principal.

The Act provides for two types of loans:

1. Loans to farmers who are already established in farming.¹³
(Section 8 (d) of the Quebec Farm Credit Act.)

Credit may be obtained for the purchase of, or improvement to, farm real estate, to consolidate debts, to construct and repair essential buildings, and for other necessities. Loans may be made up to 80 per cent of the appraised value of the security or \$15,000, whichever is the lesser. Security

¹³On. cit., 8, p. 11.

is gained by taking a first mortgage on the land. The term is not to exceed thirty-nine and one-half years. Payments of twenty dollars per one thousand borrowed are made semi-annually, including principle and interest. The interest rate is two and one-half per cent, per annum.

2. Loans to young farmers for the purpose of purchasing an economic farm unit. (Section 8 (e) of the Quebec Farm Credit Act)

The applicant must be between the ages of 21 to 40 years. The conditions of the loan under this section of the act are the same as above with the following exceptions:

- a. The loan is not to exceed 90 per cent of the appraised value of the security or \$15,000, whichever is the lesser.
- b. It is obligatory for the applicant to carry life insurance in an amount equivalent to the size of the loan.
- c. There is a special rebate of one-third of the amount of the loan, up to a maximum of \$3,000, to be granted to the farmer provided he has lived on his farm for ten years following the signing of the note.

The value of the farm which is offered as security for the loan, is determined by means of an on-the-spot appraisal of the land and buildings. The livestock and equipment are not specifically taken into account.

New Brunswick

Long-term credit is extended to farmers in New Brunswick under the Farm Settlement Act of 1912, administered by the Farm Settlement Board. This Act is divided into two parts.

Part I provides for the purchase of farms not exceeding \$10,000 in value for one person or \$15,000 in the case of a partnership. Not less than 25 per cent of the purchase price must be paid to the Board

when the purchaser takes possession of the asset. A farmer who has purchased real estate after April 1, 1946, may also be granted a loan for the purchase of livestock and equipment. The amount of the loan cannot exceed 75 per cent of the appraised value of the livestock or \$7,500, whichever is the smaller amount. These loans are secured by a chattel mortgage. The maximum term is not to exceed ten years. The balance of the purchase price, after deducting the down payment, carries interest at 4 per cent on loans less than five years and 5 per cent on loans exceeding five years.

Part II of the Farm Settlement Act is designed to assist in the establishment of young farmers. They must be sons of farmers who have been residents of the province for at least five years and must themselves have had at least five years of practical farming experience. The purpose of such loans is to purchase real estate, livestock and farm machinery. No loan to any applicant is to exceed \$20,000. The maximum term of any loan is not to exceed thirty years. Interest is to be charged at a rate of 3 per cent on contracts up to fifteen years and 5 per cent on those over fifteen years. Legislation under this Part provides for supervision of the loan. Hence, each borrower must present a plan of operations along with a financial statement before each crop year.

Nova Scotia

Loans of a long-term nature were provided to prospective farmers in the province under the Nova Scotia Land Settlement Act before 1939. In 1939 this legislation was incorporated into the Agriculture and

Marketing Act as Part XVIII, Settlement of Farm Lands, and later became Part XIX of the Agriculture and Marketing Act in 1954. This Part of the Act is administered by the Land Settlement Board. The purpose of the Board is not unlike that of similar bodies in other provinces.

The Act makes provision for the purchasing of farms not exceeding \$30,000 in value for one person or \$50,000 in the case of a partnership. Loans for larger amounts must be ratified by the Lieutenant-Governor-in-Council. Not less than 25 per cent of the purchase price must be paid by the purchaser in cash or by a chattel mortgage.

Only persons over 21 and under 55 years are eligible for loans. In the case of a father-and-son partnership a loan may be granted to borrowers aged 19 to 65. Loans over a stipulated amount are supervised. A borrower whose obligation exceeds \$15,000 must agree to supervision.

Group life and total disability insurance is compulsory but some of the cost is defrayed by the Board.

The Nova Scotia Land Settlement Board is financed through grants from the Provincial Government.

Prince Edward Island

Legislation was passed in 1959 providing for the Assistance to Establish Young Farmers Act. It is administered by the Prince Edward Island Farm Establishment Board.

The purpose of the Board is to extend loans for the acquisition of land, for improvements to consolidate outstanding liabilities, to provide drainage, to purchase livestock, seed, fertilizer, farm machinery

and the equipment necessary for the proper operation of a farm. Land and buildings are appraised on the basis of their value for farming purposes.

Under the Act, and regulations pertaining to the Act, farm loans may be made up to a maximum of \$10,000 or 85 per cent of the appraised value of the security, whichever is the lesser amount. Security is by a first mortgage, chattel mortgage, insurance policies or other securities. Loans have a repayment period of up to twenty-five years. The interest rate is 5 per cent, set by the Lieutenant Governor-in-Council. The age restriction is from 21 to 50 years.

Life insurance is now compulsory for all loans. The farmer's program is supervised.

Newfoundland

In 1953 the Government of Newfoundland passed legislation providing for the Farm Development Loan Act. The purpose of this Act is to aid qualified farmers to improve or enlarge their farming operations.

The Act is administered by the Farm Development Loan Board which may make loans up to \$3,500 for the purchase of livestock and up to \$3,000 for the purchase of farm equipment.

All loans under the Act are secured by a first mortgage on the lands farmed or by means of a chattel mortgage.

The interest rate is three and one-half per cent under an amortization plan. Loans cannot exceed 70 per cent of the appraised value and are to be repaid in monthly, semi-annual or annual installments over

a period not exceeding twelve years.

The Farm Development Loan Board obtains its funds through the Provincial Government's contributions to the Farm Development Loan Fund.

It is obvious from the above discussion that each provincial Act was drafted to meet the special conditions prevailing within the province. While some provinces promoted assistance to the established farmer, some attempted to emphasize the need for establishing young men on farms. The terms of several acts facilitated intensification within the farm unit while others aided extensification of the unit. A critical appraisal of the Provincial Credit Legislation will be made following the examination of other available sources of long-term financing in Canada.

The Growth of the Federal Government Lending Institution

Loans under the Canadian Farm Loan Board were rather restricted at the beginning. In the first five years (1929 to 1933) only \$9,400,000 of credit was issued (Table V). In the next five years, (1934 to 1938), in the midst of the depression, the Board expanded its operations to refinance farmers' outstanding debts. In five year intervals starting in 1939, loans disbursed by the Corporation, decreased steadily (1939 to 1943); increased steadily (1944 to 1948); and remained relatively constant during the period 1949 to 1953. In the 1950's loans of the Corporation began to expand, reflecting a sharp curtailment of other sources of farm financing. Another contribution to expansion in the volume of Corporation loans was the amendments to the Farm Loan Act in 1952 and again in 1956 which provided for a higher maximum loan limit.

TABLE V
 FARM LOAN BOARD AND FARM CREDIT CORPORATION
 LOANS DISBURSED? 1929-66

<u>Fiscal Year</u>	<u>Number</u>	<u>Dollars</u>
1929-30	1,270	2,630,377
1930-31	2,102	3,517,489
1931-32	468	1,966,344
1932-33	655	1,276,114
1933-34	307	558,630
1934-35	352	547,207
1935-36	3,593	7,423,779
1936-37	5,385	11,074,156
1937-38	2,523	5,264,308
1938-39	2,232	4,338,843
1939-40	2,361	4,342,662
1940-41	1,425	2,727,507
1941-42	1,112	2,133,514
1942-43	642	1,320,256
1943-44	590	1,336,103
1944-45	695	1,661,410
1945-46	877	2,121,207
1946-47	1,286	3,273,811
1947-48	1,218	3,185,240
1948-49	1,751	4,595,036

Table V (continued)

<u>Fiscal Year</u>	<u>Number</u>	<u>Dollars</u>
1949-50	1,841	4,942,930
1950-51	1,800	4,693,079
1951-52	1,508	4,469,091
1952-53	1,514	5,118,559
1953-54	1,908	7,000,540
1954-55	2,137	8,207,003
1955-56	2,087	8,254,323
1956-57	2,826	12,183,992
1957-58	3,500	19,342,560
1958-59	4,659	28,368,265
1959-60	5,169	35,840,882
1960-61	5,162	52,305,266
1961-62	5,885	68,574,850
1962-63	7,438	90,924,300
1963-64	8,689	108,009,100
1964-65	10,142	154,813,900
1965-66	11,238	208,984,900

The cumulative total of loans disbursed is \$887.3 million

1965-66 loans outstanding, \$586.4 million

Source: Annual Report and Financial Statements for the Fiscal Year 1965-1966, p. 27

In 1959, the Farm Loan Act was repealed and replaced by the Farm Credit Act. The lending powers of the new agency, the Farm Credit Corporation, were expanded and the direction of its activities transferred from the Department of Finance to the Department of Agriculture. The Corporation expanded its long-term lending rapidly. Outstanding at the end of March, 1966, the Farm Credit Corporation had \$586,300,000 in mortgage loans to farmers. From 1929 to 1966, the Federal Farm Loan Board and Farm Credit Corporation together loaned some \$887,300,000 to farmers. Of this total 71.1 per cent was lent out to farmers in the past five years.

Farm Credit Corporation

As indicated the former Canadian Farm Loan Board has been replaced by the Farm Credit Corporation, which was formed to administer federal legislation under the Farm Credit Act of July 13, 1959.

The Farm Loan Board (1929 to 1959) made 54,624 loans for a total amount of \$169,000,000. The Farm Credit Corporation took over all existing assets, liabilities and functions of the Board. All loans formerly handled by the Farm Loan Board are now made through the Corporation.

Generally, the Act was designed to provide long-term mortgage credit to assist Canadian farmers to organize viable family farm businesses. At the time of its inception, the Minister of Agriculture, The Honorable Douglas Harkness, stated that the Corporation would be guided by the following objectives:

----- to assist competent farmers in the voluntary re-organization of their industry into economic family units, each of which will be of sufficient size to produce, under the operation of its owner, the farm income necessary to meet all operating and maintenance costs, provide an adequate livelihood for the owner and his dependents, and to retire any required credit, with interest within an appropriate term -----.¹⁴

The authorized capital of the Corporation as subscribed by the Federal Government was fixed at \$16,000,000. However, this was increased to \$40,000,000 by an amendment to Section 12 of the Act on May 12, 1966. The present paid-up capital of the corporation is \$22,750,000. To finance its loans to farmers the Corporation was further empowered to borrow from the Federal Government additional funds by way of loans up to twenty-five times the authorized capital or one billion dollars.

The Corporation borrowed \$80,500,000 at 5.25 per cent, \$43,000,000 at 5.375 per cent and \$37,500,000 at 5.625 per cent interest during 1966 to finance its operations. Outstanding loans from the Minister of Finance increased from \$424,235,880 at an average interest rate of 4.7 per cent as of March 31, 1965 to \$564,728,542 at an average interest rate of 4.87 per cent as of March 31, 1966, amounting to \$1,029,998. This was due to an overall inadequate margin between the interest rate on its borrowings from the Minister of Finance and the interest rate on its loans to farmers.

The Corporation was originally designed to be self-supporting.

¹⁴The Queen's Printer and Controller of Stationery, Bill-67, The House of Commons of Canada, Second Session, Twenty-fourth Parliament, 7-8 Elizabeth II, Ottawa, 1959.

Its administration expenses were to be paid from the margin between its costs of borrowing and the interest received from the farmers. It is obvious that the margin is no longer adequate.

The Farm Credit Act provided for two types of first mortgage loans: Part II and Part III loans. Loans under Part II require no supervision other than what might be requested by the borrower. Loans under Part III require supervision.

In order to be eligible for a Part II loan, applicants must be actively engaged in farming or shortly will become engaged in the operation of the mortgaged farm. Under Part III of the Act, applicants must be between 21 and 45 years of age and must have had at least five years of farming experience. The applicant must submit a plan of operations which must be approved by the Corporation until the amount of the loan outstanding is reduced to 65 per cent of the appraised land value. He is also required to submit an annual statement of his operations.

Loans under Part II of the Act are first mortgage loans of up to \$40,000 or 75 per cent of the appraised value of the farm lands, whichever is the lesser. The repayment period is not to exceed thirty years. Interest is at 5 per cent per annum on the first \$20,000 and at $6\frac{3}{4}$ per cent per annum on the remaining \$20,000 of the loan. An additional one-half of one per cent is payable on payments in arrears.

The maximum amount of the loan under Part III is \$55,000 or 75 per cent of the appraised value of land, livestock and equipment. Of this total amount, \$35,000 is at 5 per cent while the remaining portion is

at $6\frac{3}{4}$ per cent interest. The portion of the debt based on the land as security is repayable within thirty years and the remainder is repayable within a period of ten years. At least 60 per cent of the security must be represented in land and buildings, and not more than 25 per cent by farm equipment. It is mandatory that the borrower carries life insurance up to the amount outstanding on the loan.

A successful applicant under Part III of the Act is not eligible for a loan under the Farm Improvement Loan Act unless the principal amount of the loan outstanding is less than 65 per cent of the appraised value of the land or \$20,000, whichever is the lesser.

The Farm Credit Corporation is now able to provide almost the complete requirements of the farmer at the time the loan is granted. Long-term loans are being provided for the financing of machinery, livestock and working capital as well as land and buildings. (Table VI). Although, this is gratifying, difficulties will arise in the future. An appraisal of these difficulties is made below.

Insurance, Mortgage, Loan and Trust Companies

In 1965, insurance, mortgage, loan and trust companies held 2.4 per cent of the outstanding long-term farm credit in Canada. This is a sharp contrast to the early twentieth century when they held almost one hundred per cent of the mortgages. The major companies are presently making limited loans to well established farmers living on the more productive soils. Activities of these companies on the Prairies were

TABLE VI

FARM LOAN BOARD AND FARM CREDIT CORPORATION, LOANS AND PERCENTAGE

DISTRIBUTION BY PURPOSE, 1957-1967

PURPOSE OF LOANS

Fiscal Year	No. of Loans	Total Amount	Land Purchase %	Improvements %	To Pay Land-Secured Debt %	Other Debts %	Taxes %	Live stock %	Equip-ment %	Miscel-laneous %
1957-58	3,702	\$ 21,278,450	27.7	6.8	35.7	20.9	2.3	1.4	3.3	1.9
1958-59	4,805	30,144,950	30.5	7.9	38.2	15.0	2.2	1.6	2.9	1.7
1959-60	5,339	40,031,250	36.7	6.9	34.5	14.2	1.6	1.6	2.9	1.6
1960-61	5,597	60,704,050	53.8	6.1	25.4	9.3	0.6	2.5	1.5	0.8
1961-62	5,885	68,754,850	57.8	7.1	22.0	6.7	0.5	3.2	1.3	1.4
1962-63	7,438	90,924,300	55.4	8.4	23.1	7.9	0.3	3.0	1.1	0.8
1963-64	8,689	108,009,100	55.4	10.1	22.1	7.3	0.3	2.9	1.2	0.7
1964-65	10,142	154,813,900	54.4	11.7	18.1	10.3	N.A.	2.9	1.2	1.3
1965-66	11,238	208,984,900	60.8	11.6	15.4	8.3	N.A.	1.6	0.9	1.3
1966-67	11,632	234,400,000	61.3	13.9	13.4	7.2	N.A.	1.3	1.2	1.7

concerned, until recently, with recovery of long outstanding loans made during the depression.

During an interview with a responsible official of the Great West Life Assurance company, it was indicated that whether or not farm mortgage lending by their company was to survive would be entirely dependent upon the agricultural industry. It would have to compete for their funds along with the non-agricultural sector. He pointed out that in his opinion farm mortgages might require an interest rate of 13 to 15 per cent to be comparable to available investment opportunities in urban housing and industrial construction where the interest rates range from $7\frac{1}{2}$ to $8\frac{1}{4}$ per cent. The reason advanced was that urban mortgages cost less to service. It was stated that a substantially higher degree of risk and uncertainty of loss was involved in making rural mortgage loans. However, at least one insurance company is actively pursuing farm mortgage business, with loans at a seven per cent rate of interest.

The insurance companies have slightly different attitudes among themselves toward mortgage financing in agriculture. Canadian companies have adopted a very skeptical attitude as to whether there would be any substantial growth in their investment in Canadian agriculture. One officer interviewed expressed this opinion in spite of the fact that his company was making rather large investments in United States agriculture. Paradoxically, American-based insurance companies were interested in expanding their present investment in Canadian farming. One company in particular has been able to co-ordinate and specialize its farm

mortgage lending to the degree that it is able to provide funds at an interest rate which has proven attractive to some farm borrowers.

Private Individuals

Private persons continue to be an important source of long-term farm financing. They appear to be supplying about half the mortgage credit extended in 1965. (Table IV). This source reflects transfers within a single family, the holding of mortgages on sale of a farm, and investment in farms by local residents with surplus funds. Some \$353,000,000 in mortgage debt was held by private individuals in 1965. Considering the volume of credit supplied, private individuals have played an important role in farm financing in recent years.

This source of farm mortgage credit is a satisfactory one from the viewpoint of both parties. The lender is generally familiar with the farm, that is offered as security for the loan. He knows the character of the borrower and has knowledge of the local farm production and income conditions. Loans to farmers by such lenders are often more in keeping with the ability of the farmer and the capacity of the farm to carry the debt. The lender also may sometimes be influenced by the personal character of the farmer and extend a larger loan than warranted. This means generally that in this way borrowers get credit, not available from other sources and perhaps at lower overall costs.

Veterans Land Act

The Veterans Land Act of 1942 was designed to assist veterans of the Second World War who desired to settle on land or engage in full-time or part-time farming. It provided an important contribution to the financing of agriculture at a critical stage in post-war history.

The Veterans Land Act is at present divided into three parts.

Under Part I three types of aid are possible:

1. Financial assistance, the amount of which is not to exceed \$6,000 is available to any veteran. Loans may be used for the purchase of land and buildings, building material, livestock and farm equipment. However, not more than \$1,200 can be used for the purchase of livestock and equipment. The borrower is expected to make a down payment of 10 per cent of the amount required for the purchase of the above assets. In other words, the Veterans Land Act provides 90 per cent of the appraised value up to a maximum of \$6,000. Two-thirds of the amount of the loan is to be repaid by the veteran while he receives a conditional grant of $23 \frac{1}{3}$ per cent ($33 \frac{1}{3}$ per cent less his 10 per cent down payment) if he fulfils the terms of his contract for ten years.

2. Assistance is available under Part I whereby loans are available to a maximum of \$5,800, to veterans who have farm rental or purchase agreements that are satisfactory to the Director under the Act. Under this type of assistance, up to \$3,000 of the \$5,800 may be used to purchase livestock and equipment. A twenty per cent down-payment is required for such a purchase, while a ten per cent down-payment is required for the purchase of other assets. While forty per cent of the

livestock and machinery loan must be repaid within ten years, loans incurred for the purchase of land buildings and building materials must be repaid within thirty years. The interest rate is to be $3\frac{1}{2}$ per cent.

In 1.) and 2.) above, the Director of the Veterans Land Act actually purchases the assets. A transfer of ownership is carried out by selling the assets to the veteran under an Agreement of Sale.

3. Qualified veterans who own and operate their own farms may also obtain loans up to \$4,400 at an interest rate of $3\frac{1}{2}$ per cent. The loan must be repaid within 30 years from the time it is granted. The purpose of such loans is to discharge existing encumbrances on farm land, purchase livestock and farm equipment, or to effect other farm improvements. The security for such loans is a first mortgage on land. The total amount of loan must not exceed sixty per cent of the value of such land. The borrower obtaining this type of loan does not get a conditional grant.

Under Part II any qualified veteran may receive financial assistance to build a home. The loan must be acceptable to the National Housing Act. The borrower is given thirty-five years to discharge the debt incurred.

Part III of the Act provides for additional fully repayable loans to full-time farmers already established on commercial farms. The maximum for loans under this part is \$40,000, which includes the balance of the outstanding debt under Part I. Alternatively, farming veterans can obtain a loan for seventy-five per cent of the security of the land and livestock, held by the Veterans Land Act as security for repayment.

The funds must be fully repaid within thirty years and interest at a rate of five per cent is charged on the initial \$20,000. The rate of interest on the remainder in excess of \$20,000 is similar to that periodically established for such loans by the Farm Credit Corporation.

The assistance under this Act will continue until all qualification certificates issued to eligible veterans have been used. Such qualification certificates can be issued up to October 31, 1968. Hence, after this date the Veterans Land Act will be concerned mainly with the collection and supervision of outstanding loans.

Industrial Development Bank

Although the Industrial Development Bank was established in 1944, it did not make its first farm loan until 1959. However, its volume of farm loans did not become significant until 1962.

Essentially, the Industrial Development Bank provides assistance to those industries which are unable to find the required amount of capital from other sources on terms suitable to them. The Bank has sometimes been referred to as a lender of last resort for small and medium sized businesses.

In 1961 amendments to the Industrial Development Bank Act revised the definition of industrial enterprise to include agriculture. The definition now reads "any industry, trade or other business undertaking of any kind". In addition, the authorized capital of the Bank was doubled to \$50,000,000 in order to meet its increased responsibilities. It is guided by two stipulations when considering a loan application:

1. That the required finance for the purpose is not available elsewhere at economic rates.

2. That the proposal is sound, management is capable, and the earning prospects of the business are reasonable. The Bank is now able to handle loans that were too large for the limits of other public financial institutions. This is a very significant development as is pointed out below.

This public credit institution is to function on a business basis in that the interest rate is not subsidized in any way by the Federal Government. Currently, the interest rate charged on farm loans is eight per cent per annum. Security is usually a first mortgage. It appears that the Bank is willing to exercise its new lending authority. During 1959 to 1961, it made only 14 farm loans, whereas in 1966, 185 were granted. Since the revision it had expanded its loans to \$6,876,000 as at September 30th, 1966. This amounted to 5.6 per cent of the total volume of loans granted by the bank in that year.

The Industrial Development Bank obtains its loanable funds from share capital, the Federal Reserve Fund, and debentures.¹⁵

This completes the discussion of the principal sources of mortgage credit in Canada. There follows an appraisal of the role they are playing in modern agriculture.

¹⁵Industrial Development Bank, Report of the President and Statement of Accounts Fiscal Year 1966, Ottawa.

AN APPRAISAL OF EXISTING SOURCES OF LONG-TERM CREDIT IN CANADA

Public Sources of Mortgage Credit

The main comments on public credit, as extended through the Federal and Provincial Governments, are directed to the following areas:

1. The method of appraisal employed by the credit agencies.
2. The loan limits on available credit.
3. The interest rates charged on loans.

The rural appraisers employed by the Manitoba Agricultural Credit Corporation use the market-comparison approach as their method of determining the value of farm property. The mechanics of this method are described by Barlowe as follows:

With this approach the appraiser studies the conditions and prices associated with the sale of comparable properties and values the property he is appraising in terms of the price he feels it will bring in the current market. This approach has considerable merit when one is seeking the current market value of a property. Its dependence on fluctuating market trends, however, makes it less useful for the determination of what some appraisers regard as the longer-term justified or warranted value of properties.¹⁶

One could maintain that the adoption of this appraisal method had led to inflated land prices in Western Canada.

If rural appraisers could accurately determine a market-value for contributions of the non-land assets in agriculture, the above approach to the valuation of land might be acceptable. However, constant returns

¹⁶Barlowe, R., Land Resource Economics, The Political Economy of Rural and Urban Land Resource Use, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1963, p.p. 195.

to scale would have to exist in the industry.

The assumption being made here is that on most farms in Western Canada, there exists increasing returns to scale. Under the present method of land appraisal, arbitrary "market values" are imputed to labor, capital and management. The "residual value" is attributed to the land resource. Therefore, if increasing returns to scale do exist, appraisers are over-estimating the value of land.

The practice of imputing arbitrary charges to capital assets tends to have a significant affect on the absolute values of land under the market-value approach. The two limitations cited are critical where credit policy is involved.

The alternative to using the market-comparison approach would be the income-capitalization method. The logic behind using this approach in appraisal work is that the market value of a property should always equal the present worth of its future incomes. The future flow of economic rents are discounted back to the present.

This method of rural land appraisal has been supported by Dr. J. C. Gilson in a recent speech to the Appraisal Institute of Canada when he stated:

----- From a strictly theoretical point of view, the income-capitalization approach is on much sounder grounds than the market-sales approach insofar as the appraisal of farm property is concerned,-----when a farmer demands a factor input such as land, he does so, not for the direct psychological satisfaction he hopes to get from the land, but for the production and revenue which flows from it. The production and revenue flowing from a factor input can be measured directly by the appraiser. And, indeed, the only justification of value placed on the land as a

productive input is the capitalized value of the future production or income flowing from it.¹⁷

Under this approach the appraiser is concerned with two variables.

He must determine the rent attributable to the land, and he must choose an appropriate capitalization rate.

Recent upward revision in loan limits on available public credit to agriculture has allowed the Federal and Provincial credit institutions to meet present-day needs of farmers. However, the rapidly changing nature of the industry could soon make the available sources inadequate. For example, the amount of financing required by new specialized enterprises, such as egg and poultry feeding operations, hog operations and commercial feedlots will prove to be too great for the present loan ceilings. There would be no cause for concern here if the limits on loans continue to be raised as they have in the past. It is questionable as to whether they will be raised, at least on a subsidized basis as they are at present. The reason for this conclusion is based upon the changes in the relative political strength in the rural and urban sectors. As people continue to move off the farms into the urban areas this grows less and less significant. Historically, government has been pushed by farmer criticism and pressures toward taking direct action to provide farm credit. Restriction of farm credit by commercial lending institutions has been followed by demands of farm spokesmen for government

¹⁷Gilson, J. C., The Income Approach Revisited, prepared for presentation to the Appraisal Institute of Canada, Winnipeg Chapter, January 28, 1965.

assistance. This assistance was forthcoming, directly or indirectly, because of the unwillingness of the government to jeopardise the "farm vote". Thus, as the political strength of the urban centres continues to grow at the expense of the rural areas it is inevitable that this subsidy to agriculture will receive increasing opposition.¹⁸

A conclusion, contrary to the one reached in the foregoing is offered by a prominent American agricultural economist. Although it is the popular conclusion drawn, based upon similar logic, he begs to differ.

Much---too much---has been written about the decline in political power among farmers as their numbers decline. What is rarely mentioned is that the very forces that bring a decline in the number of farmers creates new, and perhaps more powerful, political forces in agriculture. These forces are the large agricultural input producing and marketing industries which did not exist when our farm organizations, Department of Agriculture, or Colleges of Agriculture were formed. These older institutions bemoan the reduction in the number of farmers as if farmers were the only ones with economic interests and political power in modern commercial agriculture.¹⁹

This argument provides evidence supporting the contention that agriculture will not lose political power in the future.

The inevitable result will be an increase in interest rates on loans to where they will cover all associated costs. This assumes that the public will continue to tolerate present reserves of capital allotted for use by the public lending institutions. Thus, it is conceivable

¹⁸The subsidy referred to here is interest rates offered below the cost of making loans. This amounted to over \$1,000,000 in 1965 to 1966.

¹⁹Hathaway, D. E., The Implication of Changing Political Power Structure on Agriculture, American Bankers Association Public Relations Department, National Farm Credit Conference, St. Louis, Missouri, Nov. 13, 1967, p. 8-9.

that interest rates will become more in line with those of commercial non-farm mortgages.

The public lending institutions have caused the private lending companies to withdraw from long-term financing. As the long-term capital requirements of agriculture continue to grow the industry may be forced to look for new sources of funds. Although the government has made new sources of long-term credit available to farmers, they may have permanently closed-off important future private sources. The development may well prove to be irreversible. If the government did decide to restrict its aid to agriculture in this area, the industry would be left in a rather unenviable position.

A third comment on existing public credit measures involves the relatively low interest rate at which mortgage funds are available to agriculture. This low interest rate prevents proper resource adjustments in farming. The income problem in farming is primarily caused by too many human resources in the industry. The five per cent rate of interest will tend to encourage more people to remain farming longer than would otherwise be the case. The adjustment process will be hindered. Furthermore, the subsidized interest rates tend to inflate land values. Although farmers who presently own land are permitted to realize a capital gain, the new generation are forced to operate in a higher cost structure, and hence they will realize lower net earnings as a result.

Insurance, Mortgage, Loan and Trust Companies

As indicated, loans to agriculture extended by insurance, mortgage, loan and trust companies have been drastically reduced in the past three decades. So long as the federal and provincial governments continue offering long-term credit at a subsidized interest rate, it is doubtful whether these financial institutions will purchase very many farm mortgages in the immediate future. While one can appreciate the attitudes both of the farmer and of the investor, it is important that the latter keep an open mind toward farm mortgages. In the event that a situation of competitive interest rates arose, one would hope that these private companies would purchase farm mortgages at interest rates similar to those on non-farm mortgages. The differential in the interest rates charged should be equal to the added risk and uncertainty involved in the farm mortgages. The companies also should be prepared to offer specialized farm loan programs, to keep the interest rate as competitive as possible.

The Industrial Development Bank

The Industrial Development Bank may be the major public source of long-term credit for agriculture in the future. This is foreseeable if the limits on loans by the federal and provincial lending institutions are not raised to meet the needs of agriculture. The federal government is to be commended for enacting visionary legislation of this nature. It is hoped that the Bank will develop a specialized agricultural credit department to facilitate expansion in this area.

THE CHARTERED BANKS AND MORTGAGE CREDIT

The Farm Management Loan has been developed to facilitate the greater participation of the chartered banks in agricultural credit. It was designed so that the banking community could judge the merits of its farm loans more on the basis of productivity of the loan proceeds. Perhaps, even more important, it was conceived as a package-type loan which would include all types of financing to agriculture--short-term, intermediate-term and long-term. It was pointed out earlier that the banks are currently involved in short and intermediate-term financing. Their involvement could be expanded by the adoption of the Farm Management Loan. However, to offer "package-credit" the banks must become involved in long-term financing. Until the recent revision of the Bank Act the banks were forbidden to enter the mortgage-credit field.

