AN ALTERNATIVE DATA SOURCE FOR
SELECTED FARM FINANCIAL STATISTICS

by

Jack Gellner (1)
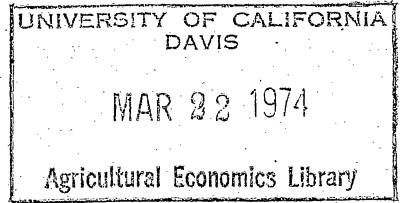
I Introduction

Statistics Canada has the responsibility to collect, compile, analyse and publish statistics on the economic and social activities and conditions of the people of Canada. In the specific case of farm financial statistics, Statistics Canada attempts to provide timely and relevant data for public policy analysis and decision-making.

In this paper. I will attempt to outline the demand, shortcomings, and alternative sources for farm financial statistics. I shall then compare the relative advantages and disadvantages of income tax returns as an alternative data source.

II Demand for Farm Financial Statistics

In the past few years, the demand for farm financial data has expanded greatly to include distribution of net farm income by geographic area, by product type and by economic class; input expense data on a regional basis; further information relating to the non-farm income

component of farmers' total income; and in general, more detailed data to enable analysis of particular income groups within the agricultural sector. However, the preceding is by no means exhaustive of the increasing demands placed on our present statistical data base.

III   Shortcomings of Present Financial Series

Over the years, the Agriculture Division of Statistics Canada has based estimates for its financial series on institutional sources, census benchmark estimates, periodic mail-questionnaire surveys and an enumerative probability sample survey carried out in 1958.(2) With the exception of selected farm expenditures such as taxes, rent, and cash wages, the time period between benchmarks has often exceeded ten and even fifteen years. Mail surveys, generally characterized by a high proportion of non-response, are becoming a less reliable statistical tool as Canadian farm units become more heterogeneous. Since financial information obtained by direct survey is limited, many proxy variables must be employed in the projection of financial benchmarks. Manufacturing statistics for such items as fertilizer and feed can be useful data sources but unfortunately they are not very numerous.

Increasing computerization, which has greatly increased the efficiency of data analysis, has made the need for more accurate and more detailed statistics more apparent. It is becoming increasingly difficult to meet these demands from our existing data base. As John Dawson aptly points out, there exists a serious void of data pertaining to distribution of net farm incomes in Canada which perceivably limits formulation of sound agricultural policy. He goes on to say:

> ...obtaining such information is a substantial
> undertaking even on a sample basis. It is
> difficult information to obtain and it is
> information which should be obtained on an
> annual basis because of the year-to-year income
> variations in some types of farming.(3)

The filling of information gaps in the future will undoubtedly necessitate the use of alternative data sources.

IV Alternative Data Sources

There are at least four sources of data which have or could potentially provide the type of data necessary to at least partially satisfy user needs. These sources include institutional statistics, agricultural censuses, probability enumerative surveys and income tax returns filed by persons reporting income from farming.

Institutional sources such as the Canadian Grain Commission and some provincial marketing boards are highly acceptable data sources but they do not cover the entire agricultural domain.

It is expected that, with the advent of more marketing boards, this data source will increase in importance over time. Historically, agricultural censuses have provided much useful information, however, high costs limit their occurrence to once every five or ten years. Most statistical methodologists agree that probability sample surveys with field enumeration provide the possibility of producing high quality estimates. This method has been used for four Agriculture Censuses to assess the coverage and quality of enumeration.

The Agriculture Division of Statistics Canada recently has been evaluating the usefulness of farmers' income tax returns as a source of financial statistics. It is this data source to which the remainder of this paper will be devoted.

V Income Tax Returns as a Source of Farm Financial Data

The new Statistics Act (which received royal assent on February 11th, 1971) provided Statistics Canada with the authority to tabulate information submitted by individuals to the Department of National Revenue. Subsection (1) of section 23 reads as follows:

> (a) the Chief Statistician or any person authorized by him to do so may inspect and have access to any returns, certificates, statements, documents, or other records obtained on behalf of the Minister of National Revenue for the purpose of the Income Tax Act; and

(b) the Minister of National Revenue shall cause such returns, certificates, statements, documents, or other records to be made available to the Chief Statistician or person authorized by him to inspect such records, in such manner and at such times as the Governor in Council may prescribe upon the recommendation of the Minister and the Minister of National Revenue.

