THE USE OF CONCEPTS IN INCOME DETERMINATION BY MEMBERS OF THE AGRICULTURAL SECTOR OF THE PLAINS AREA OF TEXAS

DISSERTATION

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By

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The problem with which this study is concerned is that of determining income concepts employed by members of the agricultural sector to determine change in equity of the owner of an entity. A secondary purpose was an investigation of the factors which influenced the decision model selected to determine income.

Data was collected from ninety-seven individuals in the plains region of Texas. Two testing instruments were used. One was a set of fourteen contrived situations presenting financial data about farm and ranch operations. For each situation respondents computed an amount for income, profit, gain, and change in wealth. The second instrument collected demographic information about each respondent.

The four amounts computed for each situation were converted to one of seven income measurement concepts, or classified as unusable. Concepts were classified by number of responses and percentage of total responses for each measurement method for each term.

Analyses of each situation were made determining income measurement method used, relationship between measurement method and terminology, and causes of unclassifyable answers. A comparison was made with the response which an accountant would give.

Tests were performed determining relationship between educational and environmental characteristics and measurement concepts used. Consistency of use of measurement methods was examined.

The data collected tested the use of the "flow" concept, the "stock" concept, and the "economic profit" concept of income. A "cash" concept was available if respondents did not use one of these concepts. Situations were also presented to determine the recognition of an additional concept, "marginal income."

No income concept, was used extensive for either "income," "profit," "gain," or "change in wealth." The stock and flow concepts found greater usage for the terms "gain" and "change in wealth" when compared to the other two terms. The economic profit concept was used by less than 10 per cent of the respondents for each term. Cash concept usage ranged from less than 40 per cent for "income" to less than 30 per cent for "change in wealth."

One-third of the respondents recognized marginal income although use of marginal concepts was greater. A change to a current period concept was found when the term change from "income" to "profit," indicating that respondents either considered "profit" a more precise term, or that they were searching for a different answer.

Unusable answers comprised 33.5 per cent of the total responses. Causes were computational errors, incorrect

interpretation of data, and time. The number of data items presented was directly related an increase in number was found when more than four or five items were given.

Four demographic factors were tested to determine their effect on the concept selected for use. No statistical tests were performed due to the failure to obtain a random sample, but comparison of percentages of use indicated that none examined exerted any determinable effect on concepts used. There was some relationship between the number of unusable answer and three of the factors.

Major findings of the study indicated that financial data is used differently by members of the sector and the accountant. Respondents did not agree among themselves about the information that should be used in income measurement, nor were they consistent in use of a given concept. Finally, evidence was presented which indicated that changes in terms used to ask for change in equity leads to different responses.

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CHAPTER I

INTRODUCTION

According to the account in Genesis, when Adam was driven from the Garden of Eden he was commanded to "earn his bread by the sweat of his brow." From that time on man has had to engage in some form of economic activity so that he might earn this bread. Whether from innate curiosity, the necessity of reporting the outcome to some other individual, or a desire to determine what activities to undertake in the future, early man found it necessary to measure the outcome of his prior activities.

Since this early man the civilized world has passed through many stages of economic development, and the scope of activities which he undertakes has grown. Because of the complex nature of these activities today, if he is to continue to engage in them with any degree of success, it is of primary importance that he have an effective way of measuring the results of his undertakings. Many kinds of results have been measured, but over a period of time attention has been drawn to one, the financial change that occurs because of the economic activity undertaken. One method that has been developed to measure financial change is the use of a concept called income. This study is an investigation of the use of that concept by one sector of the economy. The meaning of

the concept, its significance to the user, and the problems associated with its measurement will also be discussed in this paper.

Nature of the Problem

Throughout the business community, decision-making is a process engaged in by owners and managers of business entities, financial investors, and other third parties who have an interest in some business entity. In order for this process to be meaningful and enhance the well-being of the individual, information that is appropriate and timely is necessary. The one major source of information commonly used by all of these decision-makers is a set of financial statements produced for and about the business enterprise. This set of financial statements includes a balance sheet, an income statement, a statement of owner's equity, and a statement of changes in financial position.

Prior to the beginning of the twentieth century, the balance sheet was considered to be the major instrument needed to determine the financial position of a business enterprise. However, in the early part of this century users shifted their emphasis to the income statement and its final amount, net income, as a basis for measuring the efficiency of management and the future profit potential of the business enterprise. At the present time it is considered to be the most important of all financial statements produced.

Current writers in accounting literature support this view. Hendriksen reports that "emphasis on net income reporting continues to be strong in the United States and appears to be increasing in some other countries."[1] Before World War II, Paton and Littleton identified the income statement as the most important accounting report.[2] In a later book Littleton again emphasizes the importance of income when he writes that the " . . . determination of net income makes the income statement the most important product in enterprise accounting."[3]

If the information obtained from this measurement, income, is to be useful to decision makers, it must be both a valid and a reliable unit of measure of past economic activity. It is also necessary that both the user of the information and the accountant making the measurement have a common understanding of the concept of income and the way it is measured. This implies that if both start with the same set of financial data, they should arrive at the same end result or income figure. However, this has not proven to be true and does not necessarily occur with information taken from a single entity, or distinct entities in the same industry, or

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[1]Eldon S. Hendricksen, Accounting Theory (Homewood, 1970), p. 124.

[2]W. A. Paton and A. C. Littleton, An Introduction to Corporate Accounting Standards (Ann Arbor, 1967), p. 10.

[3]A. C. Littleton, Structure of Accounting Theory (Menasha, 1966), p. 22.

different entities, because different beginning assumptions as well as alternative acceptable rules are available for use by the one who is making the computation. In addition, the increasing complexities of business activities has made the aggregating and reporting of transactions in quantitative terms more difficult. Also, many current economic and accounting theorists have proposed new approaches that they believe report income in a more valid manner. These facts have led both accountants and non-accountants in recent years to criticize, both orally and in writing, the use of the currently prepared income statement as the primary tool for the measurement of income. They plead that it is not meeting the needs of the user in decision-making because of the many different methods which are available for determining the monetary amount that is being reported as net income.

Concepts of Income Determination

Since different measurement methods can produce different amounts for income, the question arises as to whether it is a single-valued concept. A reader becomes aware of this as he searches through the literature of accounting and economics, for the terminology used in defining it and the methods advocated to measure it are not the same among all writers. However, of the many theories that have evolved, there are a few that are currently widely accepted by most authorities. Three of these come from the field of economics, two have arisen

from the field of accounting, and one has its foundation in the federal legislation which has been enacted to produce revenue for the government.

One of the first theories developed has come to be known as the "stock" or "capital maintenance" concept of income. This concept, found in economic literature, attempts to measure income by comparing the amount of wealth owned by an individual at two distinct points in time. It is one of the oldest concepts of income, and reference to it can be found in the writings of the economist, Adam Smith, when he defined income as the amount that can be consumed without encroachment upon capital, including both fixed and circulating capital.[4] In a later period the economist J. R. Hicks elaborated on this definition by stating that income is the amount that a person can consume during a period and be as well off at the end of that time as he was at the beginning.[5] Using this concept, income can be mathematically defined as

$Y = (W_1 - W_0) - \Delta I$, where

Y = Income for a period,

W_1 = Wealth at the end of the period,

W_0 = Wealth at the beginning of the period, and

ΔI = Change in capital investments (the net difference between disbursements to and receipts from investors during the period.)

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[4]Statement contained in Hendriksen, op. cit., p. 131.

[5]J. R. Hicks, Value and Capital (Oxford, 1946), p. 172.

The income of a business entity, using this concept, would be computed by comparing the value of the assets held at the beginning of a period with the value of the assets at the end of the period and then adjusting this amount by the capital investments made or the capital withdrawn during the period. The primary problem that arises when this method is used to measure income is the assignment of a value to the net assets of the firm at a specific time. Various evaluation methods have been proposed to solve the problem, but the values usually associated with this concept are current values. For the purpose of this study, any current valuation method which is employed will be acceptable.

A second concept, one known as "economic profit," also comes from economic theory. The variables involved in measuring income by this method are revenue and cost. The measurement is made by comparing the total revenue acquired by the firm with the total cost which it incurs. The difference is a pure surplus or an economic profit. The meaning of cost has been expanded under this concept to include not only the explicit costs bought or hired by the firm, but also the implicit costs of self-owned and self-employed resources. The concept is defined by the formula

$$P = R - C, \text{ where}$$

P - Economic profit (Income),

R = Total revenue, and

C = Total costs.

The manager of a business entity who uses this concept would include in his cost computation a salary expense for his services if he is the owner of the entity. In addition, an interest cost on his investment would be included to arrive at the amount of total cost to be used in the measurement of income.

The third concept, a variation of the economic profit concept, is known as "marginal" income. Classical economists have accepted a marginal definition and have approached it so as to examine what happens to income as additional units are produced. The income which is received from the last unit produced has been termed marginal income. Marginal revenue then becomes the proceeds from this last unit, and marginal cost is the expense of producing this unit. The mathematical model which describes this concept is

$$MI = \Delta R - \Delta C, \text{ where}$$

MI = Marginal income,

ΔR = Change in revenue, and

ΔC = Change is costs.

In this study the concept of marginal income has been expanded to include the aggregation of the increments to revenue (R) and the increments to cost (c) which take place in the operation of the period. The individual utilizing this concept is concerned only with the changes in total revenue and total costs which are the result of changes in resources used or the form of technology employed. Since

marginal income measures the change in income due to a change in method of operation, it is only one element in investment decisions. The primary concern of investors is the total income earned by a business entity since this is the income amount which purports to measure profit potential and managerial efficiency.

The fourth concept, found in accounting literature, is the "flow" concept and is the one currently employed by the accounting practicioner. The measurement is made by examining all of the economic activities engaged in by the business firm. Expressed as a mathematical formula income is

$$Y = R - E, \text{ where}$$

Y = Income,

R = Revenue, and

E = Expenses.

Specific criteria have been established to determine both what is meant by revenue and what is meant by expense. The formula used to identify revenues is

$$R = CR + \Delta AR - \Delta DR - \Delta IR, \text{ where}$$

R = Revenue,

CR = Cash receipts for the period,

AR = Accrued receipts for the period,

DR = Deferred receipts for the period, and

IR = Investment receipts for the period.

The formula which defines expenses is

$E = CD + \Delta AD - \Delta DD - \Delta ID$, where

E = Expenses,

CD = Cash disbursements for the period,

AD = Accrued disbursements for the period,

DD = Deferred disbursements for the period, and

ID = Investment disbursements for the period.

The important variable in this concept is the cash flow which is generated by the transactions engaged in by the entity. The measurement of income indicates the results of the various operations and is determined by a matching process in which expenses incurred are allocated to the revenues that they produce. The use of accruals and deferrals serves the purpose of compensating for the timing differences in actual cash flows that occur by placing both revenues and costs in the appropriate time period.[6]

The fifth concept, a limited form of the one above, is referred to as the "cash" concept. When this concept is employed, both revenue and expense are restricted to those activities in which there is either an inflow or an outflow of cash. Transactions involving investors are ignored in this concept. Mathematically it is expressed as

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[6]H. M. Anderson, J. W. Giese, and B. A. Coda, "Research Proposal for a Study of the Discursiveness of Income Concepts," unpublished research proposal, College of Business Administration, North Texas State University, Denton, Texas, 1971, p. 1.

I = CR - CD, where

I = Income,

CR = Cash receipts for the period, and

CD = Cash disbursements for the period.

This income concept is limited in its use in financial accounting because it fails to give a complete picture of the activities carried on by most business entities. However, it is being used today, but primarily by small business entities and individuals.

The last widely accepted income concept is one that comes from federal legislation. It is known as "taxable" income and is used for the purpose of reporting the tax liability of a business on the income it earns. It is computed by use of the formula

TI = I - E - D, where

TI = Taxable income,

I = Income broadly conceived,

E = Exclusions, and

D = Deductions.[7]

This concept has a limited use in decision making by an investor since it defines income in a legal sense rather than having a theoretical justification for measuring profit potential or effectiveness of management.

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[7]Ray M. Sommerfeld, H. M. Anderson, and Horace R. Brock, An Introduction to Taxation (New York, 1969), p. 93.

The flow concept is the one used by the accountant, in a normal situation, to prepare the financial statements which are given to users. However, if the rules for the stock concept, the economic profit concept, the cash concept, or the taxable income concept were to be employed by the accountant, the computation could produce a different measure of income. With the diversity of income measurements available, the question arises as to whether the concept in current use by the accounting profession is the one that will provide the information needed by the user of this measurement.

Significance of the Study

There are many areas where economic activities occur. One of these is unique in that many of the entities are still relatively small and are managed by individuals who normally are both the owner and manager of the entity. This is the sector comprised of the many and varied agricultural operations found in the United States. It is a highly volatile sector as prices fluctuate with a great deal of regularity. It is also one of the few sectors, according to many economists, where competition plays an active role and the laws of supply and demand still exert influence on the activities engaged in by the operator.

Two new trends have appeared in this sector, a growth in the size of the entity and the use of more technology.

It is expected that these trends will continue as managers find a greater need for increasing the efficiency of the operation. With the price instability that exists in all parts of the sector and with the increasing costs of operations which must be met, good accounting data is essential for survival of the entity. These managers must have useful information so that they can make decisions on what to produce and in what quantity to produce it. In recent months the necessity for correct decisions has become even more important because of the rising costs for foods consumed by the public and the predictions of shortages in the future. Wrong decisions made about production so that rising prices are not abated and shortages prevented, can lead to a slower economic growth for the country and less improvement in the well-being of all members of society.

With the appearance of larger agricultural entities significant capital outlays for equipment and technology will be required. Large sums of money will be needed to finance these outlays. The sources of capital, lenders and other investors, must have valid information to use in determining the capability of repayment by these entities as well as the return on investment which will be earned. The determination of which entities will receive financing, or even whether investments will be made in this sector, will be dependent to a great extent on the net income which is earned by entities.

One factor which has a major bearing on the amount of income earned is the decisions about production made by the manager. A major determinant of these decisions is the information communicated by the accountant through the income statement. If income determination by the accountant is made using a different income concept than that held by the manager, one possible conclusion is that the accountant is not providing the information which this group of users needs for making correct decisions. If this occurs and managers make wrong decisions, then the probability is high that financial resources will be allocated incorrectly by the sources of capital.

Very little information is available about what concepts of income are used by the producers of income in the various sectors of the economy. This means that users, including those in the agricultural sector, must depend upon the procedures which accountants determine to be correct. If the income concepts used by members of the agricultural sector and accountants are not the same so that different values for net income are computed from the same set of data, then the accounting profession should either drop the claim that financial statements meet the needs of these users or change its position as to the proper approach for determining income. If they are the same, then additional support for present procedures has been provided. The major purpose of this study is to determine which, if any, of the income concepts

previously discussed are commonly held and used by those members of the economic world who are engaged in agricultural operations.

This study also will collect information on what financial data is meaningful to and how it is used by members of the agricultural sector. Since financial accounting is determined by environmental characteristics, the knowledge of how members of this sector use financial data should be of assistance to the accounting profession in the selection of valid alternative procedures in those areas where alternatives are now available

Organization of Paper

The methodology used to conduct the study will be discussed in Chapter II. This chapter will also contain sections which outline the basic assumptions underlying this study. Additional sections will detail the problems encountered in gathering the data, the changes that had to be made, and the limitations which are inherent in this study. Chapter III contains an analysis of the data collected as it relates to the concepts of income chosen for the study. Chapter IV will present a summary of the findings of the study and will indicate conclusions which were drawn from the data. There will also be a section which present areas for future study.

CHAPTER II

RESEARCH METHODOLOGY

The original plan of this study was to select a statistical sample from individuals engaged in farm and ranch operations in a nine county area in the western part of Texas. This area was selected for the following reasons: (1) agricultural activities being conducted are diversified; (2) size of entities vary when stratified either by acreage in production or revenue produced; and (3) the population includes not only individuals who are manager-owners, but also those who are either owners only or managers only. The activities conducted include ranching, both cattle and sheep, and farming, with such major commodities as wheat, cotton, alfalfa, and grain sorphum being raised. Farming technology includes both dry farming and irrigation methods. However, in the early part of the data collecting period, the area to be sampled and the method of sampling had to be changed. These changes will be explained later in this chapter.

Basic Assumptions and Propositions

Inherent in this research are several basic assumptions under which the study was conducted. The first of these is that accounting provides a service which is needed by others by compiling financial information which is useful and

meaningful. Since this is the accountant's primary function, he has the responsibility of trying to determine what information users desire and need.

A second assumption is that members of the agricultural sector of the economy have formulated a decision model which they use in a rational manner when acting in a decision-making capacity. It is also assumed that income is one input which provides important information in the model. In addition, it is assumed that the income concept used is influenced by educational, social, economic, and other outside environmental factors. From these assumptions it follows that if an individual is provided with data concerning financial transactions of an entity, he can reach a conclusion about the effects of the transactions on the income of the owner.

A third assumption is that there are different rules and procedures to follow in making the income measurement for each of the income concepts. In addition, if the measurement is made using one set of rules and procedures, the computation will determine a unique monetary amount. Therefore it follows that if a researcher is given a monetary amount for income which was computed from a set of financial transactions, he can identify the income concept used to compute the amount.

The final assumption is that the terminology employed to ask for the change which has occurred as a result of a set of financial transactions has an effect on the response

given by the individual who is analyzing the data. The implication here is that a different response may be given if a term other than "income" is used. There are three other terms which are often used: "profit," "gain," and "change in wealth." In the model used by the accountant, however, all four terms should have the same numeric value. This result is obtained because the set of financial statements prepared for a business enterprise for a specific time period must be fundamentally related and articulate with each other. This requirement is met because the final result of one statement is included as part of another statement, thus producing identical values for the four terms.

Hypotheses

The assumptions which were stated in the previous section enumerated some of the factors which exert influence on the decision-making process of members of this sector. These assumptions lead to the following hypotheses:

1. Members of the agricultural sector will be consistent in the rules and concepts used for the measurement of income, profit, gain, and change in wealth when given financial information in varied simulated settings. The only variation which will occur is in those situations dealing with marginal income. These are special cases as a different measure of income is required.