The principal obstacles precluding the banks from offering long-term credit to complete the package are:

1. Their inflexibility in adapting to modern farm conditions.
2. The lack of specialized procedures or personnel necessary to appraise farm lands and assets.
3. Competition from the public credit institutions which presently offer unrealistic interest rates on long-term credit.
4. A readily accessible market whereby the banks could discount their farm mortgages. The commitment of the banks as established in the Bank Act, does not allow them to accumulate huge volumes of mortgages--whether farm or non-farm.

Recent developments by the major banks in Canada indicate that there is good reason to believe that they wish to adopt a more flexible attitude toward farm lending. At least five of the banks have personnel with some knowledge of agriculture. The Royal Bank has taken the initiative in this area and have set up an agricultural department under the direction of an agricultural specialist. The Mercantile and Toronto-Dominion also have agricultural staff. The Bank of Montreal, and the Canadian Imperial Bank of Commerce have indicated a willingness to follow the precedent set by the Royal Bank. They indicate that they have personnel on their staff who are trained in Agricultural Economics, but they are presently involved in non-farm lending. Thus, there is evidence that the first obstacle to their involvement in long-term financing has been overcome.

Bank officials interviewed in regard to available appraisal facilities, indicated that they do not have personnel in their employ who have the training to appraise farmland. However, they reported that if they believed long-term credit to be feasible, appraisal experts could be hired. A more practical solution would be to hire them on a fee basis.

The third obstacle to the banks entering the farm mortgage-credit field is posed by the public credit institutions. As previously indicated, the Farm Credit Corporation suffered an operating loss of \$1,029,998 for 1965-66, primarily due to an inadequate margin between the interest rate on its borrowings from the Minister of Finance and the interest rate on its loans to farmers. It is obvious that no private lending institution could operate a business in this manner. It is unlikely it could recover

its losses through a parliamentary vote. Hence, the public credit institutions offer unfair competition to the private institutions. For example, the commercial banks must attempt to maximize their profits in order to secure adequate dividends for their shareholders. In order to do so, their interest rates on long-term credit to agriculture must reflect their cost of obtaining the loanable funds plus their costs of administering the loan and their costs in terms of the risk of loss in lending to particular farmers or on particular enterprises. Therefore, if the banks were to offer farm mortgage credit, it would have to be at substantially higher interest rates than their competitors in the public credit institutions.

In order to determine how serious a problem this posed, prominent rural managers of two major Canadian banking institutions were interviewed. They stated that in their experience, farmers were not particularly sensitive to interest rates charged to them. This was not considered by the managers to be irrational behavior. For example, suppose a farmer needed \$20,000 for operating credit. The managers suggested that frequently the farmer would waive the available Farm Improvement Loan under which the maximum is \$15,000 in order to obtain the necessary funds. Although the differential between the interest rates was only one per cent, in this case, they believed that it would be conceivably higher if the banks could offer the farmer a line-of-credit or credit in the form of a package. Hence, competition from the public credit institutions may not be too serious even though the interest rates on the bank loans would be higher. It is conceivable that the banks could offer a

realistic interest rate to the farmer under the Farm Management Loan providing they had in their employ personnel who could accurately estimate the risk and uncertainty in agriculture. An inexperienced lender would tend to raise the interest rate to a level that would ensure him a wide margin against loss or perhaps he might avoid such lending altogether. The result would be that the interest rate would tend to be excessive on most loans of this nature or that credit would not be available.

The fourth major obstacle to the chartered banks entering the farm mortgage-credit field is the lack of available markets for the mortgages. The practice of a commercial bank making farm mortgage loans and selling them to other financial institutions is fairly common in the United States (Table VII). Insurance companies provide such a market in the United States. However, some insurance companies prefer to make their farm loans directly, disbursing the funds directly to the borrowers. Insurance company officials, when contacted, indicated an interest in farm mortgages, although one company preferred to lend directly to borrowers. Perhaps, a complementary arrangement could be made to the mutual satisfaction of the banks and the insurance companies.

The obstacles outlined above do not appear to be insurmountable. There is good reason to believe that the banks, with more effective guidance in farm lending techniques, coupled with their evident enthusiasm, could increase their participation in agricultural finance, with profit to both the farmers and themselves.

CHAPTER IV

THEORETICAL BACKGROUND

Before proceeding to the empirical observations of the next chapter, it will be beneficial to institute a theoretical background for the establishment of the Farm Management Loan. Since it was designed to provide a complete "package credit" service to the farm unit, it is befitting that the theory of the firm be discussed. The financial statements of the two farm-enterprises to be examined in Chapter V include a balance sheet, statement of profit and loss and a cash flow analysis. Since the latter has not traditionally belonged in the farmer's financial statement, it is appropriate that the theory behind such an analysis be disclosed. Finally, factors affecting decision-making, such as risk and uncertainty, will be explored.

Relation of the Theoretical Considerations to the Farm Management Loan

It often helps to gain insight into a complex phenomenon by first investigating a relatively simple, if not unrealistic situation. Theory necessarily, from time to time, involves oversimplifications and abstractions, but with its aid it is possible to get as close as possible to what the natural scientist does in setting up a model on which he will base an experiment to be conducted under artificial laboratory conditions. The elements omitted from a model correspond to the variables which are held constant in a controlled experiment. The analysis begins by outlining the theory of the firm in relation to the model of the perfectly competitive market economy.

Definition of the Firm

The business firm may be defined as the economic unit for which the entrepreneur calculates his profit and investment; that is, the unit of financial control.¹ The entrepreneur is the individual in charge of production. Generally, the functions may be divided into:

1. Acquiring ownership of the various factors of production.
2. Performing the functions of management by co-ordinating the activities of the various factor units.
3. Estimating future conditions (prediction) in a situation of uncertainty and basing his present decisions upon expectations of the future.

Function of the Entrepreneur

The entrepreneur must transform certain resources into products. The extent to which he is able to perform this task is subject to the technical rules specified by his production function. It is essential to examine the relationship between the capital resource and product. This relationship is known formally as the input-output relationship or the factor-product relationship. The time required for a resource to be completely transformed into product is known as the production period. The period will vary according to the specific nature of the capital expenditure. Frequently, investments and decisions must extend over several years. This aspect of time and uncertainty is the source of the complexity found within the production period.

¹Carlson, Sune, Pure Theory of Production, Augustus M. Kelley, Bookseller, New York, 1965, pp. 10.

The Factor-Product Relationship

The factor-product principle of production is of "fundamental importance" to all entrepreneurs including the farmer, the entrepreneur in agriculture, who is attempting to employ additional capital. He acquires the capital, not because he has any direct desire for it, but because he needs it to fully exploit his productive opportunities--in other words, it is a derived demand. Thus, the amount of capital employed depends entirely upon the production which it makes possible.

Suppose technical possibilities are open to a particular agricultural enterprise which by means of the single factor, capital, can be converted into a single product Y. We assume the prices of capital and output are given on the market. Thus, so long as the total value of the product is greater than the total value of the factor, production should be carried out. The objective should be to maximize profit, the difference between their value.

The foregoing is depicted graphically in Figure I. Suppose we measure quantities of capital along the horizontal (X) axis and quantities of output along the vertical (Y) axis. A technical relationship showing the amount of output per unit of input can now be constructed. Let the amount of capital employed be OC and the amount of product be OP. It follows that the surplus product which accrues to the enterprise will be OK. The value of OK is the surplus of receipts over costs. Make OP equal to AC and let PK represent the quantity of output whose market value equals the value of OC of the factor. Hence, OK may be considered a surplus in that it is the return to the other factors of production

which are kept constant at a certain level. Thus, the conditions of equilibrium can now be set out:

1. The price of capital must equal the value of its marginal product. The slope of the production function must equal the ratio of the price of capital to the price of the product.
2. The marginal product must be diminishing. The production function is convex at the point of tangency.
3. The average product is diminishing--OK can only be positive if the slope of OA is greater than that of AK; it follows therefore that the slope of OA must be diminishing as A moves to the right. The slope of OP measures the average product. When prices are introduced, the price ratio between capital and output must be tangent to the production function.²

Given the technical production function and the assumptions relating to price, the agricultural producer with the use of the factor-product principle is able to deduce what would be an optimum amount of capital to utilize. If this capital is not available internally, the farmer must seek it externally. The traditional lender's attitude dictates that he must have considerable collateral as security before the required capital can be supplied.

The Factor-Factor Principle of Production

Whereas initial concern has so far centered around the factor-product relationship, the factor-factor principle is of equal interest for efficient resource allocation. In examining this criterion two

²Hicks, J. R., Value and Capital, 2nd Edition, Oxford University Press, Amen House, London, p. 79-81.

cases are discussed, i.e. several resources considered from the standpoint of one enterprise and from the standpoint of several enterprises.

CASE I: Several resources will be considered herefrom the standpoint of one enterprise on the farm.

Various factors of production can be substituted for one another, while holding output constant at some particular level. Profit maximization involves the determination of the least-cost combination of variable resources, given the level of output. That resources can be substituted for one another is an acknowledged fact. Optimum allocation of the limited resources is obtained when the returns on a particular resource are equalized in various uses.

Although this principle applies to several resources in the production process, two resources only will be considered here--namely labor and capital. This can be represented by the following equation:

$$(1) \quad Y = f(X_1, X_2 | X_3 \dots X_n)$$

Where Y is the given amount of output which depends jointly upon the inputs X_1 and X_2 in some definite manner when the inputs X_3 to X_n are held constant. X_1 designates labor and X_2 capital. If all the other inputs are allowed to vary while two are held constant we may calculate the marginal rate of substitution for these two. The marginal rate of substitution applied to the factor-factor relationship is not unrelated to the meaning of the term marginal product under the factor-product relationship.

The marginal rate of substitution X_2 for X_1 in figure 2 can be denoted by the ratio: (2) $\frac{dX_1}{dX_2}$

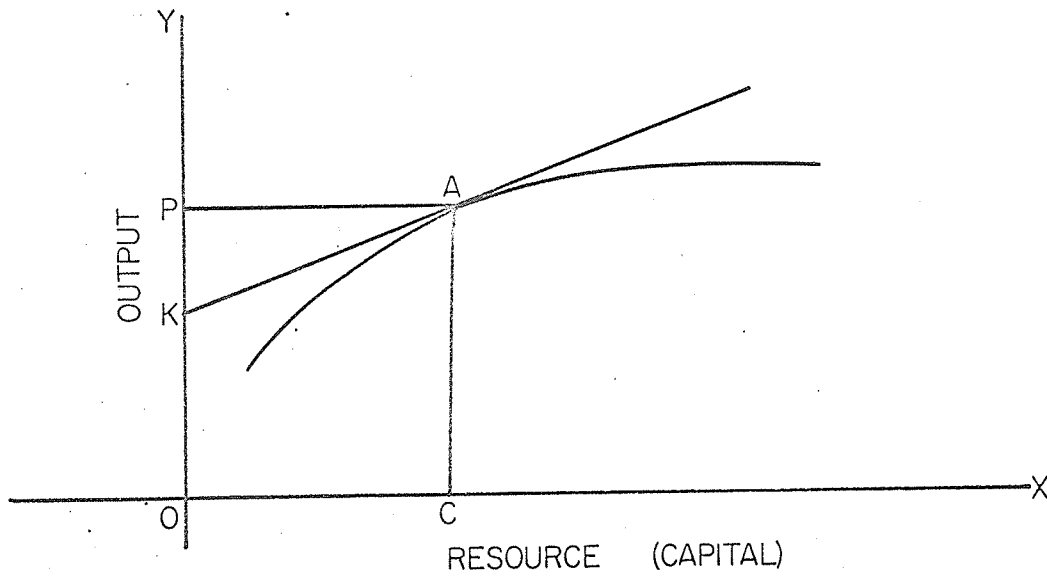


FIGURE 1

The Factor-Product Principle of Production

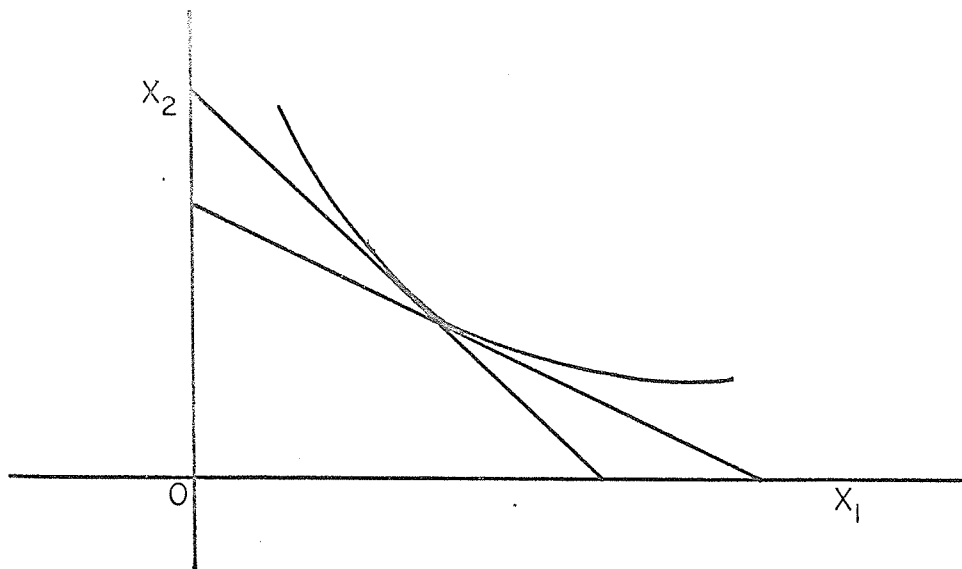


FIGURE 2

The Factor-Factor Principle of Production

reduce its use and, hence, the production of Y. However, when the marginal value products of all inputs used in production of output are exactly equal to their respective prices (costs), the most profitable level of input is being used and, hence, the most profitable amount of output is being produced.

CASE 2: Several resources are being used in more than one alternative enterprise on the farm: (Equation I is altered to $(Y_1 Y_2 \dots Y_n, X_1 X_2 \dots X_n) = 0$).

The criterion of efficient resource use must also be considered in terms of the marginal value productivity of the resources. This can be shown by the following equation:

$$(6) \quad \frac{\text{M.V.P.}_{X_1 Y_1}}{P_{X_1}} = \frac{\text{M.V.P.}_{X_2 Y_2}}{P_{X_2}} = \dots = \frac{\text{M.V.P.}_{X_n Y_m}}{P_{X_n}}$$

where $\text{M.V.P.}_{X_n Y_m}$ is the marginal value product of resource X_n in enterprise Y_m and P_{X_n} is the price of the factors $X_1 \dots X_n$.

Equation (6) may be interpreted to mean that any given factor of production should be so allocated among the alternative farm enterprises that the last unit of the factor yields the same revenue in all enterprises. Similarly, in any given enterprise the last dollar spent on any of the factors should yield the same revenue.

In a framework of perfect knowledge, capital is unlimited. This implies that the firm's demand for and use of each resource should extend to the point where the marginal cost of each resource just equals its marginal value productivity. This is shown by the following equation:

$$(7) \quad \frac{M.V.P. \cdot X_1 Y_1}{P_{X_1}} = \frac{M.V.P. \cdot X_2 Y_1}{P_{X_2}} = \dots = \frac{M.V.P. \cdot X_n Y_1}{P_{X_n}} = \frac{M.V.P. \cdot X_1 Y_m}{P_{X_1}}$$

$$= \frac{M.V.P. \cdot X_2 Y_m}{P_{X_2}} = \dots = \frac{M.V.P. \cdot X_n Y_m}{P_{X_n}} = 1$$

If capital is limited the scarce resources should be allocated in such a way that the marginal value productivity of each of the resources should be proportional to their respective prices.

The Product-Product Relationship

The typical agricultural business consists of various enterprises employing a given set of productive resources. For simplicity, consider a firm that produces two commodities with a given set of resources X_1 . The production function may be written as follows:

$$(8) \quad (Y_1, Y_2; X_1) = 0$$

where Y_1 and Y_2 are two alternative enterprises and X_1 represents the fixed factors of production. The production of Y_2 can be expanded by reducing the production of Y_1 or vice versa.

Where enterprises are competitive i.e. competing for farmer's resources, the optimum allocation of given resources between enterprises exists when the marginal rate of product substitution is inversely proportional to the product price ratio. Algebraically, these conditions can be stated as follows:

$$(9) \quad \frac{M.P.P.(X_1, \dots, X_n)Y_1}{M.P.P.(X_1, \dots, X_n)Y_2} = \frac{P_{Y_2}}{P_{Y_1}}$$

This equation is equivalent to the following expression:³

$$(10) \frac{\text{M.V.P.}(X_1, \dots, X_n)Y_1}{P_{X_1, \dots, X_n}} = \frac{\text{M.V.P.}(X_1, \dots, X_n)Y_2}{P_{X_1, \dots, X_n}}$$

This equation may be extended to cover any number of products. The interpretation of the foregoing equation is that the ratio between the value of the marginal physical product of the variable resources devoted to the production of one product must bear the same relationship to the price of those resources as exists for all other products produced with the resources if the products are being produced in the proper proportions.

METHOD OF ANALYSIS

Essentially, general economic analysis can be divided into static and dynamic theory. The former has the following characteristics:

1. It is timeless and assumes instantaneous adjustments to change in the economy.
2. It seeks to define equilibrium positions: Once an equilibrium position is reached it will continue so long as the determinants of the situation remain unchanged.

On the other hand, dynamic theory introduces the element of time, i.e. the time required for adjustments following a disequilibrating movement. The values of the variables at a particular time are dependent in part upon their values at past time periods.

³Transpose equation 9 and divide by $P(X_1 \dots X_n)$. Multiply the result by the prices of the respective products.

The comparative statics approach used in this thesis is actually an application of static analysis. This approach describes the differences between one equilibrium position and another, subsequent to a shift in the determinants. The new equilibrium position represents a different time period from the original. Perhaps, a clearer understanding of economic statics and dynamics is reached if two equilibrium positions are considered. Economic statics involves a discrete movement from one equilibrium position to another, whereas dynamics involves a continuous movement over time. The following analysis will be confined to the more easily manageable concept of comparative statics.

DEFINITION AND PROPERTIES OF CAPITAL

There are almost as many definitions of the word capital as there are articles written on the subject. Fortunately, most of these different definitions, while conflicting, all contain elements of truth. They agree that capital is productive, a stock (or fund) of wealth. Capital is not to be confused with income which is a flow (or stream) of wealth. The distinction between the two concepts was well stated by Professor Gillman when he observed that "Income is to capital as water is to ice".⁴ It is of fundamental importance not to overlook the time distinction between a stock and a flow.

⁴Professor Gillman is presently a teacher of Econometrics in the Department of Agricultural Economics at the University of Manitoba.

"The bridge or link between income and capital is the rate of interest."⁵ One of the primary functions of the interest rate is in computing from present to future values (compounding) and from future to present values (discounting). The latter process is of importance in this thesis.

J. M. Keynes first related the rate of interest to capital through what is referred to as the marginal efficiency of capital. Keynes' definition is as follows:

I define the marginal efficiency of capital as being equal to the rate of discount which would make the present value of the series of annuities given by the returns expected from the capital asset during its life just equal to its supply price.⁶

This can be interpreted to mean that the marginal efficiency of a particular asset is the rate at which the anticipated yield from an additional unit of that asset must be discounted if it is just to equal the cost of the asset. Figure 3 shows the volume of investment which will be undertaken in a given period at different rates of interest. The rate of interest is measured on the vertical axis while the volume of investment is measured along the horizontal axis. If the rate of interest is A, the corresponding volume of investment will be OD. If the rate of interest rises to B, the volume of investment will fall to OC. Hence, if farmers wish to maximize profits they will invest in new capital goods

⁵Fisher, Irving, The Theory of Interest, Macmillan & Co., N.Y., 1930, pp. 13.

⁶Keynes, J. M., The General Theory of Employment Interest and Money, The Macmillan Co. of Canada Limited, Toronto, 1964, pp. 135.

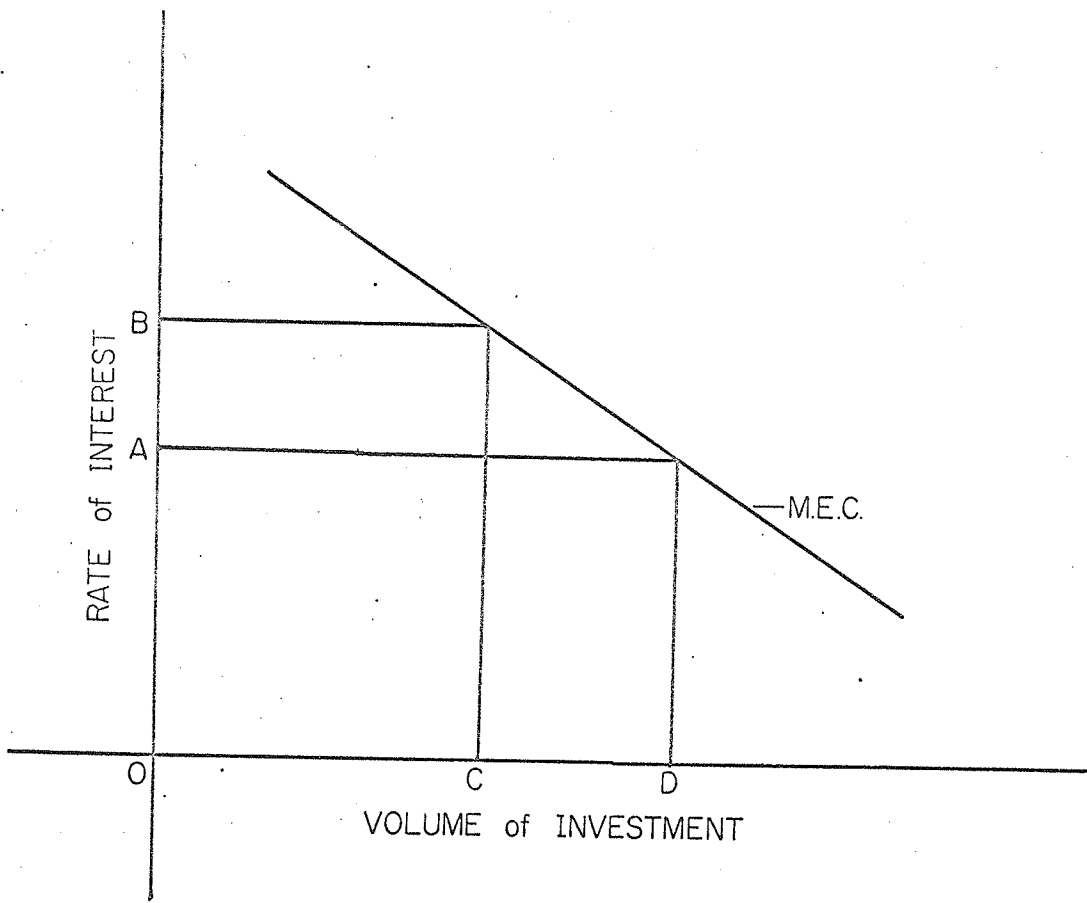


FIGURE 3

The Marginal Efficiency of Capital

up to the point where the rate at which the anticipated yields of such assets have to be discounted equates the marginal efficiency of capital with the rate of interest. Thus, one could conclude that as the interest rate rises the amount of capital utilized in the farm unit should decrease. It is interesting to note the following comment by a prominent U. S. agricultural economist in this regard. "Interest rates stand to be less important than uncertainty in restricting use of capital in agriculture."⁷ There is every indication that this statement applies to Canadian agriculture as well. For this reason an examination is made of both risk and uncertainty in the latter part of this chapter.

Capital consists of capital-goods and capital-value. The latter is simply future income discounted, while the former consists of capital-instruments and property. The value attached to capital arises from its potential productivity. Hence, it may be computed from the value of its estimated future net income. The technique of discounting makes it possible to deal with this problem of time valuation. Therefore, from capital goods there must be estimated the flow of services forthcoming in the future to give an income value. From the income value it is possible to determine a capital-value. Just as the value of land depends on the expected value of its crops, the value of capital depends on the stream of future income an item of capital will return to its owner. Thus when a farmer invests in a capital asset he does so with the belief that the

⁷Heady, E. O. Economics of Agricultural Production and Resource Use, Prentice-Hall Inc., Englewood Cliffs, N.J., pp.555.

future flow of income from the capital asset will more than offset its cost over a given period of time.

The farm firm is continually faced with the problem of deciding whether the commitment of capital goods is worthwhile in terms of benefits to be expected. This problem is more complex in agriculture because the expected benefits are likely to accrue over several years while the owners of the capital goods (machine companies, etc.) must be paid at the time of purchase. The commitment of resources, made on the expectation of realizing benefits expected to occur over a reasonably long future period of time, is referred to as investment.⁸ Economic analysis employed to determine the profit-potential of investment proposals is referred to as capital budgeting.

Jaedicke and Sprouse describe capital budgeting as follows:

---- a process of (1) ranking possible investment projects by means of some criteria of desirability; (2) selecting the cut-off point (deciding which projects are to be accepted and which rejected); and (3) providing for the financing of the capital budget which is selected.⁹

The farm manager should be aware that the capital budget should make up an integral part of the budget and the planning process. It will affect the cash budget for the coming period and will be affected in turn by the pricing forecasts. For these reasons it must be incorporated into the budgetary process.

⁸It is very important that this definition of investment not be confused with the completely distinct meaning in reference to acquisition of stocks and bonds.

⁹Jaedicke, R. K. & Sprouse, R. T., Accounting Flows: Income, Funds, and Cash, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1965, pp. 108

CASH FLOW ANALYSIS

Jaedicke & Sprouse point out that the term "cash flow" has been employed in a multiplicity of ways.¹⁰ They include the following:

1. To describe historic changes in the cash account.
2. To describe the technique of cash budgeting. This purpose is of significance to those concerned in the agricultural credit field. It is important that farmers project the cash flow in their business for some future time period with a view to predicting the cash balance that is needed at some future date.
3. To describe "working-capital flow from operations"--used primarily in security analysis.
4. In capital-budgeting decisions--A projection of "cash-flow" is useful to calculate the discounted "cash flow" used as a criterion for selecting certain investments in preference to others.

In this thesis the main concern lies in (2) and (4) above, as they relate to credit in agriculture.

Cash flow is a useful tool in assessing the credit worthiness of applicants. It is useful in this regard in both cash budgeting and capital budgeting. They facilitate the determination of debt-paying capacity as well as providing criteria through which farmers can justify investments in certain capital goods.

CAPITAL BUDGETING DECISIONS

The discounted cash flow method can be employed as a tool in capital budgeting. Generally, the cash flow technique functions by

¹⁰Ibid., pp. 108.

taking into consideration the cash gain from the use of the capital-goods over their life and discounting the gain for each year back to the period in which the investment decision is made. However, as an investment proposal frequently involves both benefits and expenditures during one or more time periods, it is convenient to combine the dollar estimates of these for each time period. The cash flow concept refers to the entire series of net proceeds and net outlays associated with an investment.

Problems in the measurement of cash flows which often create difficulty are discussed below.

Depreciation and the Investment Decision

An occasional misunderstanding arises as to the relation of depreciation to investment decisions. If the investment in question is a piece of farm machinery with an estimated useful life of ten years, should one-tenth of the cost of the equipment be considered as an expense in estimating the annual cash proceeds? The answer is no. It is not necessary to subtract depreciation from gross revenues, since the cost of the asset is automatically taken into consideration. (e.g., in the present value method the present value of the cash proceeds are compared with the cost of the asset). Using this process avoids the arbitrary allocation of the cost of the asset over its useful life and avoids double counting. This treatment in no way argues against the allocation of depreciation for accounting purposes but is useful for the decision-making procedures that appear most helpful to management as guides. Depreciation for tax purposes does affect the investment decision.

Accounting for financial purposes is interested in the income of each accounting period; thus attention is paid to the allocation of the cost of a long-lived asset over its useful life. The net present value of the investment is the important consideration when dealing with investment decisions.

Income Taxes and Capital Budgeting

Investment proposals should be evaluated on an after-tax basis. Since federal and provincial income taxes are based upon net income (and not "cash proceeds" as defined), it is necessary to consider depreciation in determining the basis for tax.¹¹

Opportunity Costs

Usually the cash outlays included in the computation of net cash flows are the outlays incurred because of the investment that would not be incurred otherwise. Outlays that would be incurred by the firm whether or not the investment is accepted should be charged to a particular investment project.

On the other hand, in some instances an investment project may require the use of some scarce resource available to the firm, although the explicit cash outlays associated with using that resource may be non-existent or may not adequately reflect the value of the resources to the firm.

¹¹Note: Book depreciation does not enter into computation of cash proceeds at all, but depreciation for tax purposes influences the income tax and thus indirectly affects the proceeds of an investment.

It may appear that the practice of charging opportunity costs against an investment project when no corresponding cash outlay can be identified is a violation of, or exception to, the procedure of evaluating investments in terms of actual cash-flows. Including opportunity costs is not so much an exception to the cash flow procedure as an extension of it. The opportunity costs charged should measure net cash flows that could have been earned if the project under discussion had been rejected. Suppose a farm could be rented out at \$15.00 per acre or used by the farmer to produce a crop of wheat in the coming year. After an initial outlay to cover production costs, the wheat crop could produce an absolute net cash inflow of \$20.00 per acre before an allowance has been made for the opportunity of renting. The figure of \$20.00 per acre overstates the benefits to be derived from working the land oneself, since the land could otherwise have returned \$15.00 per acre. By charging a rental opportunity cost of \$15.00 per acre against the benefits received when working the land, a more meaningful measure of its actual value to the farmer is obtained.

Salvage Values and Removal Costs

The salvage and removal costs introduce no real problem if it is kept in mind that the periods when cash outlays are made or when cash flows into the firm are of interest. In the following discussion the term salvage refers to "net salvage"; removal costs have been subtracted.

First consider the salvage value of the new investment. Any funds expected to be obtained from the price of the new investment when it is

retired will increase the flow of cash in the last period. Thus, the salvage value of the new investment will increase the cash flow of the last period of use.

Errors in the forecasting of disposal values usually are not serious because the actual value will be typically "small" five to ten years hence. However, possible salvage values should be considered.

