PROCEEDINGS OF THE SEMINAR ON REVISIONS TO FARM INCOME AND FINANCIAL STATISTICS FOR CANADA

R. M. A. Loyns
D. Freshwater
G. Beelen
(editors)

OCCASIONAL SERIES NO. 14

DEPARTMENT OF AGRICULTURAL ECONOMICS
AND FARM MANAGEMENT
FACULTY OF AGRICULTURE
THE UNIVERSITY OF MANITOBA
WINNIPEG, MANITOBA
R3T 2N2

June, 1983

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PREFACE

This report includes the proceedings of a Seminar held at the University of Manitoba on October 15, 1982. The topic of the Seminar was Conceptual and User Requirements of Farm Income Statistics. The Seminar was sponsored jointly by the Department of Agricultural Economics, University of Manitoba and the Agriculture Statistics Division, Statistics Canada.

In addition to the Seminar, Statistics Canada is presently funding a research project at the University of Manitoba as part of its overall review of farm income and expenses statistics. The graduate student involved in the project, Mr. George Beelen, is on study leave from Statistics Canada and is working towards an M.Sc. degree under the joint guidance of Dr. R.M.A. Loyns and Dr. David Freshwater of the Department of Agricultural Economics.

The overall project is intended to provide a detached evaluation of the concepts, methods and reporting framework for farm income statistics in Canada, and to develop proposals for revisions in farm income statistics.

The Seminar held on October 15th provided a mechanism for interested agencies and individuals to have an input into early stages of the revision process. Comments made at the Seminar provided an important contribution to the review. This document provides another vehicle for communicating the directions and nature of the research.

Three of the papers prepared for the Seminar reflect a review by the United States Department of Agriculture and the American Agricultural Economics Association, which resulted in changes in farm income statistics in the United States. The remaining two papers deal with the policy environment and changes in agriculture which require changes in statistical series in this country.

Certainly, issues relating to farm income in Canada have been, are, and will continue to be a matter of public concern and debate. The Department of Agricultural Economics , University of Manitoba, is pleased that it has had the opportunity to participate in this very important project through the financial support and cooperation provided by Statistics Canada. We hope that this publication and the forthcoming results of the M.Sc. project in the Department will assist all those individuals and organizations involved with farm income issues in Canada.

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CONCEPTUAL OBSOLESCENCE AND FARM INCOME DATA

Charles H. Riemenschneider[1]

Introduction

Over the past decade in the United States, a growing body of literature has developed on the problems of economic statistics for agriculture. Starting with the report of the AAEA Committee on Economic Statistics in 1972, a common theme emerges that serious deficiencies are evident in much of the data used by agricultural economists. Although most of the literature has focused on problems in agricultural statistics in the United States, the findings apply in large part to agricultural economic data in Canada as well. Thus, this paper will be based on my experience with United States data systems keeping in mind its general applicability to the Canadian situation.

The Nature of the Problem

Most of the current agricultural data systems in the United States were developed in the 1920's and 1930's. Although physical measures of farm output and population began in the mid 19th Century, it was not until the 1920's that important social and economic statistics on farming, such as prices and income, were prepared on a regular basis. Only minor changes in the data presented and in the general administrative structure of the United States agricultural data system have occurred in the past 60 years. Given the age of the system, it is not surprising that the major problem with the United States agricultural statistics, iden-

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[1] M.L. Upchurch. "Developments in Agricultural Economics Data," A Survey of Agricultural Economics Literature, Vol. 2, Lee R. Martin, ed., Minneapolis, University of Minnesota Press, 1977.

tified by nearly everyone studying the system, is one of conceptual obsolescence. In those cases where agricultural data series were not as useful an indicator as in earlier years, this obsolescence was generally due to a disparity between the concept being measured and actual circumstances.

Fundamental to many of the agricultural statistics developed in the 1920's is the concept of the "family farm," with a certain set of implicit assumptions about organization and values. However, as the structure of agriculture has evolved over the past half century, it has become increasingly clear that the "family farm" is not an accurate representation of all of the farming sector. For example, vertical integration in broiler, egg, and vegetable operations has made many statistics on farm prices and production virtually meaningless. Thus, the concept underlying the statistics in these cases does not conform to reality and is obsolete for many uses.

A second type of conceptual obsolescence occurs when the policy agenda facing agriculture changes dramatically and the data concepts are not adjusted to meet the needs of the new agenda. This obsolescence flows from the nature of the policy process.

In a public policy context, the design of social or economic statistics often goes hand-in-hand with defining problems in society and the economy. New problems are difficult to identify clearly without some empirical measurement of the important aspects of the situation. Under normal circumstances, the definition of a problem is preceded by some theory, norm or goal against which the actual situation is measured. These norms or goals define the public policy agenda and can be based on

religion, economics, history or whatever, but without some model of desired outcomes, it is impossible to define a problem. Numerical data provide a ready means to compare actual outcomes with the desired model. Thus, data are required which reflect accurately a model of the desired outcome in order to define the policy problem. As this model or agenda changes, then the concepts underlying the numerical data must also change.

In many cases, changes in policy questions may require completely new data concepts. Without new concepts, important policy issues could be ignored. Much historical evidence suggests that governments fail to act on policy issues before some means are found to measure a problem. Farm income measurements in the United States predate most direct income and price support programs by nearly a decade. Thus, obsolete data concepts can result in the lack of awareness by policy makers of growing problems in society.

Conceptual obsolescence in agricultural statistics has intensified over the past decade as numerous shifts in the agricultural policy agenda have occurred. Issues relating to energy, inflation, the environment, consumers, and international trade have all had a substantial impact on agriculture, yet the data system for the sector is not designed to answer many of the policy questions in these new areas.

An Information System Paradigm[2]

One major difficulty encountered in the study of agricultural statistical systems is the lack of understanding of the process by which data and information are produced. Engineers, economists, computer scientists, and others all have theories of information which focus on the unique concerns of their disciplines. Unfortunately, information systems for agriculture are required to aid in decisions that necessarily cut across disciplines. Thus, a multidisciplinary perspective is essential in understanding an operating information system.

The following paradigm will attempt to clarify the distinction between data and information. It will also provide a multidisciplinary framework for understanding the analytical process in problem solving and how this relates to data collection.

Data systems. Data collection is generally perceived in terms of statistical sampling or the total enumeration of a given population. However, a number of steps must occur prior to the actual data collection. Initially, one decides on precisely what is to be sampled or enumerated. This decision implies that a data system first requires a notion of reality that can be represented by categories of empirical variables.

The infinite complexity of reality is impossible for the human mind to understand in total, so reality must be reduced to a set of categories or other classification schemes that allow its measurement. Fur-

[2] James T. Bonnen. "Assessment of the Current Agricultural Data Base: An Information System Approach," in Lee R. Martin, ed., A Survey of Agricultural Economic Literature, Vol. 2, Minneapolis, University of Minnesota Press, 1977, pp. 386-407.

thermore, it makes little sense to categorize reality without some notion of a problem to be solved. The problem at hand will dictate phenomena in the decision maker's experience that are relevant and that allow reality to be characterized as a set of empirical categories. Thus, at the foundation of any data system is a concept of reality to be measured and this concept must ultimately be related to some decision.

Even a concept of reality, which is essentially an abstract idea, cannot be measured as such. Data collection requires the establishment of more formalized definitions (categories of empirical phenomena) that are representative of the chosen concept. In this vein, a data system has three distinct components or steps: (1) conceptualization; (2) operationalization (definition) of the concept; and (3) measurement. Problems can arise in any of these steps, which will reduce the usefulness of any data produced by the system. This gives rise to three separate meanings of statistical reliability. The first is reliability of concept, which is determined by how accurately the concept represents reality and whether the concept is pertinent to the decision at hand. The second is data reliability, affected by how well concepts are defined, which relates to the correlation between categories of empirical variables and the concept of reality. Third, measurement accuracy in the normal statistical sense also affects data reliability.

The nature of information. A rather common misunderstanding among economists and other social scientists is to assume that "data" and "information" are interchangeable terms. The system outlined in the preceding section produces data not information. Information is produced

by analyzing and interpreting data to place them in a specific decision-making context. Raw data, or even semi-processed data, are rarely of direct use to decision makers. Analysis and interpretation impart meaning to the data and provide the link between data and information.

The analytical process can take many forms depending on the decision to be made. At the most basic level, formatting of data is required in most systems to communicate the product of the data system from the data collector to analysts and decision makers. Practical considerations of data retrieval, storage, and access are part of this formatting, which, by its very nature, implies some level of analysis. As the complexity of problems increase, more sophisticated multidisciplinary analyses are required. However, at either extreme in the analytical process, the nature of the system is the same.

From the preceding discussion, it is obvious that an information system is essentialy a process which provides form and gives meaning to data in the context of a decision. An information system, as such, transforms data into information. With this understanding, it is possible to characterize three components of an information system: (1) a data system; (2) the necessary analysis to transform data into information; and (3) the decision maker (depicted in Figure 1).

Most economists and social scientists have the same basic approach to analyzing and solving problems. It starts with a body of theory, which is a simplification or representation of reality. This theory is operationalized by defining specific variables, usually in the form of a model, which are then compared to some measured empirical representation of the variables and conclusions are drawn. Thus, the process of inquiry

used by most social scientists contains the first two components of the data system, i.e., theoretical concepts and the operationalization of these concepts.

Thus, in ideal circumstances, data systems and the system of inquiry and analysis used by economists and other social scientists will operate from the same theoretical concepts and definitions of these concepts. Without this common conceptual ground, theory and empirical data could not be used meaningfully in the same analysis and any policy prescriptions derived from the analysis likely would be sub-optimal.

Farm Income Data in the United States[3]

With the understanding of information systems and the problems of agricultural information systems described in the preceding sections, the remainder of the paper will examine some relevant aspects of the United States farm income data and information system as it was in 1978 prior to recent changes in some data series. The Canadian farm income data system remains essentially the same as the earlier United States system.

History. Conceptual obsolescence in a data series is determined in part by the context in which the data were originally designed and how issues or the situation have changed since the data were originally collected. Thus, the historical context surrounding any data series can often point to potential problems with that data.

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[3]Charles H. Riemenschneider. "An Information Systems Analysis of USDA Farm Income Data," unpublished Ph.D. dissertation, Michigan State University, 1978; and Charles H. Riemenschneider and James T. Bonnen. "National Agricultural Information Systems: Design and Assessment," in M.J. Blackie and J.B. Dent, eds., Information Systems For Agriculture, London Applied Science Publishers, 1979, pp. 145-172.

The beginnings of the farm income series in the United States can be traced to the 1909 Census of Agriculture. The report of the Census was released in 1913 and provided the first estimates of farm income. Over the next decade, work continued on estimates of farm income culminating around 1924 when estimates of farm income were started on a calendar year basis along with a series on farm production expenses and national net farm income. It is important to note that the current system used to estimate farm income was developed prior to the time when the national income accounts were established, thus explaining, in part, the differences in format between the farm income accounts and the national income accounts. The farm income series were originally set up to measure the economic welfare of farmers, who, at the time of the development of the series, made up a significant proportion of the population. This segment of the population was later able to use this measure of welfare to justify price and income supports through federal legislation in the 1930's.

The relationship between farm income measurement and the agricultural policy of the 1920's through the 1950's is more direct than is apparent on the surface. The pioneering work of the National Bureau of Economic Research (NBER), in the area of national income measurement, set the tone of the important agricultural policy debates of the era. The National Bureau estimated agriculture's share of national income and the purchasing power of farmers relative to the nonfarm population for the period 1909 to 1920. These NBER studies portrayed the national income share and purchasing power of agriculture in a poor light relative to other sectors. John D. Black, in 1927, noted that the NBER results were

widely circulated and along with other analyses, which relied on the NBER findings, had an important influence on the farm policy legislation of this period.

Numerous other statements during this period confirm the influence of the NBER results on the government policy toward agriculture. J.I. Falconer, writing during the time of the development of the USDA farm income accounts, pointed out that one of the most important areas of research on farm income was in the area of comparing the purchasing power and well being of farmers with that of the urban population. H.R. Tolley is even more explicit in expressing this relationship between aggregate farm income data and farm policy. In presenting the objectives of agricultural policy, Tolley sets a farm income goal as the highest priority on his list of 10 objectives.

> First, a fair share of the national income for agriculture. Undoubtedly there is disagreement upon its precise measurement. Still, the idea of securing to the average farmer as much purchasing power relative to that of the average nonfarmer as obtained in a more normal period is a definite and tenable objective.[4]

The notion of income parity developed in response to the perceived plight of farmers relative to non-farmers. Income parity is defined in the farm legislation of the 1930's and 1940's in terms of an historical ratio between per capita income of the farm and non-farm population. While the ultimate concern of the farm legislation was with income parity, the policy to achieve income parity revolved around the use of commodity price supports. Thus, parity prices became the principal data

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[4] H.R. Tolley. "Objectives in National Agricultural Policy," Journal of Farm Economics, Vol. 20, No. 1, February 1938, pp. 24-36.

used in implementing farm policy in the 1930's and are used even today in some commodities. Karl T. Wright confirms the important relationship between price and income parity by noting that one of the major assumptions of the 1933 agricultural legislation, which provided the basis for most of the subsequent major farm legislation, was "...that price established by the parity formula would provide parity income to farmers."[5]

Farm income measurement seems to have played a significant role in the policy process during the period between 1920 and 1950 because of the importance of the income questions raised in the farm debate. At this time, the major equity questions were concerned with comparing the welfare of the farm and non-farm sectors in justifying government action to improve farm welfare. Thus, the public policy users of farm income data prior to the 1950's seem to have been concentrated on this objective.

Farm income data uses. A major implication of the information systems paradigm is that the ultimate use of data in decision making is the major determinant of the data concepts in the system. Thus, existing and potential data uses must be ascertained before the relevance of the concepts underlying the data can be judged.