All information tabulated by Statistics Canada is subject to the same stringent rules of secrecy. For emphasis, let me quote subsection (1) of section 16:

(a) no person, other than a person employed or deemed to be employed under this Act, and sworn under section 6, shall be permitted to examine any identifiable individual return made for the purposes of this Act` and
(b) no person who has been sworn under section 6 shall disclose or knowingly cause to be disclosed, by any means, any information obtained under this Act in such a manner that it is possible from any such disclosure to relate the particulars obtained from any indiviual return to any identifiable individual person, business or organization.

It should be stressed that the Department of National Revenue does not have access to documents supplied to Statistics Canada.

In general, income tax data includes gross farm income by item, farm expenses by item, net farm income, non-farm income by source, plus certain socio-economic characteristics such as age, sex, marital status, number of dependents, province in which the farm is located, and municipality of residence as determined by mailing address.

Whereas the information is available to Statistics Canada on a micro-unit basis, cross-classifications and distributions in any format (within the Statistics Canada secrecy restrictions) can be provided upon request by users. The ability to monitor the longitudinal changes of certain characteristics (including net farm income) of a constant group of taxfilers over time will also be possible.

VI Comparison of Alternate Sources of Financial Data

The information in Table 1 highlights the characteristics of the various sources of financial data with respect to certain criteria. The relative advantages and disadvatages of each source indicated are summarized below.

One drawback of income tax data is the non-comparability with the census in terms of the unit of observation and the universe. This, along with conceptual differences between some of the income and expense items serves to limit a detailed evaluation of one source in terms of the other.

A second apparent shortcoming of income tax data is that the number of individuals reporting farm income on their tax returns is markedly less than the number of census-farms in Quebec and the Atlantic provinces. However,

Table 1 - Characteristics of Financial Data Sources within Statistics Canada

Criteria	Income Tax	Census	Enumerative Survey[a]	Agriculture Division[b]
Universe				
Ideal	All individuals with self-employed earn-ings or a combina-tion of self-employed earnings and wages and salaries in excess of $800.	All census farms.	All census farms.	Agricultural production from census farms.
Actual	Only those individ-uals who comply with the income tax regulations. i.e. Some individuals may fail to report "insignificant" amounts of farm income	Census farms which are identified. Usually some under enumeration.	All census farms.	Agricultural production from census farms.
Unit	Taxfilers reporting some farm income.	Census farms (one operator per farm).	Census farms based on area sample frame.	Farm sectors by province
Frequency	Annual	Quinquennial.	Quinquennial.	Monthly cash receipts. Expenses and net income annually.
Timeliness	12 to 16 months after reference year.	16 to 26 months after reference year.	6 to 12 months after reference year.	2 to 6 months after reference year.
Financial questions	Complete coverage of farm income and expense and non-farm income.	1971-all income items -8 expense items 1976-no financial data	1971-all income items -8 expense items 1976-possible extended coverage of income and expense items.	All farm income and expense items.

(cont'd)

See footnotes on page 9.

Table 1 - Characteristics of Financial Data Sources within Statistics Canada

Criteria	Income Tax	Census	Enumerative Survey	Agriculture Division
Method of computing income and expenses	Reported mainly on cash basis (accrual accounting not commonly used by farmers). Includes interfarm transfers.	Reported on accrual basis. Includes: (a) interfarm transfers (b) landlords share of income and expense (c) non-census farm portion of income and expenses under contract agreements.	Same as census.	Calculated on accrual basis by province. Excludes interfarm transfers.
Quality of data sampling error	Gross and net farm income data are based on the universe of taxfilers. Individual items are based on a general purpose sample of tax returns. The universe is incomplete in some areas.	Data are based on total enumeration of census farms. Under enumeration in some areas.	Data are based on a probability sample of area-land segments. Error is a function of funds available.	Data are based on census and other benchmarks, voluntary response to mail surveys, and information from institutional sources.
Non-sampling error	Possibility of under/over reporting of income and expense items.	Similar to income tax. Income tax. returns often used to complete questionnaires.	Similar to income tax. More control possible with good enumeration.	Similar to income tax for those items based on census benchmarks.

