

THE UNIVERSITY OF MANITOBA

IMPACTS OF FARMLAND TENURE ARRANGEMENTS,
DEBT STRUCTURE AND RATE OF RETURN ON
PRODUCTIVE ASSETS ON
CROP FARM INCOME IN MANITOBA -
A SIMULATION STUDY

by

ERROL T. LEWIS

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OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF AGRICULTURAL ECONOMICS
AND FARM MANAGEMENT
WINNIPEG, MANITOBA

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

DOCTOR OF PHILOSOPHY

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ABSTRACT

IMPACTS OF TENURE ARRANGEMENTS
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ON PRODUCTIVE ASSETS
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- A SIMULATION STUDY

by

Errol T. Lewis

Concerns about low and variable income situation continue to be pervasive in the agriculture sector despite attempts by both Federal and Provincial Government to improve them. This study re-examines farm income in an attempt to provide new insights on those two concerns.

A sixty-subroutine simulation model was constructed as a representative crop farm. Using this as the basic framework a factorial experimental design was implemented and the various combinations simulated. Each simulation was run for twenty-years under a deterministic mode; using farmland use control, rate of return on productive assets and debt structure as controllable variables and net income, net cash flow and net worth as performance measures.

The major results of the study are that farmland control arrangements positively influenced all performance measures; rate of return displayed positive effects on net cash flow and net worth and net income, and debt structure had increasing impacts on all performance criteria. Net income showed relatively lower values and greater variability than net cash flow and net worth. This

suggests that the lowness and variability of income are inherent in the definition of net income and that net cash flow and net worth are more appropriate criteria.

The major implications of the results are related to land policy, resource adjustment and productivity, farm credit and financial management and farm income stability and welfare. Land use and ownership policies may incorporate a quantitative basis for restricting ownership. Tenure arrangement can also influence land use and conservation policies by serving as the regulatory mechanism.

Incorporation of debt structure as a precondition for borrowing will permit available credit to be loaned to viable farm and to ensure that credit needs of the sector, especially short term and medium term needs, are met quickly by lending institutions.

The results have implication for stabilization policies. They suggest that the perceived problem may not be one of net income but one of cash flow. Therefore, stabilization programmes should be based on cash flow requirements rather than income. This will dissipate some of the inequalities in ownership of income earning resources with consequences for equitability in distribution, levels of income, maintenance of the family farm and rural outmigration.

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CHAPTER I

INTRODUCTION

This chapter introduces the problem area, indicates its importance and validity, isolates the specific aspects under study and presents some essential background information. It presents assumptions, hypotheses and objectives and notes the scope and limitation of the study. The final section of the chapter gives the organization which serves to guide the reader through the remainder of the thesis.

THE PROBLEM AREA

Usually, empirical scientific inquiry in the behavioural sciences follows steps such as conception of idea, problem identification, design of study, execution, analysis and dissemination in order to explain facts or observations in the study area at issue. This study similarly patterns itself and starts by identifying the topic. The broad topic at issue in this study is the farm income problem. This term refers to statistical observations that incomes of farmers are highly variable from year to year, and on average have declined in recent years relative to the real income of comparable people in nonfarm occupations.¹ It has

¹ T.W. Schultz, "Are We Solving Our Farm Problem?" in R.J. Hildreth ed. Readings In Agricultural Policy, University of Nebraska Press, Lincoln, Nebraska, 1968. p. 141..

been suggested that low returns for family labour and investment in commercial agriculture are the outcome of high level of aggregate output and acute oversupply of farmers.²

Low and unstable farm income continue to be the major problems besetting the agricultural sector, not only in Manitoba and Canada, but also in other parts of the world. Many farmers in Manitoba and Canada are finding it increasingly difficult to provide a decent standard of living for their families.³ This difficulty has been accentuated by recent high levels of inflation and the general belief in many quarters that farmers are in need of assistance to supplement incomes:

From basic economic textbooks, through professional agricultural literature to farm organisation position-papers, all forms of the media, and unto the floors of every Government in Canada, it is accepted that farm incomes are lower and more variable than incomes of the non-farming segment of the population.⁴

² G.E. Brandow, "A Framework For the Farm Problem" in R.J. Hildreth ed. Readings in Agricultural Policy, University of Nebraska Press, Lincoln, 1968. pp. 132-140.

³ Standard of living is equated to poverty levels. A low income family had a total annual net income of not more than \$6,363. This income was approximately equal to a farm having annual gross sales of no more than \$14,999. A medium income family had a total annual net income between \$6,363 and \$10,236. Farms with gross annual sales between \$14,999 and \$39,999 constituted farms in the medium income range. Farm families receiving annual total net income greater than \$10,236 and having annual gross sales in excess of \$39,999 were in the high income range. For further details on income and poverty boundaries see C.A.R. Pemberton, "Goals and Aspirations and the Low Income Problem," Unpublished Ph.D. Thesis, University of Manitoba, Winnipeg, October 1976, pp. 22-32.