Based on a survey of those receiving United States Department of Agriculture statistics on farm income in 1977, three principal specific uses of farm income data were apparent. The dominant use was in the public policy decisions related to agriculture, including program evalu-

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[5] Karl T. Wright. "Basic Weaknesses of the Parity Price Formula for a Period of Extensive Adjustments in Agriculture," Journal of Farm Economics, Vol. 28, No. 1, February 1946, pp. 294-300.

ation, tax revenue planning, and the allocation of research funds. The next largest specific use of aggregate farm income data was in the estimation of demand for farm inputs, such as farm machinery, fertilizers and chemicals. Most of these farm input related uses were in the area of marketing and advertising, although uses in production planning and long-term investment decisions were also mentioned. The third major use was in credit-related decisions in financial institutions with an interest in agriculture. Farm income data were used in decisions on future loan volume, loan repayment potential, land valuation, and investment in agricultural firms. However, providing data for public policy decisions clearly is the overriding function of the government farm income data system.

Conceptual obsolescence. The concept of a single national family farm has been the underlying basis of the United States farm income data system since its design in the 1920's. Although recent changes have produced additional concepts of farm income, related to farm production transactions, cash flow, and other bases, the aggregate family farm concept remains a major part of the farm income data series. This concept, which remains the major concept in the Canadian farm income data system as well, characterizes the entire farm sector as if it were a single family farm. Gross farm income, under this concept, includes the imputed rental value of farm dwellings, the value of farm produce consumed on farms, government income transfers and loans, as well as the cash receipts from marketing farm products. This single national unit of observation for farm income data limits the amount of meaningful disaggregation possible within the farm income data series.

During the last half century, the major agricultural policy issues in the United States have shifted. As was noted earlier, when the current farm income data system was designed in the 1920's, the major farm income questions raised in the public policy forum revolved around comparisons of the purchasing power of farmers to the urban population and around farming's share of national income. At that time, a very significant use of farm income data was to buttress the claim that government action was necessary to maintain an adequate share of national income for farming and to sustain farm families' income at the same level as the urban population.

Today's farm income policy agenda has changed substantially from 50 years ago. Equity concerns relating to agriculture now center on the distribution of benefits among different types of farms from various farm programs. The earlier issue of the need for government intervention in agriculture is not even debated seriously today. Over the past two years, three separate major changes in the dairy price support program have been enacted by the United States Congress. Not once was there serious discussion of the need for the price support program; nearly all of the debate was on the disproportionate budget costs of the dairy program and implicitly the disproportionate share of farm income received by dairy farmers relative to other commodities.

The shift in farm income policy questions has changed the need for aggregate sector level performance measures in agriculture. Aggregate farm income data are not a serious factor in current farm policy decisions since most decisions reflect a need for data on the distribution of income within agriculture rather than the distribution between the

agricultural and non-agricultural sectors. The farm income data system's focus on aggregate measures does not allow an easy comparison among incomes of different groups in agriculture. For example, no data are provided which can be used to compare the net income of livestock producers to crop producers. Consequently, policy decisions do not fully reflect the impact of grain prices supports on livestock producer income because appropriate data are not available.

These problems point to a growing conceptual obsolescence in the major United States farm income data concepts. The policy agenda has changed yet the data concepts have not.

At the time the current farm income data system was designed, there was no serious question about the distribution of income within the farm sector. Farms were basically homogeneous and the government farm programs were a decade away. Economists who designed the system appear to have formulated it to deal with questions of economic efficiency within the sector rather than equity among groups in farming. The national family farm concept would allow traditional microeconomic analyses of allocative efficiency to be performed at the aggregate level using the data. However, comparisons of income within agriculture are not as easily performed.

Conceptual obsolescence has developed in the farm income data system because changes in the policy issues have not been matched by changes in the data. As long as equity or distributional questions dominate the policy process, then the data system must be able to provide data which are readily analyzed to answer the policy questions. Agricultural economists tend to be well versed in policy in the area of efficiency but

are less comfortable with the more political issues regarding equity within agriculture. However, problem solving in the public policy area requires information on both equity and efficiency; concentration on one without the other will result in inadequate solutions to policy problems.

Conceptual obsolescence in farm income data also has occurred as a result of changes in farming itself. The concept of a single national family farm likely was appropriate in the 1920's for the farm income data system, since there was little specialization in agricultural production and most farms were family operations. However, industrialization in agriculture has led to increased specialization and greater heterogeneity in agricultural production. Thus, it seems unlikely that an income data system, which assumes a single national family farm, would provide data representative of income in the current farm sector.

Most of the earlier studies of United States farm income data[6] have focused on conceptual obsolescence arising from changes within the farm sector rather than changes in the types of policy decisions. It is not really possible to completely separate these two kinds of conceptual obsolescence. As the structure of farming changes in the direction of increased specialization and heterogeneity among farms, issues involving

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[6] Eldon Weeks, et al. "Farm Income and Capital Accounting-Findings and Recommendations of a 1972 ERS Task Force," unpublished report, USDA, Economic Research Service, July 1972; James Hildreth, et al. "Report of Task Force on Farm Income Estimates," unpublished report, USDA, Economic Research Service, January 1975; Eldon E. Weeks, Gerald E. Schluter, and Leland W. Southard, "Monitoring the Agricultural Economy: Strains on the Data System," American Journal of Agricultural Economics, Vol. 56, No. 5, December 1974, pp. 976-983; and Thomas A. Carlin and Allen G. Smith. "A New Approach in Accounting For Our Nation's Farm Income," Agricultural Finance Review, Vol. 34, July 1973, pp. 1-6.

equity with agriculture naturally become more significant. It follows logically that the policy agenda would change because the reality of the sector itself has changed.

Conclusions

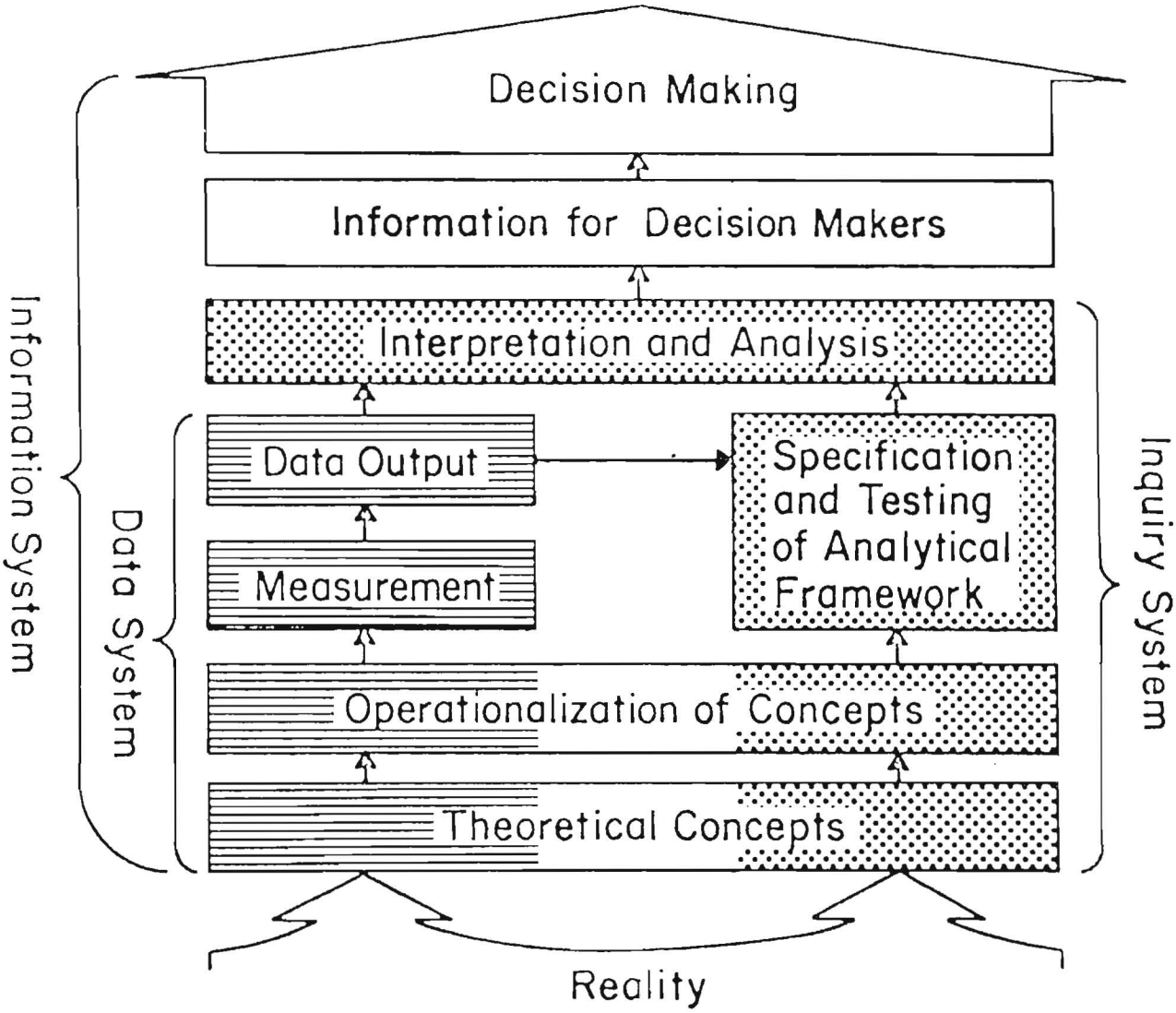
The difficulties encountered in the farm income data system are representative of problems in many agricultural and general economic data systems. Even experienced statistical managers are frustrated in attempts to resolve these issues. Conceptual, definitional, or measurement improvements in one data system must be weighed against improvements in other unrelated systems or against the possibility of gathering new data to meet the ever changing needs of decision makers. Budget cuts in United States statistical agencies have averaged 20 percent in real terms over the past three years. This has forced the elimination of some data and leaves little room for improving other data systems. The growing fiscal conservatism is likely to cause obsolescence in data systems to increase as less resources are available to make necessary improvements.

Many data improvements require changes in the data that threaten significant vested interests. These interests are especially prevalent in cases where the benefits of public programs are tied to the data through an implicit or explicit allocation formula, to the extent that farm income data directly or indirectly affect the level of government benefits received by farmers for various income and price support programs, then it will be more difficult to effect changes in the data system. The recent controversy in the United States over the delay of farm income forecasts should convince even those with little exposure to statistical

reform that changes in data systems require both political skills as well as technical expertise in the design of data systems.

Figure 1

An Agricultural Information System



BIBLIOGRAPHY

American Agricultural Economics Association, Committee on Economic Statistics. "Our Obsolete Date Systems: New Directions and Opportunities," American Journal of Agricultural Economics, Vol. 54, No. 5, December 1972, pp. 867-875.

Black, John D. "Agriculture Now?" Journal of Farm Economics, Vol. 9, No. 2, April 1927, pp. 137-172.

Bonnen, James T. "Assessment of the Current Agricultural Data Base: An Information System Approach," in Lee R. Martin, ed., A Survey of Agricultural Economic Literature, Vol. 2, Minneapolis, University of Minnesota Press, 1977, pp. 386-407.

Carlin, Thomas A. and Allen G. Smith. "A New Approach in Accounting for Our Nation's Farm Income," Agricultural Finance Review, Vol. 34, July 1973, pp. 1-6.

Falconer, J.I. "Research in Agricultural Income," Journal of Farm Economics, Vol. 10, No. 1, January 1928, pp. 71-79.

Hildreth, James, et al. "Report of Task Force on Farm Income Estimates," unpublished report, United States Department of Agriculture, Economic Research Service, January 1975.

Riemenschneider, Charles H. "An Information Systems Analysis of USDA Farm Income Data," unpublished Ph.D. dissertation, Michigan State University, 1978.

Riemenschneider, Charles H. and James T. Bonnen. "National Agricultural Information Systems: Design and Assessment," in M.J. Blackie and J.B. Dent, eds., Information Systems For Agriculture, London, Applied Science Publishers, 1979, pp. 145-172.

Tolley, H.R. "Objectives in National Agricultural Policy," Journal of Farm Economics, Vol. 20, No. 1, February 1938, pp. 24-36.

Upchurch, M.L. "Developments in Agricultural Economics Data," A Survey of Agricultural Economics Literature, Vol. 2, Lee R. Martin, ed., Minneapolis, University of Minnesota Press, 1977.

Weeks, Eldon, et al. "Farm Income and Capital Accounting-Findings and Recommendations of a 1972 ERS Task Force," unpublished report, United States Department of Agriculture, Economic Research Service, July 1972.

Weeks, Eldon, E., Gerald E. Schluter, and Leland W. Southard. "Monitoring the Agricultural Economy: Strains on the Data System," American Journal of Agricultural Economics, Vol. 56, No. 5, December 1974, pp. 976-983.

Wright, Karl T. "Basic Weaknesses of the Parity Price Formula for a Period of Extensive Adjustments in Agriculture," Journal of Farm Economics, Vol. 28, No. 1, February 1946, pp. 294-300.

AGRICULTURAL POLICY FORMULATION AND FARM INCOME DATA NEEDS

George L. Brinkman

Introduction

For many years, policies dealing with the agricultural sector were made primarily by and for farmers, through their farm organizations and ministries of agriculture. In recent years, however, there has been a proliferation in decision making in agriculture, as a broader range of individual commodity, consumer and nonfarm producer interests also have become more actively involved. At the same time, the farm income data requirements for political decision making have become more complex and sophisticated.

This paper first addresses some of the changes in political decision making in agriculture, focusing on changes introduced through the federal government "envelope" system of financial control and the proliferation and change in the participants in policy formulation. The second part of the paper examines farm income data requirements needed to justify current programs and to determine their level of assistance. Emphasis in this section is on developing appropriate measures: (1) of income and wealth levels; and (2) comparable rates of return.

Changes in Decision Making in Agricultural Policy: Implications of the Envelope System

One of the most significant changes in policy formulation at the federal level in recent years has been the introduction of the "envelope" system of financial control.[1] Under this system, certain activities and

[1]The author wishes to acknowledge the great assistance of Doug Hedley of Agriculture Canada in providing much of the information on the

programs are grouped together in an envelope with a common pool of funding for new programs. Initially there were four envelopes grouped under four separate coordinating Ministries of State. Presently, however, the structure has evolved with eleven different envelopes/funding pools under four main coordinating ministries. Since the system is still evolving, further modifications may result.