(cont'd)

Table 1 - Characteristics of Financial Data Sources within Statistics Canada

Criteria	Income Tax	Census	Enumerative Survey	Agriculture Division
Response Burden (initiated by Statistics Canada)	Currently none.	Nearly all farmers contacted every five years.	Sample of 15,000 farms.	Semi-Annual mail questionnaires sent to all farms plus a panel of farmers reporting to monthly surveys.
Sub-Provincial data possibilities.	Based on taxfiler mailing address. Potential exists for basing data on location of farm.	Based on location of farm.	Possible only with very large samples.	Difficult to put Agriculture Division data on small area basis.
Non-farm Income	Universe consists of all taxfilers who report some farm income. Includes all income sources subject to taxation.	Universe consists of detailed income statistics (including net farm income) of all individuals in 1/3 of 1971 census households.		
Relative Cost (rated on an increasing scale of 1 to 5)	1	5	3	2

a Refers to the 1971 Post-Census Agriculture Survey. This was a probability sample survey conducted, in part, as a check on the 1971 Census of Agriculture.

b Refers to the farm income and expense series of provincial aggregates currently published by the Agriculture Division of Statistics Canada.

preliminary investigations indicate that the filing rates for Ontario and the Western provinces are virtually complete. A more immediate disadvantage is the lack of resources necessary for the development of the data base and the assessment of the data quality. Initial tabulations of income tax data indicate that the estimates are similar to census data in spite of differences in definitions and concepts. In terms of timeliness income tax statistics would be available approximately one year later than the financial statistics currently published by the Agriculture Division.

In spite of these limitations income tax data do have certain advantages. The fact that the data are available annually to Statistics Canada on a micro-unit basis is probably its strongest attribute. Distributions, cross-classifications and longitudinal studies are thus possible on a relatively wide range of farm financial data. In addition, coverage of farm income and expenses is relatively complete; there is no increase in response burden on the farmers and the data collection is relatively inexpensive. While the tabulation of sub-provincial data from tax returns is possible this too requires further investigation. The non-comparability of the universe and certain concepts of income tax and census will not seriously limit the use of tax data if users are willing to accept the different concepts inherent in income tax data.

VII <u>Summary and Conclusions</u>

This paper has outlined the major advantages and disadvantages of income tax returns as an alternate source of farm financial data. Income tax returns can provide data on gross farm income by item, farm expenditures by item, non-farm income by source, and a variety of other socio-economic data for the individual taxfiler.

The conclusions of this paper can be summarized as follows:

1. The fact that there are conceptual differences between income tax data and other data sources should not detract from the usefulness of income tax data. The nature and extent of coverage of the new data indicate that income tax statistics can stand as a independent data source for the analysis of a variety of issues.

2. In spite of these conceptual differences, estimates of certain income and expense items from income tax can be used to improve the estimates of the present series.

3. Whereas income tax statistics will probably be a consistent series over time, rates of change calculated from income tax data can be used to replace many of the proxy variables that are currently employed in the Agriculture Division for the projection of benchmarks.

FOOTNOTES

(1)
The author gratefully acknowledges the able assistance
provided by members of the Agriculture Division of
Statistics Canada. Any errors or ommissions remain the
responsibility of the author.

(2)
The "1958 Survey of Farm Income and Expenditures" carried
out by D.B.S. was a probability land segment survey
involving approximately 8000 farms. In 1971 the "Post
Census Agriculture Survey" provided new benchmark estimates
for a limited number of financial series.

(3)
John A. Dawson, "Obstacles Expected and Steps Required in
Implentation of a Sound Policy for Canadian Agriculture,"
Canadian Journal of Agricultural Economics, Vol.17, Number
3, November 1969, pp. 75

BIBLIOGRAPHY

Dawson, John A., "Obstacles Expected and Steps Required in
    Implementation of a Sound Policy for Canadian
    Agriculture", Canadian Journal of Agricultural
    Economics, Vol. 17, No. 3, November, 1969