2. For each set of facts presented, members of this sector will compute the same numeric amount for income, profit, gain, and change in wealth.

3. The measurement concept adopted by each member of this sector will depend on his education and on individual environmental factors.

4. The rules and concepts for the measurement of income are the same for members of this sector and the accountant when dealing with the same financial information.

Instruments for Collecting Data

Two sets of data were needed for this study. One set was needed to provide information about the environment of the individuals who made up the sample. The second set of data was needed to provide information which would allow a researcher to determine the income concept that had been used to measure the change in owner's equity which resulted from a set of financial transactions. Since different data was needed for each purpose, the most logical approach to gathering this data appeared to be the use of two separate instruments. A search was made to try to find existing instruments which could be used. None were found so the construction of the needed instruments was begun.

The primary instrument was the one used to determine which of the income concepts the respondents had used, so this was developed first. Six income concepts were discussed

in Chapter I, but in this study the use of only five was investigated. The taxable income concept was excluded because its purpose is not to measure the efficiency of management or the profitability of the firm. The instrument developed was made up of a set of contrived situations containing financial information which would allow a respondent to compute a numeric amount which he believed to be the income resulting from the transactions presented. The amount was unique; therefore, it served as a basis for inferring the income concept used by the respondent.

The data presented in each situation was of such a nature that it tested the usage of one of the four main concepts. The fifth concept, a cash concept, was available in all of the situations and could be used if the concept being tested was considered inappropriate. Since a single test was not believed to furnish sufficient evidence to determine usage, several tests were formulated to measure the use of each concept. Finally, the situations were structured so that they would be identical to actual farm and ranch operations. This was accomplished by interviewing various sources to obtain information about the commodities produced in the area, the methods of operation employed by managers of entities, the selling price of these products, and the cost to raise them.

Fourteen situations were developed to serve as the data-collecting instrument.[1] Three of the situations were formulated to test the use of the stock concept. Usage of this concept requires that unrealized increases in the value of an asset be included in the income measurement. Therefore, in these situations the data provided not only information about operating revenue and expenses, but also an appraisal value of an asset which had been determined in a recognized market.

The use of accruals and deferrals to place revenue and expenses into the correct time period is required if the flow concept is used for the income measurement. Five situations to test the usage of this concept were developed by including in the data information relating to several areas where accruals and deferrals are commonly used by accountants. Two of these situations centered around the accrual of income and/or expenses; two were formulated to determine if the cost of a long-lived asset would be deferred, and one was developed to determine if the cost of an ending inventory would be included in the measurement of the income of the period.

Two situations were contrived to measure the usage of the economic profit concept. This was done by including data that would allow an imputed cost to be included in the computation. One of the situations contained information

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[1] A copy of the fourteen situations will be found in Appendix A.

about the salary which could have been earned if a similar operation were managed for another individual, and one presented information which would allow the respondent to determine the revenue forgone by not making an alternative investment. The number of situations testing this concept was limited as use of an opportunity cost was available in several of the other situations.

The final four situations were used to test for the recognition of a marginal concept. The use of a marginal concept occurs when financial transactions of two periods are compared. The test was accomplished by presenting financial data about a previous period, including information identifying a change in operation due either to a change in technology or size of operation, and then providing the financial data for the current period. Structuring the situations in this manner allowed the respondent to use either a marginal concept or a current concept. In addition, different types of changes in operations were used in each situation to counteract the influence on the response which might be caused by the nature of the change.

For each of the situations the respondent was asked to compute an income amount in monetary terms. He was then asked to compute a monetary amount for the situation for three other terms--profit, gain, and change in wealth. These terms were introduced because in many economic areas

they are used as synonyms for income, and it was desired to see if this were true in this sector.

The second instrument developed was a demographic survey. A list of potential hereditary and environmental factors which could have an effect upon the selection of an income concept was compiled. After discussion with two members of the Sociology Department at Odessa College and a search of some of the literature in this area of measurement, the list of factors was reduced to those which are either commonly used or those which it was felt were such that they would have an effect upon the income concept used.[2]

Pilot Study

After the two instruments were completed, a pilot study, conducted in a manner identical to that which would be used in the main study, was undertaken to determine if there were any inconsistencies, ambiguities, or biases in the wording of the situations or the reasonableness of the monetary amounts used. It was believed that these test interviews would also indicate any other difficulties that might be encountered during the actual time of collecting the data. If the pilot study indicated a need, then the revising of the old situations or the constructing and testing of new ones would be undertaken.

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[2]A copy of the demographic survey will be found in Appendix B.

The method of conducting the interviews was by personal contact with the respondents. After completing the demographic form, the respondent was given a 5 x 8 card containing a situation. The respondent then verbally told the interviewer the income amount he had computed. This method was chosen as it would allow the interviewer to answer any questions asked, uncover arithmetical errors, and make notes on any comments made.

A small number of interviews were considered sufficient for the pilot study as the technique to be used had proven satisfactory in a prior study of 231 individuals in a specific population. Six operators of agricultural entities who resided in the area near Odessa, Texas, were selected and interviewed by this method. Only one major problem was discovered through the pilot study: the length of time needed by respondents to complete the computation for three of the situations. Since, all respondents did provide an answer to each of the three situations, the decision was made to retain them as they were important, and it seemed that the time element would not prove an obstacle to obtaining the information needed.

Selection of the Participants

The population to be surveyed was to be comprised of the individuals who owned property and/or engaged in agricultural operations in the area described previously. Several

sources were investigated in an attempt to find a list of names from which a random sample could be drawn. The source which was finally selected was the Agricultural Stabilization and Conservation Service (ASCS) of the Department of Agriculture. This agency was selected because each county had a local office which had on file a list of the names and addresses of all producers in the county who had received payment from the ASCS during the preceeding twelve months. Permission was obtained by letter from the national office in Washington, D.C. and from the state office in College Station, Texas, which made the lists available for use in the study.

Each of the nine county ASCS offices was visited to acquire access to the list of producers for that county. Using a table of random numbers, a predetermined percentage of names was taken from each list. The percentage of names taken from each county list varied between 1 per cent and 5 per cent and was based on the total number of producers listed. A total of 387 names was obtained by this method. Each name was then placed on a 3 x 5 card, and the deck of cards was alphabetized and numbered sequentially. Again with the aid of a table of random numbers, 125 cards were selected. The names which appeared on the first 100 cards comprised the sample, and these were the individuals who would be interviewed to obtain the data for this study. Twenty-five additional names were included to be used as replacements in case any member of the original sample proved inaccessible.

The intent was to gather information from a minimum of 100 individuals.

Collection of Data

As soon as the instruments for collecting the data had been constructed and tested and the sample selected, attempts were made to interview the individuals who appeared on the list. After approximately three months it became apparent that personal contact at the residence of the respondent was not going to provide the data needed because of the inability of obtaining interviews.

Since this method of collecting data did not prove successful, an alternate non-random method was developed. A search was undertaken to find one or more agricultural organizations which had groups located in the various counties in the area, which were organized on a local level, and which had a board of directors meeting at regular intervals. These criteria were desired so that the data collected would come from a sample that was widely dispersed. Also it was thought that if individuals were in attendance at a regularly scheduled meeting, they would have completed the necessary activities for that day and would be more likely to have the time to provide the interviews being sought.

Five organizations were found in the area to be studied. Only two of these, the Texas Farm Bureau and the Farmer's Union, met the criteria established and could, in addition,

provide a large enough group of individuals to furnish a sample of 100. Key individuals in the county affiliates of these two organizations were contacted to explain the purpose of the study, to obtain permission to attend a meeting, and to ask for interviews.

Thirty separate organizations were contacted and asked to participate in the study. Seventeen of the groups were Farm Bureau units, and eleven agreed to participate. The remaining thirteen were National Farmers Union affiliates, and meetings were obtained with four of the groups. Only four of the units contacted refused to participate. The groups not participating either met only on a called basis and did not have meetings at a time when the interviewer was available or failed to respond. Talbe I contains a list of the county organization which were contacted and indicates those which participated in the study. Of the organizations that were included in the study, a total of 173 persons were listed as members of the board of directors. There were 119 individuals in attendance at the meetings at which interviews were obtained, and from this group data was collected from ninety-seven individuals.

Due to the change in method of obtaining respondents and because of the time needed to complete a single interview, the technique of collecting data was also changed. The data was collected from all respondents simultaneously instead of a one-on-one situation. Either prior to or after the business

TABLE I

LIST OF ORGANIZATIONS CONTACTED

Farm Bureau
Cochran County (Morton)*
Dawson County (Lamesa)*
Dickens County (Spur)*
Gaines County (Seminole)*
Hockley County (Levelland)*
Howard County (Big Springs)*
Lamb County (Littlefield)*
Lynn County (Tahoka)
Martin County (Stanton)
Midland County (Midland)
Mitchell County (Colorado City)*
Nolan County (Roscoe)
Pecos County (Ft. Stockton)
Runnels County (Balinger)
Scurry County (Snyder)*
Terry County (Brownfield)*
Yoakum County (Plains)*
Farmers Union
Crosby County (Crosbyton)*
Dawson County (Lamesa)
Garza County (Post)*
Glasscock County (Garden City)
Hockley County (Levelland)
Lubbock County (Lubbock)
Martin County (Stanton)
Midland County (Midland)*
Nolan County (Sweetwater)
Runnels County (Winters)*
Taylor County (Merkel)
Terry County (Brownfield)
Yoakum County (Tokio)

*Organizations providing interviews

meeting of the organization, the interviewer was introduced to the group. The purpose of the study was explained and the cooperation of those in attendance requested. Those who agreed to participate were given instructions about what was wanted prior to receiving the two testing instruments. The respondents were also told that the interviewer would be present to answer any questions or provide any additional explanations needed. The method of presenting the situations to the respondent was also changed because of the group interview. Instead of having each typed on a 5 x 8 card with one situation and a question relating to income for the situation presented, each situation was typed on a standard size piece of paper followed by four questions--the first asking for income, the second asking the profit, the third asking for gain, and the fourth asking the change in wealth. All fourteen situations were given to the respondent at the same time.

Limitations of the Study

There are several factors which limit this study. The major limitation is that the sample is not random. However, some characteristics of a random sample are present. There was no prior knowledge as to which of the organizations contacted would respond. Also, there was no prior knowledge of who the individuals would be that would comprise the population nor which members would be in attendance on a particular night and agree to provide data for the study.

A second limitation is related to the composition of the situations. Each situation was constructed with the intention of providing data which would allow the use of one or more of the concepts relating to income determination discussed in Chapter I. If a respondent wished to use some other concept, he may have been restricted by the limited amount of data provided. Also, data was not available to allow respondents to use all income concepts in every situation. If this had been done, the situations would have been very complex and difficult for the respondent to analyze. Also, it was not possible to measure all types of transactions which occur in the agricultural sector. This would have required an increase in the number of situations presented, and the time needed for completion of the interview would have been prohibitive.

A third limitation is the use of the group method to obtain the data. This method allows for the potentiality of a respondent's being influenced by those around him, by casual conversation, and by answers to questions asked of the interviewer. The possibility also exists for a communication problem either in the explanation or the instructions given by the interviewer or misinterpretation of the data in the situations which was not clarified.

A fourth limitation is concerned with the data collected. It is difficult to explain logically some of the answers which were given to the situations. It is possible that some

of them are computational errors or a misunderstanding of the situation, but others have no apparent explanation.

A fifth limitation is that the data collected does not always explain the reasoning process used to obtain an answer. Even though the respondents were asked to explain the answer given, very few complied, providing only a numeric amount. For those cases where the response could be associated with a specific concept of income, the reasoning process seemed apparent. In a few instances the respondent made his computation on the instrument provided and the reasoning process could be followed. For other replies, the data could be manipulated to obtain the response. However, there were some cases in which no association between a response and a rational reasoning process could be found. One possible explanation for this could be that the responses were frivolous or insincere. Whether or not any replies were of this type is not known, but it should be noted that even though most of the respondents appeared to want to be helpful, there were some who participated who did not take the study seriously and who did not consider it of any immediate importance to themselves.

The final limitation is that the findings of this research project done in the High Plains area of West Texas may not have any significance for other agricultural areas of the United States nor any significance for other economic sectors.

Review of Literature

The use of the income statement, as presently prepared, has been critized by both accountants and non-accountants as not being useful to all because of the many income concepts held by various users. However, very little research has been conducted in this area to ascertain what concepts are held and used by decision-makers. Most of the research which has been done in this area has been oriented towards stockholders of corporations, with other sectors of the economy being ignored. In researching the literature in the field only one study[3] was found in which the approach was used of asking individuals in an economic area to determine the income concepts that they believed applied to specific economic situations. This study, empirical in nature, is an attempt to determine what concepts of income, if any, producers of income in a specific economic sector would use when presented with a set of financial transactions. Chapter III is an analysis of the data collected from the members of this sector of the economy.

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[3]Robert E. McGillivray, "Income Concepts Used by Bank Loan Officers in a Methrpolitan Environment," unpublished dissertation, College of Business Administration, North Texas State University, Denton, Texas, 1974.

CHAPTER III

ANALYSIS OF DATA

Information for this study was collected from a total of ninety-seven individuals who were owners and/or managers of agricultural entities. The reason for gathering this data was to analyze the concepts which would be used by members of this economic sector to determine income. The data which was collected can be classified into two types. One type shows the personal and environmental characteristics of the respondents while the other type of data is made up of numeric responses to fourteen situations.

Each situation was designed with the intent of presenting to a respondent information of such a nature that alternative measurement concepts would be available for use in computing income for a period. Since each measurement concept can be identified with a theoretical income concept, individuals could be classified by means of the responses given. There was a limiting factor present in that the data presented did not allow respondents to use all concepts in every situation. Therefore, some of the income concepts identified may have been a selection of alternatives rather than use of the one desired.

One of the income concepts discussed in Chapter II, taxable income, was not included in the study because of the

reason for the measurement. Its primary purpose is to meet the need of governmental bodies to obtain revenue from available sources and with the policy of government to promote national social and economic goals. This differs from the primary purpose of the investor, the need to determine the future profit potential of a firm as well as the efficiency of its management. It is true that the tax effect of a transaction is one consideration in the selection of alternative courses of action to undertake, but, since taxable income does not purport to measure either past efficiency or future profit potential, the final amount computed under its rules is not, or should not be, a valid criteria to use in evaluating the overall operation of the entity by either the manager or the investor.

Organization of the Chapter

To facilitate the analysis of the data collected, this chapter will be divided into several sections. The section which follows this one will contain the definition of certain concepts that will be used in the analysis of the data. These concepts are ones that will be used to identify the method of measurement which was used by the respondent to compute an answer from the transactions presented in the situations. An example would be the use of gross receipts when the amount reported as income is the total cash inflow of the period.

The next part of the chapter will contain the sections in which the situations applicable to each of the major

income concepts are described and the purpose of each is explained. The results which were obtained in the interviews will be analyzed for concepts used by respondents and compared with the responses which would be given by the accountant. At this point the numbers assigned to the situations for the data collecting part of the study will be changed. The placement of the situations in the testing instrument was done by a random selection. In the analysis all situations containing the same alternatives will be introduced in one section and a number will be assigned to each in sequential order as they are introduced.

An analysis of the relationship between the complexity of the problem as measured by the number of transactions presented and the number of usable answers obtained will be in the next section. Following this will be an analysis of the demographic data. The final section will present a short biographical sketch of certain respondents who consistently employed one income measurement concept.

Income Measurement Concepts

Each situation contained a set of numeric data which could be manipulated by a respondent to produce a numeric answer. Since it was possible to obtain different amounts for each situation, certain terms will be used to identify the measurement concept which was used to produce an answer. Use of these terms in place of numeric amounts should facilitate the analysis of the data and make it easier for the

reader to follow and understand. Any variations from these definitions in the analysis will be pointed out at the time they are applied.

1. Appreciation in value will be used for those answers given by a respondent in which a change in the value of an asset, determined by an appraisal or a market, is included in the income computation. Even though realization has not taken place, the respondent is willing to accept the change in value as having an effect on the amount of income earned.

2. Gross receipts is used for the case where a respondent recognizes only the gross cash inflows from the operations of the period. These normally are the cash receipts, but may be both the cash and accounts receivable. An illustration of this would be an answer of $50,000 to the question "What is the income?" when the situation states that sales are $50,000 and expenses are $35,000 for the current period.

3. Net cash flow describes a response in which the income amount computed indicates that the cash receipts and disbursements relating to the normal operation for the period are used. Ignored in the measurement are the purchases for cash of assets with lives of more than one period or charges for depreciation of assets used in the production process, receipts for goods purchased on account by customers, and expenses of the period not paid for in cash.

4. Cash payout represents the measurement in situations in which all cash outflows and all cash inflows are netted

to produce an income amount. As an example, an entity which has cash receipts of $25,000, cash expenditures for liabilities incurred of $20,000, and which purchases a long lived asset during the period for $10,000 would have a loss of $5,000.

5. Accrual accounting is the concept in which the respondent allocates part of the inflows and/or outflows of the current period to other time periods. The term normally used in accounting literature would be either the accrual or deferral of income or expense. The major function of this process is to separate the recognition of income from the realization of cash and the recognition of an expense from the cash disbursement. Deferring of an expense as through the depreciation of an asset, deferring the recognition of revenue collected in advance to a future period, recognizing as current income sales on account to customers, or recognizing an expense to be paid in a future time period as accrued salaries payable, are all examples of the use of the accrual process.

6. Imputed costs describe the case where a respondent includes in the income computation the implicit costs of operations and the opportunity cost which arise from alternative courses of action which are available to the firm. Examples of these costs are the inclusion of, as an expense of operation, a salary for the sole proprietor of an entity, or charging, as an expense, the revenue which could be earned from an outside investment on funds used in the business.

7. Marginal revenue and expense is used for the case where the income computation is made using only the incremental revenue and expense which resulted from a change in the manner in which the business conducted its operations. Total revenue and expenses are ignored. If a firm, when operating in a normal situation has income of $50,000 and operating expenses of $40,000, introduces a new technology which increases revenue to $60,000 and operating expenses to $45,000, including the cost of the new technology, then the marginal income reported would be $5,000.