Presently, the Ministry of State for Economic and Regional Development (MSERD) oversees the Envelopes for Economic Development and Energy. Agriculture is located within the Economic Development Envelope, along with Forestry, Fisheries and Oceans, Environment, and the forthcoming Department of Regional Industrial Expansion (DRIE).

Under the envelope system, new programs and policy changes are first sent to the ministry serving as the Head of the Envelope, which provides an assessment of the proposals and possible recommendations for support. The proposals in turn are sent to the cabinet committee dealing with each envelope for approval or rejection. Fiscal control is introduced into the system by requiring, in most cases, that all ministries within the envelope stay within the aggregate budget of the envelope for new projects. As a result, each ministry effectively becomes a competitor for a fixed level of available funds, and new projects are forced to compete with old projects if additional funding is not provided.

This procedure enforces fiscal responsibility in the federal government by effectively putting a limit on the level of funding in each area. In contrast, prior to the envelope system, many programs were financed simply by deficit financing without regard to trading off one

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structure and evolution of the envelope system.

program for another to stay within a fixed budget. Under the old system, new policies involving agriculture had to be approved by the Government Operations Committee of Cabinet. A proposal, lacking support there, may have been simply reargued in Cabinet and then financed on the basis of political rather than fiscal criteria. As a result, there was less control over the introduction of new policies and programs, and little incentive to curtail old ones. Federal government spending increased dramatically from around $12 billion in 1968-69 to around $64 billion in 1981-82 (more than a five-fold increase).

Under the present method, the envelope system not only has introduced measures for fiscal responsibility, but also has redistributed power from the individual ministries to the coordinating ministry directing the envelope. In the area of agriculture, for example, MSERD strongly influences which new programs may be financed and has even established provincial Federal Economic Development Coordinators to coordinate and monitor the programs in each province by the various ministries in the Economic Development Envelope.

The impact of the envelope system on agriculture is seen in terms of the Agri-food Strategy, which was approved as policy, but not for new funding. Mr. Whelan's first year funding request to initiate the program (likely around $100 million) was simply turned down because this project would have used up all of the funds for new economic development projects.

As a result of these developments, MSERD is emerging as a new client for farm income data for use in evaluating agricultural programs and in assessing funding priorities from all ministries within the envelope.

Furthermore, since the envelope system provides more control over expenditures and makes the introduction of new programs more difficult, it is likely that we may see more emphasis among federal ministries on regulations to achieve their objectives, rather than on income transfers. In this regard, Mr. Whelan's emphasis on creating new marketing boards to solve problems among beef and pork producers is understandable, even though the enhanced stabilization programs preferred by the majority of producers generally would be considered as superior solutions.

Proliferation in Policy Making

Traditionally, Agriculture Canada has been the primary participant in agricultural policy formulation. In the past few years, however, many new participants have emerged as additional ministries have taken on decision-making responsibilities and programs affecting agriculture. Furthermore, the emphasis of agricultural policy has been shifting from general agricultural assistance to a much stronger commodity orientation, resulting in the emergence of a variety of commodity organizations and marketing boards with important policy-making roles.

At the national level, the proliferation of decision making is seen by the operation outside of Agriculture Canada of the major federal activities affecting agricultural production in western Canada. The Wheat Board, for example, is administered in its own ministry. Funds for the Western Grains Stabilization Act have been voted under Industry, Trade and Commerce, and with the most recent reorganization, likely will come under DRIE rather than under Agriculture Canada. Major decisions affecting agricultural transportation costs, i.e., Crow Rates, are in the process of modification under the direction of the Ministry of Transpor-

tation. Other ministries, like MSERD and Finance , also have become actively involved in program selection through fiscal control. These ministries, together with Consumer and Corporate Affairs, also are becoming active in policy review (for example, the recent interdepartmental federal review of dairy policy). Legislative changes enabling national supply control marketing boards also have created powerful vested interests and organizations for dealing with dairy and poultry, such as the Canadian Dairy Commission and the poultry marketing agencies.

At the provincial level, most provinces have their own stabilization or price and income support programs, and Quebec even has its own credit policy. During 1981, for example, Quebec farmers could get credit at 8 percent (or less for small, initial amounts), when FCC rates were around 16 percent. These provincial policies engage provincial treasuries in competition with one another and circumvent national comparative advantage by encouraging provincial production at the expense of producers in other provinces.

A major end result of the current proliferation of agricultural decision making is that Agriculture Canada is rapidly losing control of agricultural policy. The wide range of federal decisions affecting agriculture prevent Agriculture Canada from taking a comprehensive approach to agricultural development. Furthermore, Agriculture Canada presently is unable to control the C.D.C. and poultry marketing agencies. To date, Agriculture Canada also has been unsuccessful in getting provincial co-operation in modifying federal and provincial stabilization programs to eliminate provincial "topping up" provisions and their distortions on comparative advantage.

Another consequence of this proliferation is that there now are many more decision-making points and, therefore, clients for data and information on farm incomes and performance. The traditional policy participants of agricultural ministries, national and provincial farm organizations, and consumer interests are now being supplemented by new ministries like MSERD and Finance, producer commodity organizations, and providers of information, like Statistics Canada and technical advisors from universities and consultant firms. Statistics Canada probably has one of the most underestimated roles to play, particularly with its emerging data analysis role and the incomparable credibility given to its official figures by most policy participants. Statistics Canada also faces a tremendous challenge in revising existing data concepts and measurements to more adequately meet the requirements of the expanded agricultural policy decision-making clientele.

Farm Income Data Requirements

Farm income data requirements generally relate to: (1) the level of income; and (2) rates of return. The two concepts are related, but address different issues. The level of income, for example, addresses the question of whether farmers are poor and serves as the main justification for the principle of government assistance to agriculture. Rates of return, on the other hand, are used primarily to address the question whether farmers are underpaid. Comparisons of farm and nonfarm rates of return are used to determine if farmers are earning a "fair" return and to calculate "cost of production" product price levels for supply-managed commodities.

The relationship between levels of income and rates of return is illustrated in Figure 1. Many of the larger, commercial farmers are located in the upper left-hand area because they have both adequate levels of income and rates of return to their resources that are comparable to those earned in the nonfarm sectors of the economy. Some large operators with many resources, however, may earn adequate levels of income, but lower rates of return than in comparable employment because of poor management or depressed market conditions for their production. On the other hand, some small-farm operators may be good managers and earn good rates of return to their resources, but have too few resources to earn a decent level of living from them. Most small-scale limited resource farmers, however, earn neither adequate levels of income from their farm resources nor comparable rates of return and are located in the lower right-hand area of the diagram.

The distribution of farmers by levels of income and comparable rates of return is crucial to the selection of agricultural support policies, yet we lack precise data on this distribution for farmers in general and by specific farm commodity types and geographic areas. An important priority in agricultural policy formation, therefore, should be the quantification of this distribution through the development of appropriate data concepts and their measurement.

Data Requirements for Examining Levels of Returns to Farmers

The major data requirements for measuring the level of returns to farmers consist of:

1. Farm net operating incomes
2. Farm income-in-kind

a) food produced and consumed on the farm

b) the net house rental value from living "rent free" on one's business property

3. Nonfarm income

4. Changes in capital values

5. Special taxation advantages

Of these five components, changes in capital values are probably the least understood. Capital value changes, however, are of crucial importance in measuring changes in wealth and in providing a complete measurement of the returns to farming. Changes in capital values should be measured for several reasons.

First of all, the claim by farmers that capital appreciation cannot be realized until the farm is sold (and, therefore, should not be counted) misses the real point. The most common way farmers gain from capital appreciation without selling their farm is by treating their increased farm values as their retirement fund and subsequently using this capital appreciation as a substitute for the retirement savings that they normally would have to take out of their current income. By not having to reduce his expenditures by the amount he otherwise would set aside for retirement, the farmer can consumer 100 percent of his income. On the other hand, a nonfarmer, who sets aside 20 percent of his income for retirement, has only 80 percent of his income for consumption. In this case, a farmer with only 80 percent of the nonfarmer's income could live equally well off and the portion of income that otherwise would have to be set aside for retirement is realized each year. Furthermore, capital appreciation can be captured through borrowing against increased

land values. This latter procedure requires interest payments, however, and may or may not be a wise decision depending on the strength of land values; that land values are related in this way and that we are probably seeing land values drop dramatically in some areas is all the more reason to examine capital appreciation.

A second reason for examining capital appreciation is the misuse by farmers when they treat it as a cost, but ignore it as a return. This misuse occurs when farmers value their capital at current market value rather than original purchase price when calculating what they "ought" to be earning on their capital investments. Consider a farm that was originally purchased for $50,000 and which is now worth $300,000. At an interest rate of 15 percent most farmers claim that their return to capital should be $45,000 (based on current market value), instead of $7,500 (based on original purchase costs), because they could sell their farm for $300,000 and invest these proceeds in the nonfarm sector. This procedure is correct as far as it goes, but it also must be pointed out that the farmer could not liquidate his farm without realizing the capital appreciation. In other words, the farmer is treating capital appreciation as an opportunity cost but ignoring it as an opportunity return. In this case, it must be recognized that part of the $45,000 current return would be made up by capital appreciation. If current market value is used as the basis for calculating an appropriate return to capital, then capital appreciation must also be included as a return.

A third reason for examining changes in capital values is that they can go down as well as up. Currently, many farmers are experiencing capital depreciation (losses). However, if you can't count capital ap-

preciation, as many farm organizations have claimed, you also can't count capital depreciation. The only thing these farm organizations can say to a farmer experiencing large capital losses is "tough luck, you never had it so you never lost it." I don't find that to be a very accurate position or a good representation of the situation which a new farmer faces if he's caught with asset depreciation. It seems far more appropriate to monitor asset values, both when they go up, and when they go down.

Finally, many people do not realize that much of the capital invested in Canada is not physical capital (machinery, land, buildings, and so on) and does not appreciate in value. Probably half of Canada's investment capital is human capital, acquired by investing in people through education and training. The main costs of human capital investments through education are the earnings foregone while at school and the direct school expenses. Considering these costs, a doctor or new Ph.D. chemist, for example, has about $200,000 invested. Because this capital cannot be sold or transferred, it cannot appreciate, and eventually depreciates to zero. The only return to human capital is the labour and management earnings of the individual. For human and physical (nonhuman) capital to earn comparable overall returns, the return to human capital needs to be as large as the income from physical capital plus any realized appreciation in its value. Farmers also have human capital, but usually most of their investments are in physical capital. Consequently, their capital investments have the advantage of both a rate of return and the possibility of appreciation. Both of these factors should be considered in analyzing returns to all forms of capital.

Generally, Statistics Canada has done an excellent job of measuring farm and nonfarm incomes through census and taxfiler data. Wealth accounts and measurements of capital appreciation/depreciation currently are not well developed and probably represent the most important current omission. Measurements of the special impacts of taxation benefits would be very useful, but typically would require special studies to provide the needed in-depth research analysis.

Several modifications and analyses of existing data and income accounts also should be considered to provide more meaningful measurements. First of all, the distribution of farm returns (as well as rates of return) by gross farm sales is very important as an indicator of the distribution of benefits by farm size. This distribution needs to be measured for both components of income and wealth and also for government assistance payments by type and commodity. To provide a more meaningful measure of size over time, however, it would be useful to provide distributions by constant dollar gross sales, rather than nominal sales, to adjust the categories for the impact of inflation.

Income measurements also need to be adjusted for the impact of taxation changes and new measurement techniques. For example, the new farm income provisions for allowing payments to a spouse could show drastically reduced farm operator incomes from earlier periods, even though total incomes might not have changed. In this case, it would seem appropriate to include "hired labour" payments to the spouse as farm income, rather than as farm expenses. Additional in-depth analysis of farms by income characteristics, such as Statistics Canada's proposed structural analysis and breakdown by commodity and percentiles, is highly commendable and should be strongly supported.

Some modifications to the current techniques for determining farm land values also should be considered in order to provide more accurate wealth accounts and measurements of capital value changes. Currently, the value of land and buildings is based primarily on the values derived through reported transactions. These transactions show only minor changes in prices from earlier time periods, but great declines in the number of sales. These prices, consequently, are not comparable with those from earlier periods, as farmers currently would have to reduce their prices substantially to maintain the same volume of farm sales. In other words, the procedure of calculating farm land and building values from the average of prices of the limited number of current transactions likely overestimates the current value of land and buildings. This procedure should be modified to incorporate more estimates by local appraisers to more accurately reflect the prices and value of real estate that would exist under the normal level of farm sales.

Data Requirements for Measuring Comparable Rates of Return

The major data requirements for quantifying comparable rates of return relate to: (1) providing data that will enable conceptually accurate measurements of comparable farm and nonfarm returns; and (2) the distribution of comparable earnings by commodity and farm size.

Comparable farm returns generally are based on the opportunity earnings of farm resources in alternative nonfarm occupations. In calculating opportunity costs, the nonfarm basis of comparisons should have characteristics as close as possible to agriculture to reflect similar conditions of employment and resource use. Some important characteristics include:

1. A business organization based mainly on the family unit with similar conditions as found in agriculture for working hours, periods of employment, control over resources, capital invested, levels of risk, physical abilities, travel time and cost to work, and living characteristics (living at home with one's family versus being displaced, etc.);
2. Remuneration to the business operator and unpaid family help based on a joint labour, management and capital return, including current income, income-in-kind, levels of capital investment and changes in capital values, taxation and fringe benefits, and non-monetary or psychic benefits (being one's own boss, etc.);
3. A rate of return adjusted for the major long-term determinants of earnings, consisting of age, education, experience, sex, and class of worker (self-employed, wage earners, or unpaid family help).