When the investment is being made to replace an item of equipment in current use, there are two additional salvage values to be considered. One is the salvage value now of the old equipment, and the other is the salvage value at the end of its physical or useful life (whichever comes first). If the asset is replaced now, the present salvage will have the effect of increasing the cash flow of this period (or decreasing the required cash outlay for the new equipment). However, if the old equipment is being retired now, the salvage that would have been obtained at the end of its life will not be realized then, and there is a decrease in the relative cash flows of the last period. In summation, the salvage value of the new equipment tends to increase the cash flow of the last year of use, while the present salvage value of the old equipment tends to increase the cash flow for this year (decrease the cash outlay). The salvage value of the old equipment at time of normal retirement decreases the cash flow of that year (since the salvage value would be obtained if the replacement did not take place and would not be obtained if the replacement did take place).

CASH BUDGETING DECISION

In addition to the capital budget being facilitated by the cash flow technique, the cash budget is able to make use of it as well. It is concerned with predicting changes in the farmer's cash balance. The function of the cash budget is well stated by Jaedicke & Sprouse:

The cash budget, as a financial management tool, has its primary usefulness as an aid in making short-term credit decisions. Since these kinds of decisions are recurring, the cash budget is usually prepared as part of the over-all annual firm budget. ----a cash budget may be prepared to show the level of bank loans which are necessary to support the profit plan. In addition, the budget may indicate when bank loans can be repaid. Such a forecast makes it possible to determining short-term credit needs well in advance of their actual occurrence. Also, the amount of credit needed and the time period involved can be established by this procedure. This type of cash analysis is especially important in a seasonal business.¹²

Agriculture, being seasonal in nature can utilize this type of budget to great advantage. A cash budget for a typical farm in the Carman District Farm Business Association, employing the cash flow analysis will be applied in the following chapter.

CASH FLOW AS A BASIS FOR CREDIT ALLOCATION

Whereas credit has been traditionally allocated to individual farmers, in most cases, directly on the value of assets used as security, the cash flow technique allows the financial institutions to lend directly

¹²Op. cit. 8, pp. 109.

on the basis of productivity or economic efficiency criteria. It is suggested that the credit institutions which initially employ agricultural economists, trained in farm management, to appraise the productivity of the capital stock to be purchased with the acquired credit could conceivably dominate the farm credit market in the future. Such appraisal work would include cash flows. Farmers who are borrowing money are making investments which have one or more periods of cash outlays interspersed with periods of positive cash flows. A farmer should always determine whether the investment he is about to make in farm capital goods, etc., will be productive. Will it enable him to increase his income or otherwise improve his level of living? Capital that will accomplish either or both of these objectives is the only basis for credit.

The timing of cash flows resulting from capital expenditures is extremely important to both the farm manager and his banker in attempting to plan the cash needs of the firm. It is necessary to make reasonable estimates as to the specific days on which the notes will have to be paid and when cash will begin to be generated by the investment.

In applying a cash flow to the farm business, one of two methods could be used.

1. The Yield Approach--This particular method utilizes the discount concept, but avoids the arbitrary choice of a rate of interest in the attempt to evaluate an investment proposal. It ascertains the percentage figure which will make the present market value of the expected proceeds from the use of the capital goods (i.e. the sum of the proceeds

of figures for each year discounted back to the present) equal to the outlay of funds for such an investment. The percentage figure, rate of interest, or yield of the investment, must be found by trial and error. The following formula can facilitate this process:

$$R_1^n / R_1^{in} / \text{----} = A^{13}$$

where R or R^1 is the estimated annual return or net cash proceeds; i is the interest rate and A is the capital outlay required or the amount of investment.

2. The Net Present Value Approach--This method requires the calculation of the present value of the expected proceeds determined with an assumed discount rate, and comparison of this with the figure of outlay on the capital goods, etc., the difference being the net present value. Investments would be placed in an order of priority and those with the highest net present value figures would be given top priority.

In comparing the two approaches, the latter is said to be superior.

Bierman & Smidt comment that:

It is easy to use the present-value method correctly. It is much more difficult to use the yield method correctly--more difficult to describe what comparisons are appropriate for a given decision, and more difficult to carry out the required calculations.¹⁴

Hence, the cash flow analysis will be developed around the net present value approach. The cash flow technique is believed to have a superiority

¹³Bierman, Harold & Smidt, Seymour, The Capital Budgeting Decision, The Macmillan Company, N.Y., 1960, pp. 32-3.

¹⁴Ibid., p. 34.

over the traditional accounting method (that is, it is felt that the advantages outweigh the disadvantages).

The disadvantages of the technique are as follows:

1. The application of this technique to measure the productivity of individual capital-expenditure projects is relatively new. Hence, accounting personnel must be trained to a new method of accounting.
2. Because it does not correspond to accounting concepts about the recording of costs and revenues, it entails tedious work in reviewing past farm records.

Generally speaking, the advantages of the cash flow analysis are as follows:

1. For farmers, the cash flow statement is a valuable control device which they have long needed. With rising costs threatening profitable operation, such a statement provides the farmer an opportunity to compare his expense estimates with actual experience, thus exposing danger points and alerting him to the need for remedial action.
2. From the banker's point of view the cash flow statement is useful since, by showing actual cash repayment ability, it provides a much truer picture of the soundness of the loan.
3. In addition, the farmer can easily adapt the cash flow data to the profit and loss statement he needs for tax purposes by including non-cash income and expenses (mainly depreciation) and deductions for his family.

The advantages are stated in a more specific manner by Joel Dean as follows:¹⁵

1. The discounted-cash-flow method is economically realistic in confining the analysis to cash flows and forgetting about customary book allocations. The books, although very valuable for other purposes, are irrelevant for the task of measuring investment worth.

¹⁵Dean, Joel, Measuring the Productivity of Capital, Harvard Business Review, Volume 32, Jan. - Feb., 1954, pp. 129.

2. The use of this method forces guided thinking about the whole life of the project and concentration on the life-time earnings.
3. It weights the time pattern of the investment outlay and the cash earnings from the outlay in such a way as to reflect real and important differences in the value of near and distant cash flows.
4. It reflects accurately and without ambiguity the timing of tax savings, either from expensing part of the investment outlay or from writing off capitalized costs over the life of the investment--something quite difficult to do by the accounting method.
5. It permits simple allowances for risks and uncertainties and can be adapted readily to increasing risk allowance over time.
6. It is strictly comparable to cost-of-capital ratios so that decisions can be made quickly and safely on the basis of the relationship between indicated rate of return and the value of money to the company (or single proprietorship, as the case may be, in agriculture).

As will be demonstrated, the cash flow method of computing the rate of return to an investment is superior to existing alternatives in accuracy, and relevance.

HANDLING RISK AND UNCERTAINTY

Thus far, the problem of risk and uncertainty in investment decision making has been essentially ignored. Decision making would be simplified if all projects bore the same degree of risk or uncertainty, but some investments inherently involve more risk and uncertainty than others. Estimates of future benefits may not materialize. Situations where actual income differs from expected income in the cash flow sheet may occur for any number of reasons, which include yield uncertainty, technological

uncertainty, price uncertainty, and generally poor business conditions. In practice allowance must be made for risk and uncertainty in the farm business. If two projects promise to result in just about the same benefits or cash flows and one involves more risk, there is no problem. Frequently, however, the one promising the largest return may involve more risk. Therefore, if sound management decisions are to be made on the farm the risk and uncertainty connected with the various expenditures as well as their expected cash flows must be considered. This is one of the serious limitations in budgeting.

Risk, by its nature, tends to be less of a problem than uncertainty. A probability can be attached to a situation involving risk, but not in the matter of uncertainty. Hence, risk is insurable and can be incorporated into the cost structure of the business, while uncertainty cannot be. Empirical probabilities of outcome or loss can be established for risk.

It is obvious that the classical economist's attitude cannot be adopted, for uncertainty cannot be ignored under the rationale of perfect knowledge. Uncertainty is related to a firm's decision to borrow funds for capital and current expenditure.

Suppose two investment opportunities are open to consideration, namely investments A and B --for example, increasing usage of fertilizer versus increasing the number of feeder cattle. Further, assume both investments potentially yield the same positive flows and negative loss. Figure 4 indicates that investment B is the more desirable of the two

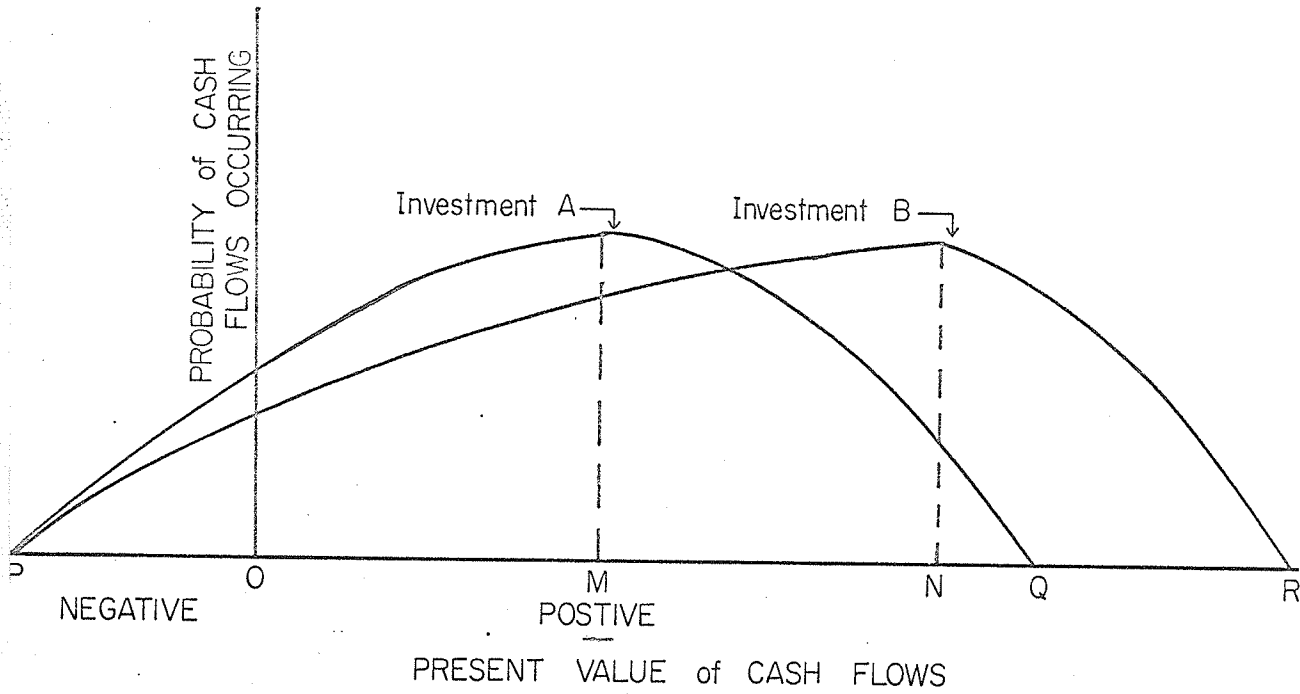


FIGURE 4

The Probability of Cash Flows Occurring as a Function of the
Present Value of Cash Flows

investments. Both have the same probability of loss (P), although the maximum possible gains do differ (i.e. R / Q). The probabilities associated with investment A are shown to resemble a normal distribution. Hence, the most probable outcome is shown at M. This can be compared with N which represents the most probable outcome of investment B. Since the most likely outcome from investment B is greater than the most probable outcome from A, B is superior to A.

Unfortunately, firms can never be certain that the expected cash flows will be attained. Farmers cannot be certain of their costs, selling prices and yields in the future, nor can they know the likelihood of new technological developments that could render their existing machinery obsolete. Therefore, probability adjustments are necessary.

Various investments in the numerous enterprises on the farm have different degrees of probability of attaining expected returns. For particular investments the range or variance of expectations decreases as the production period approaches termination. Heady illustrates this phenomenon by employing two diagrams, which we have reproduced in figures 5a and 5b.

Initial planning is at date t_0 and marketing is at date t_4 . The range of possible outcomes (the lower and upper limits within which the operator might expect prices to fall with a probability of 1.0.) is ab when plans are laid at date t_0 , reduces to cd , ef , and gh at dates t_1 , t_2 , and t_3 , and falls to zero at the marketing date t_4 . It is entirely possible, however, that as a date such as t_1 is reached an entirely different set of price or weather conditions come into prospect and conditions expectations accordingly. (drought) As is illustrated in figure 5b the level and range of expectations will take on an entirely different nature as the new information appears; the range of possibilities may narrow from date t_0 to date t_2 , but mushroom into an entirely

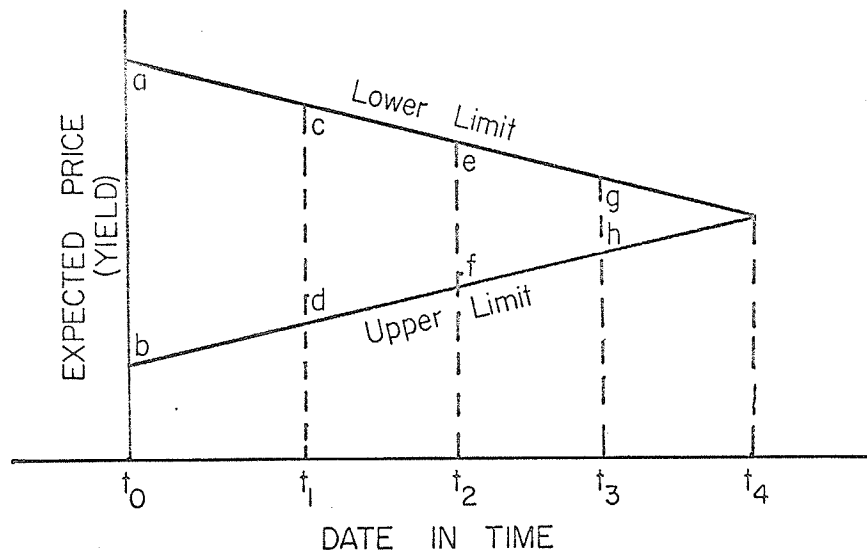


FIGURE 5 (a)

Relationship of Time to Dispersion of Expectations

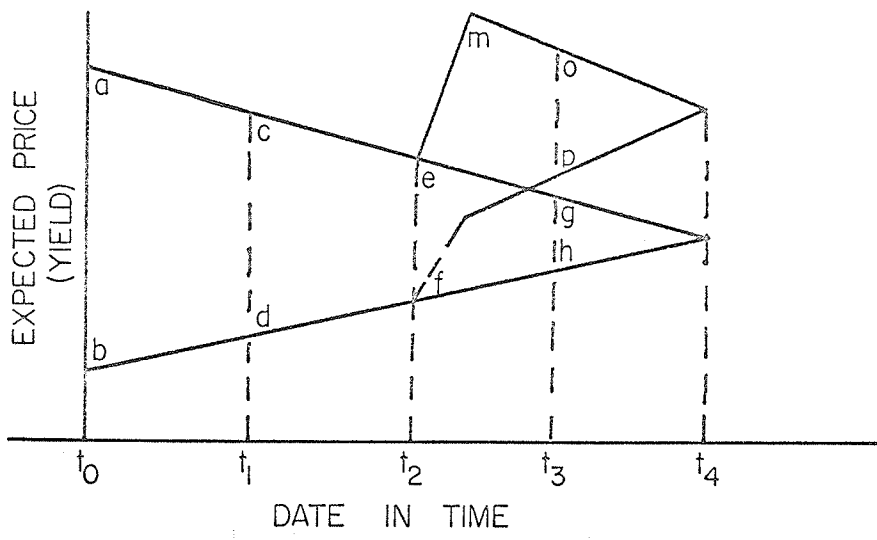


FIGURE 5 (b)

Relationship of Time to Dispersion of Expectations

different structure. However, unless new revealing information is obtained (including absence of forces which prove original expectations to be erroneous) the new expectation framework should again display the convergence characteristic.¹⁶

Thus, it is clear that the net effect of uncertainty is to increase the relative advantage of investments of relatively short duration, and presumably to reduce the total volume of investment compared to what would be undertaken if the farmers were certain of the expected returns.

In reality, farmers confronted with alternative enterprises in which to invest capital (internal or external) attach a degree of belief or "subjective probability" to each prospect. This probability estimate allows the farmer to inflate the rate of discount over and above the cost of capital in order to hedge against uncertainty.

The introduction of probability judgements leads to a confrontation with decision theory. This is a body of theory developed around principles on how reasonable and well-informed individuals observably tend to behave when faced with decision problems which they have properly understood. Further, probability is regarded as the primary concept of this theory.

Recently a major contribution was made to this area of economic behavior by Professor William Fellner.¹⁷ He presents a body of theory which allows an interpretation of why farmers fail to employ capital to the point where its marginal cost equals its marginal value productivity. An interpretation of the theory as it relates to the topic

¹⁶Heady, E. O., *op. cit.* 4 pp. 472-3.

¹⁷Fellner, William, Probability and Profit, R. D. Irwin & Co., 1965, esp. Ch. 4, 5, and 6.

under analysis would be interesting and advantageous.

The theory rests on five general assumptions:

1. Alternative projects confront farmers through their various enterprises with the prospect of alternative money incomes.

Fellner attaches to each a degree of belief or subjective probability.

2. It is possible to define for the decision maker two marginal functions:

i) $G(x)$ function.--This function may be defined as the marginal utility function of potential gains as a function of the amount to be invested in the project. This function is generally downward sloping because of the diminishing marginal utility of money.

ii) $L(x)$ function.--This function is defined as the weighted marginal disutility of potential loss as a function of the amount to be invested. This function is generally upward sloping as depicted in figure 7. This would be particularly true for large investments, as supported by Kalecki's Principle of Increasing Risk.¹⁸ Before continuing with the assumptions underlying the theory, it would be advantageous to examine this principle.

The Principle of Increasing Risk

The principle states, that as a firm expands by the aid of borrowed capital the chance of loss of its own capital increases. As a result, there is a point at which the firm will cease borrowing in order to expand its operations, simply because of the increasing risk of the loss of its own capital.

The principle is illustrated in figure 6. Further indebtedness through borrowing increases the variance of the net worth, although it

¹⁸Kalecki, M. The Principle of Increasing Risk, *Economica*, Vol. IV, pp. 440, November, 1937.

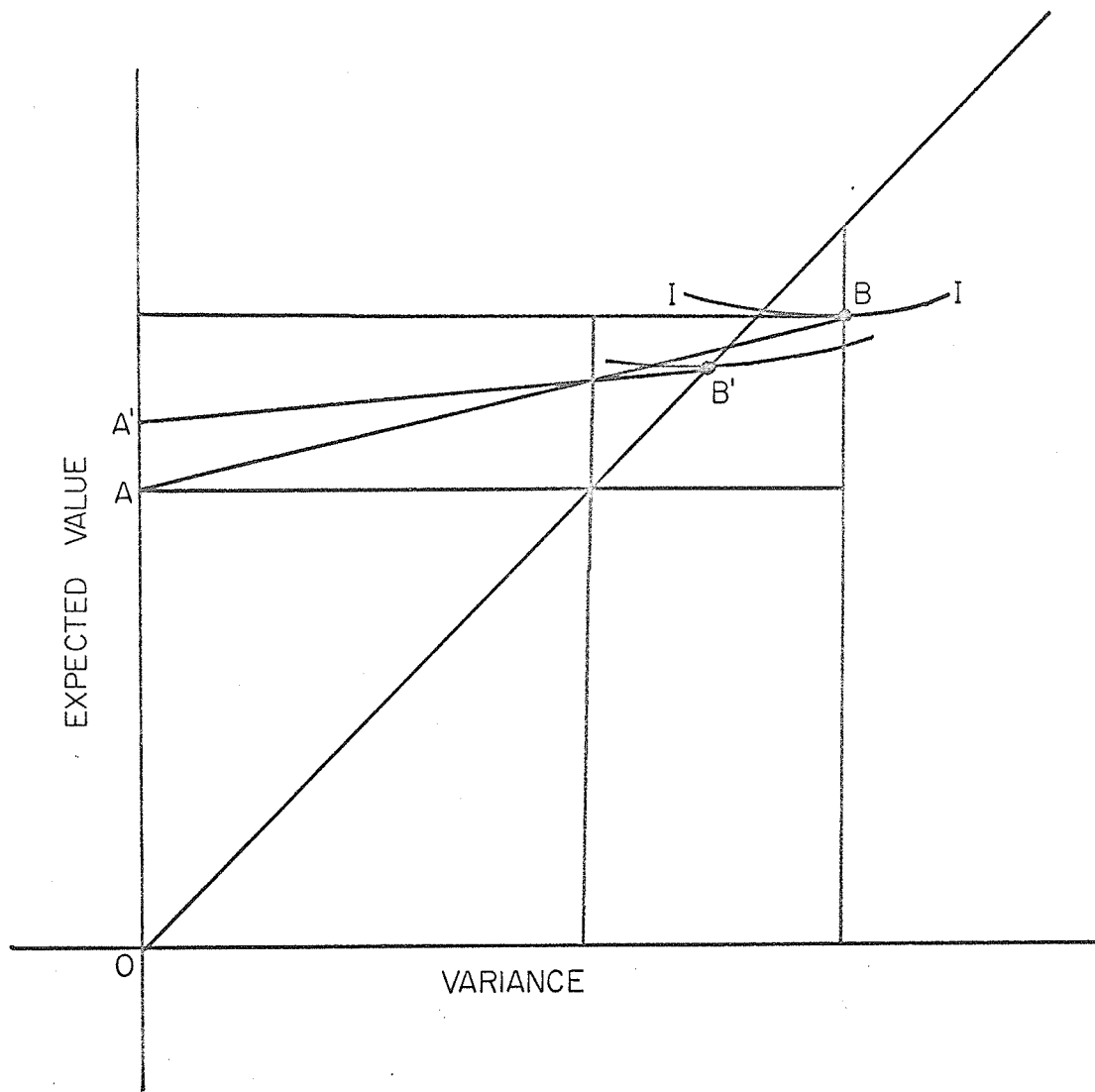


FIGURE 6

The Principle of Increasing Risk

may increase its expected value. Assume:

- a) We have an opportunity line AB in figure 9. An equilibrium position exists where the opportunity line intersects the indifference curve II. Beyond this equilibrium point the increase in risk (measured by the variance) exceeds the increase in the expected value.
- b) The initial net worth of the firm is N and it borrows an amount W, so that its total assets now become $(N + W)$.
- c) Two possibilities exist, one of loss, which will reduce the total assets to $(N + W)k$ where $k < 1$, and another of gain which will increase the total assets to $(N + W)c$, where $c > 1$.
- d) The chance of favorable event is P, the chance of unfavorable event being $1-P$.

The variance of the net worth values σ^2 is given by:

$$\sigma^2 = (N + W)(c-k)$$

where the net worth of the favorable event is $(N + W)c - W$ and the unfavorable event $(N + W)k - W$. The expected value (E) is given by the following:

$$E = \left\{ (N + W)c - W \right\} P + \left\{ (N + W)k - W \right\} (1-P) = (N + W) \left\{ cP + k(1-P) \right\} - W \quad (13)$$

When we eliminate W between these two equations we get the equations of the opportunity line:

$$E = N \left(P + \frac{k-1}{c-k} \right) \sigma^2 \quad (14)$$

From (12) we see that when $\sigma^2 = 0$, $W = -N$. i.e. in order to avoid any risk it would be necessary to borrow the entire capital for the enterprise. If the possible loss and the possible gain are equal ($P = \frac{1}{2}$), equation (14) reduces to:

$$(15) \quad E = N \sqrt{\sigma^2} (P - \frac{1}{2})$$

where $c = I \neq r$ and $k = I - r$. The opportunity line is horizontal when this occurs and when interpreted this means that borrowing increases the risk without increasing the expected value. Only when the chance of gain is greater than the chance of loss ($P > \frac{1}{2}$) will the farmer borrow: (when the opportunity line has a positive slope).

This concludes an examination of Kalecki's contribution to the area of risk.

As to further assumptions in regard to Fellner's theory, the following points must be considered:

3. Profit (ex. ante) is to be maximized to gain a utility surplus.
 4. The expected probability is the "pure probability".¹⁹
- $$p^1 = \frac{1}{2} ; I - p^2 = \frac{1}{2}$$
5. The investment of one dollar will give a return of two dollars in a given situation.

Formulation of the Theory

Given the above assumptions the formulation of the theory can be states as follows:

1. Specify the utility function:

$$\begin{aligned} \text{a) } U(x) &= ax - bx^2 \\ U(2x) &= a(2x) - b(2x)^2 \\ &= 2ax - 4bx^2 \end{aligned}$$

¹⁹Pure probability in that it is arrived at through the Principle of Insufficient Reasons.

2. The marginal utility of potential gain becomes:

$$\frac{d U(2x)}{dx} = 2a - 8bx$$

3. Weighting: $p^I = 1/2$

4. Specify the marginal utility function:

$$\begin{aligned} G(x) &= \frac{1}{2} \cdot 2a - \frac{1}{2} \cdot 8bx \\ &= a - 4bx \end{aligned}$$

5. $D(y) = D(x) = ax - bx^2$

6. The marginal disutility of potential loss becomes:

$$\frac{d D(x)}{Dx} = a - 2bx$$

7. $I - p^I = \frac{1}{2}$

8. Specify the marginal disutility function:

$$L(x) = \frac{1}{2} \cdot a - bx$$

9. Let $a = 4$ and $b = \frac{1}{4}$

The foregoing equations allow calculation of the equilibrium point where the marginal utility of an investment is equal to the marginal disutility (Figure 7). If the weighted marginal utility is greater than the weighted marginal disutility, it is advantageous for the farmer to invest. Hence, X_m is the maximum amount of capital a farmer should invest. The maximum amount of utility derived is 1.6 utils.²⁰ Fellner calls this shaded area the risk taker's surplus (Figure 7).

$$\begin{aligned} {}^{20}G(x) &= L(x) \\ 4 - x &= 2 - x/4 \\ 2 &= x - x/4 \\ x &= 1.6 \end{aligned}$$

This can be verified through integral calculus:

$$\begin{aligned} M &= \int G(x)dx - \int L(x)dx \\ &= \int (4 - x)dx - \int (2 - x/4)dx \\ &= \int 4 dx - \int x dx - \int 2 dx - \int x/4 dx \\ &= 4x - \frac{1}{2}x^2 - 2x - \frac{1}{8}x^2 \\ &= 3.2 - 12.8/8 = 3.2 - 1.6 = 1.6 \end{aligned}$$

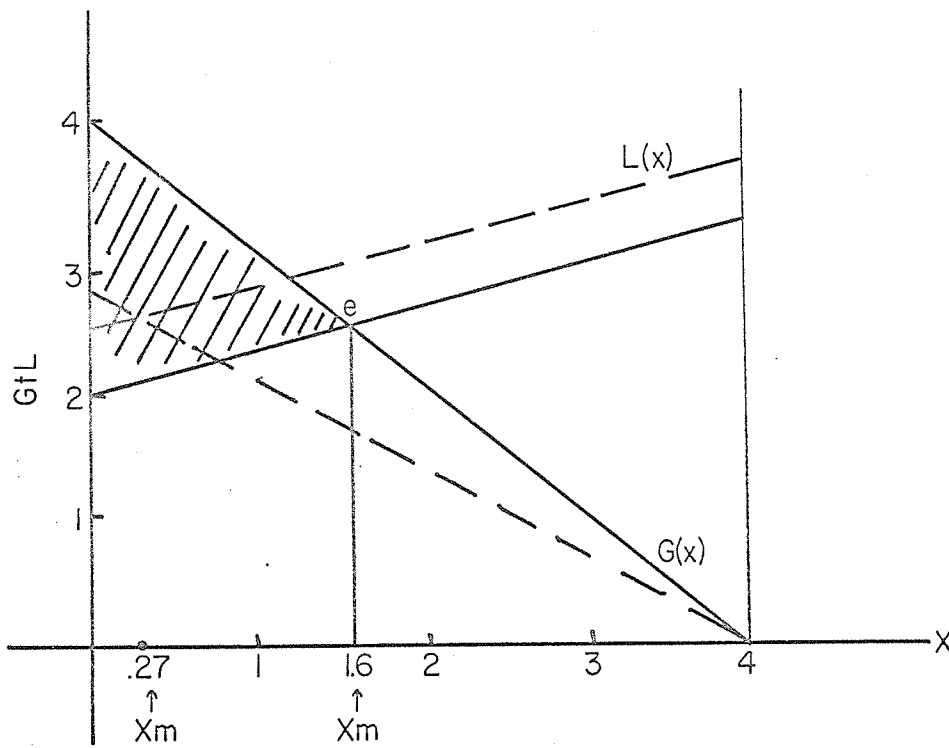


FIGURE 7

The Risk-Taker's Surplus

Fellner rejects the arbitrary choice of $\frac{1}{2}$ as a weight and consequently the principle of insufficient reason. He moves closer to reality by proposing a semi-probabilistic approach.²¹ In the semi-probabilistic approach, the probability judgements reflect subjective estimates of decision makers as to the degree of uncertainty they feel is involved in a particular investment. A high degree of variation associated with the corresponding decision weights is anticipated since some managers are more risk-loving than others.

Suppose there is a farm manager who desires to inflate the discount rate in order to hedge against uncertainty. This would result in his using a lower weight in association with a particular investment. Assume he attaches a weight of $1/3$ to his marginal utility function. As a result, 4 above becomes:

$$G(x) = 1/3 (2a - 8bx) = 2.66 - 0.66x$$

Similarly he attaches a weight of $3/5$ to his marginal disutility function so that equation 8 becomes:

$$L(x) = 3/5(a - 2bx) = 2.4 - 0.3x$$

Under the same logic as before x^I_m is the maximum amount the farmer will invest. ($x^I_m = .27$) Hence, under the semi-probabilistic approach the risk-taker's surplus is smaller than under the previous approach. The farmer discounts because he is not certain.

²¹As opposed to the traditional pure probabilistic approach.