8. Indeterminate will be used to describe the class of responses given which do not agree with any of the answers that should be obtained from the data which the respondent was asked to analyze. In some cases the results are mathematical errors. In other cases assumptions were made by the respondent during the computation which did not place it in one of the previously defined categories or could not be identified by the interviewer. In some cases the reasoning process used to arrive at an answer resulted in an illogical answer. Throughout the rest of this study any amount that cannot be placed in any of the first seven categories will be listed under this classification.

The definitions given above may not agree in all cases with the definition of the terminology as understood by the reader or as generally accepted by accountants and economists. However, it was necessary to modify and adapt the meaning

associated with some of the terms in order to assist in the analysis of the data collected.

The Stock Concept

The stock concept of income is one which contains the idea of a flow of wealth which is in excess of the amount required to maintain a constant amount of equity so that future revenues will be produced. Income, under this definition, is a measure of the change in capital between two distinct points in time. The measurement is made by comparing the value of the assets held at the beginning and the end of a period. The determination of what constitutes an asset and the valuation of the assets to be included in the computation are the two major problems which must be solved when this income concept is used.

The use of valuation changes that is required when this concept is employed in the measurement of income is not accepted by the accounting profession. Generally accepted accounting principles in current use do not recognize changes in value of assets for revenue determination; instead, they accept a realization principle. This principle requires the earning process to be almost complete and an exchange to take place, while the use of current market value requires the recognition of revenue from changes in value prior to any exchange transaction. There have been proposals by groups in the profession to change certain principles so that the use of market value would be deemed acceptable in

certain instances. One of these groups, the Accounting Principles Board of the AICPA, proposed the use of current market values for certain listed securities, but their proposal met with such a storm of protest by members of the profession that the proposal was abandoned.

Three of the test situations were constructed to determine if respondents would accept a stock concept when computing an answer for income. The problems inherent in the valuation of assets were resolved by assigning a specific value to assets by use of either an appraisal or a market value.

Situation 1 presented two different types of transactions to be analyzed. The information which was given to the respondent included the cost of an investment in a farm, the appraisal value of the farm at the end of the period, revenue realized from the investment through a rental agreement, and two cash disbursements which were made as a result of the investment. The situation was contrived to determine if the respondent would recognize the increased value of the land as income, profit, gain, and change in wealth. Income could be recognized from the increased value of the investment as determined by an independent appraisal, and it was possible to recognize a loss from matching the rental income and expenditures. The common accounting practice would be to recognize the loss in this period, but to defer the recognition of the increased value of the land until it was

validated by a sale. Classification of the responses by number of times used and the percentage of usage is presented in Table II.

TABLE II

A COMPARISON OF RESPONSES TO SITUATION 1

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Appreciation in Value	12	12	18	19	51	52	55	57
Net Cash Flow	48	49	23	24	8	8	14	14
Gross Receipts	17	18	10	10	0	0	0	0
Indeterminate	16	17	37	38	30	31	20	21
No Response	4	4	9	9	9	9	8	8

The measurement method used in this situation appears to have some relationship to the terminology used. This is indicated by the fact that 49 per cent of the responses given to "income" used a strict accounting concept, net cash flow, while the realization criteria was relaxed and appreciation in value was used by 52 per cent for "gain" and 57 per cent for "change in wealth." From the responses it would appear that appreciation in value is associated with "gain" or "change in wealth" while net cash flow is associated with "income." The difference in the use of these two concepts for "profit" is small, only 5 per cent; therefore, no generalization can

be made. The fact that there is no greater difference in the use of the two methods for "profit" is due to the fact that twenty-seven of the responses classified as indeterminate gave zero as an answer. The reasoning process which led to this answer was not indicated by the respondents. However, it should be noted that this number is greater than the number who used either the net cash flow method or the appreciation in value method. Since net cash flow is the accountant's method for this set of transactions, "income" is the only term in which some agreement between the accountant and members of this sector is found.

Situation 2 was constructed to see if respondents would include as part of the proceeds of a sale a value for property which was received as part of the settlement. The situation indicated that a piece of property had been sold and that payment was made partially in cash, with the balance being new investment property which had not been sold at the end of the period. The newly acquired property had been appraised and was listed on the real estate market at the appraisal value. This was a test to find out if the appraised value of the property, or at least some assigned value, would be included in the measurement made, or excluded, and only the difference between the cash received and the original cost used. The accepted accounting practice would be to record the cash received and the fair market value of the property as the

proceeds of the sale. Table III presents the classification of the responses by number of times used and percentage of usage.

TABLE III

A COMPARISON OF RESPONSES TO SITUATION 2

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Appreciation in Value	33	34	40	42	61	63	56	58
Net Cash Flow	41	43	39	40	18	19	18	19
Gross Receipts	4	4	0	0	0	0	0	0
Indeterminate	9	9	7	7	9	9	12	12
No Response	10	10	11	11	9	9	11	11

Approximately three-fourths of the responses received were classified as either a cash approach or one which included a value for the asset received. For the two terms, "income" and "profit," the number of responses classified under each measurement concept was similar. The similarity in number of responses for the two terms indicates a lack of preference for either measurement method. However, when the term was changed to "gain" or "change in wealth," a preference for measurement method does appear. The number of respondents using an appreciation in value method increased significantly while the number who used the net cash flow method decreased

more than 50 per cent. The ratio between the two approaches to measuring income changed from one to one for "income" and "profit" to three to one for "gain" and "change in wealth." This again emphasizes the fact that the use of an appraisal value has a greater acceptability by members of this sector when the term employed to ask for change in the equity of the owner of an entity is "gain" or "change in wealth." If the market value of the asset received is assumed to be its fair market value, then the use of the appreciation in value method is the one that the accountant would use in this situation. From the percentages given in the table, agreement between members of this sector and the accountant is low for "income" and "profit" but does improve when the terms are changed to "gain" or "change in wealth."

When the per cent of usage of the appreciation in value is compared with that in the previous situation, it is found that there is a notable increase for all terms except "change in wealth." The percentage of use for "income" and "profit" is more than twice as great, and that for "gain" increased 10 per cent. This seems to indicate that more faith is placed in the market which values the unsold asset in this situation. This fact, along with the knowledge that the asset was placed on the market for sale, appeared to increase the use of a value for the asset by members of this sector when calculating the proceeds from the sale.

Situation 3 was one that had two parts. The first part was designed to test if an increase in value of an asset purchased, but not sold, would be recognized when the value was determined by a market whose operation would allow the asset to be sold whenever desired. The asset was a marketable security which had been purchased during the period with funds that were not needed in the operation of an entity. The cost of the asset was known as was the listed market value at the end of the period. For this transaction no income would be recognized by the accountant. Under accounting rules the realization of holding gains is deferred until the period in which the sale occurs. The second part of the situation introduced a subsequent time period in which the sale of the asset was made, but at a price lower than the market value at the end of the first time period. This was a test designed to see if the respondent would be consistent in the measurement method which was employed. Since an exchange transaction had taken place, this is the time period in which the accounting profession would recognize the receipt of income. Classification of responses to the first part of the situation is found in Table IV.

The use of the market increase in value of the asset found a wide acceptance in Part A of the situation. The increase in usage was very apparent in the computation for "income" and "profit." The largest percentage of use was 65 per cent for "gain," and the smallest, 52 per cent, was

in the calculation of "income." The net cash flow method, the one which would be employed by the accountant, was used by only one-fourth of the respondents to obtain an answer for "income" or "profit" and less than 20 per cent for "gain" and "change in wealth." This small percentage of use indiates a disagreement with the accountant in this situation as to what should be included in the computation.

TABLE IV

A COMPARISON OF RESPONSES TO SITUATION 3A

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Appreciation in Value	50	52	54	56	63	65	56	58
Net Cash Flow	25	26	28	29	16	17	18	19
Cash Payout	2	2	2	2	1	1	1	1
Indeterminate	8	8	1	1	2	2	7	7
No Response	12	12	12	12	15	15	15	15

The number of responses and percentage of use for the second part of the situation is found in Table V.

TABLE V

A COMPARISON OF RESPONSES TO SITUATION 3B

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Appreciation in Value	8	8	4	4	4	4	5	5
Net Cash Flow	62	64	71	73	72	74	74	76
Gross Receipts	7	7	0	0	0	0	0	0
Imputed Costs	1	1	2	2	1	1	0	0
Indeterminate	6	6	6	6	6	6	4	4
No Response	13	14	14	15	14	15	14	15

The period in which the sale occurs is the one in which the accountant would recognize that an entity has become better off. The members of this sector agreed with the profession on the use of this net cash flow concept for each of the four terms. The percentage of usage, as indicated by the number of responses, was 64 per cent for "income" and more than 70 per cent for the other three terms. No other measurement method, including appreciation in value, for any of the terms received more than 8 per cent of the responses.

When the measurement methods used by respondents for the second part of the situation were identified, it was noted that the one which was used by a majority of the respondents was not the same as had been used by most of the respondents in the first part. Since both parts of the

situation pertained to the same transaction, a normal assumption would be that the same method would be used for both computations. Appreciation in value had been the method employed for Part A; therefore, this same method should have been used to compute the amount for Part B. This assumption, however, did not hold true for any of the four terms. Of the fifty respondents who had used the appreciation in value concept for "income" in Part A, only 16 per cent employed this method for Part B. Of the remaining respondents, 70 per cent changed to the net cash flow method. For the term "profit," fifty-four respondents had used appreciation in value for Part A, but, for Part B, 80 per cent changed to net cash flow while only 7 per cent kept the same method. For "gain," only 6 per cent were consistent in method used, while 84 per cent changed to net cash flow. In the computation of change in wealth, forty-eight of fifty-six, or 88 per cent, changed to net cash flow and only 7 per cent retained the appreciation method. This change in method seems to infer that the cash inflow of the second period had an effect on the respondents' decision as to which measurement method was appropriate.

An examination was made of the total number of responses to each term in which the appreciation in value had been used for each of the three situations. This was done to try to determine if there was a relationship between the number of respondents who use the concept and an acceptance of the

reliability of the market to correctly value the asset. These totals are found in Table VI.

TABLE VI

A COMPARISON OF THE NUMBER OF RESPONSES USING THE APPRECIATION IN VALUE CONCEPT

	Income	Profit	Gain	Change in Wealth
Situation 1	12	18	51	55
Situation 2	34	41	61	56
Situation 3A	50	54	63	56

The total number of responses which were possible for each situation was 388. The totals which were obtained, particularly in Situation 1 and Situation 2, were due to respondent's willingness to use the information on appreciation for "income" and "profit" quite differently from "gain" and "change in wealth." The number of responses for Situation 1 was 136, or 35 per cent of the number possible; for Situation 2, 192, or 49 per cent; and for Situation 3, 223, or 57 per cent. Valuation in Situation 1 was by a third party appraisal, in Situation 2 by a real estate market, and in Situation 3 by a stock market. If the criteria used to measure reliability of a market in valuing an asset is how readily the appreciated value of the asset can be converted into cash, then it would appear from the percentages determined above that the more reliable the market, the greater the

number of respondents willing to include the appraised value in their calculation.

The number of respondents using this concept was also compared to the terminology used to indicate the change in owner's equity for the period. The total number of responses that could have been given for each term used was 291. The number of responses classified under this concept was ninety-six, or 35 per cent, for "income"; 114, or 39 per cent, for "profit"; 170, or 58 per cent, for "gain"; and 173, or 59 per cent for "change in wealth." From these percentages it again appears that appreciation is more strongly associated with the terms "change in wealth" and "gain" than with the terms "income" and "profit."

The last analysis of the data was to examine the consistency of use of this concept. This was done by counting the total number of times each respondent incorporated the concept into his answer for "income," "profit," "gain," and "change in wealth." Table VII gives this information.

TABLE VII

NUMBER OF TIMES APPRECIATION IN VALUE CONCEPT USED

Number of Times Used	Income	Profit	Gain	Change in Wealth
0	35	24	14	16
1	32	39	19	22
2	26	27	38	31
3	4	7	26	28

When the term used was "income," the number of respondents decreased as the number of times used increased from zero to three. From this fact it appears that there is little consistency of use for the term "income." When "profit" was computed, the number of respondents using this concept once was fifteen more than the number using it zero times and twelve more than the number who used it twice. Only seven respondents used the concept in three situations. Due to the variation in number of times used, no statement on consistency appears valid for the term "profit." The results obtained for the two terms, "gain" and "change in wealth," are similar. For both terms the number of times the concept is applied increased from zero to two. The number of times the concept is used in all three situations then decreased but was slightly greater than the number of times it was used for one or none of the situations. However, these totals do indicate a greater consistency of use of this concept for these two terms when compared to the terms "income" and "profit."

A comparison was also made in order to try to determine consistency of use by comparing the number of times the concept was used zero or one time with the number of times it was used at least twice. The number of times the response was used in at least two of the situations was thirty, or 31 per cent, for "income"; thirty-four, or 35 per cent, for "profit"; sixty-four, or 66 per cent, for "gain"; and fifty-nine,

or 61 per cent, for "change in wealth." Since the percentages for "gain" and "change in wealth" are approximately twice those for "income" and "profit," it would appear to strengthen the previously determined observation that appreciation in value is more closely associated with the terms "gain" and "change in wealth" than with the terms "income" and "profit."

From the information presented in this section, there are several generalizations which can be made about the acceptability and use of the stock concept of income as determined by the respondents' use of appreciation in value of an asset when computing the change in owner's equity. The first of these is that if a member of this sector is asked to compute "income" or "profit," he is less likely to use the concept than if he is asked to determine a "gain" or a "change in wealth." A second generalization is that as the respondent places greater faith in the market which assigns the value to the asset, measured by an acceptance of the fact that the asset can readily be exchanged for an equivalent amount of cash in this market, the use of the concept, especially for "income" and "profit," will increase. Finally, it can be stated that there is an overall lack of consistency in the use of this concept by the individual respondent, but that there is a more consistent use when computing "gain" or "change in wealth" than when computing "income" or "profit."

The Flow Concept

A second concept of income is based upon the recording of changes in asset and liability valuation which arise from the activities engaged in by a firm. These transactions can be either internal or external in nature. Internal transactions are those which occur when assets are used or changed within the firm. External transactions arise when assets or liabilities are transferred from some outside entity to the firm or from the firm to an outside entity. Through these transactions income is realized and a flow of cash is produced from which further operations can be conducted. Under this concept valuation changes which occur due to changes in expectation or market valuation are usually excluded from the computation.[4] There are some exceptions to the preceeding statement. The method used in the valuation of inventory at the end of the period is an example. The American Institute of Certified Public Accountants requries a departure from the use of the transaction values, cost, to some lower level, commonly market value, when the utility of the items is no longer as great as their cost.[5]

The transactions approach is the one normally used by the accountant when producing an income statement. The transactions engaged in by a firm produce revenues and

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[4]Hendrickson, op. cit., p. 1421.

[5]Committee on Accounting Procedures, AICPA, "Restatement and Revision of Accounting Research Bulletins," Accounting Research Bulletin No. 43 (New York, 1953), p. 30.

expenses which are the basis for the determination of the income amount to be reported. The major emphasis of the accountant is one of properly matching expenses with related revenue so that the income of the period can be determined.

Associated with the matching process are timing and valuation problems. Solutions to these problems are found in a body of principles known as generally accepted accounting principles (GAAP). These principles are rules which are based on doctrines which have evolved from within the accounting profession. The accountant must follow these principles; if he departs from them, the burden of proof lies with him that the alternative method is better. In general these principles require that revenue be recognized in the period in which the transaction has been validated by a sale, and an expense is to be recognized in the period in which the associated revenue is reported. Since the recognition of revenue and expenses does not always coincide with the actual cash flow, a second problem becomes important, the proper method of handling the time lead or lag between the two. This timing difference is the reason for the use of accruals if the period of recognition precedes the period of cash flow and for the use of deferrals if the period of recognition follows the period of cash flow.

When computing the income of an entity, the accountant must analyze and report correctly many transactions. Three types of transactions, as shown by the amount of space

devoted to them in accounting literature, appear to present the greatest difficulties. One type of transaction involves the point in time in which revenue and expenses for which there is no cash exchange are to be reported. A second concerns the recognition of, as an expense, the cost of an asset used in production which has a life longer than one operating cycle. The third type pertains to the value to be assigned to the inventory of goods which remains at the end of the period. In order to determine how members of this sector would deal with these problems, five of the situations of this study were designed so that the information presented to the respondent required a solution to one of these three problems. Analysis of the responses received is contained in the remainder of the section.

Two of the situations presented the problem of determining the period in which revenue and/or an expense should be recognized if there was no actual cash flow. Situation 4 was a test to determine if respondents would recognize revenue during the current period if a sale was made but cash had not been received. The situation was one in which the owner of a farm and ranch supply store had sold goods for cash to most of his customers, but had made some additional sales on account. The total cost of the goods that had been sold was known. The intent was to see if the respondents would include the receivables as one component of revenue. The accountant, using generally accepted accounting principles, would be

required to include the goods sold on account as part of the revenue of the period. Therefore, in his computation, income would be the sum of the cash sales and the sales on account less the cost of the goods sold and operating expenses of the period. Table VIII gives the number of responses and percentage of usage for this situation.

TABLE VIII

A COMPARISON OF RESPONSES TO SITUATION 4

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Accrual Acctg	10	10	15	16	22	23	22	23
Net Cash Flow	36	37	34	35	27	28	30	31
Gross Receipts	10	10	0	0	0	0	0	0
Indeterminate	29	30	36	37	36	37	33	34
No Response	12	13	12	12	12	12	12	12

In the computation of "income," three measurement concepts could be identified, but only two were used by the respondents to obtain amounts for the other three terms. The measurement concept used most often for each of the terms was net cash flow, while the gross receipts concept was used only in the calculation of "income." Of the ten who used this concept of gross receipts, only one included the accounts receivable sales as part of the revenue of the period. The method which would be used by the accountant, accrual accounting, was

employed by only 10 per cent of the respondents when calculating "income" for the period, but did increase to 23 per cent for "gain" and "change in wealth." This small number of responses would seem to indicate that in this situation members of this sector do not agree with the accounting method of reporting revenue at the point of sale for any of the four terms unless there has been an actual cash transaction.