These calculations require relatively sophisticated data series for each income component, and by farm commodity type. The greater the detail and coverage in Statistics Canada data, therefore, the more accurately these comparable rates of return can be measured. Of particular importance is the need to have accurate, detailed information on the characteristics and earnings of nonfarm self-employed small businessmen, since this comparison is the most similar to farming. At present, however, we do not have good data on this sector, so less appropriate comparisons are being made with wage earners. Unfortunately, many of the comparisons with wage earners neglect to adjust for differences in earnings and earning capabilities indicated in the second and third points

above. Consequently and ironically, some of the most important data requirements for examining farm returns would be the provision of appropriate data on nonfarm self-employed businessmen.

Another key policy issue related to calculating comparable rates of return involves cost-of-production pricing and the selection of an appropriate price level for supply-managed commodities. Since different farmers have different costs, any given product price level will provide different net returns to farmers, based on their relative efficiency and size of operation. This relationship is illustrated in Figure 2, which examines the trade-offs between levels of production and number of farmers that are adequately supported by a particular product price.

Such information requires measurements of output and costs of production by percentiles of producers for major Canadian farm commodities. To date we do not have this information for a single commodity, yet it is extremely important and forms the basis for the eventual selection of a "fair" price for cost-of-production priced commodities. It is recognized that some of this information may have to be derived from detailed farm management accounts and may be beyond the scope of traditional Statistics Canada data. However, any additional data to assist in quantifying percentile distributions of producers by cost of production would be very important.

Conclusions

This paper illustrates some of the changing clients for farm income data and some of the new data requirements for implementing current policies. In particular, the broad range of participants in policy formulation means that greater use can be made of sophisticated farm income

data in evaluating the appropriateness of current policies. Statistics Canada, as well as agricultural researchers, have both a major opportunity and responsibility to generate and disseminate these data. To provide maximum usefulness, however, additional attention should be given to such items as wealth and capital change measures, distribution of income and payments by constant dollar gross farm sales, appropriate self-employment and other nonfarm earning calculations, and commodity distribution of farm production and cost of production by percentiles of producers. This is a large challenge, but its importance in monitoring farm incomes and in allocating hundreds of millions of taxpayer dollars through agricultural programs cannot be overlooked.

Figure 1

The Interface Between Farm Income and Resource Returns

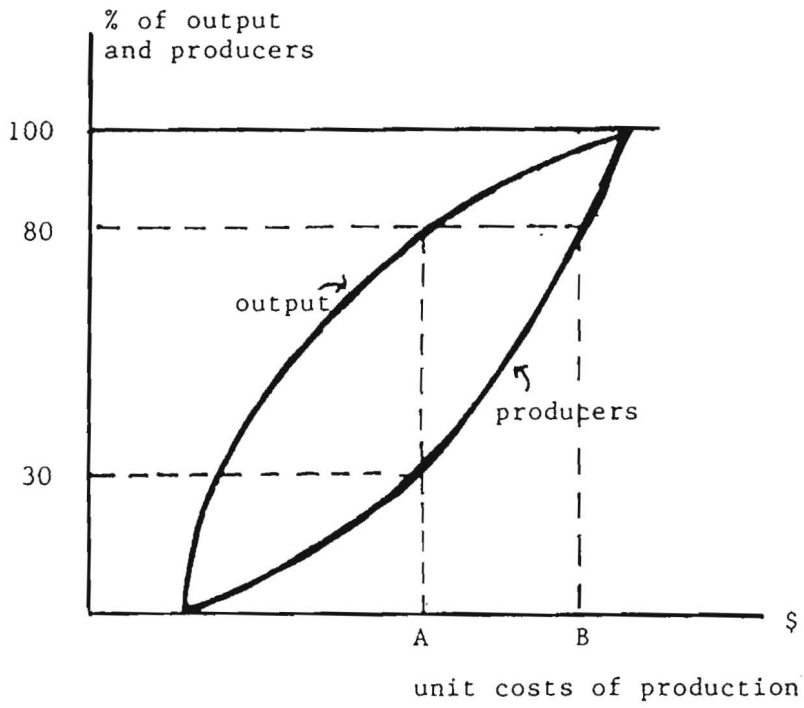
Returns per Resource Unit

Income		≥ Comparable to nonfarm returns		≤ Comparable to nonfarm returns	
		Full-time	Part-time	Full-time	Part-time
≥	Minimum level				
≤	Minimum level				

Source: Developed by Professor T.K. Warley, University of Guelph.

Figure 2

The Cumulative Percentage of Production and Producers
Totally Covered by Different Cost of Production Levels



REPORTING FARM SECTOR DATA IN THE UNITED STATES: A REVISED APPROACH

Ken Nicol

Introduction

Economic data for the farm sector in the United States (U.S.) are developed by the United States Department of Agriculture's (U.S.D.A.) Economics, Statistics and Cooperatives Service (ESCS). The Economics' staff are responsible for outlining the data needs, who then work with the Statistics' staff to collect any data not available through other data projects or from other government agencies. Presently, the economic well-being data are compiled and published by the Economic Indicators and Statistics Branch of ESCS. These include the balance sheet, farm income, agricultural productivity, and cost of production data series.

Balance sheet data have been reported since the 1940's, and the farm income estimates are available from 1914. Both series were developed at the aggregate sector level during a period in history when most of the farms were structurally uniform. Changes in the agricultural production sector's structure have made such aggregate estimates less useful as an indicator of the economic well-being of the sector. Specialization of product and increasing size of operation are the main structural changes reducing the effectiveness of the aggregate data. Disaggregations of the aggregate sector data have been made to reflect size distribution based on farm gross sales and regional distribution based on state boundaries.

These disaggregations better illustrate some of the variability of the sector's economic condition. Other aspects are not reflected and can substantially influence the true status of the performance of indi-

vidual farm operations. Cyclical patterns in product prices affect farms selling or buying this product while having less effect on farms not involved in this product's market process.

During the past 10 years, concern about the validity of the data being reported arose and two separate reviews (ERS Task Force,[1] ERS-AAEA Task Force)[2] and an internal project (Weeks)[3] have suggested changes in the present economic data system. These reviews and discussions with government staff members and members of the academic community have formed the basis for a set of economic accounts which can begin to remove some of the shortcomings of the present systems (Nicol).[4] A project to review the data available to implement these accounts has been implemented and a two phased product produced. Initially, the account formats are being implemented to the extent possible with available data. The second phase was to identify the data needed to fully implement the accounts (Nicol).[5]

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[1] Eldon Weeks, et al. "Farm Income and Capital Accounting - Findings and Recommendations of a 1972 ERS Task Force," unpublished report, United States Department of Agriculture, Economic Research Service, July 1972.

[2] James Hildreth, et al. "Report of Task Force on Farm Income Estimates," unpublished report, United States Department of Agriculture, Economic Research Service, January 1975.

[3] Eldon Weeks, et al. Economic Accounts for the Food and Fiber Sector, Part I, II, and III, Working papers of the Economic Research Service U.S.D.A., Washington, D.C., 1978.

[4] Kenneth J. Nicol. Economic Information for the U.S. Farm Sector: A Revised Format, Economics, Statistics and Cooperatives Service, U.S.D.A., Washington, D.C.

[5] Kenneth J. Nicol. Data Collection, Use and Improvement for the Farm Sector Economic Indicators, Economics, Statistics and Cooperatives Service, U.S.D.A., Washington, D.C.

A review of the economic data projects and recommendations for changes are presented below. First, a clarification of the definition of the sector is made. This is followed by a description of the set of accounts and a discussion of the data needs to fully implement these accounts.

Definition of the Farm Sector

The agricultural production sector is defined as the population of all farms meeting the U.S.D.A.'s guidelines on farm definition. A farm is defined as any establishment producing or having the potential to produce a minimum of $1,000 of agricultural products. Data at the farm level are to be measured to reflect the total economic activity of the establishment. Activity associated with the movement of a product from the site of production for the purpose of transfer of ownership or for movement through a marketing channel or processing facility will constitute movement from the production sector. This distinction is made to separate the component parts of integrated enterprises while still allowing the farm operator to move commodities to off-farm storage with the intent of influencing market timing. Movement of the product into storage or transport with the intent of altering the locational or physical attributes of the product should be associated with the marketing or processing sectors.

Where possible, the production process is being reported separately from the activity of the household (farm family) controlling the establishment. This eliminates the need to measure the other activities of the farm household and include them as part of the farm's economic activity.

Identification of the Economic Data

The economic data needed to measure the income and assets of the production sector have been organized into a set of four accounts. These include an asset account detailing asset types and financing, an asset flow account reflecting asset purchases and consumption, a production or income account organized in a value-added format, and a cash transactions account representing the flow of funds in the sector.

These accounts have been defined in a manner that disaggregations of the sector totals can be made using the same account formats. Emphasis for the disaggregations is on size based on economic sales class, geographic location based on state boundaries, and product specialization based on the Standard Industrial Classification for the agricultural sector.

These account formats can also be used as a basis for reporting the activity of the farm's controlling institution. These institutions are to be defined based on legal identity (corporation, partnership, sole proprietor, or others). Other disaggregations based on the characteristics of the controlling institution can also be made if the necessary information is available. Examples include operator equal opportunity characteristics, degree of reliance on farming, or tenure.

The asset account. The asset account, Figure 1, brings together the data associated with the farm establishment's physical and financial assets, and loan and equity liabilities. The data in the asset account cover only the assets used in the agricultural production process. Assets used by the household for personal living are not included. Assets

owned by the service sector and rented, leased, or hired by the farm establishment should not be included as they receive a return generated by the income flows of the agricultural production service sector.

The asset flow account. Changes in asset values in the farm sector result from the interaction of two specific components, prices and quantitites. The emphasis of the data in the asset flow account concentrates on the physical assets of the sector, Figure 2. Changes in financial assets are incorporated into the cash flow account. Asset formation is the sum of fixed asset formation and inventory adjustments. Asset utilization includes depreciation, accidental damage, sales and net capital growth.

The production or income account. The production account provides data on the value of products produced and the allocation of this value to inputs and resources, Figure 3. The account reports income in a format that is generally compatible with the national income and product accounts of the Department of Commerce. The major function of this account is to measure the output and input activities of the sector on a value-added basis rather than on a sales and purchases basis. As part of this emphasis on value added, the inclusion of CCC loans is being changed. Commodities placed as security for CCC loans have been considered as sold under the previous method. In the new system, the commodity is reported as an income source when it is sold after production or it is valued at market price and placed in inventory. Any subsequent transaction with the CCC represents a loan secured by the commodity in

inventory; it enters the sector's cash flow account and has no immediate effect on income. It subsequently may affect income as the farmer pays storage and interest or forfeits the loan to the CCC at a loan rate above the present inventory value of the commodity. (This would be recorded as a transfer payment from the CCC to the farmer.) The activity associated with the receipt of funds represented by the loan is accounted for in the sector's cash transactions.

The cash transactions account. Not all income, as reported in the production account, is realized as cash available for payment of farm obligations. The cash transactions account, Figure 4, reports data which illustrate various levels of cash inflow and disbursement. The cash flows of the agricultural production establishment and the operator household are closely related, especially in the case of the sole proprietor establishments. This account reports data which measure the cash components of the production account and supplements these sources and flows with loan activity information. These data will illustrate the impacts of net changes in inventory and CCC loan activity.

For the disaggregated sector reports, the data in this account will illustrate the impacts of outlays for capital including land. These data reflect how the fixed payment commitments of each subsector vary in importance and how they affect the establishments' cash available.

Measurement of Operator Well-Being

Measuring the well-being of the farm operator is a necessary component to adequately reflect the status of the farm sector. Many operators supplement their income and the cash flow of the establishment by

off-farm employment. The farm operator income account, Figure 5, presents data to evaluate the farm and off-farm sources of income for the operator. Other organizational forms can also be used as the basis for this type of account. Included may be operators by legal form (corporation, sole proprietor, partnership, and other); operator by reliance on agriculture for income; or other socially or politically relevant classification.

Data Needs to Fully Implement the Accounts

Data modifications needed to alter the existing income and balance sheet programs in line with the above accounts include changes in sector level definitions and data series. The data series issues relate to the present definition and reliability of specific data elements. Many of the reported series are estimated from secondary data sources or from arithmetic operations on a set of these data sources. The concerns that arise as a result of this method include complete compatibility of the series, the ability to keep the series current, and the possibility of loss of continuity as the data collector's priorities change.

The major emphasis in the rest of this paper will be on the sector level data needs. These needs are by implication also pertinent when dealing with the individual data series.

Establishment definition. The definition of establishments included in the sector controls the population of farms for the agricultural sector. The official U.S.D.A. definition of farms is presently set to include all establishments which produce or have the capability to produce $1,000 of agricultural products. This varies from the Department of

Commerce, National Income and Product Accounts establishment where the classification is based on the SIC commodity or commodity group which accounts for at least 50 percent of the establishment's sales.

Presently, much of the economic data for the farm sector are collected at the market channel level and the flow of goods is not identified directly with the establishment which markets or purchases the commodity. This method of data collection measures product income (sales) adequately but the use of such data fails to reflect establishments at the disaggregated level.

Inventory accounting. Changes in reporting are proposed for three components of the value of inventories held on the farms. First, is the identification of goods held as a marketing strategy and goods held as production assets. Second, the value of inventory is inventory modified for the reporting of commodities held as CCC loan security. And third, is the identification and measurement of input inventories.

The present accounts report land, buildings, and machinery in capital assets with breeding herds included in livestock inventory. The livestock inventory is to be separated into capital livestock, animals or birds held for the product they produce not primarily for the sale of the animal or bird in question. The other animal in inventory will be those held for sale such as broilers, feeders, and animals on feed.

Presently, inventory levels for both the capital and production of livestock can be identified and their values determined. The major problem in the implementation of this breakout is the identification of the flows of livestock. Measuring the value of livestock marketed at

the market channel level makes identification of the prior or proposed use of the animal difficult. Is the animal being sold out of a breeding herd as a cull or to another breeder as a capital item. Young animals will remain in inventory until introduced into the breeding or milking herds. Thus, heifers sold may be for feeders, calf slaughter, or eventual entry into a herd.