The preceding statement clearly reflects not only the pervasiveness and complexity of the farm income problem, but also the confusion the topic generates. It is not surprising, therefore, that great concern is expressed about the problem:

conventional wisdom, reinforced by politicians, governments and farm group, is that farmers are poorly paid for their efforts, are poorer than the rest of society, and are about to exodus farms because of inadequate returns.⁵

Whether the above statements exaggerate, oversimplify or misrepresent the farm income situation may be a moot point. What is important is that every group which participates in the decision-making milieu believes that farm income is the fundamental concern of the agricultural sector. The sector continues to comprise a large share of the national households and the labour force, contributes significantly in the economic welfare of the state, and possesses an effective lobbying force which influences national policy.⁶ The foregoing statements suggest an urgent need for new

⁴ R.M.A. Loyns, Farm to Food Prices, Discussion Paper No. 157, prepared for The Economic Council of Canada, Ottawa, January, 1980, pp. 66.

⁵ *Ibid.*, p. 67.

⁶ Agriculture's contribution include 3.3 percent of the gross domestic product in 1976, 5.0 percent of the total labour force, 10.6 percent of total exports, 15.2 percent of total consumer expenditure on food. There were some 338,578 agricultural households in 1976. See T.S. Veeman and M.M. Veeman, "The Changing Organization, Structure, and Control of Canadian Agriculture." American Journal of Agricultural Economics, Vol. 60, No. 5, December, 1978, pp. 759-768.

investigations of the farm income problem in order that these referential groups will have more detailed and additional information on which to deliberate and to base policy and other decisions. Increasing pressures will be placed on those decision making groups to ameliorate the burdens of the farming sector.

Agricultural policy in Canada in the early sixties had the following goals:

1. Full employment.
2. A high rate of economic growth.
3. Reasonable stable prices.
4. Maintenance of a viable balance of payments.
5. Equitable distribution of income.⁷

Anderson⁸ noted that agriculture should be an efficient industry which meets fully the competitiveness of other industries for the resources used in agriculture so that its rates of return would equal those set by the general level prevailing in the economy.

The objectives of agricultural policy for the Province of Manitoba included stabilizing net farm income and enhancing

⁷ W.W. Drummond, W.J. Anderson and T.C. Kerr, A Review of Agricultural Policy in Canada, Agricultural Economics Research Council of Canada, June 1966, p. 67.

⁸ W.J. Anderson, Agricultural Policy in Perspective, Agricultural Research Council of Canada, June 1967, p. 10.

the economic viability of low and middle income producers.⁹ Implicit in these objectives were the goals of higher net per capita income, less variability in income, and a more equitable income distribution. The objectives enunciated above continue to be evident in both Federal and Provincial farm policies today.¹⁰ Pemberton¹¹ has reviewed the low income problem and discussed federal and provincial programmes which were designed to deal with it. Loyns,¹² Gilson.¹³ and Wirick¹⁴ have discussed the programmes in detail.

The preoccupation of policy-makers with the goals of higher and more stable farm income and more equitable distribution of farm income is justification for investigating the farm income problem. The problem is a complex one comprising inadequate income, variable income and uneven

⁹ The Province of Manitoba, Guidelines for the Seventies, Introduction and Economic Analysis, March 1973, pp. 83-84.

¹⁰ J.C. Gilson, "Canadian Agriculture and a National Food Policy," National Food Policy. Proceedings of the Agricultural and Food Marketing Forum, ed. R.M.A. Loyns, University of Manitoba, Winnipeg, November 1979. pp. 1-15. See Agriculture Canada, Challenge for Growth - An Agri-Food Strategy for Canada. Discussion Paper, Agri-6-81DD July 9, 1981.

¹¹ Pemberton, op.cit., pp. 1-8.

¹² Loyns, op.cit., pp. 74-78

¹³ Gilson, op.cit., pp. 1-15.

¹⁴ R.G. Wirick, A Preliminary Paper in Some Food Policy Aspects of Farm Income, Reference Paper No. 9. Food Prices Review Board (Undated).

distribution of income.

Despite efforts by governments in terms of various agricultural programmes, the problem remains. This apparent failure of the market system and governmental programmes to deal effectively with the income problem warrant new investigations on the topic. Some probable reasons for the apparent ineffectiveness of government programmes in alleviating the farm income problem were that the programmes did not address in sufficient detail, the distributional aspects of income within the agricultural sector, rates of return the farmer receives for his fixed resources, the farmland tenure arrangement under which the farmer operates and the types of debt relationships the farmer is forced to maintain in the operation of his farm.

The low income problem itself comprises a trilogy of problems:

- a) the physical asset problem,
- b) the resource adjustment problem, and
- c) the preference problem.¹⁵

The low income problem sometimes viewed as an income inadequacy problem, is usually displayed by comparing the farm net income with the nonfarm income. Viewed in this way the average net farm income more often than not lags behind the nonfarm net income.