The number of responses that were classifiable was not large: only 57 per cent for "income," 51 per cent for "gain" and "profit," and 54 per cent for "change in wealth" were identifiable with a particular measurement concept. An analysis of the indeterminate answers brought out the fact that one major cause for them was the fact that many of the respondents considered the account receivables to be an expense or loss rather than a part of revenue, or disregarding it entirely. The number of respondents who followed this practice was twenty-seven, or 28 per cent, for "income," thirty-four, or 35 per cent, for "profit," thirty-three, or 34 per cent, for "gain," and twenty-nine, or 30 per cent, for "change in wealth." This was a larger number for each term than the number who used the accepted accounting practice of accruing revenue and was as great for each term, except "income," as the number who followed the net cash flow method.

Situation 5 was also a test to determine if revenue due, but not received, would be recognized during the period in

which it was earned, but is also included a test to determine the period in which an unpaid expense would be recognized. There were three data items given. The first was a lease agreement between an owner of land and agricultural operator in which the revenue from the lease, although due, had not been paid by the end of the period. This presented a revenue situation similar to situation 4, except in this case the entire revenue for the period was considered a receivable. The other two items were expenses associated with the ownership of the land. One of the expenses was paid during the period, but the second, which the owner had expected to pay from the lease revenue, was due but had not been paid at the end of the period. Accounting conventions would require recognizing the revenue and matching of both expenses with this revenue to determine the income of the period. The number of responses and percentage of usage for situation 5 is found in Table IX.

TABLE IX

A COMPARISON OF RESPONSES TO SITUATION 5

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Accrual Acctg	38	39	34	35	34	35	41	42
Net Cash Flow	19	20	9	9	10	10	14	14
Gross Receipts	6	6	1	1	2	2	4	4
Indeterminate	23	24	40	41	36	37	23	24
No Response	11	11	13	14	15	16	15	16

Accrual accounting was the method used by the largest number of respondents, but it was used by less than 45 per cent for all terms. However, not all of these responses were the same as the one that would have been given by the accountant. Accounting convention requires that both the unreceived revenue and the unpaid expense be included in the measurement. Several of the respondents did not follow this convention. However, all responses in which at least one of the two items was accrued were placed in this classification. The number of responses which were identical to that of the accountant was twenty-three, or 24 per cent, for "income," thirty, or 31 per cent, for "profit"; twenty-nine, or 30 per cent, for "gain"; and twenty-seven, or 28 per cent, for "change in wealth." Of those who did not accrue both the revenue and the expense, fifteen of the thirty-eight did not recognize the lease payment as revenue but did recognize the expenses when the computation was made for the term "income." For the other three terms, four of thirty-four for "profit," five of thirty-four for "gain," and fourteen of forty-one for "change in wealth" also followed this practice. None of the responses indicated that respondents were willing to recognize the unreceived revenue but not the unpaid expense. The respondents' use of the expense, but not the revenue, indicates a preference for a conservative approach in the measurement of change in equity, but not one as restrictive as would have been indicated by the use of a cash method.

A cash basis of accounting, one of the measurement methods available in this situation, was used by some respondents, and ranged from a low of 9 per cent in the calculation of "profit" to a high of 20 per cent for "income."

The number of indeterminate answers is large for "profit" and "gain" when compared to the other two terms. This was due to the number of respondents who gave zero as an answer for these two terms, refusing to accrue the income or to recognize either of the two expenses in this computation. The reason for this particular type of response by such a large number of respondents could not be determined. The concept that an account receivable is considered an expense rather than revenue received some additional support in the responses given to this situation. When "income" was computed, thirteen of the indeterminate answers were due to the respondents' handling it in this manner. This decreased to four for "profit," to three for "gain," and to seven for "change in wealth."

A generally accepted accounting principle is that revenue, even though not received, must be recognized in the period in which there is an identifiable event which validates a sale and that all expenses associated with this revenue, whether paid or unpaid, must also be recognized. The preceeding two situations gave three opportunities for the respondent to follow this accounting practice. To determine the acceptability of accruals by members of this sector the responses to Situation 4 and Situation 5 were

analyzed to determine the number of times this method was used by each respondent. The results of this tabulation are presented in Table X.

TABLE X

A COMPARISON OF THE NUMBER AND PERCENTAGE OF USE OF THE ACCRUAL CONCEPT

Number of Times Used	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
0	43	44	56	58	50	52	41	42
1	29	30	9	9	16	16	22	23
2	19	20	21	22	20	21	23	24
3	6	6	11	11	11	11	11	11

Since at least 42 per cent of the respondents failed to use an accrual in any of the test situations, it would appear that the practice of accruing revenue and expenses is not prevalent in this sector. The percentages increase to a minimum of 65 per cent when the number who accrued one time only is added. A further analysis was made of the responses to try to determine if the accrual of revenue or the accrual of expenses was used to any great extent. Situation 5 offered the one opportunity to include an unpaid expense in the computation. Of the ninety-seven possible responses which did follow this practice, there were forty-nine for "income," thirty-eight for "profit," thirty-seven

for "gain," and forty-seven for "change in wealth." The percentage of those who included the accrued expense ranged from a low of 38 per cent for "gain" to a high of 50 per cent for "income." Both Situation 4 and Situation 5 presented the opportunity to include unreceived revenue in the computation. Of the 194 possible responses, only thirty-three for "income," forty-five for "profit," fifty-one for "gain," and forty-nine for "change in wealth" did include the receivable in the computation. The percentage varied from a low of 17 per cent for "income" to a high of 26 per cent for "gain." The small percentage of use for both the accrual of revenue and of expenses would imply that the use of accruals is not generally understood regardless of which term is used to indicate change in equity. It also can be pointed out that conservatism is indicated in that the percentage of respondents who were willing to recognize the unpaid expense is greater for all terms than the percentage who recognized the unreceived revenue, even though the number who did when compared to total responses is small.

Two of the situations were designed to present a second problem faced by the accountant, the determination of the period in which to expense the cost of an asset which will be used in the production process over an extended period of time. Accounting principles state that the cost of such an asset should be allocated equitably over the period in which the asset contributes to the production of revenue. This is

accomplished by expensing a part of the cost in the period when purchased and deferring the remainder to future periods. The common terminology used by the accounting profession is depreciation of an asset. Various methods, each with theoretical justification, are in use to allow the accountant to determine what amount of cost to allocate to a period. Associated with each allocation method is the problem of identifying the useful life of the asset. For purposes of analysis of these two situations, the use of any depreciation method and any life span greater than one year will place a response in the accrual accounting classification.

Situation 6 was a test to determine if the respondent would use a depreciation method to allocate the cost of an asset that was purchased at the beginning of the period but would be used in the production process in future periods or if it would be treated in some other manner. The information given included the cost of the asset and an estimation of its useful life, the total sales for the period, and the total cash expenses for the period. A tabulation of the number and percentage of responses is given in Table XI.

TABLE XI

A COMPARISON OF RESPONSES TO SITUATION 6

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Accrual Acctg	33	34	50	52	50	52	41	42
Net Cash Flow	26	27	22	23	17	18	18	19
Gross Receipts	12	12	0	0	0	0	0	0
Cash Payout	7	7	2	2	1	1	5	5
Imputed Costs	0	0	0	0	1	1	1	1
Indeterminate	6	6	10	10	14	14	18	19
No Response	13	14	13	13	14	14	14	14

Five different methods of measurement were used by respondents to compute amounts for this situation, but one of those, gross receipts, was used only for "income." Two methods, accrual accounting and net cash flow, accounted for 61 per cent or more of the responses for each term. These two methods differ only in that accrual accounting requires the allocation of a part of the cost of the long-lived asset, while in the net cash flow computation it is excluded. Those who did allocate used the straight line method, the oldest and most conservative one available. The number of respondents who used the accrual method for "income" was slightly larger than the number who used the net cash flow method, but this

difference increased significantly in the computation for "profit," "gain," and "change in wealth." The increasing usage of the accrual method is evidence that the use of depreciation in determining change in equity is a concept that has a degree of acceptability in this sector.

Because of the known conservatism of the members of this sector, it was expected that many would expense the entire cost of the asset during the period. However, this method, cash payout, was not used by any significant number of respondents for any of the four terms. The greatest percentage of usage was 7 per cent for "income" and 5 per cent for "change in wealth." One respondent used the imputed cost method for calculating "gain" and "change in wealth," including as an expense the interest lost because the money used to purchase the asset had not been invested in a savings account. Comments on the use of implicit costs will be deferred to the section where the situations testing the acceptability of the economic profit concept of income will be discussed.

Situation 7 was constructed as a test to determine the period in which expense would be recognized for two assets with different lives and in which the expectation of the revenue that they would produce was believed to be greater than their cost. The situation presented the case of an operator of an entity who had purchased a used asset which was needed in his operation. Major repairs were necessary

to place the asset in a usable condition. The cost of the repairs was a material amount. The useful life of the repairs was less than that of the asset purchased; therefore, they would have to be undertaken again during the life of the used asset. Since the cost of the repairs was a material amount and was expected to extend the life of the used asset, this cost, according to accounting convention, is considered a separate depreciable asset. Additional information included the net fees (revenue less cash operating expenses) for the period and an estimation of the net fees which were expected to be earned over the life of the used asset. The accounting principle which applies to this situation allows revenue to be recognized only as received and requires that the cost of the assets be allocated over the length of their lives individually. Table XII contains the tabulation of responses for this situation.

TABLE XII

A COMPARISON OF RESPONSES TO SITUATION 7

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Accrual Acctg	35	36	49	51	43	44	35	36
Net Cash Flow	18	19	6	6	6	6	8	8
Cash Payout	9	9	5	5	5	5	6	6
Imputed Cost	1	1	1	1	1	1	1	1
Indeterminate	20	21	22	23	27	28	33	34
No Response	14	14	14	14	15	16	14	15

The analysis of the transactions in this situation was more difficult for the respondent than those that were previously discussed as evidenced by the number of different amounts that were reported. The measurement method used by the greatest percentage of respondents was a form of accrual accounting. Even though all respondents did not follow the measurement in the strict accounting sense, all answers in which at least one of the assets was depreciated were grouped under this classification. Of the thirty-five who used this method for the term "income," twenty-four followed the practice of the accountant and depreciated both assets. Of the remaining eleven, there were five who used the full cost of the repairs as a period expense, three who used asset lives different from those given, two who ignored the cost of one of the assets completely, and one who computed "income" using the allocation process for expense but used the anticipated revenue for the full life of the used asset. When "profit" was the term asked for, 51 per cent of the responses were classified under the accrual method. Of these forty-nine responses there were thirty-two who used the accounting concept, eight who expensed the repairs and allocated the cost of the used asset, four who used a different asset life than those given, four who allocated only the cost of one asset, and one who calculated an amount for the entire period. For the computation of "gain," twenty-nine of the forty-three responses included the allocation of cost of both assets,

five expensed the repairs fully, and the other nine gave the same response as indicated for the term "profit." There were thirty-five respondents who used the accrual accounting method for the term "change in wealth." Of these, twenty-one prorated the cost of both assets, six expensed the cost of the repairs entirely, three ignored the cost of one asset and allocated the other, four used a different asset life, and one made the calculation using the extended period revenue. This data leads to an inference that even though respondents may be aware of the principle of allocation of cost for long-lived assets, their knowledge is incomplete as to what constitutes a depreciable asset.

Of the other measurement methods used, none was used by a significant number of respondents, with one exception. In the calculation of "income," eighteen, or 19 per cent, used the net cash flow method to obtain an answer. It also might be noted that a cash method was used by twenty-eight of the respondents for "income," four more than the number which followed the accepted accounting practice. When the answers classified as indeterminate were analyzed, no particular cause was found for the number that were received.

The responses were analyzed in two ways in order to determine the acceptability of the depreciation concept. One of these was to compare the total number of times depreciation was used in a response in the three tests found in the two situations with the total number of times it could have been

used. The total number of times a depreciation method could have been used for each of the four terms was 291. The number of times it was used for "income" was ninety-five, or 33 per cent; for "profit," 134, or 46 per cent; for "gain," 125, or 43 per cent; and for "change in wealth," 100, or 34 per cent. Since all percentages are less than 50 per cent, it can be generalized that the use of depreciation in the calculation of the results of operation for the period will not be widespread among members of this sector regardless of the term used to indicate it. An analysis was also made to see if there was any consistency of use among the respondents. Table XIII lists the number of times this procedure was used by each respondent regardless of how the response had been classified.

TABLE XIII

A COMPARISON OF THE NUMBER OF TIMES DEPRECIATION USED

Number of Times Used	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
0	49	51	32	33	37	38	47	48
1	15	15	20	20.5	21	22	20	21
2	19	20	21	21.5	13	13	10	10
3	14	14	24	25	26	27	20	21

As indicated by the data in the table, depreciation was used in the computation at least once by 49 per cent or more of the respondents for all four terms, with the largest percentage of use occurring in the computation of "profit," 68 per cent, and "gain," 62 per cent. This would infer that respondents are more willing to use this concept for "profit" and "gain" than for "income" and "change in wealth." The number who used depreciation at least two times was forty-five, or 46.5 per cent, for "profit"; thirty-nine, or 40 per cent, for "gain"; thirty-three, or 34 per cent, for "income"; and thirty, or 31 per cent, for "change in wealth." These percentages indicate that there is no consistency of use of this concept by members of this sector. From the two analyses made, it appears that the acceptability of depreciation is not great for any of the four terms that are used to indicate change in equity, but of the four terms used, the acceptability of use is greater for "profit" and "gain" than it is for "income" and "change in wealth."

Situation 8 was a test to determine how the respondent would deal with a third major problem faced by the accountant, the valuation of an ending inventory. The situation concerned an operation in which the production of a period had not been completely sold by the end of the period. The product was a homogenous product; therefore, the unit cost for all units was the same. The total cost of production was given as well as the pro rata cost of each unit. The number of

units produced, the number sold, and the number in the ending inventory were given as part of the data. The revenue received for the units sold was known, as was the expected sales price of the ending inventory. The sale of the units in the ending inventory was not expected to affect the sale of any of the production of the next period. The accountant, facing this problem and using generally accepted accounting principles, would record the revenue of the period and would reduce production costs of the period by the cost of the inventory carried over. The number of responses and percentage of usage is presented in Table XIV.

TABLE XIV

A COMPARISON OF RESPONSES TO SITUATION 8

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Accrual Acctg	12	12	22	23	33	34	28	29
Net Cash Flow	25	26	30	31	17	18	17	18
Gross Receipts	16	17	2	2	1	1	1	1
Appreciation in Value	16	17	13	13	15	15	16	17
Imputed Costs	0	0	1	1	1	1	0	0
Indeterminate	18	18	18	19	19	20	21	21
No Response	10	10	11	11	11	11	14	14

The number of different answers received for this situation was about the same as that in Situation 7. One of the possible causes for this variety of answers could lie in the increased number of data items found in the two situations. An analysis of the number of data items presented, the number of different responses received, and the number of responses that could be identified with a measurement concept will be presented in a subsequent section. For this situation all of the usable answers except one were classified under four measurement concepts. The net cash flow concept was used by the largest percent in the calculation of "income" and "profit," but the concept was changed to accrual accounting for "gain" and "change in wealth." The per cent of respondents who used these two concepts increased from 38 per cent for "income" to 54 per cent for "profit," 52 per cent for "gain," and 47 per cent for "change in wealth." The number who used the accrual method was largest for "change in wealth" and "gain," with the number of responses to these two terms being more than twice as great as those using this method for "income." The responses of those classified as using an accrual method proved surprising in that very few followed the accepted accounting practice of expensing only the cost of the units sold. None of the respondents used this method when they calculated "income"; only three used it in the calculation of"profit"; five used it to compute "gain"; and four used it

for "change in wealth." Other responses were placed in this category because they included as part of the income of the period the anticipated proceeds from the sale of the units in the ending inventory in addition to the net cash flow for the period. Of the sixteen respondents who used the gross receipts method, four used the revenue of the period and the anticipated revenue, and one used the revenue for the period and an amount less than the anticipated revenue. A final comment on this situation is that it is the only one of the five situations analyzed in this section in which the appreciation in value concept was one of the measurement methods which could be identified. However, the percentage of use was much less than the usage in the situations analyzed under the stock concept and does not appear to have any significance.

Since an accrual concept is the one which is followed by members of the accounting profession, an analysis was made of the responses to these five situations to determine the number of times members of this sector had given the same responses as the accountant. This information is found in Table XV. The numbers listed in this table are not the same as those listed under accrual accounting in the tables for Situation 5, 7, and 8. The reason for this is that in the analysis of the situations the emphasis was on the use of accruals and deferrals, not responses which matched the one which would be given by an accountant.

TABLE XV

NUMBER OF RESPONDENTS WHOSE ANSWERS MATCHED THOSE OF THE ACCOUNTANT

	Income	Profit	Gain	Change in Wealth
Situation 4	10	15	22	22
Situation 5	23	30	29	27
Situation 6	33	50	50	41
Situation 7	24	32	29	21
Situation 8	0	3	5	4
Total	90	130	135	115

For the five situations there was a possibility of 485 responses which could correspond with the answer given by the accountant for each of the terms. The percentage of matching that did occur was 28 per cent for "gain," 27 per cent for "profit," 24 per cent for "change in wealth," and 19 per cent for "income." It is readily apparent from the number of responses to the five situations which tested the use of accruals that members of this sector do not determine the change in equity in the same manner as do members of the accounting profession. It is also apparent that there is a closer relationship between the two groups, although not by very much, if the term being used is "profit" or "gain" rather than "income." If Situation 8 is eliminated, the percentages change to 33 per cent for "profit," 34 per cent

for "gain," 29 per cent for "change in wealth," and 23 per cent for "income." However, these percentages do not indicate any change in the generalization made using all five of the situations.