The impact of the change in CCC loans, shifting them from an assumed sale to a loan with commodities for collateral, requires more data than the previously reported net change in value of loans outstanding. The quantities of the commodities under loan must be identified, as must the market value of the commodity and its loan rate.

The measurement of input inventories has not been reported directly in the sector's data reports in the past. The potential use of current cash to purchase next year's inputs before the end of the calendar (tax) year can, potentially, have a noted impact on reported fertilizer, seed, or fuel purchases. The present method for calculating these items allows little fluctuation, as the expense is calculated from use data rather than marketings. However, as more establishment data become available, from surveys like the Farm Production Expenditures Survey, the potential for fluctuations in expenses, due to input inventory changes, increases.

Operator interaction. In the previous discussion on the operator account, a reference was made to the need for data which allow for separation of the activity of the production establishment and its controlling institution. Most reference made to the operator has the connotation of

a sole proprietor or family farm. Corporations, partnerships, or other legal entities also are included as operator institutions. Policy considerations may suggest the separation of the family held corporation from the multi-shareholders corporation.

Data are needed that separate the assets between those used for production and those used for operator household living. This would mean separating operator dwellings, household furnishings, and household financial assets from the assets presently identifed in the ESCS-Balance Sheet Project.

Separating off-farm income and other income flows associated with the household from the present receipts is also needed. This transfers the imputed rental value of the dwelling to the operator account from the farm income statement. As the needed data are collected, a more accurate representation of the sector's production activity and its relationship to the assets will be available.

Subsector disaggregation. Present disaggregations include States and Economic Sales Class (based on sales). Cyclical patterns in relative prices encourage the development of more disaggregations especially one based on farm type. The state disaggregations are based on census benchmarks as are the economic sales class distribution procedures.

The cyclical patterns of commodity prices causes the direction and magnitude of income changes to vary by type of product produced. In order to evaluate the well-being of the various farm establishments, both the relative and absolute effect on the various commodity groups is needed. The program being implemented will eventually develop a farm

type disaggregation based on the SIC agricultural establishment categories.

At this time, plans do not call for any further disaggregations of the farm economic data.

Data Collection

The major data issues to be discussed cover some of the concepts discussed above. Data for each series must be evaluated for accuracy and compatibility with the other series. Data for the major structural changes are being developed through modifications in existing data sources or by developing new data collection projects. Some of the efforts being undertaken are discussed below by major area of concern.

Establishment definition. Little new data were needed except where surveys reflect the entire population of farms or the old U.S.D.A. farm definition. In many instances, the series used have also been modified to the $1,000 minimum farm size criteria, as the surveys used to collect the data are sampled based on this criteria.

Inventory accounting. Most of the flow data for the inventory accounting needs cannot be developed from the presently available sources. While the actual levels are available, flow data on sales and purchases of various types of livestock by source or use are needed. Modifications have been introduced to the Annual Farm Production Expenditure Survey (FPES) of the U.S.D.A. It is planned that these data will adequately reflect the flows on the purchase side. No data are available for the sales of commodities from the capital stock. This shortage of

data may be overcome if the Economic Indicators Survey is implemented as has been proposed. This survey, in conjunction with the present asset data and the FPES, as modified, should facilitate the inventory calculations.

A second data need is the CCC loan activity on a gross basis to facilitate calculation of the loan level and cash flows. A program has been initiated with the ASCS Kansas City office to receive the necessary data. Emphasis is on the level of loan activity and its impact on flow of funds.

Operator interaction. The section which would break out the activity of the operator institution from the farm production establishment has the greatest data shortcoming. Much of this problem is associated with the definitions of the data series as collected. The Census of Agriculture can provide some help but is only available on a five year schedule.

A proposal to change the census household section has been made with the possibility of a follow on survey with a sample based on the census population and disaggregations.

Subsector disaggregations. The major data issue here is the availability of classifiers on the surveys which collect the data. Already type classifiers have been added to the Farm Production Expenditures Survey and are being included in the new Economic Indicators Survey. A tentative procedure would be to develop scalers which could distribute the aggregate series.

Data compatibility. With almost every data series originating from different primary data sources, some concern has to be dircted at the compatibility of the series. Different collection procedures, sampling rates, and processing can affect the accuracy of the calculated series.

A proposal which may solve this compatibility issue would be to completely modify the use and function of the census. The present census could be used primarily to identify the population, stratify it, and develop sampling weights for a series of census follow-on surveys. These follow-on surveys could collect the necessary data and be conducted each year based on the census sample frame. The annual follow-on surveys could keep track of a piece of property and follow it through transfers to maintain the flows associated with the sector's assets.

A program like this would allow for the removal of some surveys presently conducted and most importantly keep all series based on common sampling procedures and population definition.

Summary

The data for evaluating the economic status of the farm sector have not adapted to reflect the historical changes in the structure of the sector. The Farm Sector Economic Data project undertaken in ESCS has attempted to identify the issues, develop a framework, and implement the system including the collection of any new data necessary to quantify the system. At present, the program is in the implementation stage with 1979 economic data being presented this year in the new framework (as data permit). New surveys, changes in existing surveys, and discussions have been initiated with the Bureau of the Census to help fulfill the existing data needs.

Figure 1

An Asset Account For The Farm Sector

Assets	Liabilities
I. Physical assets	I. Loans
A. Capital	A. Loans for capital purchase
1. Land	1. Real estate
2. Buildings	2. Machinery
3. Machinery	3. Livestock
4. Livestock	
B. Inventories	B. Loans for operating expenses
1. Inputs	
2. Work in process	C. Government loans
3. Finished goods	
4. Crops held as CCC loan security	1. Commodity programs
	2. Disaster loans
	3. Other (conservation, pollution)
II. Financial Assets	
A. Currency	II. Accounts payable
B. Demand deposits	III. Equity
C. Savings	A. Corporate equity
D. Investment in cooperatives	1. Book value
III. Accounts receivable	2. Retained earnings
IV. Total assets	B. Proprietor's equity
	IV. Total liabilities

Figure 2

An Asset Flow Account For The Farm Sector

Formation	Disappearance
I. Fixed asset formation	I. Capital consumption
A. Own account formation	A. Depreciation
1. Replacement livestock	1. Buildings
2. Construction of buildings	2. Machinery
3. Land improvement	3. Livestock
	B. Accidental damage
B. Purchases	1. Buildings
1. Land	2. Machinery
2. Buildings	3. Livestock
3. Machinery	
4. Replacement livestock	II. Sales of capital items
C. Valuation adjustment	A. Within the sector
1. Land & buildings	1. Land & buildings
2. Machinery	2. Machinery
3. Livestock	3. Livestock
II. Changes in inventories	B. To other sectors
A. Net value of quantity change	1. Domestic
	2. Foreign
1. Inputs	III. Net capital growth
2. Work in process	
3. Finished goods	IV. Gross capital disappearance
B. Net value of price change	
1. Inputs	
2. Work in process	
3. Finished goods	
III. Gross capital formation	

Figure 3

A Production Transaction Account For Agriculture

Allocations	Sources
I. Intermediate products*	I. Sales
A. Purchases of farm products	A. Agricultural products
1. Feed	B. Other products
2. Livestock	
3. Seed	II. Other incomes
B. Purchases from other sectors	A. Government payments
	1. Program payments
II. Gross value-added**	2. CCC loans guarantee payments
A. Capital consumption	
	B. Other
B. Business taxes	
	1. Insurance
C. Net income at factor costs	2. Interest and dividends
	3. Rents
1. Labor compensation	III. Own account uses
a. Hired laborers	
b. Operator and family labor	A. On final demand
	1. Operator family
2. Return to land and buildings	2. Employee perquisites
a. Rent to landlords	
i. nonoperator landlords	B. Fixed capital formation
ii. operator landlords	1. Breeding livestock
a. Return to operator assets	2. Own account construction (buildings, land improvement, orchards)
b. Real estate interest	
c. Corporate asset return	C. Change in inventories
	1. Inputs
3. Capital return	2. Crops
a. Nonreal estate interest	3. Nonbreeding livestock
b. Return on operator capital	IV. Total sources
c. Corporate capital	

return
4. Management return
   a. hired
   b. operator
5. Entrepreneurial return

III. Total allocations

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*Includes inputs for production of ancillary and secondary products.

**For compatibility with National Income Accounts rent paid must be included as an intermediate product purchase from the real estate sector.

Figure 4

A Cash Transaction Account For The Farm Sector

Cash Sources	Cash Uses
I. Cash sales	I. Production expenses
A. Agricultural products	A. Intermediate products
1. Crops	1. In sector
2. Livestock	2. Intersector
B. Ancillary products	B. Resource payments
1. Custom work or machinery rent	1. Cash wages and salaries
2. Recreation	2. Cash rents
3. Rents	3. Interest payments
4. Interest & dividends	II. Capital goods purchases
C. Sale of capital items	A. Land & buildings
II. Government payments	B. Machinery
A. Program	C. Livestock breeding animals
B. Other	D. Land improvements
III. CCC loans	III. CCC loan payments
IV. Other loans initiated	IV. Other loan payments
A. Real estate	A. Real estate
B. Nonreal estate	B. Nonreal estate
V. Financial asset changes	V. Net investments
A. Changes in the sector	VI. Assets of operators exiting the sector
B. New assets entering the sector	VII. Total cash uses
VI. Total cash sources	

Figure 5

Farm Operator Income Statement

Allocations	Sources
I. Expenses of operators	I. Farm income
A. Dwelling expenses	A. Labor
B. Business associated	B. Return on land
II. Net family income	1. Production return 2. Capital gain on land & buildings
A. Tax & nontax payments	
B. Social security payments	C. Capital return
C. Net disposable income	1. Return to working capital 2. Value change of machinery inventory
III. Total operator allocations	
	D. Management
	E. Entrepreneurial return
	II. Imputed rental value of dwelling
	III. Nonfarm income
	A. Wages & salaries
	B. Business incomes
	C. Interest, dividends, & rents
	D. Transfer payments
	IV. Total operator income

BIBLIOGRAPHY

Hildreth, James, et al. "Report of Task Force on Farm Income Estimates," unpublished report, United States Department of Agriculture, Economic Research Service, January 1975.

Nicol, Kenneth J. Economic Information for the U.S. Farm Sector: A Revised Format, Economics, Statistics and Cooperatives Service, U.S.D.A., Washington, D.C.

Nicol, Kenneth J. Data Collection, Use and Improvement for the Farm Sector Economic Indicators, Economics, Statistics and Cooperatives Service, U.S.D.A., Washington, D.C.

Weeks, Eldon, et al. "Farm Income and Capital Accounting - Findings and Recommendations, of a 1972 ERS Task Force," unpublished report, United States Department of Agriculture, Economic Research Service, July 1972.

Weeks, Eldon, et al. Economic Accounts for the Food and Fiber Sector, Part I, II, and III. Working papers of the Economic Research Service, U.S.D.A., Washington, D.C., 1978.

IMPLEMENTING THE NEW USDA FARM INCOME ACCOUNTS

George Hoffman[1]

Introduction

The United States Department of Agriculture's farm income accounts were originally designed to provide information about the farm sector as an aggregate unit, treating agriculture as one all encompassing farm firm. Over time, however, U.S. agriculture has fundamentally changed with the physical and financial characteristics of its farm units taking on an increasingly heterogeneous character. Instead of the general crop and livestock farms that used to dominate the agricultural landscape, more and more farmers developed operating units which; specialized in one or two products, utilized more nonfarm produced inputs, increased capital items used in farming, expanded the use of debt as a source of cash flow, and substantially revised legal forms of business. As the structure of agriculture departed from homogeneity and farms became more specialized, new measures of well-being were needed. A single farm income or balance sheet calculation could not provide the perspective needed to understand financial strengths or weaknesses of the farming industry. To provide more complete information about economic conditions in the farm production sector, additional measures of income were developed. This paper provides a discussion on the concepts underlying USDA's revised farm income accounts and some of the problems encountered

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in their implementation.

Background Developments

Improvement and expansion of the USDA farm income and balance sheet accounts has been a continual process since their inception. For example, state income estimates were added in 1949 and income distributions by value of sales class were started in 1960. Farm sector balance sheets by value of sales class were introduced in 1975 and state balance sheet distributions in 1978. A measure of capital gains first appeared in 1975.

Although not as readily apparent, the review of income and balance sheet concepts and the farm sector data system has also been a continual process with substantial gains and improvements. In addition to several individual studies prepared by its staff, ERS has conducted a series of major evaluations of the farm sector accounts in recent years. Sample products from relatively recent working groups include: Farm Income and Capital Accounting--Findings and Recommendations of a 1972 Task Force, (4); Report of Task Force on Farm Income Estimates, 1975, (1); Proceedings of Workshop on Farm Sector Financial Accounts, 1977, (2); and Economic Information For the U.S. Farm Sector: A Revised Format NED, (3).[2]

The recommendations developed by the 1972 ERS Task Force included an alternative farm income and capital accounting system. This task force recommended a basic series of three accounts for each of the product and establishment concepts of the industry. Suggested titles for these acounts were Production Account, Capital Flows Account, and Capital

[2] Numbers in parenthesis refer to referenced items.

Stocks Account.

Recommendations developed by the 1972 ERS Task Force were largely accepted by a review panel composed of University, U.S. Department of Agriculture, and U.S. Department of Commerce analysts. The recommendations focused primarily on four areas of needed revisions. The areas were: (1) accounting rules and definitions, such as reporting "net income of farms" rather than "net income of farm operators;" (2) basic data, namely, to improve quarterly and annual estimates of farm income; (3) timing and revisions; and (4) development of improved techniques for use of data (2).

The focus of the Workshop on Farm Sector Financial Accounts was on financial accounts and data to link the income and balance sheet accounts. The workshop consisted of a series of papers without a basic set of recommendations such as a task force might produce. Data and concepts covered focused on the balance sheet, farm income, capital finance and capital flow acconts, cash flow statements and sources and uses of funds accounts. Many of the data recommendations of the workshop were incorporated into the 1979 Agriculture Census of Farm Finance,[3] including purchases and sales of farm real estate, borrowing by purpose, and selected balance sheet data.