The Marginal Utility Surplus Curve

The marginal utility surplus (MUS) may be defined as the change in the risk-taker's surplus divided by the change in the output. This may be shown algebraically as: $M.U.S. = \frac{dM}{dQ}$

Since output is an increasing function of the amount invested, it is possible to calculate M as a function of the amount invested in the same way as the marginal product curve may be determined from the total product curve. Thus, since both Q and M are a function of the amount invested, they must be related to one another. "The equilibrium output is determined by the intersection of the M.U.S. curve with the abscissa, that is by the condition that $M.U.S. = 0$."²²

Relation of the Marginal Utility Surplus curve to the Agricultural Firm

In order to keep the theory as simple as possible the revenue and cost curves for the hypothetical firm have been constructed as linear. In reality, the shape of the curves would be affected by the economics of scale that exist for the particular unit. Ideally, the farmer should be producing where marginal cost of capital equals its marginal revenue (Q_e) in figure 8. Actually, he is producing an output Q_v which is less than Q_e , where the monotonic decreasing marginal utility surplus curve cuts the horizontal axis. Therefore, in a situation of uncertainty under the semi-probabilistic approach the farmer will produce an output at a

²²Ibid., 18, pp.175.

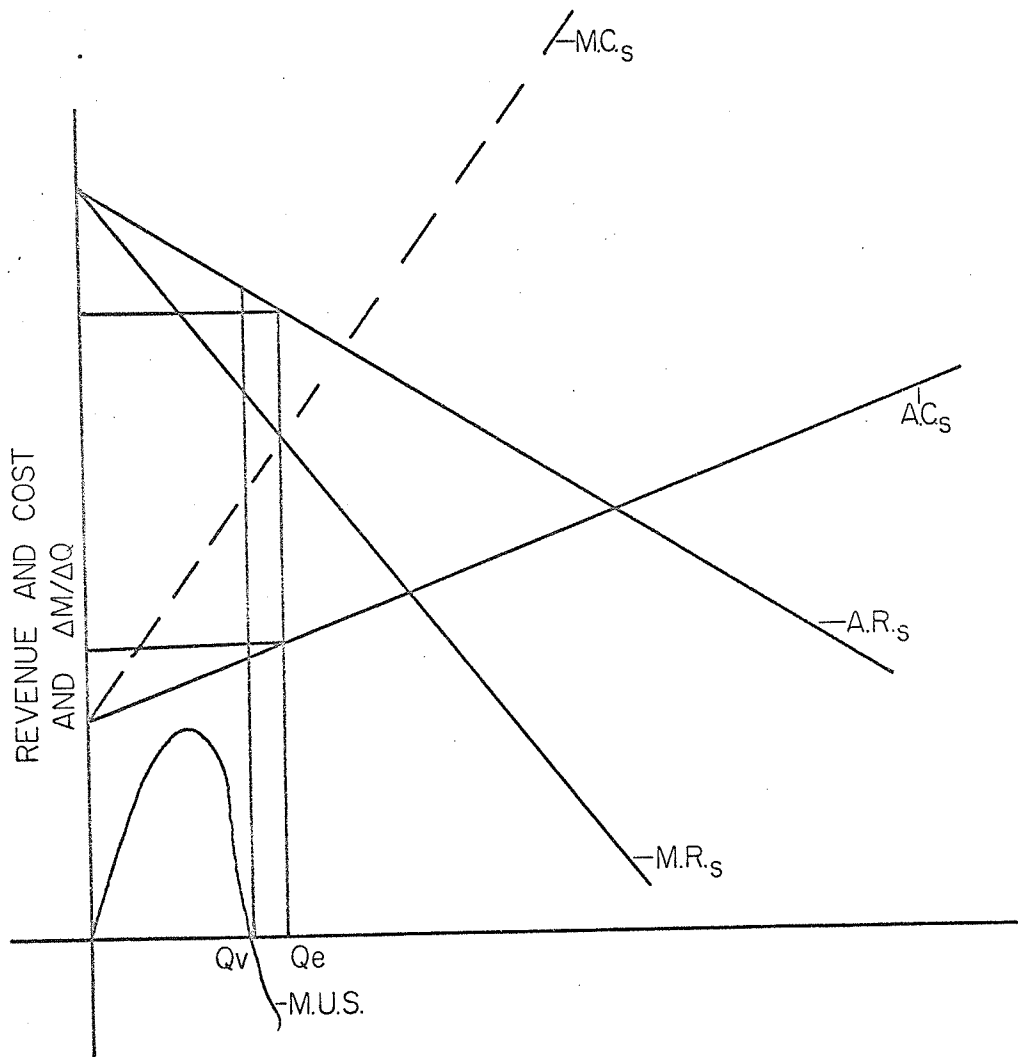


FIGURE 8

Relationship of the Marginal Utility Surplus Curve to the
Theory of the Firm

level less than his maximum expected profit. This reaction of discounting future returns so as to hedge against risk and uncertainty results in many farmers employing less resources in their farm business than they could profitably employ.

CAPITAL RATIONING AMONG FARMERS

It is generally agreed that in many farm businesses the marginal productivity of capital is greater than the marginal productivity of labor. This implies capital rationing, whether internal or external. External capital rationing means that (additional) credit is not available at going rates of interest because of limitations imposed by lenders. Internal capital rationing refers to those instances in which additional credit could be obtained, but the manager elects not to use it.²³ An area for further study would be to determine the causes and the extent of capital rationing in Western Canadian agriculture.

It is important that to recognize that where there is capital rationing the cost of capital of the firm is no longer the appropriate discount rate. Under internal capital rationing the farmer tends to limit investments to a set amount of funds or a set cut-off rate even though other profitable investment opportunities are available. Bierman and Smidt suggest that there are two types of internal capital rationing.

²³Hesser, L. F., Conceptual Models of Capital Rationing Among Farmers, Journal of Farm Economics, Vol. XLII, #2, May 1960, pp. 325.

The first type is one where the firm uses an inflated discount rate that is, a higher discount rate than the cost of capital.²⁴ In this situation a farmer, because of the aversion to risk, may require that investments must have a present value of 10 per cent, even though his cost of capital is only six per cent. With a definite cut-off rate available this rate can be used to discount cash flows. An investment of a dollar now yielding less than 10 per cent will not be undertaken.

A comparison of the undiscounted and discounted income forthcoming from a particular investment is illustrated in figure 9.²⁵ At an interest rate (the cost of borrowed capital) of OR , the farmer would invest to the point OB if the income was not discounted. When the income is discounted because of risk associated with an investment, the farmer might invest only to the point OA .

The second type of internal capital rationing, depicts a situation where the cut-off rate is not specified. The farmer has in his mind the maximum amount that he is willing to invest. This amount will depend upon his attitude toward uncertainty.

External capital rationing is the lender's reaction to uncertainty, just as internal capital rationing is the would-be-borrower's reaction to uncertainty.

The existing theory on capital rationing is based on the unattainable assumption of perfect knowledge, i.e. perfect foresight and accuracy

²⁴Bierman, H. and Smidt, S., op. cit., 10, pp. 168.

²⁵Gilson, J. C., Agricultural Capital and Credit in Canada, Manuscript 7.17.

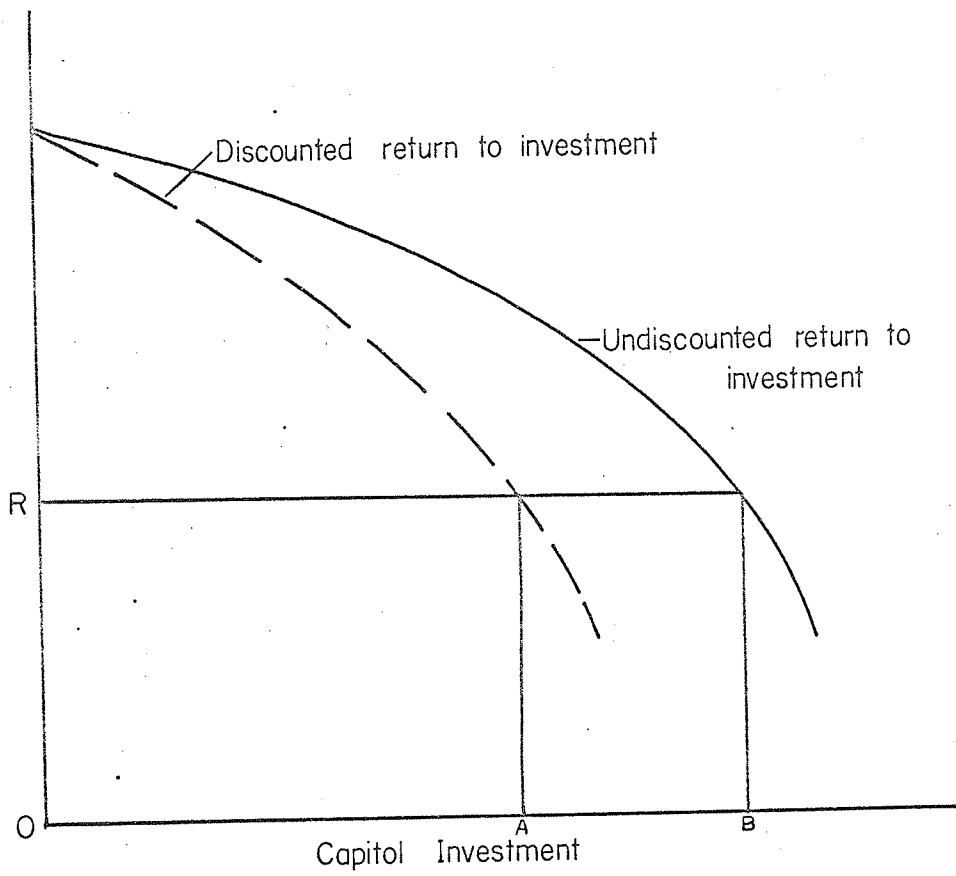


FIGURE 9

Undiscounted Versus Discounted Income Forthcoming
from a Particular Investment

in measurement of productivity and appraisal of risk.²⁶ Although such theory allows empirical estimates of uncertainty and encourages ingenuity in overcoming imperfections, the theory is of limited value in the subsequent analysis. The essence of the theory of rationing is to project, under assumed conditions, the rate of return at which a firm's capital demand and supply curve will intersect. This cut-off rate is determined by the farmer in one case and by the lender in the other.

Thus, the cash flow analysis is complicated by the fact that farmers react differently to conditions of uncertainty. Because of the time period involved in farming, decisions must be made in an environment of uncertainty or lack of knowledge concerning future prices, yields and other variables which affect income. The risk-takers, the gambler types, strive to maximize profits while the more conservative elements attempt to minimize losses. A continuum exists for farmers' various reactions to uncertainty with the risk-takers at one extreme and the conservatives at the other end with all possible combinations in between. In the credit field an attempt must be made to estimate the discount rate which each individual farmer possesses for alternative investment decisions since farmers' actions in the credit market are a function of their reactions to uncertainty.

²⁶Dean, Joel, op. cit. 14, especially Chapter 4.

A LINE OF CREDIT IN AGRICULTURE

Cash and capital budgeting facilitated by the cash flow technique provides a tool whereby the credit institutions can make available an open line of credit to the farmer. Line of credit, "package credit", or "comprehensive credit service" are all phrases which may be interpreted to mean a complete and well-balanced financial servicing arranged between banker and client for the production period at hand. It suggests that the farmer should coordinate all his financing with one institution. Until recently (May 1, 1967) commercial banks were forbidden by law to lend funds for the purchase of farm real-estate on the security of same. However, with this obstacle removed, line-of-credit financing by the banks is feasible. Diesslin suggests that a line of credit "can be provided at best in financing the farm as a single unit of operation and not by breaking it down into short-, intermediate-, and long-term segments."²⁷ Although he does not suggest how this would be done, it would seem that cash and capital budgeting techniques previously outlined, provide the answer. There is no longer any need to be concerned about the traditional loan classification. It is only necessary to gear the loan payments to the expected cash flow from the particular item financed, whether it be a capital expenditure or an operating expenditure.

²⁷Diesslin, Howard G., Capital and Credit Needs in a Changing Agriculture, Iowa State University Press, Ames, Iowa U.S.A., 1961, pp. 226.

CHAPTER V

FINANCING THE FARM ENTERPRISES

A detailed analysis of the records of individual members in the Carman District Farm Business Association (C.D.F.B.A.) is presented in this chapter. On the basis of two or three years of farm records, it is possible to make projections of income and expenditures for the coming production period. An analysis of a feeder-cattle operation will be conducted initially, followed by an analysis of a grain cropping enterprise. However, before proceeding further, it is necessary to discuss the specific steps in preparing a "farm management loan" plan for the individual farm borrower.

The Long-Run Projection

The long-run plan for the borrower's farm operation must precede or set the stage for his short-run financial program. It reflects the farmer's anticipated rate of growth over the next number of coming years.

Pertinent questions must be asked to determine:

1. The individual's plans for replacement and increase in equipment, buildings, etc., geared to expansion of the present operation.
2. His attitude toward risk and uncertainty which is later to be reflected in the discount rate placed on capital expenditures.
3. The advisability of a restriction to be placed on the size of the enterprise as a consequence of the principle of increasing risk.

The long-run plan must include a complete inventory and evaluation of the following farm resources:¹

1. The amount of capital and credit available to the farming operation.
2. An inventory of the individual farmer himself as a manager. What kind of farming does he prefer? For what kind of operation does he have the greatest skill?
3. An inventory of soil resources, including topography, drainage, soil management, yield history, soil samples, buildings and fences, and water supply. This is particularly important for a commercial feeder who is in an area where it is economical for him to grow his own feed-grain.
4. Long-range cropping plans, rotations, yield estimates, projected annual income, and crop expenses. This is of relevance to the crop enterprise.
5. Long-range livestock program and feed requirements, expected herd build-up and expansion, and annual livestock expenses. Thus, by taking this approach, the farmer's current needs can be analyzed in view of his future objectives. Suitable forms could easily be selected for this purpose.

The Financial Statement

Prior to the initiation of the cash-flow analysis, a financial statement giving the farmer's entire financial picture must be made available. The financial statement relating to the analysis of individual farm enterprises includes a balance sheet and statement of profit and loss. The balance sheet is an instantaneous picture of the business at a given date. In contrast, a profit and loss statement is recorded over a period of time.

¹Heady, E. O., Jensen, H. R., Farm Management Economics, Prentice Hall, Inc., Englewood Cliffs, New Jersey, pp. 94-114.

The balance sheet to be used later in our analysis can be separated into assets, liabilities and net worth. Assets and liabilities can be classified into two categories--current and fixed. The net worth is the book value of the owner's equity in the business. Current assets are those assets that can be converted into cash within twelve months. Similarly, current liabilities are those that must be paid within the year. Long-term liabilities are debts of a much longer term (e.g. mortgage). The owner's equity is the difference between total assets and total liabilities.

Current assets include the following items:

1. Cash (on hand and on deposit).
2. Accounts receivable--result when goods are sold for other than cash.
3. Inventory--will be small or large depending upon the nature of the enterprise and the time of the year.
4. Marketable securities--include investments in stocks and bonds, growth funds, etc.
5. Cash Surrender Value of Life Insurance--includes the amount of the policy that can be redeemed for cash.
6. Prepaid expenses--include any payments for items not yet purchased.

Current liabilities include the following:

1. Loans due--include bank loans which are payable one year from the date of the balance sheet. Repayment commitments for the purchase of machinery and equipment are disclosed as separate long-term liabilities with the payment due during the year segregated and included in current liabilities.
2. Bills payable--include items which have been purchased but not yet paid. These bills arise from the granting of seasonal credit by merchants and dealers.

The difference between total current assets and total current liabilities is net cash income from the operation or working capital.

Fixed assets represent a minor or major portion of the resources of the business, depending upon the enterprise involved. A grain-cropping enterprise may have up to 85 per cent of its resources in fixed assets while a feeder-cattle operation may have as little as 15 per cent of its resources in fixed assets. Fixed assets may be acquired for cash or by creating long-term liabilities. Such assets include machinery and equipment, buildings and improvements, and farm land. It is generally recognized as a good accounting practice to deduct the accumulated depreciation from each class of fixed asset. The only exception to this technique is farm land which is not depreciable.

In summary, a balance sheet is a statement showing at one point in time what you own, what you owe, and the difference or what you are worth.

The statement of profit and loss is a report of a business summarizing the revenues, incomes, expenses and losses for a stated period. This statement may also be appropriately described as the "income statement" or statement of revenue and expenses. The period generally covered by the statement is the fiscal year, although for closer control a monthly period should be seriously considered, especially for a commercial feeding operation.

The statement may be divided into sections which reveal net cash income, net operating profit and net profit from the operation.

Net profit is determined after making a suitable allowance for

inventory and depreciation adjustments.

It has been suggested that a "statement of Source and Application of Funds" be employed along with the balance sheet and statement of profit and loss. Such a statement is useful in summarizing the cash flows from different sources to different uses. However, it was agreed it would duplicate information supplied by a cash flow analysis.

THE CASH FLOW ANALYSIS

The cash flow analysis of the individual farmer selected from the Carman District Farm Business Association is carried out in the following manner:

1. A complete examination of three preceding years of farm records was carried out to establish a schedule of estimated expenses for the coming production period. In addition, for the grain-cropping enterprise the estimated cash flows for the 1966 crop years were compared with the actual cash flows for this period.
2. Based on a similar technique, an estimate of the amount and timing of farm income was prepared. Credit is required to the extent that expenses exceed income receipts for any particular time period.
3. A repayment program is initiated to fit the cash flows into the business. Interest is paid only on the amount to be borrowed. Authorization from the credit department of the particular credit institution involved is obtained for the total amount anticipated,--i.e. a line-of-credit is set up.

The particular cash flow form employed was prepared by selecting what was considered to be the best from flow forms inspected.

Planning Period Used

The planning period will depend upon the particular enterprise being considered. The annual cash flow was rejected because it is too general for the farm management loan plan under consideration. It was not rejected because it was too simple, since the less complicated the plan the better.

The grain-farming enterprise can best utilize a cash flow analysis set up on a seasonal or quarterly basis. In this way expenses for the various operations can be grouped together. For example, planting expenses, (seed, fertilizer, fuel, repairs, labor, etc.) could be grouped together. Loans could be made preceding each stage in the production process.

The feeder-cattle, dairy and hog enterprises would require the more detailed cash flow statement. A monthly cash flow would best suit the farmer involved in any one of these operations. Such an analysis will be developed for the feeder-cattle enterprise, preceded by a brief analysis of the industry.

THE CATTLE INDUSTRY

Nature of the Enterprise

The production of beef cattle in Canada has an excellent potential, due to an increasing demand for high protein foods by Canadians, reflecting a rising standard of living. The per capita demand for beef and veal is expected to rise by 22 per cent between 1963-1975 in Canada.

Consequently beef production is expected to increase by 60 per cent over the 1963 level of production. Of this overall increase 80 per cent is expected to originate in the Prairie Provinces.²

The cattle industry may be separated into two principal phases. The first of these is the "cow-calf operation", while the second is the "feeding" or "finishing" phase. Originally these phases were integrated with one another. However, gradually a tendency has developed for Canadian cattlemen to specialize in either one phase or the other. Although credit is sometimes required in both production stages, it can be particularly important to the development of the second phase.

The Cow-calf Operation

The cow-calf enterprise is the fundamental operation in the production of beef cattle. The breeding herds are the source of calves which are ultimately used as stockers and feeders by the feeder-cattle enterprise. The major source of revenue realized from the cow-calf operation arises from the sale of weaned beef calves.

The vast semi-arid pasture lands of Alberta, South-western Saskatchewan, along with isolated areas in British Columbia and Manitoba (Westlake and Interlake areas), constitute the principal breeding grounds for beef cattle in Canada.

²Gilson, J. C., Ackerman, G. E., Anderson, G. R., Hudson, J. P., Seale, M. E., Wood, A. W., and Yeh, M. H., Development of the Livestock Industry in Canada by 1975 and Implications for the Meat Processing Industry In Manitoba. A study prepared for the Committee on Manitoba's Economic Future, July 1962, Winnipeg, Manitoba.

Individuals engaged in this type of operation belong in two general classifications. The first group which predominates in the industry are the ranchers who specialize in raising cattle. The second group are the mixed farmers who combine cattle raising with the feeder cattle phase. Both phases usually constitute a secondary enterprise in the mixed farming areas of the Prairies.

In regions such as Alberta and South Western Saskatchewan which are sub-marginal for cereal crop production, expansion in cow herd numbers and total cattle population seems probable. More accurately, it might be said that any expansion in cow herds will occur in these regions.³ The ability of mixed farmers on the Prairies to sell their cereal grains in almost unlimited quantities would suggest that any increase in mixed farm herds is improbable, especially where cattle and cereals are competitive for land use.

In financing this operation, a farm-management loan, complete with a long-run projection, financial statement and a cash flow analysis could be adopted. The repayment schedule could be considered concurrently with the loan plan.

The need for this type of credit service to the "cow-calf" operation has been expressed by The Committee on Manitoba's Economic Future.⁴

³Seale, M. E., & Hudson, J. P., Cow-Calf Operations, 7th Annual Conference, Manitoba Livestock and Poultry Nutrition Council, December 14, 1965, University of Manitoba

⁴Government of Manitoba, Report of the Committee on Manitoba's Economic Future, Manitoba 1962-1975, Winnipeg, 1963, Volume 2-5.

It suggests that there is a lack of intermediate-term credit in this area. If there is to be the expansion in the cattle industry that the Committee indicates, more adequate sources of intermediate-term credit should be made available for the purpose of expanding the basic cattle herd. The farm management loan would provide a means whereby commercial banks could fulfill this need.

The Feeder-Cattle Operation

The feeder-cattle industry has been expanding steadily over the past decade. It is estimated that, of the cattle received at public stockyards a decade ago, nearly 200,000 were returned to farmers and feedlots for further finishing.⁵ In 1966 over 500,000 were returned for further feeding. This would be a minimum estimate of the actual size of the industry as there is also a substantial volume of feeder-cattle which are moved to feedlots without passing through the public yards. Similarly, an outside estimate can be obtained from the total number of feeder-cattle on farms. In 1956, approximately one million feeders were on Canadian farms and feedlots. This figure increased to 1,200,000 in 1966. The feeder-cattle industry has been increasing relative to the cattle industry.

Modern methods of feeding are being developed today. Local feedlot operators in Manitoba have utilized by-products from the potato and

⁵ Dominion Bureau of Statistics, Livestock Market Review, Ottawa.

poultry enterprises, as principal sources of protein energy for their livestock.

As the two phases in the cattle industry become segregated, the commercial producer must take advantage of the various sources for feeder-cattle. The principal source of supply is the public stockyards. The manager of the feedlot purchases the cattle through a commission firm located in the stockyards, which sorts out the animals by size and quality. This source is of particular advantage to the manager in that:

1. He is able to purchase feeders at all seasons of the year. This is an asset to him because he can now receive an income during all months of the year. In addition, it provides a built-in "hedge" against a sudden price change.
2. He is protected against disease infestations in his herd. The animals must be tested and vaccinated before they are allowed to leave the stockyards.
3. He is legally protected since the animals must be free of any encumbrance before leaving the "yard".

Other sources of supply include purchases of feeders direct from ranchers and farmers, from local auction sales, and from local dealers. Fall sales of feeder-cattle through local auctions have become quite popular during the past several years, particularly in Manitoba. For example, large centralized auction sales are conducted annually at St. Rose and Ashern, at which time ranchers in the Interlake and Westlake areas of Manitoba transport their feeder-stock to the available markets. Cattle offered for sale, primarily spring calves, are sorted out according to sex and size, and are usually auctioned on a "lot" basis.

In the feed-lot operation, cattle feeders buy, feed and sell cattle, usually operating on a margin. Frequently they feed the animals

for a specific number of days and then dispose of them. The longer the feeding period the greater the risk of price variation. However, as indicated in the next chapter, a futures market would remove this source of uncertainty. Insurance is available at a nominal price for accidental loss of animals. Mortality insurance is also available, although it is at a prohibitive cost.

Some Economic Considerations of the Cattle Industry

The basic principles discussed in Chapter IV apply when making livestock management decisions. The manager must consider such principles as the factor-factor, product-product and factor-product relationships. It is also necessary to consider time in relating any livestock enterprise to the rest of the farm business. The latter is particularly important, as it is essential that the decision maker recognize and interpret certain characteristics of the livestock input-output ratios.

Buildings and special equipment dominate the fixed costs in the feeder-cattle enterprise. The only land costs charged to livestock are those incurred for the buildings, enclosures and an allotment for the storage of adequate roughage. The size of the fixed costs for any particular feeder-cattle enterprise will vary according to its size, the age of the steers, management system, geographical location and various other factors.

The more important items in regard to a feeder-cattle enterprise include feed, labor, materials and services. Each of these major inputs may be further broken down into their constituent elements. Feed, for

example, includes two major types of materials, concentrates and roughages, in addition to coarse grains. It generally accounts for 75 to 85 per cent of total cost of the feeder-cattle enterprise,⁶ excluding the original outlays for buying feeder animals. It is clear that if maximum profits are to be realized from finishing cattle the feed costs per pound gain have to be as low as possible. It follows that farmers should strive for maximum efficiency of feed utilization and employ a least-cost ration.

Labor is the second most important item among the variable costs. It will become obvious, upon examination of the individual firm selected in the Carman Farm Business Association, that feeder livestock managers should give the closest attention to feed and labor in making their decisions.

The manager of the feeder-cattle enterprise is faced with difficult problems if he hopes to maximize profits. It is essential that the manager determine and apply the most profitable feeding practices if he hopes to obtain maximum earnings from his feeder-cattle. He must analyse input-output relationships in his area accurately, in order to select the optimum. The physical problem of the kinds, proportion and total amount of nutrients to employ is almost as important as the economic problems, and appears not to be unrelated.

⁶Hopkins, J. A., Murray, W. G., Elements of Farm Management, Prentice-Hall Inc., New York, 4th Edition, 1954, pp. 254.

Credit Considerations in Financing a Feeder-Cattle Enterprise

The specialized feeder-cattle enterprise is almost ideally suited to the procedure of cash budgeting, facilitated by a cash flow analysis of the business. In this way a line-of-credit can be established for the manager to finance his complete operation.

The capital-intensive nature of the feeder-cattle operation frequently makes it dependent upon credit to sustain its growth. In order to supply the necessary credit to each individual producer in the business of feeding cattle it is important that an appropriate cash flow be estimated. Table XIV shows a typical monthly cash flow, taken from an actual farmer's records in the Carman District Farm Business Association. His records were analysed over the periods 1963-1964, 1964-1965, and 1965-1966, with a projection made for the current production period. Provision has been made for all expenses in relation to the feeder-cattle including purchases of feeders, equipment, etc. It is suggested that part of the duties of an agricultural officer with any lending institution would be to assist the farm manager in the preparation of such a cash flow statement.

An excellent source of information for such a statement would be the Prairie Provinces Farm Account Book prepared by the University of Manitoba in co-operation with the Departments of Agriculture in Manitoba and Alberta. This could be used as a principal source of data in addition to discussing the projections with the individual farmer involved. The income tax return could be utilized as an alternative source. There is no question that individual farms should be visited periodically by

the agricultural officer in order to obtain a proper understanding of the situation and to enable a better administration of the loan. A visit also allows the officer to assess the accuracy of the financial statement in terms of his experience.

Analysing a Feedlot Operation

The Balance Sheet: The first step towards analysing the three year records of the feedlot operator's business was to compose a balance sheet. The analysis of the balance sheets shown in Table VII will be initiated by carrying out an item by item examination of its contents.

Accounts Receivable: An account receivable is an amount claimed against a debtor, generally money rights arising from the sale of goods or services. This item is usually of little significance to a feeder-cattle operation as cash is received for the animals upon deliver to the market.

Inventory: Inventory items such as livestock held for sale, feed and supplies, are valued at cost price or market price, whichever is lower. This is a major item in a feedlot enterprise since large numbers of feeders may be held from one fiscal year to the next.

Marketable Securities: Stocks and bonds may be held under the category of marketable securities. Although the farmer under examination does not have any securities, they are a valued addition to the assets of any operation.

Cash Surrender Value of Life Insurance: This item in the balance sheet is self-explanatory. It is the amount of cash that a policy holder

TABLE VII
FEEDER-CATTLE ENTERPRISE
BALANCE SHEET
AS AT DECEMBER 31, 1964

<u>ASSETS</u>		<u>LIABILITIES</u>	
<u>CURRENT</u>		<u>CURRENT</u>	
	\$		\$
Cash on Hand	Nil	Loans Due	24,174.11
Cash on Deposit	Nil	Bills Payable	Nil
Accounts Receivable	4,000.00	Term Debt	
Inventory		Maturing Within	
- Livestock held		One Year	895.02
for sale	15,960.00	Other (Specify)	Nil
- Grain, fodder,		Total Current	
straw, etc.	5,862.00	Liabilities	25,069.13
- Supplies	85.00		
Securities (Marketable)	Nil	<u>LONG-TERM</u>	
C.S.V. of life insurance	2,975.00	Long-Term Loans	5,690.88
Prepaid Expenses	Nil	Total Liability	30,760.01
Co-op Equity	1,816.00	Net Worth	12,287.99
Other (specify)	Nil		
Total Current	30,698.00	Total Liabilities	
		& Net Worth	43,048.00
<u>FIXED</u>			
Machinery and Equipment (net)	10,080.00		
Buildings & Improvements	2,270.00		
Starting Inventory	9,550.00		
Ending Inventory	11,820.00		
Total Fixed	\$12,350.00		
Total Assets	\$43,048.00		

AS AT DECEMBER 31, 1965

Assets		Liabilities	
Current		Current	
Cash on Hand	Nil	Loans Due	26,732.00
Cash on Deposit	Nil	Bills Payable	Nil
Accounts Receivable	4,000.00	Term Debt Maturing	
Inventory		Within One Year	1,201.00
- Livestock held		Other (specify)	Nil
for sale	21,100.00	Total Current	
- Grain, fodder,		Liabilities	27,933.00
straw, etc.	5,350.00		
- Supplies	620.00		

Table VII (continued) AS AT DECEMBER 31, 1965

	\$		\$
Securities (Marketable)	Nil	Long-Term	
C.S.V. of life insurance	3,162.00	Long-term loans	6,741.00
Prepaid Expenses	Nil	Total Liability	34,674.00
Co-op Equity	1,863.00	Net Worth	12,141.00
Other (specify)	Nil	Total Liabilities	
Total Current	36,095.00	and Net Worth	46,815.00
Fixed			
Machinery and Equipment	10,540.00		
Buildings & Improvements	180.00		
Starting Inventory	\$11,820.00		
Ending Inventory	\$12,000.00		
Total Fixed	10,720.00		
Total Assets	46,815.00		

AS AT DECEMBER 31, 1966

Assets		Liabilities	
Current		Current	
	\$		\$
Cash on Hand	Nil	Loans due	43,309.00
Cash on Deposit	Nil	Bills payable	Nil
Accounts Receivable	Nil	Term debt maturing	
Inventory		within one year	1,386.00
- Livestock held		Total Current	
for sale	37,125.00	Liabilities	44,695.00
- Grain, fodder,			
straw, etc.	5,580.00		
- Supplies	390.00		
Securities (Marketable)	Nil	Long-Term	
C.S.V. of life insurance	3,673.00	Long-term loans	6,716.00
Prepaid expenses	Nil	Total liability	51,411.00
Co-op Equity	1,972.00	Net Worth	6,939.00
Other (specify)	Nil	Total Liabilities	
Total Current	48,740.00	and Net Worth	58,350.00
Fixed			
Machinery and Equipment	9,460.00		
Buildings & improvements	150.00		
Starting Inventory	12,000.00		
Ending Inventory	12,150.00		
Total Fixed	9,610.00		
Total Assets	58,350.00		

would receive if he surrendered his life insurance policy.