In previous analyses in this section it was found that a large percentage of the responses did not agree with the accounting method of handling any of the three problems which are most commonly found in the computation of change in equity of an owner of an entity. This would seem to further justify the generalization that members of this sector do not follow accounting rules for this measurement. However, it was found in previous analyses that some members are willing to use some of the accounting techniques to a greater extent than others. Table XVI gives the percentage of usage of the four accrual concepts tested in this section.

TABLE XVI

PERCENTAGE USAGE OF ACCRUAL CONCEPTS

	Income	Profit	Gain	Change in Wealth
Accrued Revenue	17	23	26	25
Accrued Expense	51	39	38	48
Deferred Expense	33	46	43	34
Inventory Valuation	0	3	5	4

The percentages listed in the table indicates that the usage of accounting techniques is not great, regardless of which term--"income," "profit," "gain," or "change in wealth" --is used. However, they do show that if the transaction relates to an expense, it is a more acceptable practice to include it than if it relates to revenue. The percentages also indicate that it is more acceptable to accrue an operating expense than it is to defer part of the cost of a long-lived asset when the term employed is "income" or "change in wealth," while the reverse is true if the term is "profit" or "gain." Another fact that is readily apparent from the data is that members of this sector are either unwilling to use an ending inventory valuation in the computation or that there is a complete lack of knowledge of its effect upon the computation to obtain the results of operations for the period.

The percentages listed in the table were also scrutinized to try to determine if there was a greater use of these concepts in the computation of one of the four terms than for the other three. One method tried was to find the average percentage usage of the concepts for each term. These were 28 per cent for "change in wealth," "profit," and "gain," and 25 per cent for "income." Because of the closeness of the averages, the only observation that appears relevant is that the use of accounting concepts is slightly less acceptable when the term asked for is "income." A second attempt to use this method was tried by averaging the percentages

without those for inventory valuation. When this was done, there were no significant changes observed. Again this led to no inference except the one about "income" previously made.

A second approach was used to try to find if a relationship existed between the terms used to indicate the results of operations for the period and the use of accrual concepts. For each accrual concept the percentage of usage for "income," "profit," "gain," and "change in wealth" were ranked in order with the highest percentage of usage being ranked first. The position each term occupied in the ranking for each of the four accrual concepts was examined and the following results were found. "Gain" was ranked first two times, second one time, and fourth one time. "Change in wealth" was ranked second three times and third one time. "Profit" was rated first one time and third three times. "Income" was ranked first one time and last three times. This ranking approach tends to emphasize that accruals are used less frequently when computing "income" or "profit." This fact is significant when it is known that "income" is the term which has been prescribed by the accounting profession as the one which should be used to describe the results of operations for the period.

Economic Profit

The interpretation of what constititutes economic costs to a firm leads to a third income concept, the economic

profit concept. In economic analysis, a pure surplus can be obtained by a firm if the total revenue of the firm exceeds its total cost of production. This surplus is the economic profit of the entity. Cost, as used by the economist in this definition, has a meaning different from that used by the accountant as it includes all costs incurred for resources used by the firm, not just the explicit costs of production. These additional resource costs are called implicit costs and are usually assigned a value equal to what the resource could earn in its best alternative use. Examples of these implicit costs are the return to owners of capital used equivalent to what it would earn elsewhere in the economy and the cost of self-employed resources. Although the implicit cost doctrine has gained acceptance in economic theory, it has failed to find any great following among members of the accounting profession. The usage that has proven acceptable has been in the area of internal reporting for mangers of firms; however, at the present time generally accepted accounting principles do not allow its use in the external reports that are produced.

Two of the situations of this study were constructed specifically to try to determine whether members of the agricultural sector would agree with the economist in the definition of what constitutes cost, or disagree and use the accounting definition. In many of the other situations the use of imputed costs was available to the respondent. The

usage that was found will be discussed after the analysis of the two situations included primarily to test the acceptability of the imputed cost concept.

Situation 9 was a test to determine if respondents would consider as part of the cost of operation the revenue which was lost because an alternative investment was not made by the owner of the entity. The situation presented an operation in which registered cattle were being raised by an owner-manager. The total livestock sales for the period was included as part of the data, as was the total cost for feed, labor, financing, and other operating expenses. To be sure that respondents would be aware of the opportunity to use the implicit cost concept, information was provided describing an alternative investment that was available and the amount of revenue that it was expected to earn. This information was provided so that those responses which had been computed using the rules of the economic profit concept of income determination could be identified with certainty. Table XVII contains the number of percentage of use for this situation.

The use of the interest cost in the computation for the term "income" was considered relevant by some members of this sector, but the concept was not widely accepted. The maximum usage, 21 per cent for "income," differed from the minimum usage, 16 per cent for "change in wealth," by only 5 per cent, indicating that the term being used did not change the acceptability of use.

TABLE XVII

A COMPARISON OF RESPONSES TO SITUATION 9

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Imputed Costs	20	21	19	20	19	20	15	16
Net Cash Flow	44	45	54	55	46	47	44	45
Gross Receipts	12	12	0	0	1	1	0	0
Cash Payout	1	1	0	0	0	0	0	0
Indeterminate	12	13	16	17	21	22	27	28
No Response	8	8	8	8	10	10	11	11

The concept was used by a small percentage of total respondents as only thirty-four, or 35 per cent, included the implicit cost of the investment in the computation of at least one of the terms. Of the twenty who used it in the computation of "income," 10 per cent used it for "income"only; 35 per cent used it in the computation for "profit" also; 15 per cent used it for "gain"; 25 per cent used it for all terms, while the remaining 15 per cent used it for various combination of terms. In addition, there were fourteen respondents who did not use this concept for "income," but did use it for some other term or combination of terms.

When the indeterminate answers were analyzed, it was found that three respondents for "income" and "profit," six for "gain," and eight for "change in wealth" considered the

lost revenue to be something added to the entity rather than a cost of operation. Treatment of the interest cost in this manner was the reason for the increase in the number of indeterminate answers for "gain" and "change in wealth."

The method used by the largest number of respondents for all four terms was net cash flow, the method which the accountant would adopt in this situation. However, only in the calculation of "profit," 55 per cent, was it used by at least one-half of the respondents. From the percentage of use it appears that the implicit cost concept is not acceptable regardless of the term used. There is some agreement with the accounting method but only because it is identical to simple cash flow.

Situation 10 was designed to test whether the time spent by the owner of an entity, a salary cost, would be included if the salary that a manager of a comparable operation would receive was known. The situation had as a secondary test to see if a firm offer for the successful operation that was in excess of the investment would have an effect on the responses given. The appreciation in value of the firm was less than the results of the year's operations, but was more than the economic profit of the firm. Under generally accepted accounting principles, both the salary cost and the appreciation in value would be excluded from the measurement of the results of operations of the period. The number of responses

and percentage of use for this situation will be found in Table XVIII.

TABLE XVIII

A COMPARISON OF RESPONSES TO SITUATION 10

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Imputed Cost	2	2	3	3	3	3	2	2
Appreciation in Value	7	7	12	12	20	21	24	25
Net Cash Flow	47	49	53	55	42	43	36	37
Gross Receipts	10	10	0	0	0	0	0	0
Cash Payout	3	3	1	1	0	0	0	0
Indeterminate	16	17	15	16	18	19	22	23
No Response	12	12	15	13	14	14	13	13

The use of a salary cost was rejected by members of this sector as the largest percentage of use found was 3 per cent for "profit" and "gain." Although the percentage was less than 10 per cent for each term, the number of respondents who considered the salary to be something that made them better off was greater than those who used it as a cost of production. These answers were classified as indeterminate. The use of the appreciation concept was slightly greater than that of imputed cost, but was not large enough to be significant except for the term "gain," 21 per cent, and "change

in wealth," 25 per cent. These percentages indicate that of the two concepts, the appreciation in value concept is the more acceptable, particularly if the change in equity is indicated by the term "gain" or "change in wealth." Of all the responses received there was only one respondent who treated the salary amount as a cost and the appreciation in value as revenue. There were seven in the computation for "income," four in the computation for "profit" and "gain," and six in the computation for "change in wealth" who used both amounts, but this group of respondents considered both to be revenue.

Net cash flow was again the measurement method employed by the majority of the respondents although it was used by less than one-half of them except in the computation for "profit." From the percentage of use, it can be inferred that respondents found this concept more acceptable when the term used was "income" or "profit." It also might be pointed out that if the percentages for net cash flow and appreciation in value are examined simultaneously, it appears that net cash flow is associated more closely with "income" and "profit" while appreciation in value is more closely associated with "gain" and "change in wealth." This is additional evidence for the conclusions reached in the analysis of Situations 1 through 3.

The use of the imputed cost concept was available in other situations, although there were no clues given to the respondent in these situations. For Situations 1, 2, 3, 6, and 7, the investment in the operation was one of the data items included. With this information a rate of return which would have been earned in an alternative investment could have been determined and used as a cost of the period. Since most of the situations designated that the operator was also the owner of the entity, an imputed salary cost could have been included in the measurement. In the situations analyzed prior to these two,the only ones which contained responses which were classified as imputed costs were Situations 3, 6, 7, and 8, with all of these classifications due to the use of an imputed interest cost. The number of responses was minimal as only two for "income," four for "gain" and "profit," and one for "change in wealth" were found. This small number of responses is additional evidence for the generalization that the use of implicit costs is not considered relevant by the members of this sector in determining either "income," "profit," "gain," or "change in wealth." No further analysis was made of the responses because it was believed that the small percentage of use prohibited the finding of any information that would be of value in this study.

The Marginal Concept

The economic sector studied in this project is one in which changes in size, product, and/or technology employed can be accomplished with a great degree of ease. Knowledge of the effect of these changes on the financial outcome of the period is information which the manager needs to evaluate the effectiveness of the changes which have been instituted. Total costs and total revenue are meaningless in obtaining information of this nature, and the information that is needed concerns the revenue earned and the costs incurred which can be traced to the changes undertaken. The financial outcome which occurs under these conditions has been given the name "marginal income" and is the fourth income concept that was investigated in this study.

Four situations were designed to determine if members of this sector would analyze the data presented and recognize a marginal income concept. The four situations were structures in a manner similar to the other ten situations, but there were two differences. One of these differences was due to the necessity of providing the respondent with data for two time periods instead of the one previously given. The second difference is found in the wording of the question which asked the respondent to make the computation. The statement was reworded so that it asked for the income which was due to the change made rather than the income from the operation or the period. In all other ways the format for these

situations was the same as the situations which were previously discussed. Respondents were asked to compute amounts for income, profit, gain, and change in wealth as before. These four situations were made to appear similar to the other ten situations to try to eliminate any biases which might arise because of different formats.

The analysis of responses in this section will be more limited than that of previous sections. Since the purpose of this analysis is to discover if members of this sector recognize the incremental income earned due to a change in operations, it was believed that an examination of the responses to the terms "income" and "profit" would provide this information. The responses to both terms were examined so that those respondents who might state a marginal revenue amount when asked for "income," would have an opportunity to report the incremental income amount when the term "profit" was used. However, the responses given to all four terms will be included in the tables for those readers who might find use for the information.

Situation 11 concerned a ranching operation which had been conducted for several years. During the current period a hormone ear implant program was begun in an attempt to produce heavier animals for sale in the same time span as had been used to raise animals in previous years. The experiment was successful, and revenue for the period increased.

The increased revenue was due to the weight gain as there had been no change in the selling price. Total costs to raise the animals increased, but only by an amount required to implement the new technology. A tabulation of the responses which were given is found in Table XIX.

TABLE XIX

A COMPARISON OF RESPONSES TO SITUATION 11

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Marginal Income	57	59	47	48	47	48	42	43
Marginal Revenue	8	8	2	2	7	7	2	2
Net Cash Flow-Current Year	8	8	19	20	15	16	17	17
Indeterminate	8	8	13	13	10	10	18	19
No Response	16	17	16	17	18	19	18	19

A marginal concept was recognized by approximately two-thirds of the respondents in the computation for "income." Most of these computed marginal income, but there were 7 per cent who were only willing to recognize the change in revenue while ignoring any of the cost incurred. Of the seventy-three classifiable answers, there were eight in which a non-marginal concept, net cash flow for the current period, was used. When "marginal profit" was the term being computed, the percentage identifying marginal income decreased 11 per

cent, and the percentage of responses in which a current period concept was used increased 12 per cent. This change from a marginal concept to a current period concept, when the term being used changed from "income" to "profit," will be discussed after the analysis of the other three situations is completed.

Situation 12 was a farming operation in which part of the acreage of the entity was used to grow grain. The change introduced was to increase the number of acres on which the crop was grown. The revenue which was earned during the current period was greater than that of the prior period. This increase was due entirely to the additional production on the increased acreage as the revenue earned per acre was the same for the two periods. Total cost also increased because of the additional number of acres under cultivation, but operating costs per acre decreased because of a more efficient use of the assets employed in production. A tabulation of the responses which were given is found in Table XX.

Responses for the term "income" which could be classified under an identifiable marginal concept were given by slightly less than 50 per cent of the respondents, although only 39 per cent gave a response that was the marginal income. In addition to those listed in the table under a marginal concept, there were eleven responses classified as indeterminate, which were unsophistacated attempts to determine marginal income.

TABLE XX

A COMPARISON OF RESPONSES TO SITUATION 12

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Marginal Income	38	39	19	20	32	33	24	25
Marginal Revenue	7	7	2	2	1	1	1	1
Margin Cost	2	2	2	2	0	0	0	0
Net Cash Flow-Current Year	12	12	41	42	31	32	37	38
Indeterminate	25	26	20	21	19	20	19	20
No Response	13	14	13	13	14	14	16	16

Among this group, eight arrived at an answer by multiplying the additional acreage placed in production by the income earned per acre. The other three responded with an answer which was the product of the total acreage on which the grain crop was produced and the cost reduction per acre. It also should be pointed out that when the term under consideration was "profit," the number of responses classified as marginal income was reduced one-half, and the number of responses classified under the net cash flow method increased from twelve to forty-one.

Situation 13 presented an operation in which cotton was the crop being grown. The change introduced during the period was technological in nature, the use of a new certified seed to sow the current year's crop. In previous years the

planting had been done with the seed saved from the last crop produced. The use of the certified seed did result in the production of additional units (bales of cotton), all of which were sold during the period. The revenue received was greater than that of the prior year, with the increase being due to the additional units produced as the price per bale was the same as the previous year. Unit cost, excluding the cost of the new technology, remained constant. However, total costs increased due to the increased production and to the cost of the certified seed. A tabulation of the responses is found in Table XXI.

TABLE XXI

A COMPARISON OF RESPONSES TO SITUATION 13

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Marginal Income	31	32	22	23	26	27	24	25
Marginal Revenue	5	5	1	1	3	3	4	4
Marginal Operating Cost	2	2	0	0	0	0	0	0
Net Cash Flow-Current Year	4	4	31	32	19	20	23	24
Indeterminate	47	48	34	35	39	40	34	35
No Response	8	8	9	9	10	10	12	12

For this situation, less than one-third of the respondents identified the marginal income for the period. However, there were a total of forty-eight whose response indicated that they held some form of a marginal concept. In addition to the thirty-eight tabulated under one of the marginal concepts in the table, there were ten whose responses were classified as indeterminate who attempted to use a marginal concept. Five of these subtracted the cost of the seed from marginal revenue to obtain an answer while the other five multiplied the additional units produced by the difference between selling price per bale and operating cost per bale. As was found previously when the term was changed to "profit," the use of the marginal income concept decreased and the use of the net cash flow-current period increased significantly. Also it might be pointed out that there are more indeterminate answers than in the previous two situations.

Situation 14 concerned a farming operation in which the operator had made a decision to install an irrigation system so that water could be supplied to crops as needed rather than having to depend upon the whims of nature. This was accomplished by having several water wells drilled and by purchasing pumps and other necessary equipment to move water to where it was needed. The results of the new method was an increased yield per acre under cultivation. When the crop was sold, the total revenue received was greater than that of the previous year, due entirely to the additional

production, as the sales price per unit had not changed from the prior year. Total operating costs, excluding cost of drilling the wells and cost of pumps and equipment, also increased due not only to the increased production but also to an increase in cost to raise each unit. The cost of drilling the wells, the cost of pumps and equipment, and the expected life of pumps and equipment was additional information provided the respondent. The tabulation of the responses is found in Table XXII.

TABLE XXII

A COMPARISON OF RESPONSES TO SITUATION 14

	Income		Profit		Gain		Change in Wealth	
	N	%	N	%	N	%	N	%
Marginal Income	17	18	18	19	22	23	14	15
Marginal Revenue	8	8	3	3	1	1	2	2
Marginal Cost	1	1	1	1	1	1	1	1
Marginal Cash Flow	24	25	7	7	12	12	10	10
Marginal Cash Payout	3	3	1	1	1	1	2	2
Accrual Acctg-Current Year	2	2	12	12	7	7	10	10
Net Cash Flow-Current Year	5	5	7	7	7	7	7	7
Imputed Cost-Current Year	1	1	2	2	3	3	3	3
Indeterminate	20	21	31	32	24	25	29	30
No Response	16	16	16	16	19	20	19	20

Responses given to this situation included a wider variety of identifiable income measurement concepts than any of the previous situations. One possible explanation is that this situation was more complex as measured by the number of data items than any of the previous ones. A second possible reason exists in the need to use a depreciation expense in computing the income for the current year in order that a marginal income amount might be determined. Since respondents were not queried on why a particular concept was used, the above two reasons are speculative and are given only to provide the reader with possible explanations for the multitude of responses received.

The percentage of responses in which some form of marginal concepts was used was 55 per cent, but only in slightly less than one-third of these, 18 per cent, was marginal income computed according to the definition given previously. One of the marginal concepts found in the responses, marginal net cash flow, had not been used previously but was used as a response to this situation by 25 per cent of the respondents. This classification had the largest number of responses, and the percentage of use was 7 per cent more than that for marginal income. The appearance of the cash flow concept has a logical explanation. To compute income for the current year, it is necessary to include in the expenses of the current period a part of the cost of the assets acquired to install the irrigation system. If this expense is not included, then

a net cash flow concept has been used. Since net cash flow was the appropriate method to use to compute income for the prior period, the failure to recognize the depreciation expense in the current period would lead to a marginal net cash flow concept when comparing the net results of operation for the two periods.