Nicol's paper, which incorporated many of the revisions developed earlier in the 1970's, presented a revised format for the income and balance sheet accounts. These accounts, treated in detail elsewhere in these proceedings, provide the framework for revisions being undertaken by USDA. The process of implementing revisions agreed to by the Depart-

[3] The Agriculture Census of Farm Finance is a subsample of the 1978 Census of Agriculture.

ment began with publication of the first set of accounts in 1980 for the 1979 statistics. A primary objective of the new accounts was to develop some disaggregate measures of the sector's income beyond the state and sales class disaggregates. A second objective was to develop the aggregate accounts in a manner that would permit the earnings of the farm business unit to be distinguished from those of the farm family.

Description of the Accounts

Four basic accounts are needed to meet the above objectives: an asset account detailing assets and debts and the general financing of the sector, an asset flow account reflecting asset purchases and sales, a production or income account presenting a value added formulation of production, and a cash transaction account to present the flow of funds in the sector. All of these accounts have been implemented except the asset flow account. Due to lack of data, only parts of this account have been implemented.

The asset accounts. The asset accounts were developed to provide two sets of information. One set, reported in the past, included household assets and debts such as farm dwellings and household equipment and furnishings. The second set of account information was designed to focus on the farm business by excluding household assets and debts, letting analysts focus on the farm business operator.

As currently implemented, the accounts differ slightly from the ideal concept because of data limitations. The ideal account would include work in process as a part of inventories and separate the financial assets of the household from those of the production unit. A book value measure of farm assets would make the farm balance sheet more comparable

with manufacturing balance sheets, but again data are not available to support such accounts.

In most farming operations, data for work in process are not available. For example, crops are not easily measured until after harvest. In the growing process, inputs are consumed before the finished product appears. Another problem occurs in assessing the value of the crop before it is harvested. The potential value of the crop can change dramatically from planting to harvest as weather and insects may cause wide variation in final output.

The asset account as implemented in the balance sheet includes livestock as a capital asset, but in the income accounts they are treated as sales of production and not sales of capital items. In the livestock operations, data are not available to separate out work in process and capital items. Inputs on hand are also not included in inventories because of the lack of data. In the financial assets account, savings accounts were dropped because adequate data were not available to separate household savings from the production sector. On the liabilities side, loans for capital purchases of livestock were also dropped because data are not available.

The asset flow account. The asset flow account traces the flow of assets into and out of the major components of the asset account covering the physical assets. Financial assets and loans are monitored in the cash flow account to be discussed later. The asset account provides a stock measure of the sector and the asset flow account monitors the flows of the assets. Even though no formal asset flow account was published due to lack of data, several parts are reported in the other ac-

counts. Opening and closing balance sheets are linked by capital flows and asset revaluations. The capital flow account monitors the form in which capital is accumulated. The capital finance account, an extension of the capital flows account, monitors internally operated funds from depreciation, capital asset sales, and savings used to acquire capital. Thus, by monitoring the capital accumulation process, the capital flows account can reflect the direct effects of farm income on the balance sheet. Published estimates of capital gains equal total asset valuation changes recorded in the balance sheet less net investment (net saving) in the capital flows account.

Net capital formation in the capital flows account is net new capital available for production, thus following the income and product accounting framework. Sales and purchases of real estate within the farming sector are excluded from the capital flows account because they represent only a transfer of ownership and not a change in the magnitude of capital available for production.

However, purchases and sales of farm real estate within the farm sector do create income for sellers and debt servicing requirements for buyers. Thus, the accounting treatment of land sales will necessarily differ under the application of national income and product accounting procedures and the application of flow-of-funds accounting for financial analysis. A distribution of farmers identifying the income and financial conditions of farmers selling land and farmers purchasing land needs to be developed. The methodology to account properly for farmland sales and purchases among farm operators is a new area of sector economic accounting that will require further analysis. This is an extremely

important area of concern. Data collected in the 1979 Census of Farm Finance reveal that farm operators sold $3.9 billion of the $8 billion of farmland purchased by farm operators.

Production transaction account. The production income or transactions account measures the value of goods produced and the associated expenses of the establishment during the calendar year. The objective of this account is to measure the income from agricultural production establishments on a value added basis in a manner that this value can be distributed to the institutions controlling the sector's resources.

Data problems have limited implementation of the production transaction account. The primary difficulty has been in the livestock sector because data were not available to separate production and capital livestock transactions. Also, data on the purchases and sales of livestock within a state are limited. Only interstate sales data are used. Data to separately estimate corporate activity are also not available. Gradually, more data on separating out income from insurance, interest, dividends, and rent are becoming available.

Cash transactions account. A financial flow account can be estimated indicating the net cash position of the production sector. The major contribution of this account is to illustrate the cash flow position of the farm business. The account reports the cash inflows to the production sector and the cash disbursements from the sector. Inflows include sales of farm products, loans received, government payments and a net capital balance. Disbursements include cash production expenses, capital goods purchases, and loan payments. This account becomes more important as a greater proportion of outlays become cash transactions,

such as: mortgage payments, nonfarm input purchases, and capital replacements.

Problems have arisen in developing the capital transactions account because often household accounts are not kept separate from production accounts, especially in the cash flow accounts. Farm production units, especially smaller ones, may be supported in their cash flow situations by nonfarm income, but the capital transactions accounts were developed to show the cash flow from production transactions only. Sales of capital goods are another source of cash flow, but because of inadequate data, are not included in the accounts as implemented. Off-farm income could also be used for investment purposes, such as savings accounts. Thus only the net change in farmer's currency and demand deposits are added in the farm production cash flow account and savings accounts are not included.

Two separate accounts were implemented. The cash farm account includes only those items that are cash transactions. Imputed values for operator dwellings, home consumption, and farm inventories are not included as income. Similarly depreciation, noncash perquisites to hired labor, and expenses on operator dwellings are not included on the expense side.

The cash flow account includes cash income from farming, changes in loans outstanding, net change in farmers' currency and demand deposits, and net rent to all landlords less capital expenditures.

Problems in Implementing the New Accounts

Several problems arose as the new accounts were developed. The principal problems include: the cost of implementing both sets of accounts,

data availability, user acceptance of the new account, publication difficulties, documentation of the new methodology, and the problems of users in understanding the new accounts. Each of these difficulties is briefly discussed.

Costs of implementing the new accounts. Computer costs presented a budget problem. The old set of accounts had to be maintained while the new accounts were being developed. This presented project staff with the difficulty of maintaining two distinct data bases, developing two sets of estimates, and interpreting results for users. Total data processing costs also increased substantially, since the provision of a new set of accounts also required substantial extra programming personnel to expedite the conversion.

Technical problems. Providing a time series data base presented another problem. Some of the accounts only required separating out parts of aggregates, such as the operator's dwelling costs, but other accounts lacked sufficient data to provide the necessary detail required. After extended work with available data, most of the accounts could only be re-estimated back to 1940.

User acceptance. User acceptance of the new terminology is a basic problem which arises when a new set of accounts is produced. Net farm income had a long established record as the measure of well being in the farm sector. The terminology was deeply imbedded in the farm sector vernacular. When new measures are introduced, users become suspicious that something is being hidden unless they have a role in devising the new accounts. To help mitigate the seriousness of this problem, the new accounts were produced simultaneously with the existing accounts. This

action increased costs, but prevented an outright rejection of the new accounts. Both sets of acounts are still maintained with the focus being gradually shifted toward the new methods. The change over to the new accounts also required model builders to re-estimate models. An early problem here was the short time series available for econometric estimations. The change over to the new accounts also required model builders to re-estimate their equations.

Publication problems. As the new accounts were being developed, the question also arose as to how to present the data. The first idea was to present the new accounts in one section of the report and the original accounts in another section. After trying this for one issue, it was found that users were generally turning to the old accounts and ignoring the new accounts. The accounts were mixed in the next publication so the user would have both sets of corresponding tables side by side. This approach seems to be a better solution. Users have started to more readily use the new accounts.

Documentation. Documentation of the new accounts should be done as the system progresses. However, in our situation, a short deadline for publication, combined with limited personnel, resulted in incomplete documentation. The danger of incomplete documentation is that the estimation methods may be difficult to duplicate as personnel changes. Using computer routines as the basis for most calculations helps to dampen some of the risk.

Dynamic process. The new accounts were presented to the users with the understanding that feedback on needed revisions would be considered. As a result, the accounts have continued to change over time. For exam-

ple, one revision which caused some comment was the method of treating Commodity Credit Corporation (CCC) loans as sales. The first set of new accounts treated CCC loans as loans with the quantity carried as inventory.

After much discussion, the CCC loans were restored to the sales category. This was again changed back to treating CCC proceeds as loans and putting the quantity in inventory. Flexibility in the design of the accounts is necessary for a period of time so that needed revisions can be easily accommodated.

Coordination with other agencies. Changes that were made in the income accounts required close coordination with other government agencies. The United States Department of Commerce uses USDA statistics in developing Gross National Product and Personal Income statistics. If changes made by USDA would not accommodate Commerce's accounts, then serious problems would have arisen in the development of the National Income Accounts. Close coordination is also necessary for those agencies which collect survey data, such as the Statistical Reporting Service and the Bureau of the Census. Survey instruments, for example, may have to be revised to provide adequate information to support the new accounts.

Other agencies that provide data for the accounts, such as the Federal Deposit Insurance Corporation, Internal Revenue Service, and the Agricultural Stabilization and Conservation Service, may also have to change their tabulation procedures to support the new accounts. Often these changes will require added costs or reimbursements to these agencies. Banks and other lending agencies also may have to provide revised tabulations to meet the debt, financial asset, and interest data.

Future Changes and Improvements

Planned extension of our income accounts work includes type-of-farm income and balance sheet distributions, data improvements through closer linkage between farm production expenditure and cost of production surveys, better dissemination of the results, and a closer coordination between farm income, farm balance sheet, and productivity accounts.

Accounting concepts and income distribution. As farms have become more specialized, estimating income by type-of-farm has become increasingly needed. Only preliminary type-of-farm analysis has been completed. These preliminary analyses will be expanded to cover more types of farms as data become available. The importance of type-of-farm income distribution can be seen in the dramatic difference in income. Per farm returns for crop farms of $11,806 in 1978 almost doubled per farm returns for livestock farms of $6,553. Development of type-of-farm income estimates is targeted as the next major goal in improving the farm income accounts.

Data improvement. A closer working relationship has been developed with data suppliers, especially on the Farm Production Expenditure Survey (FPES). A complete review of the annual FPES was conducted by SRS and ERS staff last spring in order to obtain data on many of the issues raised in this paper. The focus of the FPES in the past was primarily on the collection of farm expense and capital expenditure data. The 1982 FPES is the first FPES survey to collect all data required to construct a farm income account and balance sheet, thus permitting specialized cross-tabulations of farm income and financial data for economic issues of immediate policy concern as well as improved farm income and balance sheet distributions.

Internal Revenue Service (IRS) data were also analyzed as a possible data source to estimate and distribute farm income. A basic finding of the analysis was that IRS data, despite its highly aggregated nature, can be used to improve and expand the USDA farm income accounts. IRS farm expense data (total deductions) can be reconciled to USDA total farm production expenses from 1974 to 1978 with a statistical difference of less than 1 percent.

USDA net farm income is on a before-tax basis, thus preventing the analysis of tax program benefits and burdens. IRS data will permit development of the USDA net farm income series on an after-tax basis. IRS depreciation data will permit the development of the capital finance account to monitor internally generated funds. Aggregate IRS data provide additional annual data for USDA farm income distributions by type of farm and business organization. Use of IRS off-farm income data also have the potential to reduce respondent burden and data collection costs.

Staff support. New farm income measures have been introduced while existing farm income measures have been maintained. Distributions of both new and old measures of farm income and balance sheet accounts have been expanded by value of sales class and state. This has placed a heavy workload on existing staff. Future improvement and expansion of the farm sector economic accounts will be constrained unless staff is expanded.

Dissemination of results. Analysis of farm income and the improvement of the farm sector economic accounts are simultaneous processes, with improvements in one area enhancing the improvements or the need for

improvements in the other area. A basic problem in improving the farm sector accounts was the fragmented nature of the data published in the Farm Income Situation, Balance Sheet of the Farming Sector and Changes in Farm Production and Efficiency. These publications were discontinued to alleviate the disjointed nature of the presentation of farm sector economic data and to enhance farm economic analysis. All farm income, capital, and productivity accounts and their data are now published in the Economic Indicators of the Farm Sector series. A new publication within the Economic Indicators series, the Farm Sector Review, will examine current economic developments in the farm sector and contain farm income research articles emphasizing farm sector data estimating methods.

Summary

Data needs change over time as the structure of agriculture changes. Farm income and balance sheet accounts must be designed to reflect these changes in order to meet user needs. Coordination with data users and suppliers is necessary to permit a smooth transition toward a new set of accounts. The cost of the transition should be carefully considered both in budget costs and availability of programming help to rewrite programs for the new accounts. Our experience also suggests a side by side publication of the two accounts to encourage greater understanding and use on the part of users.

BIBLIOGRAPHY

1. Hildreth, James, et al. "Report of Task Force on Farm Income Estimates," unpublished report, United States Department of Agriculture, Economic Research Service, January 1975.

2. Lins, David A, and Lindon J. Robinson, coordinators. Proceedings of Workshop on Farm Sector Financial Accounts, Agricultural Economic Report 412, ESCS, USDA, April 14-15, 1977.

3. Nicol, Ken. Economic Information for the U.S. Farm Sector: A Revised Format, Economics, Statistics and Cooperatives Service, U.S.D.A., Washington, D.C., August 1980.

4. Weeks, Eldon, et al. "Farm Income and Capital Accounting-Findings and Recommendations of a 1972 ERS Task Force," unpublished report, United States Department of Agriculture, Economic Research Service, July 1972.