Prenaid Expenses: Prepaid expenses occur in the feeder-cattle business. A feeder may have determined that it is not economical for him to grow feed grain on his farm. In this case he would attempt to purchase his feed by contract from neighboring farmers. The present policy in most areas is to prepay a portion of the feed costs in the spring before the crop is planted.

Co-op Equity: Equity in local consumer co-operatives that has been accumulated by their patrons can be withdrawn for cash or merchandise.

Machinery and Equipment: Machinery and equipment appear on the balance sheet at full cost less accumulated depreciation. The method of depreciation employed is not significant so long as one is consistent. Straight-line depreciation has been used as opposed to depreciation calculated on a reducing balance.

Buildings and Improvements: Buildings have little salvage value in the event of liquidation and are disregarded for purposes of analysis. Any new buildings or improvements to existing buildings during the year are added to fixed assets in the balance sheet for that year. This total is entered, less accumulated depreciation on the buildings. This accounting technique is rather severe for the feeder-cattle operator who has a substantial investment in his housing facilities for feed and livestock.

Loans Due: The item, "loans due", includes all short-term loans. This is perhaps the single most important item on the balance sheet for the feed-lot operation under analysis. The cash flow analysis reveals

that the farmer in question sells his animals every eight months. This means that he requires credit of a short-term nature. Hence, his current liabilities will be high relative to his non-current liabilities. This phenomenon will adversely affect the qualitative study of key items using ratios.

Term Debt Maturing Within One Year: This item found under current liabilities includes that portion of intermediate-term credit and long-term mortgages which is due within twelve months of the date on the balance sheet.

Long-Term Liabilities: This item includes all obligations of the feeder-cattle operator which are due beyond one year. For example, a loan for the purchase of machinery and equipment, etc., belongs in long-term liabilities and only the portion due within twelve months is shown under current liabilities.

Since each item on the balance sheets has been explained, the next procedure is to make a comparative study of each year. The quantitative relationships of the balance sheet items can best be shown for such a purpose by presenting them in a summarized form as in Table VIII. This table illustrates where money has been invested and how it has been financed. It shows how liquid or tight is the cash position of this operation. A comparative analysis serves to reveal weaknesses not easily recognizable from an individual balance sheet.

The current assets have been increasing steadily over the three years under consideration. This increase has been reflected by correspondingly higher inventories. The higher inventories result from a

TABLE VIII

FEEDER-CATTLE ENTERPRISE

COMPARATIVE BALANCE SHEET 1964 to 1966 INCLUSIVE

	1964	1965	1966	Liabilities	1964	1965	1966
Assets	\$	\$	\$	Current	\$	\$	\$
Current							
Cash on hand	Nil.	Nil	Nil	Loans due	24,174.00	26,732.00	43,309.00
Cash on deposit	Nil	Nil	Nil	Bills payable	Nil	Nil	Nil
Accounts Receivable	4,000.00	4,000.00	Nil	Term Debt			
Inventory				Maturing			
- Livestock held	15,960.00	21,100.00	37,125.00	Within			
for sale				One Year	895.00	1,201.00	1,386.00
- Grain, fodder,	5,862.00	5,350.00	5,580.00	Other(specify)	Nil	Nil	Nil
straw, etc.	85.00	620.00	390.00	Total Current			44,695.00
- Supplies	Nil	Nil	Nil	Liabilities	25,069.00	27,933.00	
Securities (Marketable)	Nil	Nil	Nil	Long-Term			
C.S.V. of life	2,975.00	3,162.00	3,673.00	Long-Term			
insurance	Nil	Nil	Nil	Loans	5,691.00	6,741.00	6,716.00
Prepaid Expenses	1,816.00	1,863.00	1,972.00	Total	30,760.00	34,674.00	51,411.00
Co-op Equity	Nil	Nil	Nil	Liabilities			
Other (Specify)	Nil	Nil	Nil	Net Worth	12,288.00	12,141.00	6,939.00
Total Current	30,698.00	36,095.00	48,740.00	Total Liabili-			
Fixed				ties and Net			
Machinery & Equip-	10,080.00	10,540.00	9,460.00	Worth	43,048.00	46,815.00	58,350.00
ment (Net)							
Buildings & Im-	2,270.00	180.00	150.00				
provements							
--starting inven-	9,550.00	11,820.00	12,000.00				
tory							
--ending inven-	11,820.00	12,000.00	12,150.00				
tory	12,350.00	10,720.00	9,610.00				
Total Fixed	43,048.00	46,815.00	58,350.00				
Total Assets							

build-up in the number of animals being fed.

The current liabilities can be analyzed in a similar manner. Bank loans are higher at the end of each succeeding year reflecting a heavier inventory of feeders.

A weakness is revealed in the comparative balance sheet by the net worth or owner's equity. It has decreased sharply since 1964. This has been caused by a proportionately greater increase in current liabilities as opposed to current assets. The farmer has lost money somewhere-- this is the only way to reduce net worth except by capital losses, the giving away of assets, or the re-evaluation of assets. This loss could be the result of an unfavorable price decline in feeder-cattle at some earlier period. It is apparent from the comparative balance sheet that the enterprise has been refinancing the resulting debt with short-term credit. This would explain why the cattle inventory does not offset the current loans payable. The above conclusion was drawn after examining the alternative possibility, namely, that the farmer had marketed his animals at a period of decline in the market (Table IX). However, this hypothesis was ruled out when it was discovered that the market had remained relatively stable during the years under consideration.

In addition to pointing out the above weaknesses, the comparative balance sheet facilitates the calculation of ratios. A ratio analysis will be undertaken following an examination of the statement of profit and loss.

TABLE IX

FEEDER-CATTLE ENTERPRISE

GOOD SLAUGHTER STEERS, ALL WEIGHTS

WINNIPEG, MANITOBA

<u>1964</u>	<u>Ave. PR/MOS.</u>	<u>1965</u>	<u>Ave. PR/MOS.</u>	<u>1966</u>	<u>Ave. PR/MOS.</u>
August	22.66	February	21.77	January	25.52
September	22.27	April	22.74	April	25.65
October	21.44	May	23.35	July	24.10
November	21.42	June	24.58	September	24.88
December	21.06	July	24.68		
		August	23.96		
		September	23.55		

H - 22.66 - August

L - 20.35 - January

H - 24.77 - December

L - 20.97 - January

H - 26.21 - December

L - 24.10 - July

Source, Livestock Market Review, Markets Information Section, Production and Marketing Branch, Department of Agriculture, Ottawa, Canada, Vol. 45, 46 and 47.

The Profit and Loss Statement: The second step in analysing the feeder-cattle records over the past three years was to draw up a statement of profit and loss (Table X). An item by item examination of this statement was also conducted. It helps to reveal important amounts, such as net profits, etc.

Receipts: In the feeder-cattle enterprise receipts include returns from the sale of livestock. The value of the manure associated with the enterprise is the cost of disposing of it. In other words, it is given away to anyone who is willing to remove it from the operator's premises.

Expenses:

Feeder Cattle Purchased: This item located on an individual profit and loss statement is self-explanatory. However, under a comparative analysis of statements for three succeeding years, valuable information can be revealed about the farmer's buying behavior.

Hired Labor: The feeder-cattle enterprise under analysis was one of two enterprises on the farm. Therefore, only that portion of the hired labor directly applicable to the feeder-cattle enterprise was taken into account. During the period May 1st to October 31st inclusive, only one-third of the hired labor was directly applicable to the feeder-cattle enterprise. However, all the hired labor was charged to the enterprise during the remaining months (Table XXVI).

Supplements, Salt, Mineral: Since no other livestock enterprise existed on the farm except the feeder-cattle operation, all expenditures for supplements, salt and mineral were charged to this enterprise.

TABLE X

FEEDER-CATTLE ENTERPRISE

Profit and Loss Statement
For Year Ending December 31, 1966

Receipts

Gross from sale of livestock
and livestock products (describe)

January	(1)	\$ 62.14
April	(82)	19,627.50
July	(3)	529.55
September	(138)	<u>33,838.78</u>

Subtotal	Feeder Cattle	<u>\$54,057.97</u>
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Other, from feeder cattle enterprise

Subtotal, other

Gross receipts from feeder cattle enterprise	<u>54,057.97</u>
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Operating Expenses

Feeder Livestock Purchased	\$38,217.54
Hired Labor	2,407.82
Supplements, Salt, Mineral	2,374.43
Veterinary & Medicine	281.57
Grain, Fodder, Straw, etc.	22,545.14
Other, (incl. grinding feed)	1,641.49
Utilities (enterprise share)	327.39
Interest	1,616.80
Insurance (enterprise share)	--
Car, Truck (enterprise share)	<u>22.11</u>

Total Cash Operating Expenses	<u>69,434.29</u>
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Net Cash Income From Enterprise	<u>(15,376.32)</u>
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Table X (continued)

Adjustments For Change In Inventory

Beginning Inventory		<u>Feed</u>	<u>Supplies</u>	<u>Feeder Cattle</u>
Pea Screenings	(-)	\$		
Oat & Pea Hay	(-)	\$		
Tame Hay	(166T)	2,500.00		
Silage	(158T)	2,370.00		
Straw	(4800 bales)	480.00		
Complete Ration				
		\$5,350.00	\$620.00	\$21,100.00
				(167)
Ending Inventory	(-)			
Pea Screenings	(-)	\$		
Oat & Pea Hay	(-)	\$		
Tame Hay	(94T)	\$1,410.00		
Silage	(200T)	\$3,600.00		
Straw	3800 bales	\$ 570.00		
Complete Ration	(-)	-		
		\$5,580.00	\$390.00	\$37,125.00
				(297)
Net Change (/, -)		/\$ 230.00	(\$230.00)	\$16,025.00
				(16,025.00)
Net Operating Profit		<u>\$648.68</u>		
Allowance For Depreciation				\$ 1,748.00
Machinery & Equipment				1,094.00
Buildings & Other Improvements				654.00
Net (Loss) From Operation				(1,099.32)

Table X (continued) FOR YEAR ENDING DECEMBER 31, 1965

ReceiptsGross from sale of livestock
and livestock products (describe)

	<u>Units</u>	
February	(1)	127.00
April	(25)	5,560.00
May	(25)	6,339.00
June	(54)	12,832.00
July	(26)	6,317.00
August	(81)	19,752.00
September	(27)	6,344.00
Subtotal	Feeder Cattle	57,271.00
Other, from feeder cattle Enterprise		

Subtotal, other

Gross Receipts from feeder cattle enterprise 57,271.00

Operating Expenses

Feeder Cattle Purchased	34,391.46
Hired Labor	2,055.21
Supplements, Salt, Mineral	755.20
Veterinary & Medicine	68.62
Grain, Fodder, Straw, etc.	19,659.85
Other (incl. grinding feed)	170.00
Utilities (enterprise share)	266.17
Interest	1,350.00
Insurance (enterprise share)	168.00
Car, Truck (enterprise share)	20.95

Total Cash Operating Expenses 58,935.46Net Cash Income From Enterprise (\$1,664.46)

Table X (continued)

Net Cash Income - \$1,664.46

Adjustments For Change In Inventory

<u>Beginning Inventory</u>		<u>Feed</u>	<u>Supplies</u>	<u>Feeder Cattle</u>
		\$	\$	\$
Pea Screenings	(16T)	647.00	85.00	15,960.00
Oat & Pea Hay	(40T)	480.00	(133)	15,960.00
Tame Hay	(114T)	1,710.00		
Silage	(155T)	2,325.00		
Straw	(6000 bales)	600.00		
Complete Ration	(2.5 T)	100.00		
		<u>5,862.00</u>	85.00	15,960.00
<u>Ending Inventory</u>				
Pea Screenings	-			
Cat & Pea Hay	-			
Tame Hay	166 T	2,500.00		
Silage	158 T	2,370.00		
Straw	4800 bales	480.00		
Complete Ration	-			
		<u>5,350.00</u>	620.00	21,100.00
			(167)	21,100.00
Net Change (/, -)	-	512.00	535.00	5,140.00
			5,163.00	
Net Operating Profit			<u>3,498.54</u>	
Allowance For Depreciation on Capital Items:				<u>1,610.00</u>
Machinery & Equipment			1,060.00	
Buildings and Improvements			550.00	
Net Profit From Operation				<u>1,888.54</u>

Table X (continued) FOR YEAR ENDING DECEMBER 31, 1964

ReceiptsGross from sale of livestock
and livestock products (describe)

	<u>Units</u>	
August	(26)	\$4,715.00
September	(29)	5,577.00
October	(29)	5,734.00
November	(57)	11,398.00
December	(76)	15,606.00
Subtotal Feeder Cattle	(217)	43,030.00
Other From Feeder Cattle Enterprise (describe)		
		\$
		\$
Subtotal Other		
Gross Receipts From Feeder Cattle Enterprise		\$43,030.00
Operating Expenses		
Feeder Livestock Purchased		13,064.27
Hired Labor		2,057.32
Supplements, Salt, Mineral		233.17
Veterinary & Medicine		280.41
Grain Fodder, Straw, etc.		20,439.42
Other (incl. grinding feed)		114.10
Utilities (enterprise share)		228.41
Interest		1,910.80
Insurance (enterprise share)		116.20
Car, Truck (enterprise share)		12.41
Total Cash Operating Expenses		\$38,476.51
Net Cash Income From Enterprise		\$ 4,553.49

Table X (continued)

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		Net Cash Income	
			\$4,553.49
Adjustments For Change In Inventory:			
	\$	<u>Feed</u> \$	<u>Supplies</u> \$
			<u>Feeder Cattle</u> \$
Beginning Inventory		3,416.00	35.00
			25,300.00
Oat & Pea Hay (26T)	312.00		
Tame Hay (80T)	1,200.00		
Silage (117T)	1,404.00		
Straw (5000 bales)	500.00		
Ending Inventory		5,862.00	85.00
			15,960.00
Pea Screenings(16T)	647.00		
Oat & Pea Hay (40T)	480.00		(133)
Tame Hay (114T)	1,710.00		15,960.00
Silage (155T)	2,325.00		
Straw (6000 bales)	600.00		
Complete ration (2.5T)	100.00		
Net Change (/ , -)		2,446.00	50.00
		(6,844.)	(9,340.00)
Net Operating Loss			\$2,290.51
Allowance For Depreciation			1,261.00
Machinery & Equipment		978.00	
Buildings & Other Improvements		283.00	
Net Loss From Operation			3,551.51

Veterinary Services and Medicine: Again, since no other live-stock enterprise existed on the farm, this permitted an easy allocation of these expenses.

Grain, Fodder, Straw, etc.: Grain, fodder and straw which was obtained from the grain-farming enterprise was purchased from that enterprise. The purchase price was determined by the cost of similar feed on the market. Since the feeder-cattle operator purchased a significant amount of his feed, these prices were readily available (Table XI).

Other Feed Expenses (including grinding): This item refers to costs incurred by the feed-lot operator for the processing of his feed-grain.

Utilities (enterprise share): An allocation of one-third of the value shown pertains to the farm house. During the months of November, December, January, February, May and July the remaining two-thirds of the utility bills were allocated to the feeder-cattle enterprise. Hydro was employed for lighting the feedlot and heating the water facilities during the winter months. The telephone was used for numerous calls involved in ordering feed, veterinary supplies etc. There was an allocation of two-thirds of the non-personal portion of the bills during March, April and June, due to a portion of the hydro expenses being used up by the grain-farming enterprise for augering grain. This allocation decreased to one-third of the non-personal portion during August, September and October when the harvest was taking place (Table XXVI).

Interest (enterprise share): A portion of the interest charges for the year are directly applicable to the feeder-cattle enterprise.

TABLE XI

FEEDER-CATTLE ENTERPRISE
 GRAIN, FODDER, ETC. FED TO FEEDER-CATTLE
 PURCHASED FROM GRAIN-FARMING ENTERPRISE

	\$
1964	
Wheat - 1409 @ 1.38/bus.	1,944.42
Oats - Nil	Nil
Oat & Pea Hay 26T @ \$12.00/T	492.00
Tame Hay 100T. @ \$15.00/T	1,500.00
Silage 195T. @ \$12.00/T	2,340.00
4000 bales @ 20¢	800.00
Straw 40Tons @ \$5.00	<u>200.00</u>
	7,276.42
1965	
Wheat 4841 @ \$1.50	7,261.50
Oats - Nil	Nil
Oat & Pea Hay 40T @ \$12.00	480.00
Tame Hay 120.5T. @ \$15.00/T	1,807.50
Silage 155T @ \$12.00/T	2,325.00
Straw 6000 Bales @ 20¢	<u>1,200.00</u>
	12,608.00
1966	
Wheat 5491 @ \$1.33	7,303.03
Oats 6481 @ .55	3,564.55
Oat & Pea Hay - Nil	Nil
Tame Hay 205T @ \$15.00/T	3,075.00
Silage 147T. @ \$12.00/T	2,205.00
Straw 6154 bales @ 20¢	<u>1,230.80</u>
	17,378.38

This is a result of short-term credit for the purchase of the cattle and intermediate-term credit for the purchase of livestock, machinery and equipment. The mortgage and intermediate-term credit applicable to the grain-farming enterprise was excluded.

Insurance (enterprise share): The figures shown relate to the insurance taken out on the cattle purchased and on buildings directly related to the feeder-cattle enterprise.

Car and Truck (enterprise share): In this instance the truck expenses were not allocated to the feeder-cattle enterprise. The farmer reported that the cattle and feed were custom-hauled. He estimated that approximately 10 per cent of the non-personal car expenses could be attributed to the enterprise (Table XXVI).

Depreciation Allowance: Depreciation on buildings used for the housing of feeder-cattle and their feed supplies was calculated on a straight line basis allowed for tax purposes. The depreciation of the livestock machinery and equipment was reckoned in a similar manner.

A comparative profit and loss statement enables one to make a meaningful interpretation of the quantitative relationships on the statement. In addition, it provides ratios for subsequent analysis.

Along with the operating or profit and loss figures for the current year the corresponding figures for the previous two years have been shown (Table XII). It is questionable whether one can justify the existence of an operation which shows a net loss, in two of three years. The farmer feels his feeder-cattle operation is justified for the

TABLE XII
 FEEDER-CATTLE ENTERPRISE
 COMPARATIVE STATEMENT OF PROFIT AND LOSS
 1964 TO 1966 INCLUSIVE

<u>Receipts</u>	<u>1964</u> \$	<u>1965</u> \$	<u>1966</u> \$
Gross Receipts From Sale of Livestock	43,030.00	57,271.00	54,058.00
Expenditures	38,477.00	58,935.00	69,434.00
Net Cash Income	4,553.00	(1,664.00)	(15,376.00)
Adjustment For Net Change in Inventory	(6,844.00)	5,163.00	16,025.00
Net Operating Profit	(2,291.00)	3,498.00	649.00
Allowance For Depreciation	1,261.00	1,610.00	1,748.00
Net Profit	(3,552.00)	1,888.00	(1,099.00)

following reasons:

1. It permits him to employ a hired man on a yearly basis. This is important because seasonal farm labor is difficult to find. His lucrative grain-farming enterprise reflects a capable hired man.
2. It allows him a market for his feed grain. This is particularly important in years of huge surpluses which were experienced in the 1950's.

Ratios are still another useful tool of analysis, which could be used, especially when they are compared with those of other years, and other feeder-cattle enterprises. The danger of using ratios is that they tend to be inflexible. Further interpretation than a poor ratio should be made before terming a business situation as "unfavorable".

The most common ratio used is the current ratio which gives some indication of the current credit strength of the business. The current ratio for the feeder-cattle enterprise being analysed was only slightly better than 1 : 1 ratio (Table XIII). The accepted standard among financial circles is a 2 : 1 ratio. A ratio of 2 : 1 gives the credit institution a margin of safety if current assets were liquidated in order to meet current liabilities.

Another ratio that is useful in determining the condition of the business is the debt to net worth ratio. In effect it is a ratio of total liabilities to tangible net worth. When the relationship exceeds 100 per cent or the ratio is greater than 1 : 1, the equity of the creditors in the assets of the farm exceeds that of the owner. This situation is not too critical as long as the credit institution has confidence in the farmer's managerial ability.

TABLE XIII

FEEDER-CATTLE ENTERPRISE

RATIO ANALYSIS 1964-1966

	1964	1965	1966
1. Current Ratio - $\frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$	= $\frac{30,698}{25,069}$ = 1.2; 1:1	= $\frac{36,095}{27,933}$ = 1.3; 1:1	= $\frac{48,740}{44,695}$ = 1.1; 1:1
2. Ratio of total Liabilities to Net Worth	= $\frac{30,760.00}{12,288.00}$ = 2.5; 3:1	= $\frac{34,674}{12,141}$ = 2.86; 3:1	= $\frac{51,111}{6,939}$ = 7.4; 7:1
3. Ratio of Total Current Liabilities to Net Worth	= $\frac{25,069}{12,288}$ = 2.0; 2:1	= $\frac{36,095}{12,141}$ = 3.0; 3:1	= $\frac{48,740}{6,939}$ = 7.0; 7:1

The ratio of current liabilities to net worth shows the current debt burden and indicates the extent to which the feeder-cattle enterprise depends upon the credit institutions to carry on operations. Ordinarily, a farm business is having difficulty when this relationship exceeds 80 per cent. A ratio of 2 : 3 is considered to be the point at which most creditors will use extreme caution.

The ratios which have been discussed represent three of numerous useful ratios. Other ratios which could be employed include:

1. Ratio of profit to total assets.
2. Ratio of livestock sales to net worth. This ratio gives a measure of the relative turnover of invested capital.
3. Ratio of net profit to net livestock sales.
4. Ratio of net profit to net worth.

The Cash Flow Analysis

The monthly cash flow analysis of the feeder-cattle enterprise allows the farmer and the banker to assess when funds are needed to finance the enterprise and to determine when income is available to repay the borrowings (Table XIV). On the basis of a cash flow analysis of past records, the farmer is now in a position to make projections of cash inflows and outflows for the coming production period (Table XIV). In addition, the monthly cash flow forces the farmer to give close attention to his business, facilitating better control and direction of his operation. It ensures minimum waste and maximum efficiency.

For example, from the 1964 cash flow sheet it is observed that

TABLE XIV

PROJECTED CASH FLOW ANALYSIS (MONTHLY) 1967

FERRO-CATTLE ENTERPRISE

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Cash Inflow													
(1) Livestock and Livestock Products						36,000.00	34,280.00						70,280.00
(2) Other Cash Income													
From Livestock Enterprise													
(3) Total Cash Inflow						36,000.00	34,280.00						70,280.00
Cash Outflow													
(4) Supplements, Salt, Mineral							340.00						
(5) Veterinary & Medicine	30.00			30.00									
(6) Grain, Fodder, Straw, etc.	50.00	25.00		125.00	50.00								101.00
(7) Other, (incl. Grinding)	2,000.00	4,700.00	9,000.00	1,000.00	1,500.00	1,000.00	500.00						1,121.00
(8) Livestock Purchases	400.00		110.00		150.00								800.00
(9) Hired Labor	250.00												
(10) Hydro, Telephones	30.00			250.00	60.00	190.00	60.00	60.00	31,250.00				31,250.00
(11) Interest	5.00			20.00	20.00	20.00	20.00	20.00	250.00	250.00	250.00	250.00	2,100.00
(12) Insurance										40.00			45.00
(13) Car Expenses				160.00									1,400.00
(14) Buildings & Improv.	3.00			1.00	3.00	3.00		2.00	3.00	3.00	4.00	2.00	160.00
(15) Equipment						200.00				400.00			25.00
(16) Total Cash Outflow	2,755.00	5,239.00	2,551.00	1,705.00	1,891.00	1,781.00	1,978.00	455.00	86.30	486.30	32,044.00	1,223.00	53,301.00
(17) Advance Rec'd.	2,755.00	5,239.00	2,551.00	1,705.00	1,891.00	1,781.00	1,978.00	455.00	86.30	486.30	32,044.00	1,223.00	53,301.00
(18) Repayments Made													
(19) Balance of Loan	54,165.63	59,519.63	63,070.63	64,055.63	65,067.63	66,067.63	67,067.63	68,067.63	69,067.63	70,067.63	71,067.63	72,067.63	73,067.63
(20) Balance of Loan (over)													
(21) Total Cash (over)													
(22) Total Cash (over)													

Table XIV (continued) CASH FLOW ANALYSIS (MONTHLY) 1966

	January	February	March	April	May	June	July	August	September	October	November	December	Total
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Cash Inflow													
(1) Livestock & Livestock Prod.	62.14			19,627.50			529.55		33,838.78				54,057.97
(2) Other Cash Income													
(3) Total Cash Inflow	62.14			19,627.50			529.55		33,838.78				54,057.97
Cash Outflow													
(4) Supplements, Salt, Mineral			632.96				334.32	399.82			1,007.33		2,374.43
(5) Vet. & Medicine					10.00		5.40	3.85			262.32		281.57
(6) Grain, Fodder, etc.	2,500.00				283.80		4,700.00	3,150.00	3,223.38	431.93	863.53	609.00	22,545.14
(7) Other (incl. Fertil.)	210.00			579.70							1,431.49		1,641.49
(8) Livestock Purchases	9,630.40										28,587.14		38,217.54
(9) Hired Labor	250.00		250.00	260.00	83.30		83.30	83.30	125.67	235.00	250.00	422.25	2,407.82
(10) Hydro, Telephone	32.62	29.67	47.97	21.72	46.32		24.46	19.31		17.68	39.51	40.36	327.39
(11) Interest										1,380.00	209.00	27.80	1,616.80
(12) Insurance	.94	3.14	1.39	.26	3.15		3.33	1.49	2.60	3.16	.66	1.61	22.11
(13) Car Expenses	.94												
(14) Bldgs. & Improv.	205.80	249.65		4.72			384.03			8.60	205.13		1,057.94
(15) Equipment				4.50			155.00	90.57			25.00		303.59
(16) Total Cash Outflow	12,829.76	1,456.47	5,732.32	870.90	426.57		5,684.44	3,748.34	3,356.65	2,076.37	32,881.11	1,092.02	70,795.92
(17) Advances Rec'd.	12,767.62	1,456.47	5,732.32		426.57		5,684.44	3,748.34	3,356.65	2,076.37	32,881.11	1,092.02	70,795.92
(18) Repayments Made				18,756.60									
(19) Balance of Loan	47,441.30	48,897.77	54,630.09	35,873.49	36,300.06	41,984.50	45,844.26	45,844.26	15,362.13	17,438.50	50,319.61	51,411.63	
(20) Carry-over							42,095.92						

Table XIV (continued) CASH FLOW ANALYSIS (MONTHLY) 1954

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Cash Inflow													
(1) Livestock and Livestock Products								4,715.47	5,576.88	5,733.52	11,398.05	1,606.17	43,030.10
(2) Other Cash Income From Livestock Enterprise								4,715.47	5,576.88	5,733.52	11,398.05	1,606.17	43,030.10
(3) Total Cash Inflow								4,715.47	5,576.88	5,733.52	11,398.05	1,606.17	43,030.10
Cash Outflow													
(4) Supplements, Salt, Minerals		25.60	20.10	23.10	20.10	55.10	52.02				21.95		232.17
(5) Veterinary & Medicine	12.30	6.75		47.50			17.50				137.50		280.11
(6) Grain, Fodder, straw, etc.			3,612.00				425.42	1,177.00	2,000.00	6,904.00	5,750.00		647.00
(7) Other (Inc. Grinding)									9.76				104.34
(8) Livestock Purchases													114.10
(9) Hired Labor	250.00	250.00	250.00	250.00	83.20	22.20	52.00	89.12	130.00	83.30	13,064.27		13,064.27
(10) Hydro, Telephone	38.20	28.04	15.27	17.90	9.00	31.80	25.33	5.95	2.52	10.80	19.87		250.00
(11) Interest, Bank charges.		5.00											23.67
(12) Insurance						116.20					1,883.00		22.80
(13) Car, Other	.01	.69	.07	1.24	.47	.87	.67	.21	2.91	.04	4.82		146.20
(14) Buildings & Improvements			179.56										12.11
(15) Equipment						12.16				402.80	78.17		2,113.12
(16) Total Cash Outflow	300.51	316.08	4,077.50	337.20	619.15	242.59	75.51	2,808.10	4.14	402.80	78.17		2,786.11
(17) Advances Required	309.51	316.08	4,077.50	337.20	762.62	583.62	691.15	4,003.62	2,119.33	7,400.94	21,209.58		20.00
(18) Payments Made						583.62	691.15			1,667.42	9,011.52		3,210.10
(19) Balance of Loan	29,018.51	29,334.59	33,411.89	33,719.09	34,511.71	35,095.33	35,786.78	711.59	3,127.55	33,314.86	43,126.38		12,366.37
(22, 718.00 Carry-over)								35,074.99	31,617.44	33,314.86	43,126.38		30,760.01

he purchased his feeders in November. The 1965 cash flow sheet reveals that he sold this lot in June of that year. Similarly, he purchased new feeders in January of 1965 which he sold in August of the same year. The indication is that he keeps his animals on feed for eight months. This type of information is invaluable to the banker and is typical of what can be learned from such an analysis.