When the term to be computed was changed to "profit," the percentage of respondents using a marginal concept decreased as was previously noted, although the number of responses classified as marginal increased by 1 per cent. Although not a significant increase, it is contrary to what was found in the analysis of previous situations in this section. A second finding was that the number of respondents using the current year net cash flow concept increased only 2 per cent. However, when the number using the current year accrual method is added to the number using net cash flow, an increase in the number of responses comparable to the previous situations can be found.

To determine how well members of the agricultural sector were able to identify this type of income, the total number of responses in which marginal income was correctly determined was examined. A correct determination was made by the largest number of respondents, fifty-seven, in Situation 11 and by the smallest number, seventeen, in Situation 14. Marginal income was correctly identified in 143 of the 388 possible responses to the four situations. This was a

percentage of 37 per cent and an average number of times correctly determined of thirty-six. Since identification was made by only one-third of the respondents, it seems to indicate that marginal income is not widely recognized by members of this sector.

The number of times in which there was an attempt to use a marginal concept was also examined. The total number of responses which could be identified, including those that were classified as indeterminate, was 224, or 58 per cent of the total number possible. This is 21 per cent greater than the percentage of responses in which marginal income was correctly computed. The range of usage was seventeen, with a low of forty-eight in Situation 13 and a high of sixty-four in Situation 11. The average number of responses per situation was fifty-six. These statistics indicate that there is an unsophisticated recognition of an incremental concept, even though marginal income cannot be identified correctly.

As was pointed out in the analysis of the individual situations, a change in the concept used in the computation was found when the responses were tabulated for the term "profit." In each situation the use of the marginal concept decreased while the use of a current period concept increased. The decrease for Situation 11 was fourteen, or 22 per cent; for Situation 12, twenty-four, or 51 per cent; for Situation 13, fifteen, or 39 per cent; and for Situation 14, twenty-three, or 43 per cent. The increase in the number of

respondents who used a current period concept in Situation 11 was eleven; in Situation 12, twenty-nine; in Situation 13, twenty-seven; and in Situation 14, thirteen. All of the change in Situation 11, 72 per cent of the change in Situation 12, 48 per cent of the change in Situation 13, and 92 per cent of the change in Situation 14 was due to respondents who had used a marginal concept to compute an answer to the term "income."

Since the change was not found until the responses were tabulated, it was not possible to ask the respondents why this was done. However, there are two explanations which seem plausible. One of these is that many respondents may consider the term "profit" to be a more complicated concept. Since it is more complicated, it also may be believed to be a more precise concept to use in measuring the change in equity. Some evidence that this could be the explanation was found when the responses to the previous situations were reexamined. In all of the situations where a gross receipts concept had been used to compute "income," a decrease in the number of responses was found for "profit." For the three situations testing the use of the appreciation method and for the five testing the accrual concept, the total number of responses to the term "profit" was greater than that for the term "income." When the number of unusuable answers was tabulated, it was found that in eight of the

situations the number for "profit" was greater than that for "income." Each of these observations tends to support this explanation as the cause of the change in concept used.

A second explanation for the change could lie in the fact that those respondents who changed measurement methods were searching for a different answer for "profit" than the one which had been given for "income." This would be possible if the instructions were misunderstood and the respondent believed that he was to compute an answer for "income" using a marginal concept, but one for "profit" that was similar to those in the previous situations. Since in the testing instrument these marginal situations were interspersed among the other situations, the possibility also exists that when computing "profit" some respondents forgot that they were looking for a marginal amount. However, there is some negative evidence which contradicts this observation as a possible explanation. When the tables are examined for the number of respondents who used the marginal concept for the terms "gain" and/or "change in wealth," it will be noted that the number of responses for these terms is greater than the number for "profit" in three of the four situations. No other evidence was found which would either support or deny this explanation as the causal factor for the change in concept usage.

The final observation concerns the number of unusable answers, the no responses and those classified as

indeterminate, which did not use a marginal concept for the four situations. These ranged from a high of fifty-five in Situation 13 to a low of twenty-one in Situation 11. The total number was 146, or 38 per cent of the total responses, an average of thirty-six and one-half. These values are slightly larger than the comparable figures for marginal income. Adding the number of unusable answers to the responses classified as current period responses indicates that there are twice as many members of this sector who will not, or cannot, recognize any form of marginal concept as there are who are able to identify marginal income.

Cash Concepts of Income

There is another concept of income, a modification of the flow concept, which limits revenue to the inflows of cash and limits expenses to the cash outflows that take place during the period. The determination of the financial change of a period using these rules for identifying revenue and expenses is known as the cash concept of income. Of the several income concepts this is the most restrictive. Its use has not been deemed acceptable by the accounting profession for most entities; however, it is in use by some sole proprietors and other smaller incorporated entities. Since the members of this sector as a group are known to be conservative, because most of the entities are structured as sole proprietorships or partnerships and because of the cash nature of the transactions engaged in, an examination of the

first ten situations was undertaken to determine to what extent this concept of income was used in the responses which were given.

Two measurement methods, net cash flow and cash payout, were available for use by the respondents to indicate that they were using a cash concept to determine the change in equity during the period. The more restrictive of the two is cash payout. Under the rules of this measurement method, expenses of the period include not only the cash operating expenses, but also the cash outflow which occurs in the purchase of long term assets. Situation 1, Situation 3A, Situation 6, Situation 7, Situation 9, and Situation 10 provided information which would allow the use of the cash payout method. For these situations a total of fifty-one responses, classified as cash payout, were received as answers to the terms "income," "profit," "gain," and "change in wealth." None of the terms received more than 10 per cent of the total responses in any situation. The term, "income," received the largest number of responses, twenty-two; and the term "gain" received the smallest number, seven. This small number of occurrences indicates that the cash payout method for measuring periodic change is rejected by members of this sector.

The net cash flow method is one in which only the cash operating revenue and expenses are used to compute the financial change of the period. Each respondent had eleven

opportunities to use this method in the first ten situations. With ninety-seven respondents participating in the study, 1,067 responses to each term were possible. The number of responses in which net cash flow was the method used to compute "income" was 391, with the greatest usage found in Situation 3B. The smallest usage was eighteen in Situation 7 and nineteen in Situation 5. The average number of times it was used was thirty-five and one-half. When "profit" was being determined, the total number of responses using net cash flow was 369, an average of thirty-three and one-half per situation. The range of usage was greater than that for "income," with seventy-one using the method in Situation 3B and six using it in Situation 7. For the term, "gain," the number of responses using this method was 279, an average of slightly more than twenty-five per situation. This average is not a representative figure, however, for Situation 3B, Situation 9, and Situation 10 accounted for 160 of the responses, 57 per cent of the total number in which net cash flow was used. The term "change in wealth" had 291 responses in which net cash flow was used, an average of twenty-six and one-half. Again the usage was not widespread, as more than 50 per cent of the total were given as responses to three situations.

The number of responses using either method was totaled to see if any information concerning the cash concept could be discovered. The total number of responses using both of

the cash concepts for "income" was 413; for "profit," 379; for "gain," 286; and "for change in wealth," 303. The average number of responses per situation was not calculated as there would have been no significant change from those calculated for net cash flow due to the small number of responses to the situations in which the cash payout method was used. The smallness of the total number of responses given does provide additional evidence to show that the cash concept is not widely used by members of this sector for either "income," profit," "gain," or "change in wealth."

From the analysis of the number of responses in which a cash concept was used, two trends were found. One of these is that a less restrictive cash concept method is preferred by those who use a cash concept to determine periodic change. The second is that when a cash concept is used, it is more likely to be associated with the terms "income" or "profit," rather than with "gain" or "change in wealth."

Analysis of Unusable Answers

When this study was begun, much time was spent to see that all of the information collected could be used. However, after the data had been collected and tabulated, it was found that there were many responses which could not be classified under any of the measurement methods defined. The unusable answers which were received were of two kinds, those in which no response was given and those in which the computation that

was made could not be matched with a measurement method. Some of the factors causing these responses are known, but some could not be determined. Table XXIII contains a comparison of the number of unusable responses for each situation with one of the possible causes, the number of data items given in the situation.

The total number of unusable answers found when the data was tabulated was 1,950, or 33.5 per cent of the total responses which were given. The number of unusable answers for "income" was 435; for "profit," 490; for "gain," 509; and for "change in wealth," 516. When compared to the total number of responses possible for each term, 1,455, it was found that 30 per cent of the responses given for "income," 33.7 per cent of the responses for "profit," 35 per cent of the responses for "gain," and 35.5 per cent of those for "change in wealth" were not usable. These percentages point out the fact that for each term, one-third of the respondents in this sector were not able to determine an answer to a hypothetical situation or, if one was provided, it could not be associated with one of the common methods of measuring change in equity of an owner. Some of the causes are undoubtedly due to unintentional omissions, to computational errors, or to incorrect interpretation of the data. Other causes which were found will be discussed in the analysis of the two classes of unusable answers. The causes for some of the responses, however, were not explainable.

TABLE XXIII

A COMPARISON OF THE NUMBER OF DATA ITEMS
AND UNUSABLE ANSWERS

	Number of Data Items	Income		Profit		Gain		Change in Wealth	
		Ind	NR	Ind	NR	Ind	NR	Ind	NR
Situation 3A	2	8	12	1	12	2	15	7	15
Situation 3B	2	6	13	6	14	6	14	4	14
Situation 4	3	29	12	36	12	36	12	33	12
Situation 5	3	23	11	40	13	36	15	23	15
Situation 2	4	9	10	7	11	9	9	12	11
Situation 6	4	6	13	10	13	14	14	18	14
Situation 9	4	12	8	16	8	21	10	27	11
Situation 1	5	16	4	37	9	30	9	20	8
Situation 10	5	16	12	15	13	18	14	22	13
Situation 7	6	20	14	22	14	27	15	33	14
Situation 8	6	18	10	18	11	19	11	21	14
Situation 12	6	25	13	20	13	19	14	19	16
Situation 11	7	8	16	13	16	10	18	18	18
Situation 13	9	47	8	34	9	39	10	34	12
Situation 14	9	20	16	31	16	24	19	29	19

One type of unusable answer was one in which no response was made. The total number of times this occurred for one of the four terms was 751, or 13 per cent of the total responses. The average number for each term was twelve and one-half. The fewest times found was four in Situation 1, for the term "income," and the largest number, nineteen, was found in Situation 14 for the terms "gain" and "change in wealth." One causal factor producing this kind of response was the need for the respondent to leave before the completion of the interview. This occurred in three instances. One respondent stated during the interview that he could not answer the situations which concerned a ranching operation because he did not raise cattle. Another cause lay in the length of time which was needed to complete the interview, an average of one hour. Some respondents did not provide answers to some of the terms and/or situations so that they might complete the interview.

The number of data items provided did not appear to be related to the number of responses in which no computation was made. The term being determined, or the sequence in which the terms were presented, did seem to have a slight effect. The total number received for "income" was 172; for "profit," 184; for "gain," 199; and for "change in wealth," 196. Additional supporting evidence is provided by the fact that in ten of the fifteen situations the number of responses

for "gain" and "change in wealth" was greater than that for "income" or "profit."

The total number of indeterminate responses for the four terms was 1,199, or 20.6 per cent of the total possible number. The causal factors of these answers is more difficult to explain. In one situation they were due to a large number of respondents treating an account receivable as an expense rather than correctly as revenue, or ignoring it completely. In two of the situations many respondents gave an answer of zero, refusing to recognize that any transaction had occurred which would cause a change. Other causes were found to be computational errors and/or incorrect interpretations of the data presented.

The number of responses which could not be classified for each term was examined to see if a pattern could be found or if a relationship existed. The term with the fewest number of indeterminate responses, 263, was "income." This was an average of seventeen and one-half for each situation. Situation 3B had the fewest number, six, and the largest number was forty-seven for Situation 13. The term, "change in wealth," had the largest number of indeterminant responses, 320, an average of twenty-one per situation. The largest number was thirty-four in Situation 13, and the fewest was four in Situation 3B. There was 306 responses to the term "profit" and 310 for "gain" which did not match any of the measurement methods defined previously. These data items

lead to a generalization that, except for "income," there does not appear to be any relationship between the term being used and the number of indeterminate answers.

A comparison was also made between the number of facts which the respondent had to consider and the number of indeterminate answers for each of the four terms. The number of facts presented in the situations varied from two to nine. In examining the number of these answers to each situation listed under "income," it appears that as the number of facts increases, the number of indeterminate answers also increases. The two situations with three facts does not follow this pattern, but the variation here can be explained by the incorrect method of handling an accrual. In Situation 4, twenty-seven respondents used this incorrect method. If these are eliminated, then there are only two indeterminate responses. In the other situation with three facts, Situation 5, nine respondents used this incorrect method for an accrual while eight refused to recognize that any of the transactions had an effect. If these seventeen responses are eliminated, the number of indeterminate responses is six. These numbers, two and six, correspond more closely to the number of indeterminate responses which are found for the other situations. Situation 11 also shows a variation as only eight indeterminate answers were found. This situation was a marginal test, and although seven facts were given, only two for the previous year and three for the current year were financial and used in

the computation. The computation was relatively easy, and the situation was simple, which probably accounts for the variation found. If these three situations are eliminated, the number of indeterminate answers does seem to depend upon the number of facts which must be analyzed. One other observation that seems revelant concerns the point at which the number of indeterminate answers increases more rapidly than the number of facts given. When the number of facts is two, three, or four, the number of indeterminate responses is less than ten. When five or more facts are presented, the number of indeterminate responses increases significantly. This appears to infer that five facts is the maximum number that can be handled with any degree of ease.

The realationship between the term "profit" and the number of facts presented is not quite as evident as that for income, but still appears to be true. Several of the situations do not follow the pattern, but again a logical explanation can be found. Situation 4 had thirty-five responses classified as indeterminate because of the method of using an accrual as a loss, while Situation 5 had thirty-five responses and Situation 1 had twenty-seven classified as indeterminate due to the respondent's giving an answer of zero. Situation 11 also varied with the same explanation found for "income" applicable for this term. It should be noted also that when four or five facts are presented, the number

of indeterminate responses increases noticeably, as it did for "income."

Examination of the responses to the terms "gain" and "change in wealth" revealed that the relationship appears to give the same results as were found for "profit." The variation in the number of indeterminate responses found for these two terms could be explained by the same causal factors which were used to explain the variation found for the term "profit."

The analysis of this causal factor, the number of facts presented, shows three things. The first is that as the number of facts increase, the number of indeterminate responses also increases. Secondly, the increase in the number of indeterminate answers is more rapid as the number of facts presented reaches four or five. Finally, the increase in number of responses classified as indeterminate is less pronounced for "income" than for the other three terms.

Hereditary and Environmental Factors

The primary purpose of this study was to determine what income determination concepts members of the agricultural sector would use when presented with a set of financial data. Since it was assumed that several measurement methods would be employed in the computation, different responses were expected. A secondary purpose of the study was to find reasons for the variation in responses, particularly any which were the results of hereditary and environmental factors.

To obtain the information which might allow these causes to be identified, each respondent was given a demographic instrument which surveyed the following areas: respondent-entity relationship, years engaged in agriculture, growth of the entity, time spent with agricultural activities, outside employment, gross revenue, sources of revenue, use of financial statements, age, occupation of father, education, ethnic background, and religious preference.[6]

Upon completion of the research, it was found that the analysis of these environmental factors would have to be limited. A major reason for the limitation is found in the method which had to be employed in obtaining the data for the study. The technique used did not produce a random sample; therefore, no statistical tests could be performed which would have any validity in determining significant variance in the data. A second reason for limiting the analysis appeared when the data for the thirteen categories was tabulated. In seven of these areas the number of respondents falling into a single class interval ranged from 75 per cent to 95 per cent. These areas were respondent-entity relationship, growth in size of entity, amount of time spent in agricultural activities, outside employment, sources of revenue, ethnic background, and occupation of father. Since for each of the seven classifications the number of

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[6]The tabulation of the number of responses for each environmental factor will be found in Appendix C.

respondents in all but one class was small, the technique of collapsing all other classes into a single class to compare with the class containing the majority of responses was examined. This method, however, did not provide the information which was desired so the decision was made to eliminate these factors from the analysis. A further elimination of environmental factors was made after comparing responses to age of respondent and number of years engaged in agricultural activities. The relationship between the two factors was of such a nature that a separate analysis of each would have been a duplication of effort. Because age of respondent is of lesser importance, no analysis was undertaken using it. Finally, since the analysis was to be limited, an arbitrary decision was made to also exclude religious preference. The remaining factors, education, gross revenue, use of financial statements, and number of years engaged in agriculture are analyzed in the remaining paragraphs of this section to determine their effect on the variation in responses given.

The form of the analysis of these four factors is based on a comparison of the total number of times respondents included in a class interval used a particular measurement method for Situation 1 through 10. Situations 11 through 14 were not included in the analysis as the primary purpose of these four situations was to test for the recognition or non-recognition of marginal income. The responses which are

analyzed are for the terms "income" and "profit" only. Since the number of respondents in each class interval differed, the number of times used was translated into a percentage of use for comparative purposes. Only four measurement methods, appreciation in value, gross receipts, net cash flow, and accrual had a wide usage, so the remaining methods that had been employed were consolidated into one group. The data was also examined to determine if the number of responses found was due to a widespread use or if it was due to a concentrated use by a few individuals. The number of times that the appreciation method was available for use was six; the number of times that the accrual method was available was five; maximum usage of the cash flow method was eleven; and the gross receipts method could have been used in nine of the situations. A tabulation was made of the number of individuals who used the appreciation in value method three or more times, the gross receipts method four or more times, the accrual method three or more times, and the net cash flow method five or more times. The total number of responses given by these respondents was then compared to the total number of responses given by members of the class to obtain the percentage of use by these individuals. The findings that appear to have relevance will be reported with the analysis of each of the environmental factors.