AN ACCOUNTING FRAMEWORK FOR CANADA - FORMAT AND ESTIMATION METHODS

George W. Beelen

Introduction

Users and suppliers of financial data on the agricultural production sector have expressed concern with inadequacies in the amount of available data, and with estimation concepts and procedures. Structural change in agriculture and an expanding policy agenda by governments have created the need for additional data and for review of existing concepts.

This paper discusses a format of aggregate accounts for the sector which, if developed, may be better suited to the needs of public and private sector decision makers. The format discussed in this paper is consistent with international recommendations and recent changes to the accounts in the United States. Each proposed account is compared to presently available accounts, with discussion of expected advantages and known estimation problems. To facilitate understanding of the rationale and conceptual basis of the proposed accounts, a brief summary of objectives and uses of aggregate accounts and a summary of concepts of sectoring are included.

Objectives and Uses of Aggregate Accounts For Agriculture

Aggregate financial accounts are compiled for purposes of informing decision makers on issues related to financial aspects of agriculture. Data are used to analyze situations, monitor changes, develop strategies or policies and make decisions affecting the sector. The accounts are intended to serve as an information base for issues such as equity of

returns, productivity, capacity, input demand, and financial health of the industry.[1]

Measures of equity of returns to resources require data on the level and type of resources used as well as on output returns. Equity issues also relate to the economic welfare of sector participants which require data on incomes and wealth of farm and nonfarm groups. Productivity measures can be derived from data on outputs and inputs used in production. Capacity analysis refers to the ability of agriculture to produce under various conditions and requires data on the amounts and quality of inputs, such as labour, land and buildings, and machinery. The analysis of demand for inputs and the financial health of the sector involves measures of cash position, income prospects, liquidity, solvency and profitability.

Increasing product specialization within individual farms and heterogeneity between farms in the sector has reduced the relevance of summary aggregate accounts and created a need for disaggregated data by product type, size of farm and other variables. However, the summary accounts have a role in the development of appropriate subsector aggregates which are compatible and consistently estimated. In addition, summary aggregates provide the context for variations in structure and changes within subsectors of the industry. Finally, summary aggregates for the sector are essential for comparisons to other sectors of the economy.

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[1] J.B. Penson, and D.A. Lins. Agricultural Finance: An Introduction to Micro and Macro Concepts, Englewood Cliffs, N.J.: Prentice-Hall Inc., 1980, pp. 291-293.

Definition of the Production Sector

Accounts for any group of units must be defined on the basis of sectoring concepts. The national accounts uses primarily the establishment concept, where establishments are the smallest units, at a single physical location, capable of reporting basic industrial statistics. Under this concept, the sector comprises the activities of all establishments whose principal economic activity is agricultural production. An alternative product concept defines the sector as all agricultural production activities. Figure 1 illustrates the difference between these two concepts.

Agricultural production units are not usually identified on the basis of principal economic activity, but, rather on the basis of a minimum level of production or sales. Thus, a variation of the establishment concept can be defined, the holdings concept, which includes all activities of farm holdings, resulting in the inclusion of all significant agricultural production in the sector accounts. The holdings concept of the sector is the basis of the accounting format suggested here, although it is recognized that for some purposes product-concept based accounts could also be useful. The differences between the two concepts are reconcilable if appropriate detailed data are available.[2]

The production sector must also be defined in terms of which activities are included in the sector accounts. Activities may be classified as agricultural production of the sector, nonagricultural production of the sector and activities outside the sector. Figure 2 suggests a clas-

[2] E.E. Weeks. "Capital Finance and Capital Flows Accounts: Discussion," Proceedings of Workshop on Farm Sector Financial Accounts, April 14-15, 1977, Washington, D.C.: United States Department of Agriculture, Agricultural Economic Report #412, ESCS, pp. 79-82.

sification of activities intended to be comprehensive and mutually exclusive with no double counting. Agricultural production of the sector is the result of cultivation of land, tending of trees and other perennials and animal husbandry. Nonagricultural activities in the sector are those associated with the farm holding thus including activities ancillary or auxiliary to agricultural production. Activities outside the sector accounts are those carried on by operators but independent of farming. The principal objective is to provide a comprehensive classification without double counting that will result in meaningful sector aggregates.

Agricultural production activity must be defined operationally in terms of a list of agricultural products. The Standard Industrial Classification (SIC) used by Statistics Canada is one such list which may be used. In addition to the products listed in the agriculture industry in the SIC, it may be desirable that fish farming and tree farming activities also be defined as agricultural production, particularly as these types of farming may be increasing in importance.

Format of Aggregate Accounts

Just as an individual firm keeps accounts on income, assets, cash flow and financing, in order to analyze economic performance, such accounts are needed for the sector as a whole. The proposed framework expands on the existing income and capital value accounts in a manner suggested by international convention.[3] Particular elements of certain accounts differ due to data availability or circumstances specific to

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[3] Food and Agriculture Organization. Handbook of Economic Accounts for Agriculture, Provisional, Rome: United Nations, 1973.

the Canadian information system.

Production account. The purpose of the production account is to record the value of productive activity in a particular time period. Output is either sold or used on own account, such as inventory accumulation or own consumption. Balancing the value of output are intermediate inputs used, capital consumption, taxes and factor payments, including employee compensation, rents, interest and profits. Figure 3 illustrates this accounting format.

The current format of this account focuses on the estimation of farm net income of operators from farming operations and is based mainly on a product concept of the sector. The proposed format of the account recognizes that profits from farming may accrue to sector participants other than farm operators. The account proposes the allocation of net value added to appropriate categories, such as employee compensation, debt capital, rented capital, operator-proprietor returns, corporate returns and production contracts. The concise identification of factor incomes earned in the sector enables the production account to be linked to the income and outlay account for operators. In addition, this format recognizes operator returns as returns to labour, capital and management inputs provided by the operator family. Under this concept, all wages paid to the operator household by the farm holding should be identified as part of operator returns and excluded from employee compensation.

The sales portion of output may be accounted for either gross or net of sales to other farm holdings. Current practice is to count only sales outside the sector, treating each province as one large farm. The

aggregate account proposed is gross farm sales, including inter- farm sales in order to make disaggregations of the account by size or type of holding easier and compatible.

The account suggested in this format presents several problems in estimation. Input inventory data are not presently collected, but may be important for accurate measurement of incomes in a time period. Inter-farm sales data need to be developed if the goal of compatible sector and subsector accounts is to be achieved. Own account fixed capital formation must be estimated in order to account for productive activity which increases the stock of the sector through fixed capital formation rather than product output. Finally, the components of farm net income must be identified in greater detail in order to ascribe income to its claimants.

Capital value account. The capital value series represents the value of fixed capital production assets in the sector at current values regardless of ownership. As presently estimated, this account includes all such assets on farms but not those off farms, such as machinery owned by custom operators. The purpose of a capital value series is to provide a measure of the value of capital used directly in agricultural production. Consequently, measurement of the capital value of assets owned outside the sector, but used in agricultural production, may be relevant to this account. A summary format is shown in Figure 4, which, disaggregated by type of capital, also provides data on the structure of the capital stock available for production.

The only other difference in the proposed account compared to present practice is the inclusion of input inventories as part of the nonfixed stock, for completeness. This account is closely related to the balance sheet account, which includes only assets owned in the sector.

Balance sheet of the sector. Figure 5 shows the balance sheet account for the sector relating assets owned and corresponding debt and equity claims against these assets. Excluded from the account are personal assets and debt of operator households as this account is intended to focus on the financial position of the sector as opposed to operators. The purpose of the account is to enable measurement of indicators of liquidity, solvency and profitability in the sector and to aid analysis of asset and debt structure. In combination with the sector production account, financial health of the sector can be analyzed.

No balance sheet for the sector is regularly produced at present, but a balance sheet, with subsector detail, has been estimated for January, 1981, in a special study.[4] Although the format of the balance sheet in the study differs slightly from that suggested here, the FCC study provides an excellent benchmark for the development of a regularly compiled balance sheet.

A major problem in estimation of this account is the treatment of dwellings on farm holdings. If included in the value of land and buildings, then the imputed rental value of dwellings should be included in output in any profitability ratio. If the value of dwellings are to be excluded, then some means must be found of valuing dwellings separately

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[4] Farm Credit Corporation. Farm Survey, Ottawa, 1981.

from farm businesses. Presently, the capital values series makes no attempt to exclude the value of farm houses and thus overestimates the value of capital used in agricultural production.

Some components of the balance sheet are presently estimated although not published. For example, an estimate of owned machinery and other physical capital is made in order to derive depreciation expenses. Also, the estimate of rent expenses could serve as a basis for estimating owned land.

It should be noted that sector owned assets for the purposes of the balance sheet should include farm assets owned by the holding or by the owners of the corporate farm of the farm holding. Rodefeld[5] pointed out the problem of family farm corporations where assets are owned by the family and leased to the corporate farm entity. In order that such nominal transfers of ownership do not affect the balance sheet, it is necessary to define farm assets owned by the holdings or the holdings' owners as sector assets.

One of the primary reasons for interest in the capital value series and balance sheet is the analysis of changes in the quantity and value of capital used and owned in agriculture. In order to separately identify the sources of these changes, it is possible to construct supporting statements of capital formation and disappearance. The principal purpose of such an account is the identification of changes in the capital stock in agriculture due to real changes in the physical stock and changes due to revaluation of capital. Figure 6 shows the format of the

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[5] R.D. Rodefeld. "Farm Sector Data: Presentation and Improvement: Discussion," American Journal of Agricultural Economics, May 1981, p. 356.

capital flows account, which explains changes in the capital value series.

Income and outlay account. The business accounts for the production sector reflect its size, output, structure and control. They relate income earned in the sector to various factors of production, such as hired labour, rented land, debt capital and equity capital. The capital used in the sector is owned by operators and nonoperators and each group has some claim on income earned from production in the sector.

The economic welfare of the farm operator population is of major policy interest in Canada. Economic welfare of farm operators depends not only on income earned in agriculture but on all income sources. The income and outlay account identifies income by source for farm operators, as shown in Figure 7. The farm operator group must be precisely defined in order to identify which households should be included in the estimation of the account. It is assumed that the family is the proper unit for collection of data because welfare analysis seems most often concerned with the family unit.

Problems exist in defining the farm operator group. The definition suggested here includes operator-proprietor families of unincorporated and incorporated farms, operator families of rented farm holdings, all partners with some operating responsibilities and managers of corporate farms. The precise definition of operator may ultimately depend on data availability.

This account is intended to monitor the levels and composition of income sources to farm operator households. Disaggregated data on opera-

tor incomes by size of farm holding and product type should also be estimated as data presently available indicate very wide variation in degree of reliance or agriculture for economic welfare by operators.

Presently, data on farm operators' incomes have been derived from the taxfiler data base. Many problems remain to overcome differences in the taxfiler group and the theoretical operator group defined above.

Any attempt to build income and outlay accounts should also reflect the accounts available for groups to which comparisons are to be made. Consistency of income definition and comparability of data complicate these comparisons as well as the identification of suitable groups for comparison purposes.

Cash flow statement. For some purposes, a cash flow statement may be a more suitable indicator of income than the production account. For example, demand for capital inputs may be affected more by cash flow position of the sector than by depreciation-adjusted income as measured in the production account. The sector cash flow statement should supplement the production and balance sheet accounts to summarize the financial position of the sector. Cash sources and uses from farming can be estimated from components of the production account. The cash income from farming estimate is important for the analysis of cash versus income position of the sector and for analysis of capital depreciation as a source of operating funds.

If available, an ideal cash flow statement would identify all cash sources, such as loans and uses of loans and expenditures on a gross basis. However, it is probably more feasible to compile a cash flow sum-

mary where the net change in loans and level of currency and deposits held is measured as a cash source (i.e., an increase in loans held is a cash source, a decrease in loans held decreases cash sources). Uses of funds are summarized as capital expenditures and net cash flow from farm sources.

This statement requires very little new data. It should be feasible to estimate the changes in debt outstanding by farm holdings from available sources. Changes in currency and deposits of holdings are likely to be insignificant. Cash uses in the sector are principally for capital goods purchases and residual discretionary cash income, representing cash available for operators' use and for flow of cash out of the sector.

Conclusions

The aggregate financial accounts format suggested here represents a significant expansion in the number of accounts to be estimated relative to those available for Canada now. In many cases, new data sources would need to be developed for complete estimation of the accounts framework and thus would require an expanded commitment of resources to develop and estimate these accounts.

Several general advantages of an expanded accounting system can be identified. The development of consistent and comprehensive subsector accounts should be made easier by the existence of compatible aggregate accounts. The separate identification of incomes earned in agriculture and total incomes of operators should reduce the present propensity to equate farm and operator incomes. The development of a balance sheet for Canadian agriculture should increase the ability of analysts to un-

derstand structural changes in the financial position of the sector and to measure profitability, solvency and liquidity. The suggested format also recognizes structural changes in the industry. Finally, it accommodates new information demands of decision makers by increasing the amount of detailed data and by measuring new data of relevance to problems facing the sector.

Figure 1

Concepts of Agriculture on Establishment and Product Bases

Types of establishment and activities	Type of Product	Farm commodities	Nonagricultural commodities and services	
Farming establishment	Farming (major activity)	A11		Establishment concept of agriculture A11 + A22
	Nonagricultural (minor activity)		A22	
Nonagricultural establishment	Farming (minor activity)	A31		
	Nonagricultural (major activity)		A42	
		Product concept of agriculture A11 + A31		

Source: Eldon E. Weeks. Proceedings of Workshop on Farm Sector Financial Accounts, April 14-15, 1977, U.S.D.A. Agricultural Economic Report #413, Washington, p. 80.

Figure 2

Definition of the Production Sector

Agricultural Production Sector		Nonagricultural Sector
Agricultural Production	Nonagricultural Production	
Products Listed in Standard Industrial Classification	Land Improvements	Off-farm Wages and Salaries
Fish Farming	Other Own Capital Formation	Businesses Run or Owned by Operator
Tree Farming	Custom Farm Work	Quarry and Topsoil Sales
	Farm Cooperative Dividends	Major Processing or Transportation of Agricultural Products
	Farm Woodlot Production	Investments of Operators
	Oil Lease Revenue	Production from Household Gardens
	Farm Vacations, Hunting Rights, etc.	