This concludes the analysis of the feeder-cattle enterprise. However, before leaving the subject of financing feeder-cattle, it is necessary to examine how the commercial feedlot could be financed in the future. A close study of the method whereby today's grain trade is financed will reveal interesting similarities between it and the business of feeder-cattle.

FINANCING OF THE GRAIN TRADE

An examination is made of the financing of wheat, oats, and barley which are under the control of the Canadian Wheat Board.

Upon delivery of grain to the line elevator, producers are paid by the elevator company the initial rate set by the Board. The agreement between the Board and the companies authorizes the latter to pledge the grain as security for bank loans to finance the payments made to producers. At this stage all bank borrowings with respect to the foregoing are secured under section 88 of the Bank Act.

The grain is shipped by the elevator companies from the Prairie Provinces by rail to terminals at the Lakehead, Churchill or the Pacific Coast. While the grain is in transit it is secured by rail bills of

lading. The banks' position in this stage is covered by the security provided for under Section 88.

Upon delivery of the grain to the Lakehead terminal the banks' legal basis for security shifts from Section 88 to Section 86 under the Bank Act. The grain company surrenders the rail bills for terminal warehouse receipts.

In the Lakehead terminal position, the Canadian Wheat Board acquires physical control of the grain. The grain company that has delivered the grain has three days after delivery to present the relative warehouse receipts (fully registered) to the Canadian Wheat Board. Funds received from the Board are available for repayment or reduction of Section 88 bank loans. The Canadian Wheat Board will endorse the warehouse receipts over to the purchasing grain company (if an immediate sale is possible) upon receiving payment for the grain. The purchasing grain company will in turn deposit the warehouse receipts with the Lake Shippers Clearance Association, providing the company does not resell the grain. Upon loading the grain at the Lakehead, the warehouse receipts are turned over to the terminals. In return for the Lakehead Terminal Warehouse Receipts the shipping grain company receives lake bills of lading. The banks, in order to remain in a secured position throughout, obtain the lake bills of lading and hypothecate them as security under Section 86 of the Bank Act. Lake bills hypothecated to the banks are usually forwarded to their Montreal offices to be available for delivery upon sale of the grain. When the grain is sold out of the Eastern terminals, the lake bills must be surrendered to the

terminals to get delivery of the grain. In return the seller obtains Ocean Bills of Lading which he surrenders to the purchaser against payment. The payment is usually a Letter of Credit established by the purchaser with a Canadian Bank.

FIELD WAREHOUSING

Under the present system of financing it is conceivable that the commercial banks in Canada would be willing to lend up to 65 per cent of the value of the cattle, nothing on feed. However, by the technique of warehousing we would estimate a line of credit could be established to 80 to 90 per cent of the value of the cattle, 70 to 80 per cent of the value of the feed. This type of financing would be particularly important to the large commercial feeder who has limited working capital, is expanding rapidly and does not have sufficient financial strength to support the large credit accommodations necessary for his operations. It would appear the banks could advance to these managers more credit on their inventories if they were warehousing.

Field warehousing consists of securing collateral for additional financing by means of warehouse receipts. Canadian banks would be able to hypothecate security under Section 86 of the Bank Act rather than take a chattel mortgage. In feedlot financing the chief advantages of warehousing are the following:

1. Borrowing power is usually much greater when warehouse receipts are used.

2. Field warehousing provides an orderly, systematic, and continuous financing program. In addition it has more flexibility, since a payment against the loan is required when warehoused merchandise is released, so that the loan is reduced at the same rate as the inventory. When stocks are built up, the warehouse receipts issued to cover this increase provide the additional working capital at the same time it is needed to process the larger inventory.
3. Warehouse receipts can also be issued to cover products used in the manufacture of feed. This enables the feedlot operator to take advantage of large lot discounts and make advantageous purchases at lower prices. In addition, field warehousing relieves the burden which feed inventories, that are temporarily high, impose on operators. It can even be used to cover manure, accumulated during winter months and held for sale to nearby farmers.

The warehouse receipt has five principal advantages over the conventional chattel mortgage.

a) With warehouse receipts, acknowledgement before a notary public and recording is not necessary. In contrast, with chattel mortgages signatures must be sworn to before a notary and documents must be recorded for protection against other creditors.

b) Possession and control of goods covered by a warehouse receipt lie in a disinterested third party--the warehousemen. Alternatively, goods covered by a chattel mortgage remain in the possession of the borrower. He may not have the legal right to misuse the goods, but he does have the power to do so.

c) Any property covered by a warehouse receipt and under pledge can be sold without reference to bankruptcy court. Sale of it cannot be restrained except by showing that the sale would dissipate the equity in the goods. However, in bankruptcy, goods secured by a chattel mortgage automatically come under the jurisdiction of the bankruptcy court, and

some delay may result from such action.

d) Warehouse receipts can be rediscounted. Loans secured by chattel mortgages are not eligible for rediscount unless supported by a financial statement and proof that funds are to be used for agricultural or commercial purposes.

e) Warehouse receipts are negotiable anywhere and non-negotiable warehouse receipts may be transferred by assignment. Chattel mortgages lack the quality of being negotiable.

From an operating standpoint, field warehousing for cattle feedlots would be installed in much the same manner as they would be for other commodities, of which grain is an excellent example.

HOW CANADIAN FEEDLOT OPERATIONS COULD BE FINANCED IN THE FUTURE

The commodities futures market has been extended to include a beef futures market in Chicago. After intensive research it appears that this development will be the precedent of a more consequential innovation in the feeder cattle enterprise, namely field warehousing.

Under the technique of field warehousing the lender has the security of (1) the collateral covered by the receipts issued; (2) the integrity and financial worth of the field warehouse company involved; and (3) the bond and insurance coverage maintained by the field warehouse companies.

Essentially, three parties would be involved in field warehousing: the banker, the feeder and the warehouse company. The warehouse

company could be one that is already in existence or a Canadian company could establish such a business in this area. For example, a feed company would be in an excellent position to expand in this manner. Most feed companies possess personnel trained in agriculture.

The procedure for setting up a field warehouse would be as follows:

1. The first step for the producer in setting up a field warehouse on his property would be to apply for a line of credit through a "farm management loan" with the bank. It is then up to the bank to set the limit on credit, to designate the percentage to be loaned against cost of inventory and to set the rate of interest to be charged. It is conceivable that with a warehouse company securing the loan, a bank could increase the limit on a customer's line of credit. They could loan a greater percentage of the inventory value.

The Lawrence Warehouse Company, Chicago, Illinois, report a lack of participation by Canadian public warehouses in field warehousing. However, the former enjoy a small volume of Canadian business and operate a number of field warehouse locations in Canada. It appears anxious to expand their operations by assisting the financing of livestock through the use of Lawrence warehouse receipts.

2. A lease is prepared between the feedlot operation and the warehouse company covering the corral area and/or feed storage facilities which will contain the commodities to be covered by a warehouse receipt later on. This lease would be prepared on a month-to-month basis, and may be cancelled by either party upon giving 30 days' notice, providing there are no outstanding warehouse receipts at the moment.
3. Some method must be devised by the warehouse company to serve notice to the public of the establishment of a warehouse and hypothecation of the inventory contained therein.
4. Watchmen must be hired by the warehouse company to comply with the regulation of a twenty-four hour bonded service that the warehouse must have.
5. A warehouse manager would be responsible for matters relating to the receiving of commodities into or making delivery from the warehouse.

6. Warehouse receipts are issued by the manager as requested by the owner of the feedlot covering cattle and/or feed which has been received into the leased warehouse area. The warehouse receipts should contain all pertinent information necessary for the continuous positive identification of the cattle or feed being warehoused. This would normally include number of head, full description of commodity, number assigned to lot, average weight of each animal in the lot, number of corral into which they have been deposited, value per head (based on average weight and price paid) and total extended value of lot.
7. The warehouse receipt is then signed by the warehouse manager. Thereupon it is delivered to the bank to be hypothecated as security under Section 86 of the Bank Act. Subsequently, the feeder is granted a loan on the basis of this collateral.
8. Once the warehouse receipt has been issued, the warehouse company must deal with the bank as to when and how deliveries are made.

There is an excellent potential for growth in the size of the feeder cattle industry. The financial advantages of warehousing make it an area of great potential for any enterprising Canadian company.

Changes taking place in the livestock industry--the development of the commercial feedlot, etc.--make it imperative for banks to tailor their credit to the needs of the industry. The "farm management loan" outlined is suitable for adoption by such a commercial operation. Being secured by warehouse receipts, it appears to be a highly profitable loan, easy to administer and one which would be welcome to a bank's loan portfolio. In addition, it is secured by self-liquidating collateral.

THE GRAIN-FARMING ENTERPRISE

Nature of the Industry

Study of the location of grain producing areas in Canada indicates that certain regions tend to specialize in certain crops. The wheat producing area of the vast Western Prairies, the specialty crops of the Pembina Triangle in Manitoba, the tobacco crops in Ontario and the dairy farms of Quebec and the Maritimes are all examples of this regional specialization. However, within each region, a variety of crops are grown. Although the Prairie region is famous for growing wheat, such crops as barley, oats, rye, and rapeseed are also produced on a commercial basis.

The principal physical factors affecting the location of production include the soil, the climate and the topography. Biological factors such as insects, plant diseases and weeds also affect the location of grain crops.

Economic considerations influence the location of grain crops. A demand must exist so that the crop will be taken from the market. In this connection, the huge wheat sales to the Communist Countries have played a major role in expanding wheat production on the Prairies in recent years (Table XV). Relative prices and costs reflect economic forces at play.

In planning his cropping program, the individual farmer is interested in the trends of national production, only as they affect the prices he is likely to receive for his crops. More specifically, he is interested in the amount of labor and other cost factors needed by different crops under conditions prevailing in his locality. The principles of

TABLE XV

GRAIN-FEEDING ENTERPRISE

CANADA'S LONG-TERM WHEAT AGREEMENTS

O/R LONG-TERM WHEAT AGREEMENTS (Compiled by the Department of Trade and Commerce)

Country	Period	Quantity (in bushels)	Terms	Sales contracts signed (in millions of bushels)
China	3 yr. from Aug. 1/63	wheat 112 million (minimum) to 187 million (maximum)	25% cash, balance 18 months. Credit provisions authorized by government under the Canadian Wheat Board Act	<ol style="list-style-type: none"> 18.7 shipment Aug./52-Jan./64 * 18.7 shipment Feb./64-Jun./64 2.8 shipment May/64-Dec./64 37.3 shipment Jul/54-Dec./64 30.0 shipment Feb.-June/65
U.S.S.R.	3 yr. from April 18/63	(a) first two years of agreement wheat 198 million flour 30.5 million (wheat equivalent) (b) third year agreement wheat or flour equivalent 18.7 million	All purchases made for cash although terms of 25% cash, bal. 6, 12, 18 months authorized by government under Section 21 of ECIC to max. of \$200 million Cash	<p>Actual shipments Wheat Flour **</p> <p>USSR 197.8 21.9</p> <p>Cuba 10 8.6</p> <p>Total 207.8 30.5</p>
Bulgaria	3 yr. from Oct. 8/63	A firm quantity of 3.7 million wheat for flour equiv. for each of the 3 yr. of the agreement making a total of 11 million.	10% cash, bal. 24, 30, 36 months. Credit authorized by government under Section 21 of ECIC.	<ol style="list-style-type: none"> 5.5 shipment Mar.-Jul. 1964 1.8 shipment Apr.-May 1964 1.8 shipment Aug.-Oct. 20/64 1.8 shipment Dec./64 - Feb./65
Czechoslovakia	5 yr. from Oct. 29/63	A firm total of 44 million	10% cash, bal. 24, 30, 36 months. Credit authorized by government under Section 21 of ECIC.	<ol style="list-style-type: none"> 4.4 shipment Mar.-Jun. 1964 *** 18.4 shipment Aug. - Nov. 1964
Poland	3 yr. from Nov. 5/63	A firm quantity of 44 million.	10% cash, bal. 24, 30, 36 months. Credit authorized by government under Section 21 of ECIC.	<ol style="list-style-type: none"> 7.3 shipment Apr.-Jul./64 7.3 shipment Aug.-Nov./64 7.3 shipment Aug.-Nov./64

Table XV (continued)

Country	Period	Quantity (in bushels)	Terms	Sales contracts signed (in millions of bushels)
East Germany	3 yr. from Aug. 1/64	4 firm quantity of 27.6 million.	25% cash, balance 18 months. Credit provisions authorized by government under CEB Act.	1. 6.4 shipment Aug.-Nov./64 2. 2.8 shipment Apr.-Jul/65
Hungary	3 yr. from June 11/64	Total of 9.2 million wheat (or flour equivalent on credit or min. of 4.6 million wheat (and/or flour equivalent) on credit and maximum of 5.7 million feed barley for cash.	10% cash, balance 24, 30, 36 months. Credit authorized by government, under Section 21 of ECIC.	1. 3.7 shipment Dec.-Mar./65

* Wheat Board concluded firm sales contracts for shipments of 16.3 million bu. of barley to China last year, on terms of 25% cash and the balance in 18 months. The sale is not under the long term agreement.

** Immediately prior to the conclusion of the long term agreement, USSR purchased 11.8 million bu. of Canadian wheat for shipment in 1963-64. This quantity is additional to 207.8 million bu. of wheat and 30.5 million bu. wheat equivalent of flour mentioned above.

*** In addition Czechoslovakia purchased about 2 million bu. of Canadian wheat on a cash basis in 1963-64.

**** In Oct./64 USSR purchased 10.6 million bu. wheat and flour on a cash basis for shipment to the USSR and/or Cuba at the buyer's option between November/64 and August/65. In January/65 USSR purchased 9.4 million bu. of wheat and flour on the same basis, for shipment February-June/65. Any quantity shipped after April 17/65 could be considered as part of the USSR commitments in the third year of the long term agreement.

In February/65, USSR bought 4.5 million bu. of wheat and flour to be delivered between May and September. Terms: cash payment of \$9 million.

Source: Financial Post, February 1965.

production discussed in Chapter IV apply when making cropping decisions.

Land and equipment dominate the fixed costs in the grain-farming enterprise. The only building costs are those incurred for grain storage facilities and the housing of cropping machinery. Equipment costs include depreciation and an investment outlay.

The important variable costs associated with this enterprise include fertilizer, seed, herbicides, pesticides, labor repairs, fuel, oil, gas, and electricity.

As previously stated, the grain-farming enterprise can best utilize a cash flow analysis which employs a seasonal planning period. However, before proceeding with this analysis, individual attention will be given to the financing of farm equipment. It warrants this special consideration because farmers' total investment in machinery has been second only to the value of their real estate. Mechanized farms are the consequence of rapid increases in agricultural technology.

Farm Equipment Financing

The nature of farm equipment indicates that it involves intermediate-term credit. In Canada, intermediate and short-term financing is supplied by the banks to farmers mainly under two plans, the Farm Improvement Loans Act and ordinary bank loans. The Farm Improvement Loans have been used by farmers primarily for the purchase of farm machinery (Appendix C). The amount of credit outstanding under this Act increased from \$341,000,000 in 1964 to \$459,000,000 in 1965 (Table IV).

Over 75 per cent of all loans were for farm machinery, equipment and trucks. In the period 1945 to 1961, 84 per cent of the amount loaned under the Farm Improvement Loans Act was used for the purchase of farm machinery. Farm equipment financing should be attractive to the banks, for machinery is an income-producing asset. Moreover, it is relatively standard in character, is repossessible, and resaleable.

The principal complaint with existing sources of farm equipment financing is that they fail to meet farmers' requirements in regard to the method by which equipment is financed. Since farm machinery is an income-producing asset, farmers wish to repay a loan for its purchase as this income is forthcoming. For example, it is undesirable to have a credit institution grant short term credit for the purchase of capital equipment. In addition, a repayment period of five years is unrealistic when the equipment purchased has an estimated life of fifteen years. Credit practices of this nature reflect a failure of public and private financial institutions to interpret the needs of agriculture.

In the purchase of farm machinery, the farmer is faced with deciding whether his investment is worthwhile in terms of benefits to be expected. This is complicated because the expected benefits accrue over several years. Hence, he must employ capital budgeting to determine whether his anticipated investment will prove profitable.

The discounted cash flow method can be used to facilitate capital budgeting. It is necessary to take into consideration the cash gain from the use of the machine over its estimated life and discount the net gain for each year back to the present. Upon the completion of such a

cash flow, the farmer should take it to his banker. The banker can determine from the cash flow sheet the debt-paying capacity of the borrower toward the purchase of the machine. Loan amortization schedules have been established to reflect annual payments designed to extend over the productive life of the asset (Table XVI). Ideally, the annual loan payment for the purchase of a machine should be the depreciation on the machine plus interest. However, since the financial institutions prefer equal annual payments the loan was amortized over ten years. This repayment schedule is realistic in that the value of the machine is greater than the outstanding value of the loan at every period. Security for the loan is established through a chattel mortgage on the machine to be purchased. However, although the matter of security is important, primary emphasis for the loan should be on the productivity of its proceeds, that is, the additional income that the new asset will add to the business.

Analysing a Grain-Farming Enterprise

The grain-farming operation which was analysed is the major enterprise of a member in the Carman District Farm Business Association. In addition to this enterprise, he had a cattle and hog operation. An analysis of his business consisted of an item by item analysis, a comparative statement analysis and a ratio analysis of his financial statement. The financial statement which was drafted consisted of a balance sheet and a statement of profit and loss. A cash flow analysis of his records for 1963 - 1965 inclusively, was completed. A projection of the cash flows for the 1966 production period was made on the basis of this

TABLE XVI
GRAIN-FARMING ENTERPRISE
FARM EQUIPMENT FINANCING
AMORTIZATION AND DEPRECIATION SCHEDULE

Item: Combine Total Cost: \$12,950.46 Credit: \$10,000.00
Source of Credit: F.I.L. Amortization Period: 10 Years
Rate of Interest: 5% Depreciation Period: 15 Years

LOAN AMORTIZATION SCHEDULE

<u>Year</u>	<u>Principal</u> \$	<u>Interest</u> \$	<u>Balance</u> \$
1	795.05	500.00	9,204.95
2	834.80	460.25	8,370.15
3	876.54	418.51	7,493.61
4	920.37	374.68	6,573.24
5	966.39	328.66	5,606.85
6	1,014.71	280.34	4,592.14
7	1,065.44	229.61	3,526.70
8	1,118.71	176.34	2,407.99
9	1,174.65	120.40	1,233.34
10	1,233.38	Nil	-

DEPRECIATION SCHEDULE

<u>Year</u>	<u>Amount</u> \$	<u>Balance</u> \$	<u>Year</u>	<u>Amount</u> \$	<u>Balance</u> \$	<u>Year</u>	<u>Amount</u> \$	<u>Balance</u> \$
1	670.00	9,330.00	7	670.00	5,310.00	13	670.00	1,390.00
2	670.00	8,660.00	8	670.00	4,640.00	14	670.00	620.00
3	670.00	7,990.00	9	670.00	3,970.00	15	670.00	0
4	670.00	7,320.00	10	670.00	3,300.00			
5	670.00	6,650.00	11	670.00	2,630.00			
6	670.00	5,980.00	12	670.00	1,960.00			

analysis. Finally, the actual figures for this period were obtained and a comparison was made.

The Balance Sheet: The initial step in analysing a grain-farming enterprise was to compose a balance sheet (Table XVII). The techniques of analysis in this enterprise are similar in many ways to methods used in the analysis of the feeder-cattle operation. Therefore, only the dissimilarities among the content of items will be indicated.

Farm Land: The value placed on the farm land will have a significant effect on the financial statements of the business. It is important that a conservative estimate be placed on the land to guard against inflated land prices. The farm under analysis was valued at \$54.00 per acre in 1963 and this figure was reassessed at \$100.00 per acre in 1964, 1965 and 1966. The land was significantly under-valued at the former price. The new price of \$100.00 an acre is a conservative estimate of the land value in this area of Manitoba. Similar land in the area has been sold for \$150 to \$200 per acre.

The comparative analysis of the balance sheets for the production periods in question allows one to make certain observations (Table XVIII).

The current assets have been increasing steadily over the three years examined. This was mainly attributed to an increasing inventory of grain.

The farmer's investment in fixed assets far exceed the amount financed by long term sources of money. This is a desirable situation from the lender's point of view. The total value of the fixed assets

TABLE XVII
GRAIN-FARMING ENTERPRISE
BALANCE SHEET
AS AT DECEMBER 31, 1963

Assets		Liabilities	
Current		Current	
Cash on hand	Nil	Loans due	Nil
Cash on deposit	Nil	Bills payable	Nil
Accounts Receivable	Nil	Term debt maturing	
Inventory		within one year	2,794.00
- crops held for			
sale and feed	6,970.00	Total current	
- supplies	15.00	Liabilities	2,794.00
- improvements	100.00		
- fertilizer	Nil	Long-term	
- small tools	98.00		
Securities(Marketable)	Nil	Mortgage on	
C.S.V. of life insurance	2,050.00	Farm Real Estate	14,368.00
Prepaid Expenses	Nil		
Total Current	9,233.00	Intermediate-Term	
Fixed			
Machinery and Equipment		Loans	2,910.00
(Net)	4,646.00	Other (specify)	Nil
Buildings & Improvements	485.00	Total Long-Term	17,278.00
Starting inventory	560.00	Total Liability	20,072.00
Ending inventory	1,045.00	Net Worth	24,384.00
Farm Land	30,000.00	Total Liability	
Total Fixed	35,223.00	and Net Worth	44,456.00
Total Assets	44,456.00		

AS AT DECEMBER 31, 1964

Assets		Liabilities	
Current		Current	
Cash on hand	Nil	Loans due	Nil
Cash on deposit	Nil	Bills payable	Nil
Accounts receivable	Nil	Term debt maturing	
Inventory		within one year	2,774.00
- crops held for		Other (specify)	Nil
sale and feed	8,738.00	Total Current	
- supplies	15.00	Liabilities	2,774.00
- improvements	115.00		
- fertilizer	486.00	Long-Term	
- small tools	146.00		

Table XVII (continued) AS AT DECEMBER 31, 1964

Securities (marketable)	518.00	Mortgage on Farm	
C.S.V. of life insurance	2,950.00	real estate	12,763.00
Prepaid expenses	Nil		
Total current	12,968.00	Intermediate-term	
Fixed		Loans	1,740.00
Machinery and Equipment(Net)	11,541.00	Other (specify)	Nil
Buildings and improvements	-50.00	Total Long-Term	14,503.00
- Starting Inventory	1,045.00	Total Liability	17,277.00
- Ending Inventory	1,095.00	Net Worth	63,182.00
Farmland	56,000.00	Total Liability	
Other (specify)	Nil	and Net Worth	80,459.00
Total Fixed	67,491.00		
Total Assets	80,459.00		

AS AT DECEMBER 31, 1965

Assets		Liabilities	
Current		Current	
Cash on hand	Nil	Loans due	1,200.00
Cash on deposit	Nil	Bills payable	Nil
Accounts receivable	374.00	Term debt maturing	
Inventory		within one year	3,581.00
- crops held for		other (specify)	Nil
sale and feed	12,792.00	Total current	
- supplies	20.00	liabilities	4,781.00
- improvements	100.00		
- fertilizer	Nil	Long-Term	
- small tools	163.00	Mortgage on farm	
Securities (Marketable)	545.00	real estate	10,623.00
C.S.V. of life insurance	2,700.00		
Prepaid Expenses	Nil	Intermediate-term	
Total current	16,694.00	loans	4,000.00
Fixed		Other (specify)	Nil
Machinery and Equipment(net)	31,949.00	Total long-term	14,623.00
Buildings and improvements	-50.00	Total liability	19,004.00
-starting inventory		Net Worth	85,189.00
-ending inventory		Total Liability	
Farmland	56,000.00	and Net Worth	104,593.00
Other (specify)	Nil		
Total Fixed	87,899.00		
Total Assets	104,593.00		

TABLE XVIII
GRAIN-FARMING ENTERPRISE

COMPARATIVE BALANCE SHEET 1963 TO 1965 INCLUSIVE

	1963	1964	1965
Assets			
Current			
Cash on Hand	Nil	Nil	Nil
Cash on Deposit	Nil	Nil	Nil
Accounts Receivable	Nil	Nil	374.00
Inventory			
- Crops Held For Sale and Feed	6,970.00	8,738.00	12,792.00
- Supplies	15.00	15.00	20.00
- Improvements	100.00	115.00	100.00
- Fertilizer	Nil	486.00	Nil
- Small Tools	98.00	146.00	163.00
Securities (Marketable)	Nil	518.00	545.00
S.S.V. of Life Insurance	2,050.00	2,950.00	2,700.00
Prepaid Expenses	Nil	Nil	Nil
Total Current	9,233.00	12,968.00	16,694.00
Fixed			
Machinery and Equipment (Net)	11,876.00	11,541.00	31,949.00
Buildings and Improvements	485.00	50.00	50.00
-Starting Inventory	560.00	1,045.00	50.00
-Ending Inventory	1,045.00	1,095.00	1,045.00
Farm Land	30,000.00	56,000.00	56,000.00
Total Fixed	42,361.00	67,491.00	87,899.00
Total Assets	51,594.00	80,559.00	104,593.00
Liabilities			
Current			
Loans Due	Nil	Nil	1,200.00
Bills Payable	Nil	Nil	Nil
Term Debt Maturing Within One Year	2,794.00	2,774.00	3,591.00
Other (Specify)	Nil	Nil	Nil
Total Current Liabilities	2,794.00	2,774.00	4,791.00
Long-Term			
Mortgage on Farm Real Estate	14,368.00	12,763.00	10,623.00
Intermediate - term loans	2,910.00	1,740.00	4,000.00
Other (Specify)	Nil	Nil	Nil
Total Long-Term	17,278.00	14,503.00	14,623.00
Total Liability	20,072.00	17,277.00	19,414.00
Net Worth	31,522.00	63,282.00	85,179.00
Total Liability and Net Worth	51,594.00	80,559.00	104,593.00

has been increasing. The cause of the increase is the value of machinery which more than offset the depreciation. The value of the land which almost doubled between 1963 and 1964, can be attributed to capital gain. It is particularly large due to an extreme under-evaluation of the land prior to 1963.

Current assets have increased relative to current liabilities. This situation can be interpreted to mean that the farmer is moving into a more liquid cash position. Another excellent sign of the business' health is the net worth. It has increased in amount every year.

The Profit and Loss Statement: The second step in analysing the grain-farming records was to construct a statement of profit and loss. (Table XIX)

An item by item examination of the statement will be carried out. Only items not described under the feeder-cattle analysis will be discussed.

Receipts: Miscellaneous crop receipts include any payment such as wheat board payments, patronage payments, etc., received by the operator.

Car and Truck (enterprise share): All of the truck expenses were attributed to the grain-farming enterprise. Of the non-personal car expenses, ninety per cent were attributed to this enterprise (Table XXIX).

Insurance: This item includes fire, casualty, hail, and crop insurance. The inclusion of the latter in 1965 caused this expenditure item to increase sharply.