Ninety-six of the respondents provided information on the number of years that they had been engaged in or associated

with agricultural activities. Six different intervals were provided for classification of respondents. When the data was tabulated, it was found that the smallest class interval, first year, had no members, and the next smallest, 1 to 5 years, had only five. Because of the small number of respondents in these two classes, they were combined with the third class interval, 6 to 10 years, to form one interval, 0 to 10 years. Table XXIV contains the comparison of the percentage of respondents using each measurement method and this environmental factor.

When the percentages in the table are examined for measurement method used to compute "income," some indication of a pattern of usage is found for the appreciation and net cash flow method. As the years actively engaged in agriculture increased, the use of the appreciation method also increased, although the increase between the first and last class was only 3 per cent. The largest increase, 1.4 per cent, was between the 11 to 15 year class and the 16 to 26 year class, while the smallest change, 0.5 per cent, was between the 0 to 10 year class and the 11 to 15 year class. In the 16 to 26 year class, 50 per cent of the responses were given by six, or 22 per cent, of the respondents. In the over 26 year class, five, or 14 per cent, of the respondents were the source of 37 per cent of the responses. No concentration of use was found in either of the other two classes.

TABLE XXIV

A COMPARISON OF RESPONSES BASED ON YEARS ENGAGED IN AGRICULTURAL ACTIVITIES

	Number of Respondents	Gross Receipts		Appreciation in value		Net Cash Flow		Accrual		Other Methods		Unusable Answers	
		I	P	I	P	I	P			I	P	I	P
0-10 yrs.	17	11.2	0.5	10.2	15.0	47.1	44.4	9.1	18.2	18.6	2.1	15.0	20.3
11-15 yrs.	17	5.9	1.6	10.7	11.8	41.2	41.2	13.4	18.2	11.2	5.9	23.5	28.8
16-26 yrs.	27	12.5	4.0	12.1	15.2	34.0	34.0	9.8	13.1	15.8	5.1	28.3	35.3
Over 26 yrs.	35	6.5	1.3	13.2	12.2	31.7	31.7	13.2	16.6	10.4	6.2	31.5	35.4

Net cash flow had a decreasing usage as the number of years engaged in agriculture increased. The overall change was 14.6 per cent. The smallest change, 2.3 per cent, occurred between the classes 16 to 26 years and over 26 years. The largest per cent of change, 7.2 per cent, occurred between the 11 to 15 year class and the 16 to 26 year class. This is the same point at which the largest change for the appreciation method occurred. There were eighty-eight responses classified as net cash flow in the 0 to 10 year interval. Seventy-two, or 82 per cent, were given by eleven, or 65 per cent, of the respondents. In the 11 to 15 year class, 83 per cent of the responses were provided by eleven of the seventeen respondents. For the 16 to 26 year class, 34 per cent of the respondents gave 64 per cent of the responses. The last class, over 26 years, contained thirty-five respondents. Eleven of these, or 31 per cent, used the net cash flow method a total of seventy-three times, a percentage use of 60 per cent.

The net cash flow method was the only measurement method which showed a discernable pattern of change for the term "profit," with the usage of this method varying inversely with the length of association with agricultural operations. The total usage change was 12.7 per cent, with the smallest and largest changes occurring between the same classes as that for "income." The percentage of change also remained constant. The number of respondents who used this method

five or more times decreased in all classes except for the 16 to 26 year group. In the 0 to 10 year class, eight respondents used the method fifty-four times, 65 per cent of the responses given by this class. In the 10 to 15 year class, six respondents used the method thirty-seven times, a percentage of 56. Twelve respondents in the 16 to 26 year class used net cash flow sixty-nine times, or 72 per cent of the class total, while in the over 26 year class, 50 per cent of the responses were given by nine respondents.

Although the percentage of use computed seems to indicate that a relationship exists between measurement methods and years engaged in agricultural activities, the changes found were not large. No valid conclusion can be drawn concerning the significance of the variations in usage which occurred due to an inability to perform any statistical tests. An examination of the concentration of usage by members of each class did not provide any additional information which would allow reaching a valid conclusion on the existence of a relationship. However, this part of the analysis did indicate that usage of the appraisal and net cash flow methods were more widespread among those who had been engaged in agriculture fifteen years or less than among those who had been in agriculture for sixteen years or more.

One indication of size of an entity is the gross receipts which are received during the period. Information on gross revenue from all agricultural sources was collected from

ninety-five of the respondents. Nine class intervals were provided for respondents to classify themselves. The smallest class interval, under $25,000, contained only one respondent; and the largest class, over $500,000, contained none. There were two respondents who indicated that their gross revenue fell in the $250,000-under $500,000 class. The bottom four class intervals and the top three were combined to produce four classes for the analysis. Table XXV contains the percentage of responses compared to gross revenue.

The examination of the percentages found in the table shows no trends appearing for any of the measurement methods used to compute either "income" or "profit." Except for the class with the largest gross revenue, the use of the appreciation method and gross receipts method for "income" did show an increase as gross revenue increased. The use of net cash flow for "income" and "profit" increased with the increase in gross revenue except for an unexplained decrease which occurred in the $50,000-under $100,000 class. Because several of the methods showed increases that were directly proportional to gross revenue, no relationship seemed apparent.

When examining the extent of use of the net cash flow method for "income," seven of the respondents in the under $25,000 class contributed forty-six, or 78 per cent, of the responses. In the $25,000-under $50,000 class, seventy-two, or 66 per cent, of the responses came from ten respondents.

TABLE XXV

A COMPARISON OF RESPONSES BASED ON GROSS REVENUE FROM AGRICULTURAL SOURCES

	Number of Respondents	Gross Receipts		Appreciation in Value		Net Cash Flow		Accrual		Other Methods		Unusable Answers	
		I	P	I	P	I	P	I	P	I	P	I	P
Under $25,000	15	4.8	1.2	9.1	13.9	35.8	28.5	12.7	13.9	2.4	2.4	35.2	40.1
$25,000-under $50,000	27	10.8	1.7	12.1	12.8	36.7	36.0	12.1	19.2	5.0	5.0	23.3	25.3
$50,000-under $100,000	22	11.2	1.7	12.8	13.6	33.9	35.5	12.8	16.5	2.9	0.8	26.4	31.9
$100,000 and over	31	8.2	0.9	12.0	12.9	39.6	36.4	11.7	15.2	5.0	3.5	23.5	31.1

Eight respondents gave forty-nine, or 60 per cent, of the responses in the $50,000-under $100,000 class; and 109, or 81 per cent, of the responses in the $100,000 and over class came from seventeen respondents. When "profit" was computed, at least 50 per cent of the responses in each class came from less than one-third of the respondents in the class. The same concentrated usage by an individual rather than gross revenue from all agricultural activities appears to explain the variation in responses received.

The educational level of the respondents was a third factor which was examined. Responses to the question of educational level attained were provided by ninety-six of the respondents. The responses indicated that the level of education attained varied, encompassing two respondents who had not completed the eighth grade and three who had graduate degrees. To facilitate the analysis of this factor, all respondents who indicated that they had not completed high school were grouped into a single class, as were those who indicated that they had at least a bachelor's degree. Table XXVI contains the percentage of responses compared to educational level attained.

When the percentage of usage of measurement methods were examined, both inverse and direct variations were found. The percentage of use of the appreciation method for the determination of "income" decreased as the level of education increased. However, the total change between the class with

TABLE XXVI

A COMPARISON OF RESPONSES BASED ON
EDUCATIONAL LEVEL ATTAINED

	Number of Respondents	Gross Receipts		Appreciation in Value		Net Cash Flow		Accrual		Other Methods		Unusable Answers	
		I	P	I	P	I	P	I	P	I	P	I	P
Less than High School Graduate	18	8.7	0.5	12.6	12.6	24.7	26.3	9.6	13.1	2.5	1.5	41.9	46.0
High School Graduate	34	7.2	1.6	12.6	14.2	35.6	33.4	11.8	14.2	3.5	2.7	29.3	34.0
Some College or Technical School	25	12.1	1.1	11.6	15.3	33.5	31.6	13.1	16.4	5.4	5.4	24.3	30.2
Bachelors Degree or Higher	19	8.1	1.4	10.5	10.5	54.5	47.8	13.9	22.5	4.8	2.4	8.2	15.4

the lowest educational level and the one which included respondents with the highest level was only 2.1 per cent. Increases in use of the accrual and net cash flow method as educational level increased were found for both "income" and "profit." The range of per cent change in usage of the accrual method was 4.3 per cent for "income" and 9.4 per cent for "profit." The largest change in the "income" computation was 2.2. per cent and occurred between the classes less than high school and high school graduate. The largest change in the "profit" computation was 6.1 per cent and occurred between the two classes with the highest formal education.

When use of the accrual method for determining "income was tabulated, it was found that in the class less than high school graduate, 11 per cent of the respondents accounted for one-third of the usage. In the other three classes, about one-half of the total usage could be attributed to 20 per cent of the respondents in the class. This high percentage of use by a small number of respondents to compute "income" tends to negate the significance of any relationship which seems to exist between level of education and use of the accrual method.

In the "profit" computation the usage was slightly more widespread, particularly in the class bachelor's degree or higher. In this class, 53 per cent of the respondents were responsible for 72 per cent of the responses. In the class some college or technical school, 60 per cent of the

usage was by 32 per cent of the respondents. In the high school graduate class, 21 per cent of the respondents contributed 47 per cent of the responses; and in the remaining class, less than high school graduate, 34 per cent of the usage was by 17 per cent of the respondents. As was stated for "income," no valid inference can be made due to the high percentage of use by a minority of respondents.

An increase in the use of net cash flow for both "income," and "profit" is found as the level of education increases, with one exception. The some college or technical school class showed a decrease in use of 2.1 per cent for "income" and 1.8 per cent for "profit" over the next lower class, high school graduate. The range of change in percent of usage, 29.8 for "income" and 21.5 per cent for "profit," is larger than any of the changes found previously. The percent of usage by respondents in the class, bachelor's degree or higher, is also larger than any found previously. When the number of times this concept was used by individual respondents was examined, it was found that as educational level increased, the per cent of respondents in the class who used the net cash flow method five or more times increased for "income." However, the percentage of respondents in each class was less than 45 per cent for all classes except the bachelor's degree or higher class, where fifteen of nineteen, or 79 per cent, had used this concept five or more times. The ratio of the number of times these respondents used this

concept, compared to usage by all members of their class, also showed an increase except for the some college or technical school class. For "profit," an increase in both the percent of respondents and the percent of usage by these individuals also occurred except for the class some college or technical school which again showed a decrease.

An unanticipated relationship was discovered when this analysis was being conducted. The percentage of unusable answers listed in Table XXVI indicated that the number of unusable answers was influenced by the level of education attained. The relationship shown was a direct one and was true for the responses to both "income" and "profit." The percent of change between the group with the least education and the one with the most education was 34 per cent for "income" and 21 per cent for "profit." This same direct relationship, although not so pronounced, was also found for gross revenue, while an inverse pattern was exhibited between the number of unusable answers and the number of years engaged in agricultural activities.

This factor, level of education attained, appeared to have some influence on the variation in measurement method used by the respondent. However, the change found in the percentage of use of the appreciation and accrual methods was small and very easily could be dependent on other factors which are not known. The change found in the use of the cash flow method was large enough to have some significance but

was not consistent throughout the classes. Again the inability to perform statistical tests precludes the reaching of any valid conclusion on the relationship that might exist between educational level attained and measurement method used by respondents.

The last factor examined in this analysis is the frequency of use of financial statements by members of this sector. The class designations were designed to determine how often prepared financial statements were received by respondents. The classifications provided were monthly, quarterly, semi-annually, annually, used only for income tax purposes, and no formal statements received and used. Ninety-five of the respondents classified themselves in one of these categories. For the analysis, the first three classes were collapsed into one class, more often than annually, due to the small number in each of the classes. Table XXVII contains the comparison of responses based on this factor.

As was found for the previous factors, the net cash flow method was used by more respondents for the computation of both "income" and "profit" than any of the other measurement methods available. However, no relationship between this method and frequency of receiving financial statements could be observed from the percentage of use computed. The only consistency of use found was that the smallest percentage of usage for both "income" and "profit" was by those respondents who indicated that they received financial statements

TABLE XXVII

A COMPARISON OF RESPONSES BASED ON
FREQUENCY OF FINANCIAL STATEMENTS

	Number of Respondents	Gross Receipts		Appreciation in Value		Net Cash Flow		Accrual		Other Methods		Unusable Answers	
		I	P	I	P	I	P	I	P	I	P	I	P
More Often than Annually	11	11.6	1.7	11.6	14.9	33.1	32.2	9.9	15.7	2.4	1.7	31.4	33.9
Annually	31	10.9	1.2	11.7	14.7	31.1	29.9	12.9	17.3	3.5	2.9	29.9	34.0
For Income Tax Purposes Only	40	6.8	1.6	11.4	12.5	40.7	37.7	13.9	17.3	3.6	2.5	23.5	28.4
No Formal Statements Received	13	9.8	8.4	14.7	12.6	42.7	31.5	7.7	11.9	7.7	6.3	17.4	29.3

annually. When individual usage of this method was examined, it was found that most of the responses had come from a small number of respondents in three of the classes. The exception was the for income tax purposes only class. Herein, 147 of the 179 responses received were given by twenty-three of the forty respondents when "income" was the term, while for "profit," 111 of the 166 responses received came from sixteen respondents. This class also contained more respondents who used this method seven or more times than any class of any other factor.

The percentages listed under the accrual method for "income" and "profit" indicate that those receiving financial statements most often and those who stated that no formal statements were received and used were least likely to accrue or defer items, while the percentage of use by the other two classes was similar. For the appreciation method, largest usage was among those who indicated that they received no formal statements. When the percentage of use was computed for "profit," however, it was found that respondents in the annually and more often than annually classes were the major users while the percentage of use in the other two classes varied by only 0.1 per cent. The individual usage of these two methods by respondents was also inconsistent for both "income" and "profit." Since the range of usage for both measurement methods was small and because of the inconsistencies found, no relationship appears to exist between this factor and either measurement method.

The analysis of the four factors did indicate that certain patterns could be found which tend to show that a relationship exists between some of the measurement methods and certain environmental factors. However, the validity of any that might exist could be neither positively nor negatively confirmed since no statistical tests could be performed. Other evidence appears to indicate that no relationships exist. One reason for making this statement is the smallness of the difference in usage between classes for a given measurement method. A second reason is found in the fact that many of the percentages obtained were the result of the responses given by a small number of respondents in a class. Finally, the measurement method used most often for each factor was net cash flow, and the one used least often was gross revenue. Usage of the appreciation method and the accrual method fell between these two, and varied between factors as to which was the greatest, while for all four factors the two percentages were very close. Although no valid conclusion can be reached, the observations just made tend to justify a statement that no relationships were found between any of the four environmental factors analyzed and the measurement methods used by the respondents.

When all responses had been tabulated, it was found that several of the respondents were consistent in the use of a single measurement method to obtain an answer to the

terms "income" and "profit." To provide additional information for the reader, the final section of this chapter will contain a short biographical description of these individuals. The information for the sketches was taken from the demographic form which the respondent completed. There is one apparent discrepancy which appears in this information, the relationship between the gross revenue reported and the number of acres in the entities. It would be expected that gross revenue would increase as size of the entity increased, but this does not hold true in several of the cases reported here. A comparison of both similar-sized entitites and the different-sized entitites with the revenue reported showed some variation that was greater than would be expected. Whether this variation is due to the nature of the different operations conducted or whether it is due to the fact that some of the respondents gave gross revenue while others reported a net amount could not be determined. However, the reader should be aware of this discrepancy when he evaluates the information contained in the sketches.

Selected Biographical Sketches

The use of the appreciation method was available to respondents in six situations. One individual used this method in five situations for both "income" and "profit." This individual was between 56 and 65 years of age and a high school graduate. He was the owner and manager of a

farm which contained 400 acres and had been farming for 26 years or more. He spent his time in farming duties exclusively. His gross revenue was between $10,000-$25,000 and came from cotton and grain. The only financial statements used in the operation were for income tax purposes.

Gross receipts was a measurement method available in nine of the situations. Three of the individuals who participated in the study used this method in eight of the situations for the computation of "income." Each of these respondents was between 36 and 45 years of age, held no outside job, had been farming between 16 and 26 years, raised cotton and grain, and had started with less than 200 acres. One was a manager of a 1,250 acre entity which had a gross revenue between $50,000 and $100,000. He was a high school graduate, spent 100 per cent of his time with farming activites, and received financial statements annually. The second individual was the owner-manager of a farm which contained 1,520 acres. He spent 90 per cent of his time in farming activities while earning a gross revenue of between $100,000 and $250,000. This individual also received annual financial statements. The educational level was listed as some college or technical school. The third individual was a high school graduate, the owner and manager of an entity containing 2,000 acres. The gross revenue of the entity was between $100,000 and $250,000. Financial statements were received monthly by this individual.

Use of the accrual method was available in five situations. One respondent followed this method five times for both "income" and "profit," while one used it in the computation for "profit" five times. The first individual was between 26 and 35 years of age, had attended college but did not have a degree, and had been farming between 11 and 15 years. He was an owner and manager of an entity which had 1,280 acres and grossed between $100,000 and $250,000 during the period. He spent 90 per cent of his time with farming activities, raising cotton and grain. He received a set of financial statements each year. The second individual was also the owner-manager of an entity which contained 790 acres. His gross revenue was between $50,000 and $100,000 and came from a cotton crop. He was between 46 and 55 years of age, had done graduate work in college, and used financial statements only for income tax purposes.

There were five situations in which a cash payout method, expensing all outflows of cash, could have been employed. Although not many respondents used this method, there was one who did use it for three situations in computing "income." This individual was between 26 and 35 years of age, a high school graduate, and the owner and manager of his farm. He had been farming 11 to 15 years, owned and leased 2,080 acres and had gross revenue of $100,000 to $250,000. He reported that no formal statements were received and used in his operation.