Figure 3

Production Account

Outputs
- Sales of Agricultural Products
  - -To Other Farms
  - -To Other Sectors
- Sales of Nonagricultural Products and Services
  - -Farm Woodlot Sales
  - -Farm Cooperative Dividends
  - -Custom Work Receipts
  - -Rental Income From Farm Land and Capital
  - -Perquisite Rents
- Own Account Uses
  - -Personal Consumption
  - -Fixed Capital Formation
  - -Changes in Inventories
  - -Intermediate Products Consumed

Inputs and Value Added
- Intermediate Products Consumed
  - -Own Account
  - -Purchased From Other Farms
  - -Purchased From Other Sectors
  - -Changes in Input Inventories
- Capital Consumption
- Indirect Business Taxes
- Net Value Added
  - -Employee Compensation
  - -Rental Payments
  - -Interest Paid on Debt
  - -Non-operator Owned Corporation Profits
  - -Operator Owned Corporation Profits
  - -Unincorporated Operator Returns

Adapted from: Carlin and Handy, p. 971; and Nicol, p. 20.

Figure 4

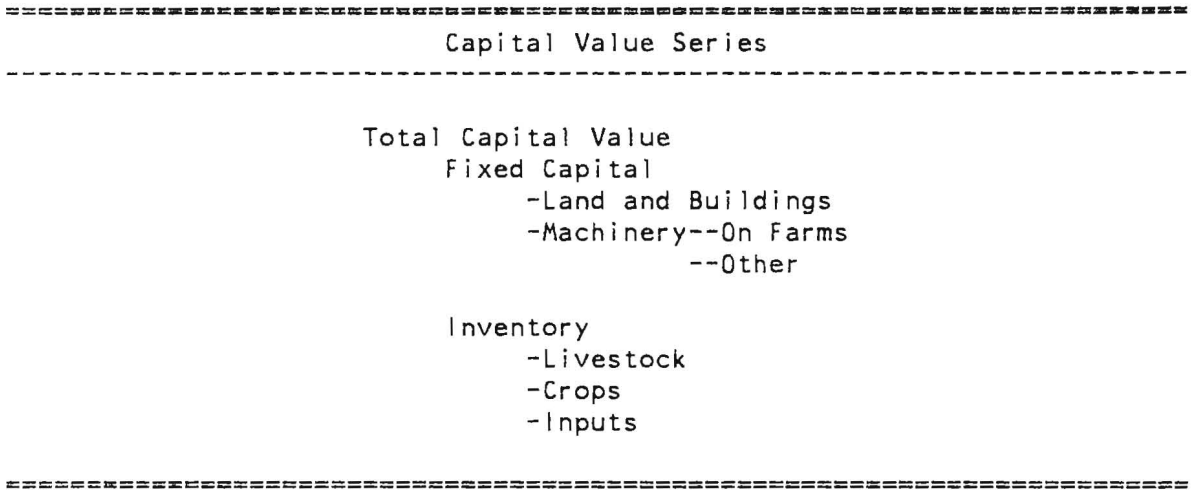
Capital Value Series
Total Capital Value
Fixed Capital
-Land and Buildings
-Machinery--On Farms
--Other
Inventory
-Livestock
-Crops
-Inputs

Figure 5

Balance Sheet of the Farm Sector

Assets	Liabilities and Equity
Physical Capital	Liabilities
Land and Buildings	Current
Machinery and Other Equipment	Intermediate
	Long-term
Quotas	Equity
Inventory	
Livestock	
Crops	
Inputs	
Financial Assets	
Currency and Deposits	
Cooperative Investments	
Accounts Receivable	

Adapted from: Carlin and Handy, pp. 972 and 974; and Nicol, pp. 9 and 14.

Figure 6

Capital Flows Account

Gross Capital Formation	Gross Capital Disappearance Plus Net Capital Formation
Fixed Capital Formation	Capital Consumption
Own Account	Depreciation
Buildings	Buildings
Livestock	Machinery
Land Improvements	Livestock
Capital Purchases	Accidental Damage
Land	
Buildings	Sales of Capital for Nonagricultural Use
Machinery	
Value Adjustment	Land and Buildings
Land and Buildings	Machinery
Machinery	
Capital Livestock	Net Capital Formation
Inventory Change	
Net Value of Quantity Change	
Net Value of Price Change	

Sources: Nicol, p. 16; Simunek, p. 536; Carlin and Handy, p. 973; U.S.D.A. 1972 Task Force, p. 13-14.

Figure 7

Farm Operator Income and Outlay Account

Sources of Income

- Operator Household Return From Farming Operations
- Imputed Rental Value of Farm Dwelling
- Nonfarm Income
  - Wages and Salaries
  - Nonfarm Business Income
  - Interest
  - Dividends
  - Rents
  - Transfer Payments
  - Imputed Value of Owned Nonfarm Dwellings

Allocations of Income

- Dwelling Expenses
- Taxes
- Net Disposable Income
  - Consumption
  - Savings and Investments

Adapted from: Carlin and Handy, p. 974; and Nicol, p. 35.

Figure 8

Sector Cash Flow Statement

Cash Transactions Summary:

(1) Cash Sources
- Farm Marketing
- Government Payments
- Other Farm Cash Receipts

(2) Cash Uses
- Intermediate Product Expenses
- Business Taxes
- Interest
- Cash Wages to Hired Labour
- Cash Rent to all Landlords

(1-2) Cash Income From Farming

Cash Flow Summary:

Cash Income From Farming
Net Change in Loans Outstanding
Net Change in Farm Currency and Demand Deposits
Rent to Operator Landlords*

Capital Expenditures

Net Cash Flow Available for Real Estate Purchases and Operators' Use

* Sector Excludes Nonoperator Landlords.

Adapted from: Nicol, 1980, p. 29.
USDA, "Economic Indicators of the Farm Sector," Statistical Bulletin 674, Washington, 1981, Table 3, p. 13.

BIBLIOGRAPHY

AAEA Committee on Economic Statistics. "Our Obsolete Data Systems: New Directions and Opportunities," American Journal of Agricultural Economics, Vol. 54, No. 5, December 1972, pp. 867-875.

Carlin, T.A., and C.R. Handy. "Concepts of the Agricultural Economy and Economic Accounting," American Journal of Agricultural Economics, Vol. 56, No. 5, December 1974, pp. 964-975.

Carlin, T.A., and A.G. Smith. "A New Approach in Accounting For Our Nation's Farm Income," Agricultural Financial Review, Vol. 34, 1973, pp. 1-6.

Food and Agriculture Organization. Handbook of Economic Accounts for Agriculture, Provisional, United Nations, Rome, 1973.

Nicol, Ken. Economic Information for the U.S. Farm Sector: A Revised Format, National Economics Division; Economics, Statistics and Co-operatiives Service, U.S. Department of Agriculture, Staff Report, Washington, August 1980.

Penson, J.B., and D.A. Lins. Agricultural Finance: An Introduction to Micro and Macro Concepts, Englewood Cliffs, N.J.: Prentice-Hall Inc., 1980.

Rodefeld, R.D. "Farm Sector Data: Presentation and Improvement: Discussion," American Journal of Agricultural Economics, Vol. 63, No. 2, May 1981, pp. 365-366.

Statistics Canada. Standard Industrial Classification Manual, 1980 Edition, Catalogue 12-501, Ottawa, 1980.

Weeks, Eldon, et al. "Farm Income and Capital Accounting-Findings and Recommendations of a 1972 ERS Task Force," unpublished report, United States Department of Agriculture, Economic Research Service, July 1972.

Weeks, Eldon E. "Capital Finance and Capital Flows Accounts: Discussion," Proceedings of Workshop on Farm Sector Financial Accounts, April 14-15, 1977, Washington, D.C.: U.S. Department of Agriculture, Agricultural Economics Report #412, pp. 79-85.

REPORT ON THE WORKSHOP ON METHODOLOGY AND IMPLEMENTATION

Chairman: David Freshwater

The methodology and implementation workshop considered a number of problems inherent in developing revisions to Canada's farm income accounts. Comments tended to reflect particular perspectives on farm income accounting and this led to the discussion becoming somewhat user-oriented. The basic concern was for a system that was methodologically consistent with the various user interests. The most obvious example of this need is for the system of farm accounts to be readily integrable into the national accounts framework. With a growing interest in, and development of, provincial accounts, this concern is now manifest at both national and provincial levels. Seminar participants agreed that the existing system provided information of a type that was consistent with national/provincial account frameworks and, therefore, the revision process should maintain rather than enhance this function.

A fundamental concern within this workshop was that revisions should be exhaustive in the sense that all elements of farm income and wealth be included. There was considerable discussion on the extent to which non-market elements should and could be included. The theoretical position is that all sources of income and wealth be incorporated, but it was recognized that this is operationally impossible. It was agreed that certain major non-market exchanges may be included: for example, tax advantages and valuation of family labour. Similarly, there was an interest in improving the estimates of depreciation and inventory adjustments to provide an accurate picture of wealth levels and income flows.

Implementation concerns revolved around a need to maintain historical continuity and to introduce revisions to the system as quickly as possible. It was noted that the existing system provides useful information but that it is severely limited in scope. Revisions would allow new issues to be addressed but this should not be at the expense of old issues that are still important. Where the revisions involve creation of an integrated system of accounts, the entire system should be implemented at one point in time rather than piecemeal. It was felt that individual components would be of limited value and reliability, relative to the package as a whole. Participants noted that the data should be collected at as disaggregated a level as possible initially in order to allow for possible adjustments in concepts and classifications as the system of revisions is introduced. Once the revisions were in place, it may be possible to collect data at a more aggregate level.

The members of the group agreed that conceptual problems with revisions were of lesser concern. There was, however, concern over how well the actual revisions would reflect the concepts. Implementation was felt to be the major problem area. This was seen as particularly important in a time of tight budgets, where there may be pressure to implement a cheaper but less complete system that would not provide answers to the questions that initially stimulated the revision process.

WORKSHOP PARTICIPANTS

METHODOLOGY AND IMPLEMENTATION SEMINAR

Chairman and Rapporteur - D. Freshwater, University of Manitoba

- R. Niemi, Canadian Wheat Board

- G. Fisher, Farm Credit Corporation

- H. Messinger, Statistics Canada

- R. Ellis, Saskatchewan Bureau of Statistics

- H. Furtan, University of Saskatchewan

- G. Hoffman, U.S. Department of Agriculture

- G. Brinkman, University of Guelph

- G. Beelen, University of Manitoba

- L. Mullings, Manitoba Bureau of Statistics

- K. Nicol, University of Lethbridge

- C. Riemenschneider, Chemical Bank

- E. Lewis, Manitoba Department of Agriculture

- P. Lys, Statistics Canada

REPORT OF THE WORKSHOP ON DATA SYSTEM USER PRIORITIES

Chairman: M. Shumsky

As a backdrop to the discussion, the chairman briefly reviewed the agricultural financial statistics that Statistics Canada is currently providing, including how frequently they are released and updated, and the degree of disaggregation provided. Users were then asked for their views on the adequacy of the existing data system and how they would like to see it revised and/or supplemented.

Users generally recognized that what they were asking for could well be a "wish list", given the technical difficulties and expenses associated with providing some types of information, but they nonetheless described what they would like in the best of all possible worlds.

The main thrust of the comments was that the information now available to public policy makers is inadequate for assessing problems in the agriculture sector and, therefore, for the formulation of policies to deal with those problems. Those users who work in the area of public policy all felt that income statistics were necessary on farming as a business, i.e., that farm income and off-farm income must be reported separately, since in many cases there is a significant difference between farm income and farmers' income. This is important for comparing agriculture with other economic sectors, especially with respect to such indicators as wealth, return on investment, return on labour, etc. It was generally felt that a balance sheet would be a useful starting point, so that profitability could be readily assessed and so that costs of production would be clearly expressed.

Users also requested that income statistics be disaggregated by commodity and by size of farm. While there was some dispute about the extent to which it was feasible to disaggregate statistics by commodity, users, especially those involved in public policy, argued that since political pressures arise on a commodity-by-commodity basis, full income information by commodity is necessary in assessing farm problems so as to be able to arrive at appropriate solutions.

Similarly, users urged that income be reported by size of operation. While recognizing that "sales" was not the ideal yardstick for measuring farm size, it was felt that it was probably the most convenient instrument to use, especially for intra-commodity comparisons.

Concerns of an information-gathering nature were:

1. that considerable financial data are now being collected from farmers and other sources, but are not being used to the fullest extent possible, and that it, therefore, may not be necessary to collect more data to meet user requirements, if better use were made of the data that Statistics Canada already collects.
2. that existing data are generally reliable and accurate, but may not be relevant in light of current agricultural practices and farm financial structures.
3. that lags exist in the reporting of farm income, not just with Statistics Canada-generated data, but also with Canadian Wheat Board final payments, WGSA payouts, etc.; this makes it difficult for policy makers to predict areas of hardship or potential hardship in the agricultural sector.

4. that annual income statistics (reported by calendar year) cannot be easily translated into crop years, which makes assessment of the financial circumstances in the grain sector difficult for researchers and policy makers.

With respect to the generation of new farm income series, concerns were raised about the potential for confusion between existing and new definitions of farm income, about misinterpretation of what any new numbers might mean, and in the event of more than one series being reported, how various interest groups could use whichever series best served their cause and whether or not the series chosen was appropriate. There was also concern about how inter-year comparisons could be made if the existing series are not continued when new ones are made available.

There was general agreement that the seminar and user workshop were beneficial to all participants, the only concern being that there was insufficient time for a detailed discussion of user requirements and priorities. In light of this, it was suggested that at the December Outlook Conference in Ottawa, the user workshop reconvene for a continuation of the discussion, should there be a general concensus that it would be a useful followup.

Brenda Reid

PARTICIPANTS IN THE WORKSHOP ON THE DATA PRIORITIES OF USERS OF THE DATA SYSTEM

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Garth Gorsky	Western Grain Stabilization Administration, Winnipeg
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