TABLE XIX
 GRAIN-FARMING ENTERPRISE
 STATEMENT OF PROFIT AND LOSS
 FOR YEAR ENDING DECEMBER 31, 1963

Receipts

Gross from sale of crops (describe)		<u>Quarters</u>	
March	\$1,544.77		\$1,544.77
April	47.00)		415.00
June	368.00)		
July	580.92)		
August	357.18)	2,862.94	
September	1,924.84)		
October	1,021.05)		
November	915.37)	2,418.02	
December	481.60)	<hr/>	<hr/>
Subtotal Crops			\$7,240.93
Other from enterprise (describe)			
Misc. crop receipts	1Q	\$ 904.69	
C.W.B. payments, etc.	2Q	-	
	3Q	421.00	
	4Q	208.82	
		<hr/>	<hr/>
			\$1,534.51
Gross Receipts from Grain-farming enterprise			<hr/> <hr/> \$8,775.24

Table XIX (continued)

Expenses						
Hired Labor		\$	843.50			
Fertilizer & herbicides			1,355.26			
Seed Purchased			387.00			
Machine hire			9.00			
Gasoline, fuel, oil			812.35			
Repairs--machinery			496.64			
Repairs--buildings			586.90			
Car, truck, etc.			219.50			
Utilities (enterprise share)			37.68			
Taxes			1,040.17			
Insurance			65.80			
Interest			1,115.04			
Small tools			299.26			
Other			<u>Nil</u>			
Total Cash Expenses						<u>\$7,268.10</u>
Net Cash Income from Operation						<u>\$1,507.14</u>
Adjustments For Change in Inventory						
Beginning Inventory:						
		<u>Grain</u>	<u>Supplies</u>	<u>Impr.</u>	<u>Fert.</u>	<u>Small Tools</u>
Wheat	(1400 bus.)	\$1,750.				
Oats	(1500 bus.)	700.				
Seed	(50 bus.)	50.				
Flax	(40 bus.)	120.				
Forage Seed	(14,000 lbs.)	<u>700.</u>				
		\$3,320.	\$150.00	\$55.00	\$Nil	\$40.00
Ending Inventory						
Wheat	(2219 bus.)	\$3,550.				
Oats	(3950 bus.)	2,170				
Flax	(400 bus.)	1,200.				
Sweet Clover	(--Nil--)	-				
Forage Seed	(1000 lbs.)	<u>50.</u>				
		\$6,970.	15.00	\$100.00	\$Nil	\$98.00
Net Change (/, -)		\$3,650.	(\$135.00)	\$ 45.00		\$58.00
		<u>\$3,618.00</u>				

Table XIX (continued)

Net Operating Profit		\$5,125.14
Allowance for Depreciation		
Machinery & Equipment	\$1,520.00	
Buildings & Other Improvements	<u>60.00</u>	<u>1,580.00</u>
Net Profit From Operation		<u>\$3,545.14</u>

Table XIX (continued) FOR YEAR ENDING DECEMBER 31, 1964

Receipts

Gross from sale of crops (describe)

January	\$1,671.50
February	1,049.63
March	1,009.65
April	231.44
July	305.32
August	1,009.20
September	4,129.73
October	92.67
November	2,315.88
December	<u>302.31</u>
Subtotal Crops	<u>12,117.33</u>

Other from enterprise (describe)

Gross Receipts from grain-farming enterprise

\$12,117.33

Expenses

Hired Labor	398.50
Fertilizer & Herbicides	2,427.74
Seed Purchased	595.35
Machine Hire	301.93
Gasoline, Fuel, Oil	623.98
Repairs - Machinery	750.88
Repairs - Buildings	876.18
Car, Truck, etc. (Farm Share)	647.82
Utilities (Farm Share)	43.46
Taxes	1,040.21
Insurance	153.45
Farm Interest	1,041.00
Small Tools	310.63
Other	<u>Nil</u>
Total Cash Expenses	9,211.13

Net Cash Income From Operation

\$ 2,906.20

Table XIX (continued)

Net Cash Income \$2,906.20

Adjustments For Change In Inventory:

Beginning Inventory	<u>Grain</u>	<u>Supplies</u>	<u>Improve- ments</u>	<u>Ferti- lizer</u>	<u>Small Tools</u>
Wheat (2219 bus.)	\$3,550.00				
Oats (3950 bus.)	2,170.00				
Flax (.400 bus.)	1,200.00				
Sweet Clover (-Nil-)	-				
Forage Seed (1000 lbs.)	<u>50.00</u>				
	\$6,970.00	\$15.00	\$100.00	Nil	\$98.00
Ending Inventory					
Wheat (4600 bus.)	\$5,888.00				
Oats (5400 bus.)	2,700.00				
Flax (-Nil-)	-				
Sweet Clover (3000 lbs.)	<u>150.00</u>				
	\$8,738.00	\$15.00	\$115.00	\$486.00	\$146.00
Net Change (/ , -)	\$2,068.00	-	\$ 15.00	\$486.00	\$ 48.00
				<u>\$2,617.00</u>	
Net Operating Profit				<u>\$5,523.20</u>	
Allowance For Depreciation					
Machinery & Equipment			\$1,678.00		
Buildings & Other Equipment			<u>35.00</u>		<u>\$1,713.00</u>
Net Profit From Operation				<u>\$3,810.20</u>	

Table XIX (continued) FOR YEAR ENDING DECEMBER 31, 1965

Receipts

Gross From Sale of Crops (describe)		<u>Quarters</u>
January	566.12)	
February	376.32)	1,103.69
March	161.25)	
May	18.24)	
June	1,296.47)	1,314.71
July	2,071.89)	
August	1,240.00)	5,509.40
September	2,197.51)	
October	1,286.05)	
November	914.80)	3,183.61
December	982.76)	

Subtotal Crops

Other From Enterprise (describe)

Misc. Crop		
Receipts	1Q	1,024.36
-C.W.B.	2Q	67.00
Payments,	3Q	343.70
etc.	4Q	618.80

Gross Receipts From Grain-Farming
Enterprise 13,165.27

EXPENSES

	\$
Hired Labor	1,151.50
Fertilizer & Herbicides	2,070.30
Seed Purchased	565.25
Machine Hire	14.00
Gasoline, Fuel, Oil	595.70
Repairs - Machinery	506.30
Repairs - Buildings	791.47
Car, Truck, etc.	1,556.93
Utilities (Farm Share)	62.65
Taxes	1,000.41
Insurance	442.61
Interest	935.00
Small Tools	272.66
Other	Nil
TOTAL CASH EXPENSES	9,964.78

Net Cash Income From Operation

3,200.49

Table XIX (continued)

\$3,200.49

Beginning Inventory		<u>Grain</u>	<u>Supplies</u>	<u>Improve- ments</u>	<u>Ferti- lizer</u>	<u>Small Tools</u>
Wheat	(4600 bus.)	\$ 5,888.00				
Oats	(5400 bus.)	2,700.00				
Flax	(-Nil-)	-				
Sweet Clover	(3000 lbs.)	<u>150.00</u>				
		\$ 8,738.00	\$15.00	\$115.00	\$486.00	\$146.00
Ending Inventory						
Wheat	(5600 bus.)	\$ 6,720.00				
Wheat (Seed)	(20 bus.)	77.00				
Oats	(6000 bus.)	3,000.00				
Flax	(866 bus.)	2,381.00				
Rapeseed	(292 bus.)	584.00				
Sweet Clover	(600 lbs.)	<u>30.00</u>				
		\$12,792.00	\$ 20.00	\$100.00	Nil	\$163.00
Net Change (/, -)		\$ 4,054.00	\$ 5.00	(\$ 15.00)	(\$486.00)	\$ 17.00
						<u>\$3,575.00</u>
Net Operating Profit						\$6,775.49
Allowance For Depreciation						
Machinery & Equipment				\$1,606.00		
Buildings & Other Improvements				<u>50.00</u>		<u>1,656.00</u>
Net Profit From Operations						<u>\$5,119.49</u>

A comparative statement of profit and loss facilitates the calculation of ratios which will subsequently be examined. A meaningful interpretation of the quantitative relationships on the statement will now be provided.

The comparative figures for 1963-1965 have been provided along with the figures for 1966 (Table XX). The business appears to be in an excellent financial position. The net profit grew from 1963-1965 and declined slightly in 1966. This decline was reflected by an increased depreciation allowance resulting from additional capital purchases.

The projected statement of profit and loss indicates that the net profit was over-estimated (Table XXI). The most significant error was made in estimating the adjustment for change in inventory. The likelihood of this error would have been substantially reduced if the farmer had made the estimates himself.

The limitations of the ratios included in the discussion of the feeder-cattle enterprise apply to the grain-farming operation. The three ratios prove to be favorable from a lending institution's point of view (Table XXII).

The current asset to current liability ratio is better than 2 : 1. This allows any credit institution an adequate margin of safety if current assets were liquidated to meet current liabilities.

The total liability to net worth ratio indicates that the farmer has a substantial interest in his business.

The ratio of current liability to net worth is better than 2 : 3, generally considered the danger point by creditors. Finally, the net

TABLE XX

GRAIN-FARMING ENTERPRISE

COMPARATIVE STATEMENT OF PROFIT AND LOSS

1963 TO 1966 INCLUSIVE

	<u>1963</u> \$	<u>1964</u> \$	<u>1965</u> \$	<u>1966</u> \$
Receipts				
Gross Receipts from grain-farming enterprise	8,775.24	12,117.33	13,165.27	20,707.22
Expenditures	7,268.10	9,211.13	9,964.78	11,730.52
Net Cash Income	1,507.14	2,906.20	3,200.49	8,976.70
Adj. for Change in Inventory	3,618.00	2,617.00	3,575.00	937.00
Net Operating Profit	5,125.14	5,523.20	6,775.49	8,039.70
Allowance For Depreciation	1,580.00	1,713.00	1,656.00	3,860.00
Net Profit	3,545.14	3,810.20	5,119.49	4,179.70

TABLE XXI

GRAIN-FARMING ENTERPRISE

STATEMENT OF PROFIT AND LOSS (ESTIMATED AND ACTUAL)

FOR YEAR ENDING DECEMBER 31, 1966

	Estimated \$	Actual \$		Estimated \$	Actual \$
Receipts			Expenses (cont:)		
Gross from sale of crops (describe)			Bal. fwd.	5,510.00	8,266.65
1st Quarter	3,200.00	4,702.03	Repairs-Buildings	375.00	219.52
2nd Quarter	3,000.00	6,150.41	Car, Truck, etc.	950.00	523.78
3rd Quarter	6,000.00	3,116.39	Utilities (Enterprise Share)	60.00	51.25
4th Quarter	4,000.00	3,511.02	Taxes	1,050.00	1,017.39
Subtotal Crops	16,200.00	17,929.85	Insurance	150.00	543.23
Other from enterprise (describe,			Interest	850.00	874.21
Misc. crop receipts (C.M.B. Payments,			Small Tools	325.00	234.49
etc.)			Other	Nil	Nil
1st Quarter	1,500.00	1,711.52	Total Cash Expenses	9,270.00	11,730.52
2nd Quarter	100.00	92.00	Net Cash Income	9,530.00	8,976.70
3rd Quarter	400.00	431.43	Adjustment For Change	490.00	-937.00
4th Quarter	600.00	599.12	In Inventory	10,020.00	8,039.70
Gross Receipts From Enterprise	2,600.00	2,737.37	Net Operating Profit	4,000.00	3,860.00
Expenses	18,800.00	20,707.22	Allowance For Depreciation	6,020.00	4,179.70
Hired Labor	1,125.00	1,504.75	Net Profit		
Fertilizer & Herbicides	2,500.00	4,639.77			
Seed Purchased	625.00	720.37			
Machine Hire	10.00	214.50			
Gasoline, fuel, oil	675.00	695.42			
Repairs - Machinery	575.00	710.61			
	5,510.00	8,266.65			

TABLE XXII

GRAIN-FARMING ENTERPRISE

RATIO ANALYSIS

1. Current Ratio =	$\frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$	=	$\frac{9233}{2794}$	=	3.3	;	$\frac{12,968}{2,774}$	=	4.7	;	$\frac{1964}{16,694}$	=	3.5	;	$\frac{1965}{4,781}$
					Ratio =				5:1						4:1
2. Ratio of total Liabilities to Net Worth	$\frac{\text{Total Liab.}}{\text{Net Worth}}$	=	$\frac{14,368}{24,384}$	=	.59	;	$\frac{17277}{63182}$	=	.27	;	$\frac{19404}{85189}$	=	.23	;	
					Ratio =				1:4						4:17
3. Ratio of total current Liabilities to Net Worth	$\frac{\text{Total Current Liab.}}{\text{Net Worth}}$	=	$\frac{2794}{24384}$	=	.12	;	$\frac{2774}{63182}$	=	.04	;	$\frac{4781}{85189}$	=	.06	;	
					Ratio =				1:8						1:21
4. Ratio of Net Profit To Net Worth	$\frac{\text{Net Profit}}{\text{Net worth}}$	=	$\frac{3545}{24384}$	=	.15	;	$\frac{3810}{63182}$	=	.06	;	$\frac{5119}{85189}$	=	.06	;	
					Ratio =				1:6						1:16
															1:17

profit to equity ratio which reflects the return on owner's worth is excellent. Generally, a relationship of at least ten per cent is regarded as an adequate objective. Thus, on the basis of the analysis to this point, the grain-farming enterprise selected appears to be in a good financial position.

The Cash Flow Analysis: The quarterly cash flow analysis of the grain-farming enterprise allows the farmer to determine when cash expenses will exceed income so that he can estimate the financing required (Table XXIII). The cash flow analysis reveals that a \$33,000 line-of-credit should be established. This allows a ten per cent margin for error. The farmer is able to market his grain evenly throughout the year facilitating a steady income from his enterprise.

The projected cash flow for 1966 was determined on the basis of actual comparative figures for the three preceding years (Table XXIV). The accuracy of the estimates was tested by obtaining the actual figures for that year. The largest error was made on fertilizer purchases in the third quarter. The fertilizer obviously had been purchased for application in the second quarter and the account paid at this time. However, the large increase in its use was not entirely anticipated. It was indirectly understood that the farmer would be purchasing approximately \$6,000 worth of machinery. The error in estimating cash flows should be less if the operator did it himself. This is the recommended procedure.

The cash flow analysis allows the financial institutions to assess the total capital requirements of the operation they are financing. The knowledge of the requirements of the business together with

TABLE XXIV

GRAIN-FARMING ENTERPRISE

CASH-FLOW ANALYSIS (QUARTERLY)

ESTIMATED AND ACTUAL COMPARATIVE FIGURES FOR 1966

	1Q		2Q		3Q		4Q	
	Estimated	Actual	Estimated	Actual	Estimated	Actual	Estimated	Actual
Cash Inflow								
Crops	3,200.00	4,702.03	3,000.00	6,150.41	6,000.00	3,146.39	4,000.00	3,941.02
Misc. Crop Receipts	1,500.00	1,711.52	100.00	52.00	400.00	434.43	600.00	569.42
Other								
Total Cash Inflow	4,700.00	6,413.55	3,100.00	6,202.41	6,400.00	3,580.82	4,600.00	4,510.44
Cash Outflow								
Buildings	-	-	-	-	-	-	-	-
Machinery & Equipment	-	-	-	-	-	-	-	-
-tractor(s)	-	-	-	-	-	-	-	-
-combine(s)	-	-	-	-	5,500.00	5,900.00	-	-
-other equip.	-	-	500.00	575.00	-	-	-	80.96
Small Tools	25.00	-	100.00	122.89	125.00	30.64	75.00	112.28
Car, Truck, etc.	350.00	203.97	150.00	142.09	300.00	65.44	150.00	929.40
Hired Labor	-	-	125.00	275.35	-	-	1,000.00	163.50
Seed Purchased	-	-	250.00	185.37	250.00	371.50	125.00	154.50
Machining Hire	-	-	-	-	-	60.00	10.00	-
Repairs-Machinery	50.00	52.04	150.00	350.76	250.00	269.03	125.00	69.01
Repairs-Buildings	100.00	-	75.00	15.26	100.00	195.31	100.00	8.95
Fertilizer & Herb.	1,000.00	1,093.50	500.00	709.65	1,000.00	2,838.63	-	49.00
Gasoline, Fuel, Oil	-	-	200.00	252.49	400.00	346.88	75.00	96.05
Taxes	-	-	-	-	1,050.00	1,017.39	-	-
Insurance	-	-	-	61.61	150.00	481.62	-	-
Utilities	10.00	5.50	15.00	14.49	25.00	30.63	10.00	.63
Other Interest	-	69.13	-	129.22	-	-	850.00	675.86
Total Cash Outflow	1,535.00	1,424.14	2,065.00	2,834.18	9,150.00	11,607.07	2,520.00	2,340.14
Advances Req'd.					2,750.00	8,026.25		
Repayments Made	3,165.00	4,989.41	1,035.00	3,368.23			2,080.00	2,170.30
Balance of Loan	26,980.85	25,156.44	25,945.85	21,788.21			26,615.85	27,644.16
(+30,145.84 Carry-over)					28,695.85	29,814.46		

an estimation of when repayments will be forthcoming should be of value to the banker.

This concludes the analysis of the grain-farming enterprise. The introduction of a balance sheet, statement of profit and loss and a cash flow analysis into all farm management accounting procedures, where it is practical, would allow the financial community to serve more adequately the needs of agriculture. If they were adopted, both farmers and most rural bankers would have to be assisted in interpreting them.

CHAPTER VI

THE CONTRIBUTION OF GOVERNMENT POLICY MEASURES AND THOSE OF PRIVATE BUSINESS TO THE REDUCTION OF RISK AND UNCERTAINTY IN AGRICULTURE

It has been established that the agricultural industry is characterized by a high level of risk and uncertainty. Traditionally, farmers and bankers alike have been influenced in their decision-making by the mutually disastrous events of the 1930's. Much of the capital rationing by both lenders and producers may be due to "memories of the 1930's". Since the assessment of the credit worthiness of a client is related to the risk and uncertainty involved in making the loan, it is important that bankers are aware of all the measures introduced since the 1930's to reduce this. Otherwise, they will tend to be conservative in their assessment of a farmer's credit needs. If the banks provide a specialized credit service for farmers through the Farm Management Loan, it is important that credit be extended until the net returns from the additional capital are equal to the costs of borrowing. To do this it is imperative that they become aware of the measures which have been established and how such programs serve to reduce risk and uncertainty in agriculture.

Present-day fiscal and monetary stabilizers of Government tend to offset the re-occurrence of events which led to the "crash". Agriculture also has similar stabilizing innovations, which serve to stabilize price and/or yield fluctuations.

FORMAL INSURANCE

There are at least four types of formal insurance available to agricultural producers. They include an all-risk crop insurance program, hail insurance, livestock insurance, and the insurance relief program set up under the auspices of the Prairie Farm Assistance Act.

Crop Insurance

Crop insurance was introduced to prairie agriculture to deal with the unpredictable nature of crop yields. Essentially, it was conceived as a scheme whereby an organization would use the years of plenty to carry agriculture over the years of scarcity. The objective of crop insurance was to give the farmer a predictable and stable income.

Before the introduction of crop insurance, agriculture was notorious among lenders for its instability. This belief has a basis in fact as indicated below:

For the Prairie Provinces, for example, the long-run term (1930 to 1960) average wheat yield amounted to 16.4 bushels per acre. It will be noted, however, that the year-to-year wheat yield varied tremendously around the average yield--a variation over which the individual had little control. For example, the wheat yield dropped from an average of 23.7 bushels per acre in 1953 to 12 bushels per acre in 1954. During the same period, however, the operating expenses, taxes and payments on the mortgage were approximately the same for both crops.

For the same period there was a precipitous drop in farm income. Net farm income per farm tumbled from \$3,652 in 1953 to \$1,713 in 1954. It jumped again to \$2,542 in 1955. The long-term average wheat yield of 16.4 bushels per acre is of little consolation to the farmer who knows full well that, once several thousand dollars are invested in his crop, the yield for that year may drop to half that of the long-term average.¹

¹Gilson, J. C., "Instability in Agriculture and Crop Insurance", (paper presented to the Farm Conference Week, University of Manitoba, March, 1962).

It is important that lenders in agriculture keep abreast of developments, such as the introduction of crop insurance into their localities, so that they are able to properly assess the risks involved in extending credit.

In Manitoba, the feasibility of crop insurance had been a subject of study for over thirty years before its actual introduction. This included two Royal Commissions reports to the Manitoba Legislature on its feasibility.

The Establishment of The Crop Insurance Test Area Act on August 4, 1959 by the Manitoba Provincial government closely followed Federal Government cost-sharing legislation in this area. This legislation took the form of The Crop Insurance Act which authorized contribution and loans out of the Consolidated Revenue Fund in respect to the operation of provincial crop insurance programs. A long awaited crop insurance program became operative in Manitoba in 1960.

The initial legislation provided for three test areas. This was extended to include five Provincial Test Areas in 1961. Starting this year, farmers may select coverage at 60, 70 and 80% of their long-term yields. In an effort to make this as meaningful as possible, their long-term yields were based on different soil productivity classifications in the Test Areas involved. As the grade of grain varies along with the price received, coverage levels vary for individual crops. Since several productivity classifications exist for each area, the crop insurance premiums and coverage per acre vary with the individual crop and the particular productivity index (P.I.) rating of the soil upon which the crop grows.

It is evident that any institution extending credit to farmers should be familiar not only with crop insurance but also with the soils and their potential productivity. This would allow them to assess more accurately the risk and uncertainty involved in making a loan. A proper interest rate can subsequently be introduced.

Crop insurance can be assigned to the bank as security for a loan. This allows the farmer to obtain the required operating credit needed for the crop year. The bank is protected in that in event of a crop failure it has first claim against the proceeds of the insurance contract.

The Prairie Farm Assistance Act (P.F.A.A.)

The bountiful harvest on the prairies in 1928 was followed by an unprecedented period of drought. The decade to follow (1929 to 1939) was an incredibly devastating one for farmers in Western Canada. Farm families who did manage to endure, did so at great personal sacrifice.

In 1939 Parliament enacted the Prairie Farm Assistance Act, introduced primarily as a relief measure. It was becoming obvious that if the agricultural industry was to perpetuate itself in the western provinces, some form of assistance must be forthcoming. Payments under the Prairie Farm Assistance Act were to be based upon the average wheat yield in a township. They were to be awarded under the following regulations:²

1. If the average yield of wheat in the township is found by the Board to be more than eight and not more than twelve

²Gilson, J.C., Ibid.

bushels per acre, the award shall be two dollars per acre: of the cultivated land of the farmer for each cent, or fraction thereof, not exceeding ten, by which the average price is less than eighty cents per bushel.

2. If the average yield of wheat in the township is found by the Board to be more than five and not more than eight bushels per acre, the award shall be two dollars per acre.
3. If the average yield of wheat in the township is found by the Board to be more than three and not more than five bushels per acre, the award shall be three dollars per acre.
4. If the average yield of wheat in the Township is not more than three bushels per acre, the award shall be four dollars per acre.

The maximum total award cannot exceed the award times one-half of the cultivated land, or the award times two hundred acres of cultivated land, whichever is the lesser of the two sums.

The assistance offered under this act is financed by the farmers themselves. One percent of the value of all grain sold to elevators is placed into the Prairie Farm Assistance Act fund. Assistance to farmers from this fund under this legislation ceases when a farmer takes out crop insurance.

Hail Insurance

"Hail insurance is sold to Canadian Farmers by private companies, co-operatives, municipal hail associations and provincial government agencies. Cereal crops constitute the bulk of the acreage insured but specialty crops such as tobacco, canning crops and tree fruits are also covered."³

³Ware, D.W., "Crop and Livestock Insurance in Canada", The Economic Annalist, Volume 30, No. 1, Ottawa: Department of Agriculture, February, 1960, pp. 102.

Farmers insure their crops against loss from hail damage on the basis of a certain amount per acre. Coverage taken usually varies between five dollars and twenty dollars per acre. Unlike crop insurance, hail insurance does not vary with the value of the particular crop being insured. For example, high value special crops such as onions, potatoes, etc., are not insured differently from cereal crops. Suppose a wheat crop was insured for fifteen dollars per acre and was subsequently damaged by hail. If the hail loss was adjusted at 25 per cent the farmer would be compensated for the loss to the extent of \$3.75 per acre.

In most provinces, premiums charged vary according to historical incidences of hail damage. An area with a high incidence of hail damage will be exposed to a substantially higher premium rate than one with a low incidence. According to a local co-operative hail insurance company, premium rates may vary from three to fifteen per cent of the coverage.

The general procedure to receive indemnification for losses is to report immediately any hail damage to the particular company with which the insurance is carried. The company will then send out an insurance adjuster to determine the extent of the damage.

Livestock Insurance

The cropping enterprise has not been alone in receiving assistance in the way of formal insurance schemes. Today there are at least five companies offering general livestock insurance.

One type of livestock insurance is available to cover loss by death from such main perils as fire, lightning, wind, collision and

overturn, smoke, theft, type of falling object, collapse, flood and an earthquake. The contract excludes any compensation for death from disease or improper management. An extension may be added to this policy to include death from artificial electricity and drowning. Premium rates are calculated on a flat rate basis and are in the vicinity of seventy-five cents per one hundred pounds for three years.

A second type of insurance, generally known as mortality insurance, is available. However, the premiums for insurance of this nature are usually prohibitive. A local insurance company handling this type of policy reports that the premiums are a straight five per cent of the value listed for each animal. The company also requires evidence from a veterinary surgeon that the animals involved are in good health at the time the insurance is taken out.

A third type of insurance, generally known as transit insurance, is also available. It is frequently carried by truckers of livestock. An additional type of insurance coverage available in the way of transit insurance is provided by railway companies. Livestock may be shipped by rail either "under owner's risk" or "under carrier's risk". Under the former policy the producer receives a minimal compensation if his animals are destroyed, whereas under the latter policy the railway assumes full responsibility as declared on the bill of lading.

The above discussion of formal insurance now available to agriculture from private and public sources gives some indication of how conditions of modern agriculture differ from conditions which existed in the "depression years". Credit institutions must keep up to date on programs of this nature and revise their attitudes accordingly.

A FUTURES MARKET FOR BEEF CATTLE

In addition to uncertainty arising from accidental death of his animals, the livestock producer has traditionally contended with price uncertainty. The livestock industry has long been lacking the mechanism for an open and centrally established price. A central pricing mechanism that would allow all legitimate pricing factors to be considered would provide a base price for the calculation of price spreads. In grain the "futures" market at present provides such an open central pricing mechanism for oats, barley, flax, rapeseed and rye, all the forces that would tend to influence price can openly interplay to establish day to day values.

The first futures market in live beef began operation in Chicago on the 30th of November, 1964. It has proved to be a satisfactory method of hedging, that is, shifting the financial risk from those who do not wish to carry it to those who are willing risk carriers. The feeder is now able to perform his feeding function without risk of price decline. This new development has allowed him an equitable return for feeding the cattle without inventory loss through price change. On the other hand, if the feeder feels he is in a financial position to carry his own risk he need not hedge on the futures market.

At the 1965 annual meeting of the Winnipeg Grain Exchange the suggestion of adding futures trading in live beef cattle was examined. This development was followed by the appointment by the Board of Governors of a committee to study the Chicago operation and to determine whether a

similar operation might be applicable to Canadian agriculture. Following their favorable report the Board approved a proposal to establish a live beef futures market as soon as necessary arrangements could be completed. However, on May 24, 1967, the Board announced that it had decided to defer the opening of a beef futures market in Canada until 1968. There were two principal reasons for the delay:

1. The producers were not enthusiastic in regard to the immediate establishment of such a market. This is believed to arise from their experience with grain trading during the 1930's.
2. It would allow the Exchange to complete adequate plans and arrangements to ensure that the market will operate effectively when it is opened.

The Nature of a Futures Market

In any futures market there are normally buying hedgers on one side, selling hedgers on the other, and speculators in the market to give flexibility and depth.⁴

An efficient futures market is one where the interest in the open market tends to equal the amount of inventory that is in a hedgeable position. For example, in grains such as rye or flax, the open interest varies in accord with the inventories. In hedging the speculators who are in a long position gain effective ownership of the inventory. However, they prefer not to deal in physical commodities but rather in promises to receive (or deliver) a commodity at some future time. When they hedge in the futures market it is to offset a cash market transaction by taking an

⁴Clarke, James W. An address by Mr. Clarke as President of the Winnipeg Grain Exchange annual meeting, September 22, 1965, Winnipeg.

opposite position in the futures market. The hedger may be either a buyer or a seller.

The function of a futures market in live beef cattle would include the following:

1. To provide a convenient hedging opportunity for livestock feeders so that the risk of price change can be shifted or cancelled out of a particular operation.
2. To provide an openly operated price setting mechanism which allows the broadest possible factors to bear on prices rather than have them set by present short-term factors.
3. To ensure a continuous market so that heavy deliveries can be made without farmers' suffering heavy losses through falling prices, assuming that the farmers have hedged their position on the futures market.

Implication of Futures Trading to Financing the Livestock Industry

In the preceding chapter we separated the livestock industry into the "cow-calf" and the "feeder-cattle" operations. There appears to be little possibility of producers using the futures market in the "cow-calf" operation. Unlike the manager of the "feeder-cattle" operation the manager in this stage of production usually has full equity in his livestock. Thus, there is no risk to offset.

The nature of the "feeder-cattle" operation would indicate that the owner of the feed lot is the logical individual to hedge on a futures market. Of primary concern to the manager and his banker is the final price he will receive for his cattle when they are ready for market.

If the risk attached to detrimental price fluctuations were removed from the industry it is conceivable that more funds to finance it would be forthcoming from the financial institutions. It logically

follows that with less risk a more attractive interest rate would also be available. At present most feed-lot managers assume the double role of feeders and speculators, although some are hedging on the Chicago futures market. In financing an operation lenders assess the manager's ability as an efficient feeder. They do not finance an operation to facilitate speculation in cattle prices by the producer, unless he is in the financial position to do so.

SOME FURTHER MEASURES WHICH HELP TO REDUCE RISK AND UNCERTAINTY IN AGRICULTURE

The formal insurance schemes discussed, coupled with the futures market, make up the measures introduced to reduce uncertainty in agriculture. However, under closer observations more indirect public developments have taken place. They include federal legislation under the Prairie Farm Rehabilitation Act and the Canadian Wheat Board Act in 1935; International Wheat Agreements; the Federal Price Support Program in 1944 with its further expansion under the Agricultural Stabilization Act of 1958; and the Agricultural Rehabilitation and Development Act passed in 1961.

The Prairie Farm Rehabilitation Act of 1935 was implemented to correct inappropriate land use on the prairies. During the settlement of the prairies, semi-arid land suited for grazing purposes was cultivated in an attempt to divert it to grain cropping uses. However, once the initial organic matter became used up, the land was prone to soil drifting and drought. Thus, it is not too surprising that an extended period

of drought which existed in the 1930's would cause substantial erosion. Since the initiation of the Prairie Farm Rehabilitation Act legislation, some seven million acres of marginal and sub-marginal cropland were shifted into community pastures. In addition to soil conservation this program was designed to improve existing cultural practices and promote water conservation. Although it began as emergency legislation the Prairie Farm Rehabilitation Act has since become established as one of several public measures designed to reduce the risk of yield uncertainty.

Historically, farm spokesmen have long been campaigning for a more stable income for agriculture. As a result, the Canadian Wheat Board was established in 1935. The legislation was designed to establish greater price certainty and thereby stabilize income. Initially the Board received wheat on a voluntary basis from the producers. However, it found that for a marketing board to function efficiently, all producers must belong. Hence, in 1943 the Canadian Wheat Board was given compulsory control over all wheat marketed in Western Canada. The power of the Board was extended in 1949 to include all marketings of oats and barley. The principal ways in which the Wheat Board has served to reduce price risks are as follows:

1. It provides an assured price to the producer before the crop is planted.
2. It has maintained effective market control and facilitates an orderly marketing of the producers' grain. There has been increased stability in grain prices during the past two decades.

The federal price support program established in 1944 has also served to reduce price uncertainty in Canada. It was designed to

guarantee the producer a minimum price by way of deficiency payments for certain farm products. It has served to stabilize prices and hence aid producers in their decision-making. The Agricultural Stabilization Act of 1958, which succeeded this program was designed with similar objectives in mind.

Other federal legislation designed to reduce price uncertainty includes the International Wheat Agreements. The predecessor of the International Wheat Agreements for Canadian producers was the United Kingdom Wheat Agreement following the Second World War. This and later agreements were designed to provide minimum prices for export wheat. Recently, (in June, 1967) a new International Wheat Agreement was drawn up in Geneva where all major exporters of wheat were represented.⁵

The private and public measures introduced to reduce uncertainty in agriculture help to prevent a recurrence of the disasters which befell agriculture in the 1930's. They provide, directly or indirectly, insurance to the producer against price or yield uncertainty. The credit institutions which service the industry must keep up-to-date on the developments in this area. Otherwise, their assessment of the credit worthiness of a client may be more conservative than warranted.