¹⁵ Pemberton, op.cit., p. 6.

Tables 1, 2, 3, and 4 present net farm income and total net income for farmers and nonfarmers using different kinds of data. Table 1 shows values when taxfilers data for 1967-1978 are used. Table 2 shows the incomes when data used is Revenue Canada, Taxation "farmer". Table 3 gives the income values when the data used are those for individuals who report farm income as their major source of income. Table 4 gives the income for farm family and nonfarm family using Survey of Consumer Finance data.

In every data case, net farm income and total net farm income tend to be less than the total net income of the nonfarm group. A similar situation is reflected when incomes of the farm family are compared with those of the nonfarm family.

In 1971, average farm family income in Canada was only 72 percent of the average nonfarm family income.¹⁶ Other work has shown that the ratio between per capita income for the farm/nonfarm was .50 for Canada and .42 for Manitoba. When adjustments were made for income-in-kind, and the comparison made between per farm family and per nonfarm family the ratios were .77 for Canada and .63 for Manitoba.¹⁷

¹⁶ B.H. Davey and Z.A. Hassan "Farm and Off-Farm Incomes of Farm Families in Canada," Canadian Farm Economics, December 1974, pp. 16-23.

¹⁷ R. Paul Shaw, "Canadian Farm and Nonfarm Family Incomes," American Journal of Agricultural Economics, Vol. 61, No. 4, November 1979, pp. 676-682.

TABLE 1

AVERAGE INCOME OF FARMERS AND NONFARMERS (USING TAXATION
DATA FROM TAXFILERS)*

Year	Net Farm Income (a) (Dollars) (1)	Total Net Income (b) (Dollars) (2)	Total Net Income of All Taxfilers (Dollars) (3)	(2) as a Percentage of (3) (%)
1967	2,037	3,981	5,505	72.3
1968	1,702	3,885	5,816	66.8
1969	1,183	3,723	6,263	59.4
1970	993	3,817	6,627	57.6
1971	1,311	4,407	7,063	62.4
1972	1,984	5,492	7,804	70.4
1973	3,433	7,624	8,736	87.3
1974	4,466	10,164	10,147	100.2
1975	4,890	11,697	11,438	102.3
1976	3,875	11,855	12,713	93.3
1977	3,290	12,060	13,718	87.9
1978	3,640	12,680	14,740	86.0

Source: R.D. Bollman, "A Comparison of the Money Incomes of Farmers and Nonfarmers," Canadian Journal of Agricultural Economics, Proceedings of the 1980 Annual Meeting, Edmonton, Alberta, August 1980, Table 1. p. 51.

* A farm taxfiler is any individual who reports a positive unincorporated net self-employment income from farming.

(a) Net Farm Income is defined as the value of agricultural product sold minus operating expenses and depreciation charges. It does not include sales of real estate, machinery or equipment; nor are expenses incurred for purchasing of farm real estate, machinery and equipment assigned as an expenditure in the year of purchase. Only an estimated value of depreciation on the item is included in the farm net accounts.

(b) Total net income is net farm income plus change in value of inventory plus nonfarm income such as investment returns.

TABLE 2

AVERAGE INCOME OF FARMERS AND NONFARMERS USING TAXATION DATA
1965-1978 BASED ON REVENUE CANADA TAXATION DEFINITION OF
"FARMER"*

Year	Net Farm	Total Net	Total Net	Total Net Income
	Income Per Farm (a)	Income	Income of All Taxfilers	Per Farm as a % of Total Net Income of all Taxfilers
	-----Dollars-----			Percent
1965	2,659	3,306	4,924	67.1
1966	2,690	3,392	5,218	65.0
1967	2,744	3,499	5,505	63.5
1968	2,391	3,244	5,816	55.8
1969	1,914	2,845	6,263	45.4
1970	1,758	2,799	6,627	42.2
1971	2,159	3,288	7,063	46.5
1972	3,048	4,437	7,804	56.8
1973	5,054	6,783	8,736	77.7
1974	6,789	9,385	10,147	92.3
1975	7,568	10,736	11,438	93.9
1976	6,570	10,045	12,713	79.0
1977	6,133	10,036	13,718	73.2
1978	6,505	10,741	14,740	72.9

Source: R.D. Bollman, "A Comparison of the Money Incomes of Farmers and Nonfarmers," Canadian Journal of Agricultural Economics, Proceedings of the 1980 Annual Meeting, Edmonton, Alberta, August 1980, Table 1.

* A Revenue Canada Taxation "farmer" is any individual whose major source of gross income is from farming.

(a) Net farm income divided by number of recorded farms in Canada. In census years (every five years) the number of farms comes from the Census of Agriculture in intercensal years the number of farms are estimated only.