⁵The new price for No. 1 Manitoba hard spring wheat was increased from \$1.955 to \$2.355 per bushel in U.S. dollars.

CHAPTER VII

SUMMARY AND CONCLUSIONS

There is a strong basis for a specialized agricultural credit programme, through a technique such as the Farm Management Loan. The rapid application of new technology in agriculture has resulted in farms of increased acreage and larger capital investment. The following developments are a consequence of these changes:

1. Changing technology has enabled farmers to increase agricultural production about 50 per cent in the last two decades.
2. The percentage of the labor force employed in agriculture has declined to 7.5 per cent of the total. This development coupled with an increasing agricultural output suggests a significant substitution of capital for labor in the industry. *Comparative figure?*
3. The decline in the size of the farm population relative to the total population is also a consequence of new technology. During the period 1941-1961 the number of occupied farms decreased by 23 per cent. This reduction in the number of occupied farms has been associated with a consolidation of farm units. The average farm in Canada increased its acreage by more than 50 per cent in the period 1941-1961, the largest increase has occurred on the Prairies.

The foregoing adjustments indicate the current trend in Canadian agriculture. An increasing emphasis is placed on the farm managers' ability to acquire adequate amounts of capital.

Complete details on all existing sources of credit to agriculture were not available. However it has been estimated that in 1965 the commercial banks accounted for 60 per cent of the short-term credit and 46 per cent of the intermediate-term credit. This amounted to 27 per

cent of the total outstanding loans for that year.

The failure of the suppliers and users of agricultural credit to fully communicate with one another has resulted in a "financial service gap" to this industry. The chartered banks have been slow to change their lending techniques to meet the needs of the farmer. However, in all fairness, some lag would be expected, for it would be unrealistic to expect a closely regulated bank industry to immediately adjust to changes.

The objectives of this thesis, in light of this problem were as follows:

1. To determine how bankers can base loans to agriculture more on the productivity of the loan proceeds rather than on the security upon which the loan is based.
2. To determine the possibilities for more intensive involvement of commercial banking institutions in "line-of-credit" financing in agriculture.

In consideration of these objectives, it was hypothesized that the "Farm Management Loan" could be used as a more adequate means of meeting agricultural credit requirements of the future.

This was a case study, and the validity of the hypothesis was examined by selecting individual farms from the Carman District Farm Business Association.

Examination of the hypothesis revealed that the Farm Management Loan could be used as a more adequate means to meet agricultural credit requirements of the future.

The advantages of the Farm Management Loan include the following:

1. It tends to improve management of capital by farmers-- this is accomplished by forcing the farmer to develop his plans in detail for the coming production. It also makes it imperative for the farmer to define his long-run plans. He is in a better position to evaluate the optimum combination of the factors of production. This would allow him to maximize his profits.
2. It provides a package-credit plan. As a result, the farmer is able to determine the precise amount and exactly when the credit is needed. Also, it allows him to correlate his repayment schedule with his anticipated income.
3. It facilitates the reduction of farm costs. The Farm Management Loan provides for the advance of monies only as they are needed and permits repayment upon receipt of income. Interest is charged only for the number of days for which the funds are required. Since this loan is designed to service all of the customer's credit needs, the farmer does not have to resort to more expensive outside financing through finance companies. Also, available cash enables the farmer to secure cash discounts and to purchase his supplies when the most favorable prices exist.
4. It provides for "line-of-credit" financing--the application and interview for the loan can be arranged before the production period begins. At this time, the credit requirements can be outlined for the coming period. It would no longer be necessary for the farmer to finance his operation in a "piece-meal" fashion.

The principal objectives of this thesis were achieved for the Farm Management Loan, facilitated by a cash flow analysis of the business, is a tool whereby the bankers can base loans to agriculture more on the productivity of the loan proceeds. "Line-of-credit" financing is a direct result of its implementation.

In granting a loan to a progressive farmer of today, bankers will require a financial statement, and a record of the farmer's operation for the last two or three years in order to acquire some idea of the general

trend of the operation. On-the-farm inspection and good records of past performance give bankers the necessary information to evaluate the managerial ability of the farmer. Loans made to farmers must be based primarily on the productivity of the loan proceeds and management ability. The traditional concept of collateral security assumes a secondary position--important but not sufficient.

The bank manager, or some other qualified member of the bank staff, should analyze the program the farmer has in mind to verify the effective use of the inputs of land, labor, capital and management. Upon consideration of this, a cash flow based on past records and a conservative estimate of future prices should be carried out. In this way the banker can verify the repayment ability and monthly credit needs of the applicant. The final step involves establishing the loan and its service needs for the future period.

The responsibility for the existence of a reliable financial structure in agriculture during the next two decades lies with both the farmer and his source of credit.

Agricultural credit during the balance of the sixties and through the seventies will rapidly assume the characteristics of a business loan. Credit extensions and repayments will be carefully planned and tailored to fit the cash flow of the operation. The program will be geared to the management ability and potential productivity of the farm. Credit will be made available more in line with the purpose for which the funds are to be applied and less on the basis of terms and security. We now frequently refer to short-, intermediate and long-term loans. One can

visualize a trend toward two basic types of credit--operating and term.

Some recommendations for further study are as follows:

1. Further consideration should be given to the area of long-term credit in agriculture. This should be done because as the industry continues to change, mortgage-credit will become even more critical than it is at present.
2. The Farm Improvement Loan discussed briefly in this thesis should be given a thorough examination. The interest rate being charged to farmers under the Farm Improvement Loan Act does not appear to be realistic at this time. Agriculture requires a credit policy which is forward-looking to reflect its needs.
3. Further consideration to the causes and extent of capital rationing by farmers in Western Canada.

BIBLIOGRAPHY

- Anderson, W. J., Fundamentals of Sound Credit, Paper presented to the Agricultural Institute of Canada, 45th Annual Convention, Vancouver, June 21-24, 1965.
- American Bankers Association, Intermediate-Term Bank Credit for Farmers, Agricultural Commission, American Bankers Association, New York, N.Y., 1957.
- _____, Agricultural Production Financing, Agricultural Commission, New York, N.Y., 1951.
- Barlow, R., Land Resource Economics, The Political Economy of Rural and Urban Land Resource Use, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1963.
- Bierman, Harold & Smidt, Seymour, The Capital Budgeting Decision, The Macmillan Company, N.Y., 1960.
- By-Laws, The Canadian Banker's Association, Statutes of Canada, The Bank Act and Related Statutes, Chapter 48.
- Carlson, Sune, Pure Theory of Production, Augustus M. Kelley, Bookseller, New York, 1965.
- Carr, O. W. and Associates, Farm Credit in Canada, Royal Commission on Banking & Finance, Ottawa, November 1962.
- Dean, Joel, Measuring the Productivity of Capital, Harvard Business Review, Volume 32, Jan.-Feb., 1954.
- Diesslin, Howard G., Capital and Credit Needs in a Changing Agriculture, Iowa State University Press, Ames, Iowa, U.S.A., 1961.
- Dominion Bureau of Statistics, Ottawa, Canada Year Book, 1966, 1946.
- _____, Ottawa, Canada Census, 1961, Ottawa: Queen's Printer.
- _____, Livestock Market Review, Ottawa.
- Easterbrook, W.T., & H.G.J. Aitken, Canadian Economic History, Toronto, 1958.
- Fellner, William, Probability and Profit, R. D. Irwin & Co., 1965.
- Fishner, Irving, The Theory of Interest, Macmillan & Co., N.Y., 1930.

Gilson, J. C., Farm Credit--The Current Situation in Canada, Prepared for presentation to the 5th National Farm and Business Forum sponsored by the Agriculture Bureau of Winnipeg Chamber of Commerce, March 19, 1964.

_____, The Income Approach Revisited, prepared for presentation to the Appraisal Institute of Canada, Winnipeg Chapter, January 28, 1965.

_____, Agricultural Capital and Credit in Canada, Manuscript.

_____, "Instability in Agriculture and Crop Insurance", (paper presented to the Farm Conference Week, University of Manitoba, March, 1962).

Gilson, J.C., Ackerman, G.E., Anderson, G.R., Hudson, J.P., Seale, M.E., Wood, A.W., and Yeh, M.H., Development of the Livestock Industry in Canada by 1975 and Implications for the Meat Processing Industry in Manitoba. A study prepared for the Committee on Manitoba's Economic Future, July 1962, Winnipeg, Manitoba.

Government of Canada, The Bank Act, Chapter 87 assembled to 23rd March, 1967.

Government of Manitoba, Report of The Committee on Manitoba's Economic Future, Manitoba, 1962-1975, Winnipeg, 1963, Volume, 2-5.

Halcrow, H.G., A paper presented to the National Agricultural Credit Conference, Cincinnati, Ohio, November 10, 1959.

Hathaway, D.E., The Implications of Changing Political Power Structure on Agriculture, American Bankers Association Public Relations Department, National Farm Credit Conference, St. Louis, Missouri, November 13, 1967.

Heady, E.O., Economics of Agricultural Production and Resource Use, Prentice-Hall Inc., Englewood Cliffs, N.J.

Heady, E.O., Jensen, H.R., Farm Management Economics, Prentice Hall, Inc., Englewood Cliffs, New Jersey.

Hesser, L.F., Conceptual Models of Capital Rationing Among Farmers, Journal of Farm Economics, Volume XLII, #2, May, 1960.

Hicks, J.R., Value and Capital, 2nd Edition, Oxford University Press, Amen House, London, England.

Industrial Development Bank, Report of the President and Statement of Accounts Fiscal Year 1966, Ottawa.

- Jaedicke, R.K., & Sprouse, R.T., Accounting Flows: Income, Funds, and Cash, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1965.
- Kalecki, M., The Principle of Increasing Risk, Economica, Volume IV, November, 1937.
- Keynes, J.M., The General Theory of Employment Interest and Money, The Macmillan Co. of Canada Limited, Toronto, 1964.
- Kulshreshtha, S.B., Comparison of Farm and Non-farm Incomes in Canada, 1926-1961, (Ph. D. Thesis) University of Manitoba.
- Mackenzie, William, Comparative Resource, Productivity, and Income Effects of Canadian and United States Farm Policies, J.F.E., Volume #47, No. 5, December 1965.
- Organization for Economic Cooperation and Development, Economic Surveys, Paris, 1967.
- Royal Commission, Royal Commission on Canada's Economic Prospects, Final Report, November, 1957.
- Rust, R.S., How Much Farm Credit in Canada, The Economic Annalist, February, 1963.
- _____, Farm Credit Legislation in Canada, The Economic Annalist, Volume XXXIV, No's. 5-6, October to December, 1964.
- Seale, M.E., & Hudson, J.P., Cow-Calf Operations, 7th Annual Conferance, Manitoba Livestock and Poultry Nutrition Council, December 14, 1965, University of Manitoba.
- Ware, D.W., "Crop and Livestock Insurance in Canada", The Economic Annalist, Volume 30, No. 1, Ottawa: Department of Agriculture, February, 1960.

APPENDIX A

Table XXV . . . Data Pertaining to the Balance Sheet of the Feeder-Cattle Enterprise. Adjustments Made for Capital Items 1964-1966

	<u>MACHINERY AND EQUIPMENT</u>			<u>BUILDINGS AND OTHER IMPROVEMENTS</u>		
	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
	\$	\$	\$	\$	\$	\$
Beginning Inventory						
Haying Equipment	1,700.00	5,750.00	5,175.00	8,350.00	10,670.00	10,900.00
Cattle Equipment	1,005.00	930.00	2,044.00	100.00	75.00	50.00
General Live-stock Equipment	<u>3,625.00</u>	<u>3,400.00</u>	<u>3,330.00</u>	<u>1,100.00</u>	<u>1,075.00</u>	<u>1,050.00</u>
TOTAL	<u>6,330.00</u>	<u>10,080.00</u>	<u>10,549.00</u>	<u>9,550.00</u>	<u>11,820.00</u>	<u>12,000.00</u>
Ending Inventory						
Haying Equipment	5,750.00	5,175.00	4,425.00	10,670.00	10,900.00	11,100.00
Cattle Equipment	930.00	2,035.00	1,850.00	75.00	50.00	25.00
General Live-stock Equipment	<u>3,400.00</u>	<u>3,330.00</u>	<u>3,185.00</u>	<u>1,075.00</u>	<u>1,050.00</u>	<u>1,025.00</u>
TOTAL	<u>10,080.00</u>	<u>10,540.00</u>	<u>9,460.00</u>	<u>11,820.00</u>	<u>12,000.00</u>	<u>12,150.00</u>

TABLE XXVI

DATA PERTAINING TO THE CALCULATION OF THE FEEDER-CATTLE
ENTERPRISE'S SHARE OF HIRED LABOR, UTILITIES AND CAR EXPENSES

<u>1966</u>		<u>Livestock</u> <u>Enterprise</u> \$	<u>Grain-Farming</u> <u>Enterprise</u> \$	<u>Total</u> \$	
Jan.	Hired Labor	250.00	Nil	250.00	
Feb.		250.00	Nil	250.00	
Mar.		250.00	Nil	250.00	
Apr.		260.00	Nil	260.00	
May		83.30	166.70	250.00) 1/3 Livestock
June		83.30	166.70	250.00	
July		115.00	230.00	345.00) 2/3 Grain Farming Enterprise
Aug.		83.30	166.70	250.00	
Sept.		125.67	251.33	377.00	
Oct.		235.00	470.00	705.00	
Nov.		250.00	Nil	250.00	
Dec.		<u>422.25</u>	<u>Nil</u>	<u>422.25</u>	
Total		<u>2,407.82</u>	<u>1,451.43</u>	<u>3,859.25</u>	
 <u>1965</u>					
Jan.		250.00	Nil	250.00	
Feb.		250.00	Nil	250.00	
Mar.		250.00	Nil	250.00	
Apr.		250.00	Nil	250.00	
May		83.30	166.70	250.00	
June		83.30	166.70	250.00	
July		96.63	193.27	289.90	
Aug.		88.33	176.67	265.00	
Sept.		83.30	166.70	250.00	
Oct.		120.35	240.70	361.05	
Nov.		250.00	Nil	250.00	
Dec.		<u>250.00</u>	<u>Nil</u>	<u>250.00</u>	
Total		<u>2,055.21</u>	<u>1,110.74</u>	<u>3,165.95</u>	
 <u>1964</u>					
Jan.		250.00	Nil	250.00	
Feb.		250.00	Nil	250.00	
Mar.		250.00	Nil	250.00	
Apr.		250.00	Nil	250.00	
May		83.30	166.70	250.00	
June		83.30	166.70	250.00	
July		88.00	176.00	264.00	
Aug.		89.42	178.83	268.25	
Sept.		130.00	260.00	390.00	
Oct.		83.30	166.70	250.00	
Nov.		250.00	Nil	250.00	
Dec.		<u>250.00</u>	<u>Nil</u>	<u>250.00</u>	
Total		<u>2,057.32</u>	<u>1,114.93</u>	<u>3,172.25</u>	

Table XXVI (continued)

		1/3	2/3	Grain-	Total
		Personal	Livestock Enterprise	Farming Enterprise	
		\$	\$	\$	\$
<u>1966</u>					
Jan.	Hydro, Telephone	16.31	32.62	-	48.93
Feb.		14.84	29.67	-	44.51
Mar.		35.98	47.97	23.99	107.94
Apr.		16.29	21.72	10.86	48.87
May		23.16	46.32	-	69.48
June		18.35	24.46	12.23	55.04
July		3.89	7.77	-	11.66
Aug.		28.97	19.31	38.63	86.91
Sept.		-	-	-	-
Oct.		26.51	17.68	35.35	79.54
Nov.		19.75	39.51	-	59.26
Dec.		20.18	40.36	-	60.54
Total		224.23	327.39	121.06	672.68
<u>1965</u>					
Jan.		16.55	33.09	-	49.64
Feb.		13.33	26.67	-	40.00
Mar.		10.68	14.25	7.12	32.05
Apr.		14.82	19.77	9.88	44.47
May		17.58	35.17	-	52.75
Jun.		.35	.47	.23	1.05
Jul.		21.84	43.69	-	65.53
Aug.		8.92	5.95	11.89	26.76
Sept.		6.17	4.12	8.23	18.52
Oct.		11.89	7.92	15.85	35.66
Nov.		17.17	34.35	-	51.52
Dec.		35.10	70.22	-	105.32
Total		174.40	295.67	53.20	523.27
<u>1964</u>					
Jan.		19.10	38.20	-	57.30
Feb.		14.02	28.04	-	42.06
Mar.		11.46	15.27	7.64	34.37
Apr.		13.47	17.96	8.98	40.41
May		4.50	9.00	-	13.50
Jun.		23.85	31.80	15.90	71.55
Jul.		12.66	25.33	-	37.99
Aug.		8.92	5.95	11.90	26.77
Sept.		3.78	2.52	5.05	11.35
Oct.		16.20	10.80	21.59	48.59
Nov.		9.93	19.87	-	29.80
Dec.		11.84	23.67	-	35.51
Total		149.73	228.41	71.06	449.20

Table XXVI (continued)

207

	1/3	2/3	Grain- Farming	207
	Personal	Livestock Enterprise	Enterprise	Total
	\$	\$	\$	\$
<u>1966</u>				
Jan. Car Expenses, Other	18.71	.94	8.41	28.06
Feb.	61.87	3.14	29.29	94.30
Mar.	27.73	1.39	12.47	41.59
Apr.	5.24	.26	2.36	7.86
May	62.99	3.15	28.35	94.49
Jun.	66.58	3.33	29.96	99.87
Jul.	7.53	.38	3.39	11.30
Aug.	29.89	1.49	13.45	44.83
Sept.	52.00	2.60	23.40	78.00
Oct.	63.09	3.16	28.39	94.64
Nov.	13.27	.66	5.97	19.90
Dec.	<u>32.17</u>	<u>1.61</u>	<u>14.47</u>	<u>48.25</u>
Total	441.07	22.11	199.91	663.09
<u>1965</u>				
Jan.	28.40	1.42	12.78	42.60
Feb.	20.00	1.00	9.00	30.00
Mar.	32.97	1.65	14.83	49.45
Apr.	60.67	3.03	27.30	91.00
May	23.33	1.17	10.50	35.00
Jun.	34.63	1.73	15.59	51.95
Jul.	18.83	.94	8.48	28.25
Aug.	1.40	.07	.63	2.10
Sept.	59.67	2.98	26.85	89.50
Oct.	61.33	3.07	27.60	92.00
Nov.	77.20	3.86	34.73	115.79
Dec.	<u>7.88</u>	<u>.03</u>	<u>.24</u>	<u>8.15</u>
Total	426.31	20.95	188.53	635.79
<u>1964</u>				
Jan.	.27	.01	.12	.40
Feb.	13.83	.69	6.23	20.75
Mar.	1.33	.07	.60	2.00
Apr.	24.80	1.24	11.16	37.20
May	9.47	.47	4.26	14.20
Jun.	17.35	.87	7.80	26.02
Jul.	13.33	.67	6.00	20.00
Aug.	4.20	.21	1.89	6.30
Sept.	58.23	2.91	26.20	87.34
Oct.	.83	.04	.38	1.25
Nov.	96.49	4.82	43.42	144.73
Dec.	<u>8.17</u>	<u>.41</u>	<u>3.67</u>	<u>12.25</u>
Total	248.30	12.41	111.73	372.44

APPENDIX B



Table XXVII . . . Data Pertaining to the Balance Sheet of the Grain-Farming
Enterprize Adjustments Made For Capital Items 1963-65

	<u>MACHINERY AND EQUIPMENT</u>			<u>BUILDINGS AND OTHER IMPROVEMENTS</u>		
	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>
	\$	\$	\$	\$	\$	\$
Beginning Inventory						
Truck(s)	1,120.00	900.00	720.00		300.00	285.00
Tractor(s)	4,145.00	3,770.00	3,380.00		295.00	280.00
Combine(s)	640.00	4,000.00	3,400.00	310.00	350.00	435.00
Swather	360.00	360.00	1,250.00	250.00	100.00	95.00
General Crop- ping Machin- ery	500.00	2,161.00	1,972.00			
Special Crops Equipment	55.00	50.00	45.00			
Miscellaneous Equipment	410.00	635.00	774.00			
Total	<u>7,230.00</u>	<u>11,876.00</u>	<u>11,541.00</u>	<u>560.00</u>	<u>1,045.00</u>	<u>1,095.00</u>
Ending Inventory						
Truck(s)	900.00	720.00	472.00	300.00	285.00	270.00
Tractor(s)	3,770.00	3,380.00	23,253.00	295.00	280.00	265.00
Combine(s)	4,000.00	3,400.00	2,600.00	350.00	435.00	420.00
Swather	360.00	1,250.00	1,125.00	100.00	95.00	90.00
General Crop- ping Machin- ery	2,161.00	1,972.00	3,737.00			
Special Crops Equipment	50.00	45.00	40.00			
Miscellaneous Equipment	635.00	774.00	722.00			
Total	<u>11,876.00</u>	<u>11,541.00</u>	<u>31,949.00</u>	<u>1,045.00</u>	<u>1,095.00</u>	<u>1,045.00</u>

Table XXVIII . . . Data Pertaining to the Statement of Profit and Loss of the Grain-Farming Enterprise Adjustment, For Change in Inventory (Estimated and Actual) for Year Ending December 31, 1966

	Grain \$	Supplies \$	Improvements \$	Fertilizer \$	Small Tools \$
Beginning Inventory					
Wheat (5600 bus.)	6,720.00				
Wheat (Seed) (20 bus.)	77.00				
Oats (6000 bus.)	3,000.00				
Flax (866 bus.)	2,381.00				
Rapeseed (292 bus.)	584.00				
Sweet Clover (600 lbs.)	30.00				
Total	<u>12,792.00</u>	<u>20.00</u>	<u>100.00</u>	<u>Nil</u>	<u>163.00</u>
Ending Inventory (Actual)					
Wheat (5200 bus.)	6,760.00				
Wheat (Seed) Nil	-				
Oats (3600 bus.)	1,800.00				
Flax (300 bus.)	825.00				
Rapeseed (800 bus.)	1,920.00				
Sweet Clover (600 lbs.)	30.00				
Sun Flowers (11000 lbs.)	550.00				
Total	<u>11,885.00</u>	<u>20.00</u>	<u>100.00</u>	<u>Nil</u>	<u>133.00</u>
Ending Inventory (Estimated)					
Wheat (5500 bus.)	7,150.00				
Wheat (Seed) Nil	Nil				
Oats (4500 bus.)	2,750.00				
Flax (500 bus.)	1,375.00				
Rapeseed (600 bus.)	1,440.00				
Sweet Clover (600 lbs.)	30.00				
Sunflowers (10000 lbs.)	500.00				
Total	<u>13,245.00</u>	<u>20.00</u>	<u>100.00</u>	<u>Nil</u>	<u>200.00</u>

TABLE XXIX . . . Grain-Farming Enterprise
Enterprise Share of Utilities, Car and Truck Expenses, etc.
For Years Ending 1963, 1964, 1965 and 1966

MANITOBA HYDRO AND TELEPHONE

1963	Total	Grain			Livestock			Car			2/3 Pers.			CAR, TRUCK, ETC.			Grain	Car, Truck
		1/3 Pers.	2/3 Non-Pers.	Livestock	2/3 Non-Pers.	Livestock	Car	2/3 Pers.	Non-Pers.	Grain	Livestock	Truck	Truck	Car, Truck				
January	19.41	6.47	-	12.94	18.10	12.07	6.03	5.43	.60	7.06	12.49)	\$						
February	25.80	8.60	-	17.20	44.40	29.60	14.80	13.32	1.48	15.50	28.82)		60.36					
March	22.11	7.37	4.91	9.83	23.50	15.67	7.83	7.05	.78	12.00	19.05)							
April	20.71	6.90	4.60	9.21	18.90	12.60	6.30	5.67	.63	11.50	17.17)							
May	19.62	6.54	-	13.08	32.87	21.93	10.96	9.86	1.10	5.50	15.36)		53.77					
June	18.03	6.01	4.01	8.01	20.45	13.63	6.82	6.14	.68	15.10	21.24)							
July	5.65	1.83	-	3.77	12.50	8.33	4.17	3.75	.42	15.00	18.75)		55.52					
August	30.39	10.13	13.51	6.75	6.50	4.33	2.17	1.95	.22	20.00	21.95)							
September	15.02	5.01	6.67	3.34	12.75	8.50	4.25	3.82	.43	11.00	14.82)							
October	8.95	2.98	3.98	1.99	7.25	4.83	2.42	2.18	.24	13.10	15.28)							
November	22.18	7.39	-	14.79	9.70	6.47	3.23	2.91	.32	15.00	17.91)		49.85					
December	17.27	5.76	-	11.51	19.20	12.80	3.40	5.76	.64	10.90	16.66)							
	225.14	75.04	37.68	112.42	226.14	150.76	75.38	67.84	7.54	151.66	219.50							

1966

January	24.54	8.18	-	16.36	61.87	41.25	20.62	18.56	2.06	18.50	37.06)		
February	22.92	7.64	-	15.28	49.83	33.24	16.62	14.96	1.66	18.85	33.81)		203.97
March	24.75	8.25	5.50	11.00	191.48	127.65	63.83	57.45	6.38	75.65	133.10)		
April	22.76	7.59	5.06	10.11	106.72	72.48	36.24	32.62	3.62	16.25	48.87)		
May	-	-	-	-	24.30	16.20	8.10	7.29	.81	32.44	39.73)		142.09
June	42.44	14.15	9.43	18.86	41.13	27.42	13.71	12.34	1.37	41.15	53.49)		
July	-	-	-	-	21.55	14.37	7.18	6.45	.72	2.50	8.96)		
August	57.14	19.05	25.39	12.70	23.30	15.53	7.77	6.99	.78	9.94	16.93)		65.44
September	23.57	7.86	5.24	10.47	28.35	18.90	9.45	8.50	.95	31.05	39.55)		
October	2.84	.95	.63	1.26	35.85	23.90	11.95	10.75	1.20	11.40	22.15)		
November	31.13	10.38	-	20.75	32.05	21.37	10.68	9.61	1.07	30.57	40.18)		112.28
December	25.60	8.53	-	17.07	53.50	35.67	17.83	16.05	1.78	33.90	42.95)		
	277.69	92.58	51.25	133.86	671.96	447.98	223.98	201.58	22.40	322.20	523.78		

TABLE XIX (continued)

1964	TELEPHONE		Livestock	C.A.R., TRUCK, ETC.		Total
	Non-Personal 2/3 of Total	Personal		Car Exp. (90% of N.P.)	Truck	
January	2.70	2.70	2.70	39.55	51.30	90.25
February	33.45	33.45	33.45	21.69	20.25	41.94
March	20.42	6.81	6.81	21.24	1.10	22.34
April	19.65	13.10	6.55	25.06	42.35	67.41
May	17.50	-	17.50	18.45	16.75	35.20
June	2.70	1.80	90	29.65	25.00	54.65
July	35.55	-	35.55	61.87	-	61.87
August	16.24	5.41	10.83	28.44	20.30	48.74
September	4.65	1.55	3.09	21.91	1.95	23.86
October	23.98	7.99	15.99	43.26	35.15	78.41
November	15.42	-	15.42	16.06	14.60	30.66
December	16.69	-	16.69	71.54	20.35	91.89
	208.94	43.46	165.48	398.72	249.10	647.82
<u>1965</u>						
January	17.12	-	17.12	18.83	54.90	73.73
February	21.96	-	21.96	166.81	325.84	492.65
March	24.28	8.09	16.19	15.75	45.36	61.11
April	22.40	7.47	14.93	13.45	14.75	28.21
May	21.61	-	21.61	10.21	21.26	31.47
June	20.45	6.82	13.63	8.64	75.37	84.01
July	20.85	-	20.85	9.00	37.39	46.39
August	22.48	14.99	7.49	491.01	36.31	527.32
September	19.30	12.87	6.43	19.09	33.20	52.39
October	18.62	12.41	6.21	4.50	22.50	27.00
November	22.35	-	22.35	7.07	20.25	27.32
December	38.19	-	38.19	43.24	69.09	112.23
	269.61	52.65	206.96	807.60	756.33	1,563.93

APPENDIX C

TABLE XXX

THE MAXIMUM AMOUNT AND MAXIMUM TERM
FOR VARIOUS CLASSES OF LOANS UNDER THE FARM IMPROVEMENT LOANS ACT

<u>Class of Loan</u>	<u>Maximum Amount And Maximum Term</u>	<u>Instalments Payable</u>
Motor truck or station wagon	66 2/3% of purchase price-- 2½ years.	
Portable sprinkler irrigation system	75% of cost-- 10 years.	Not less frequently than annually
Livestock	75% of cost-- 10 years.	Monthly if practicable but not less frequently than annually
Agricultural equipment or a farm electric system (purchase or installation)	75% of cost-- 10 years.	Monthly if practicable but not less frequently than annually
Farm electric system (alteration or improvement)	75% of cost-- 10 years.	Monthly if practicable but not less frequently than annually
Fencing or drainage	20% of cost-- 10 years.	Not less frequently than annually
Farm buildings (construction, repair or alteration)	20% of cost-- 10 years	Not less frequently than annually
Improvement or development of a farm	20% of cost-- 10 years	Not less frequently than annually
Beekeeping (stock or equipment)	75% of cost-- 5 years	Not less frequently than annually

Table XXX (continued)

Subject to the foregoing terms and instalment payment conditions, the term of the loan and the amount and frequency of instalment payments should be fixed in accordance with the borrower's ability to pay. The following schedule is a guide and should not be rigidly adhered to.

<u>Approximate Loan Amount</u>	<u>Normal Repayment Period</u>
\$ 500	1½ years
1,000	2½ years
2,500	4 years
5,000	6½ years
7,500	8 years
10,000	8½ years
12,500	9½ years
15,000	10 years

Source: Farm Improvement Loans Act, R.S.C. 1952
c. 110 amended September 16th, 1964.