The most commonly used method of computing "income" and "profit" was that of net cash flow. One respondent employed this method to compute "income" in ten of the eleven situations possible. A second respondent used this method nine times for both "income" and "profit"; one used it nine times for "income," and two used it nine times for the calculation of "profit." The first respondent was 26-35 years old, had been farming 6-10 years, was manager only of a farm which contained 430 acres. He raised cattle and cotton and earned between $25,000 and $50,000 during the period. He had done some graduate work in college. Financial statements were received at income tax time only.

The second respondent was an owner-manger, had been farming 26 years or more, and was between 46 and 55 years of age. He had grossed between $50,000 and $100,000 on 388 acres, all from raising cotton, and used financial statements for income tax purposes. This individual stated that he was a high school graduate. The third individual was 36-45 years of age, had a bachelor's degree, and stated that he received no formal financial statements. He had been farming 16-26 years, was owner and manager of a farm on which he raised cotton. The size of the entity was 1,100 acres and the gross revenue was between $100,000 and $250,000. The fourth respondent was an owner, but not the operator, of 1,650 acres on which cotton was raised. He was in the age class 26-35 years and had been engaged in agricultural activities 16-26

years. His gross revenue was $25,000-$50,000. Financial statements were received at income tax time. The last respondent was an owner-manager, had been farming 6-10 years, and was between the ages of 26 and 35. He had a bachelor's degree and used financial statements for income tax purposes. He farmed 1,072 acres, mostly cotton, from which he received between $25,000 and $50,000 in gross revenue annually.

Summary

The analysis of a large amount of data was undertaken in this chapter. Findings and conclusions which were appropriate were stated in the analysis of each income concept which was examined. The chapter which follows, Chapter IV, will contain a summary of the results, the specific findings of the study, and some general statements which pertain to this study. The chapter will conclude with suggestions for further research which is needed in the area of income determination.

CHAPTER IV

SUMMARY, FINDINGS, AND CONCLUSIONS

Introduction

Financial information is the lifeblood of economic decision-making, whether done by the manager of a business firm, the owner of an economic entity, or the investor seeking a way to better himself financially. The information which is used comes from many sources; however, there is one source which is common to all, the set of financial statements produced for and about the business entity. Of the four financial statements which are produced to provide information about the entity, the one which reports the results of the activities engaged in during a period, the income statement, has become the one which is used most frequently to determine the effectiveness of past decisions, the future activities to undertake, the efficiency of management, and the ability of the firm to earn an amount sufficient to make repayments on loans or to pay dividends to the owners.

The professional accountant may be the one who measures income and prepares the income statement. However, for most firms the responsibility for the information found in this statement lies with the management of the firm. But, even here, the accountant has an important function to perform, that of attesting to the fairness of the final amount, net

income, which is reported. In either case the accountant is performing a service for the user of the statement. In performing one of the two services mentioned above, the accountant tries to meet the needs of the user of the financial information. Even though this is his purpose, many critical comments have been made by well-informed individuals which question how well the users of financial information understand the accounting information which they receive and how well this information really meets their needs.

Proposals have been made to meet the objections presented about the income statement as income is presently measured. These propositions include those which advocate the production of multi-valued statements, those which would have the accountant produce a special statement for each of the different users or a multi-purpose statement, and those which claim that the information contained in current statements should suffice but that the presentation should be changed. There is, however, little empirical evidence to show that any of these proposals will produce the information that users desire and need in a manner that is better than the statements that are currently being used.

Despite the criticism which has been directed toward the profession, accountants have also failed to make any concentrated effort to find evidence which will assist them in defending their position that the current set of statements will best serve the needs of the users of financial information.

Nevertheless, they have continued to produce statements in the same traditional manner and to make the claim that there is no need to make a change since the statements present no problem to users.

This study has as its purpose the investigation of how members of one economic sector, individuals engaged in agriculture, would make the income determination when presented with a set of financial data about economic activity. Through this means, it is believed that information could be obtained that would assist in determining what information these users of accounting data desire and need in their role as decision-makers and how it compares with the accounting information they currently are receiving.

Summary of Research Procedures

Ninety-seven individuals who are actively engaged in agricultural operations in the western part of Texas and who are members of either the Texas Farm Bureau or the National Farmers Union were interviewed to obtain data for the study. The data was collected through small group interviews with the aid of two testing instruments. The primary instrument was composed of fourteen hypothetical situations concerning typical agricultural operations. For each situation respondents were asked to provide the numeric amount which they consider to be the income resulting from the financial transactions contained in the situation. Since other terms are used

in the same sense as "income," respondents were also asked to furnish responses to three other terms, "profit," "gain," and "change in wealth" to determine if the terminology employed would have any effect upon the response given. The second instrument used was one which collected certain data about personal, hereditary, and environmental characteristics.

Each of the four responses to each situation was converted to one of seven income measurement concepts, or was classified as unusable, to aid in the comparison of the various amounts which had been computed. The transactions in each situation were analyzed for the amount which an accountant, using generally accepted accounting procedures, would obtain. These answers were also converted into the same income measurement concepts which were used for the respondents answers. Finally, the answers given by the respondents were classified by number of responses and by percentage of total responses in which a given measurement method was used for each of the four terms, income, profit, gain, and change in wealth.

Each situation had been contrived to measure the use of the rules of one of five income concepts. The situations which were designed to measure a specific income concept were analyzed both individually and as a gorup. An analysis was made to determine the use of income measurement methods, the relationship between the measurement method used and the terminology employed to indicate the results of operations,

causes which explained the measurement method used, and the acceptability of the income concept being tested. A comparison was also made between the responses which would be given by the accountant and those given by members of this economic sector.

The answers to the situations which were not classifiable under a specific income measurement method were analyzed to try to find causal factors for this type of response. Each situation was examined to determine causes for each of the two types of answers which could not be associated with an income measurement method. A comparison of the number of data items presented in the situations and the number of unusable answers was made for each of the two types of unusable answers and for the total number of unclassifiable responses to determine any relationship that might exist. The analysis was conducted for each of the four terms which were used to indicate change in equity.

The final tests performed were to determine if hereditary and environmental factors had an effect on the variation in responses to the terms income and profit. Information about thirteen areas was obtained, but only four were used in the analysis. The total number of responses given by members of each class for each measurement method was converted into a percentage of total responses for the class. A comparison of these percentages and the classes was made to find areas of significance. A test for consistency of use was also made

and the results reported. Finally, a very brief biographical sketch of respondents who consistently employed one income measurement concept was presented.

Specific Findings

The data which was collected was analyzed for income concepts used, for causations of the responses which could not be classified under one of the income measurement methods defined, and for the effect of environmental factors upon the variation in responses which were received. The findings which were observed or determined will be summarized in the remainder of this section.

The Stock Concept

Use of the stock concept of income is indicated when the appreciation in value of an asset, an unrealized gain, is included in the computation to obtain the change in equity for a period. Three of the situations presented the respondent with four opportunities to use the rules of this concept when computing a numeric amount. The tests which were performed to determine the use of the concept indicated that the unrealized gain was included in the computation more frequently for the terms "gain" and "change in wealth" when compared to the usage for the terms "income" and "profit." However, there was an overall lack of consistency of use of the concept, but usage, even though small, was more consistent

for "gain" and "change in wealth." A variation in the number of respondents using the appreciation in value concept for each situation was found. This variation appeared to be related to the market which valued the asset. The greatest usage was found when the asset was valued by the stock market, while the least frequent usage occurred when valuation was made by a third party appraisal. The responses given by members of this sector agreed with those which the accountant would give in three of the four situations for the term "gain" and "change in wealth," but for only two when the term was changed to "income," and for only one when the term was changed to "profit."

The Flow Concept

The income concept which the accountant uses for financial statements is a flow concept. The rules of this concept require revenue to be recognized only when realized and expenses to be matched with related revenue. The use of accruals and deferrals of revenue and expenses is required to compensate for the timing difference which occurs between recognition and cash flow.

Two of the situations were designed to determine the use of the accrual concept. One of the tests performed indicated that accruals were used by less than 50 per cent of the respondents for each of the four terms--"income," "profit," "gain," and "change in wealth." It was also found that there

were as many respondents who considered unreceived revenue to be a loss or an expense as there were those who considered it to be revenue. A third finding pointed out the conservatism of members of this sector. This was indicated by the fact that a larger percentage of respondents were willling to accrue expense than accrue revenue. There was no consistency of use of accruals as more than one-half of the respondents used the principle less than two of the three times possible.

Deferral of part of the cost of long-lived assets was a flow concept found in two situations with the depreciation principle employable three times. The use of deferrals was found to be greatest for the term "profit," then "gain." However, only for the term "profit" was the technique used by more than 50 per cent of the respondents. This test also indicated that there was a limited knowledge of what constitutes a depreciable asset. The last test performed indicated that the consistency of use of the deferral principle was not great for any of the four terms.

The valuation to be assigned to an ending inventory was a third concept investigated. One situation included information which would allow the respondent to reduce production costs by the inventory carried over. The test performed indicated that members of this sector were either unwilling to use the cost of the ending inventory in the computation or were unaware of its effect on net income.

Tests were also performed using the responses to all five situations. One of these tests indicated that less than one-third of the responses corresponded to the one which the accountant would give. For those who did give responses that agreed with the one that the accountant would make, usage was greatest when the term employed was "profit" or "gain." Another test found that the accrual of expenses was more common than the accrual of revenue. A third test indicated that for "income" and "change in wealth" a greater number of respondents deferred the cost of a long-lived asset than used the accrual principle, while the reverse was true for the terms "profit" and "gain." The final series of tests found that the rules for the flow concept were used least often for "income," then "profit," with the greatest usage obtained when the term employed to indicate the change in equity of an owner was "gain."

Economic Profit

The rules for the economic profit concept of income require that implicit costs be included when computing the results of operations. Two implicit costs, a salary for the owner of the firm and interest on the investment in the entity, could have been used in the computation of total costs. The total number of responses in which an imputed cost was used was small. These results lead to an inference that members of this sector disagree with the economist in

the definition of income and that there is some agreement with the accounting definition for the situations tested.

The Marginal Concept

A series of tests was performed to determine if a marginal concept would be recognized. The findings indicated that only one-third of the respondents were able to compute an amount which could be identified as marginal income; however, more than one-half of the respondents either used, or made an attempt to use, a marginal concept in the computation for each situation. A second finding of this analysis was that there were as many respondents who could not produce an answer which was classifiable under an incremental concept as there were who could identify marginal income. A third finding was noted when the term used to ask for the incremental difference was changed from "income" to "profit." Some of the respondents had used a current period concept in the response when the terminology employed was "income," but there was a significant increase when the term "profit" was used. No specific causal factors were found to explain why the respondents changed the concept used, but it appeared that they either considered "profit" a more precise term or that they were looking for a different answer.

Cash Concept of Income

The only income concept available in all situations was one which is defined as a cash concept, net cash flow. A second and more restrictive cash concept, cash payout, was

also available in seven of the situations. However, this income determination method was used only fifty-eight times for the four terms--"income," "profit," "gain," and "change in wealth." The net cash flow method was used by 36.9 per cent of the respondents when the term employed was "income," by 33.5 per cent when the term was changed to "profit," by 25.4 per cent for "gain," and 26.5 per cent for "change in wealth." The preference for the net cash flow method indicates that for those who use a cash concept of income a less restrictive method is desired. A second finding which the test results indicated is that usage is more frequent for the terms "income" and "profit" when compared to usage for the terms "gain" and "change in wealth." The small percentage of use of the two cash concepts, together with the probability that some of these responses were given because the respondent did not believe a more appropriate concept was available, would indicate that the cash method is not widely used by members of this sector.

Unusable Answers

A total of 1,950, or 33.5 per cent of the responses to the situations in this study could not be associated with one of the income measurement methods defined in Chapter III and therefore had to be classified as unusable. Two types of responses were placed in this category. One group was comprised of those in which the respondent either could not

compute a numeric amount or failed to do so. This type of response comprised 38 per cent of the unusable ones. The second group was composed of those in which the answer did not match the ones which had been computed under each of the measurement methods. The examination to find the reason for the no response answers indicated that the length of time to complete the interview and the terminology employed to ask for the change in the equity of the owner were two of the causal factors.

The tests conducted on the unclassifiable responses indicated that incorrect interpretation of data and computational errors were causal factors. They also indicated that the number of data items contained in a situation were related to the number of indeterminate answers tabulated for the situation. The relationship which was found was that the number of indeterminate responses increased as the number of data items increased. This held true for all four terms--"income," "profit," "gain," and "change in wealth." A second finding was that there were fewer indeterminate answers for "income" than for the other three terms, each of which had a similar number of responses classified in this manner. This lower number of indeterminate answers for "income" was, in part at least, due to a groping for something different. The last finding was that as the number of data items exceeded four or five, the number of unusable answers increased faster than the increase in number of data items.

Hereditary and Environmental Factors

Data was collected concerning thirteen hereditary and environmental characteristics to try to determine if these factors had any effect on the income concept which was used; however, tests were performed on only four--number of years engaged in agricultural activities, gross revenue, education level attained, and use of financial statements. No tests were performed which would determine statistically the relationship between these factors and the variation in responses which were given due to the lack of knowledge of the population distribution and characteristics and the failure to obtain a random sample. However, an analysis was made by examining the percentage of usage of the different income measurement methods for each class and the percentage of respondents in a class who used a measurement method more than a given number of times.

The results of the tests indicated that the variation in usage between classes was small for all measurement methods except one, net cash flow. In addition, this was the method with the most frequent usage for all environmental factors. The method used least often for all four factors was gross receipts, while the accrual and appraisal method fell between these two. The analysis also yielded the information that for most classes of each factor a large percentage of use of a measurement method was due to the responses given by a small number of respondents. These

findings indicated that none of the factors which were examined exhibited any determinable effect upon the method used to compute the change in equity of the owner by members of the agricultural sector.

General Statements and Conclusions

The major finding of this study which can be determined from the tests performed on the data is that the expected results were not obtained. However, the specific findings should allow a series of generalizations to be made about the population studied. The deficiency of the sampling method precludes the statement of any conclusions about the general agricultural sector of the economy which would be valid statistically. But, since the sample was comprised of individuals who are currently engaged in farm and ranch operations, the population from which the sample was taken is an agricultural one even though it can not be specifically identified. Therefore, the generalizations which follow are made about this undefined agricultural population.

The first of these is that members of this sector and the accountant do not use financial data in the same way to determine income; therefore, different income concepts are used by the two groups to measure income. A second conclusion that can be reached is that members of this sector do not agree among themselves as to what information should be used for income determination. This means that there is no common

income concept acceptable to all members and, furthermore, individuals are not consistent in the application of the income concept that they employ. No reason was found for this lack of acceptability of a particular income concept. The only concept which had much usage, the cash concept, was employed in one-third of the responses, but only as a simple alternative to the other concepts.

A third generalization that can be made is that the concept of change in equity of an owner of an entity, resulting from the activities of a period, has a different meaning for members of this sector when the term employed to describe it is changed from "income" to "profit," to "gain," or to "change in wealth." This variation in interpretation will cause different responses to be given for each term. The final general statement that describes this population is that environmental factors do not have an effect upon the income concepts used to make the income determination.

This study has also produced evidence which necessitates one final comment about the usefulness of the financial information being furnished to users of accounting statements. For this sector of users, accounting measurements used to determine change in equity have only the vaguest meaning. Unpublished studies which were referred to in an earlier part of this study reached the same conclusions for the general population in the Dallas metroplex and for bank loan officers. This can only lead one to conclude that the general purpose

measurement of income which is dictated by general accounting practice does not meet the needs of users in general, and so far as can be determined, the needs of any specific group. Thus, it appears, the pragmatic usefulness of income, as measured by accountants using accepted practices, serves no end other than that of accounting conventions and customs.

Two divergent paths are thus open to the development of accounting measures. First, an effort could be made to establish a single measure which is most useful to that segment of society which has the greatest influence on the allocation of resources. Second, the accounting discipline could develop multipurpose measures of income directed at the needs of specific users. This study indicates that either course is hazardous without additional knowledge regarding users and their specific needs and the decision models that they use.

Suggestions for Further Research

The method of income determination and the presentation of useful financial statements present many problems for the accountant. This study has presented data which questions many of the assumptions which the accounting profession makes concerning the needs and desires of the users of financial information. Research needs to be done with other user populations to determine the income model which the accountant uses. Additional research is also needed which investigates

the forces which influence the income model which is chosen for the decision-making process by user populations.

APPENDIX A

Interview Number_____

Situation 1

You are offered an opportunity to buy a farm in a highly productive agricultural area. In January of 1972, you purchase the farm for $200,000. You did not farm the land yourself, but you were able to lease it for the year for $3,000 cash. During the year you paid interest of $9,000 and taxes of $1,000. The farm was not sold in 1972 but an independent appraiser estimated the value of the farm on December 31, 1972 was $225,000.

Cost of farm	$200,000
Cash revenue from lease	$ 3,000
Taxes paid	$ 9,000
Interest paid	$ 1,000
Appraised value of farm	$225,000

What is your income (or loss), if any, on the farm transaction for 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 2

You and your wife own a farm, valued at $250,000, which you purchased ten years ago for $200,000. You have decided to sell it and move into town as you wish to retire. You list the farm on the market at $250,000 and a buyer offers you $220,000 and vacant property within the city limits of a nearby medium size town. The appraised value of the vacant lot is $30,000. You accept the offer and list the vacant property on the market for $30,000. At the end of 1972 the property has not been sold.

Selling price of the farm	$250,000
Your cost for the farm	$200,000
Cash received for farm	$200,000
Value of the vacant lots	$ 30,000

What is your income (or lose), if any, from the sale of your farm in 1972?

If the question had asked what profit you had, what would your answer have been? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 3

You are the owner of a farming operation that has been very successful, and you find that you have more cash than you will need for normal operations. In November of 1972 you invested $15,000 in common stock of various industrial corporations. The market price of the investment at the end of the year (1972) was $25,000.

Investment in stocks	$15,000
Market price at Dec. 31, 1972	$25,000

A. What was your income (or loss), if any, on the stock transaction in 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

B. In may of 1973 you sell the stock for $20,000. What is your income (or loss), if any, on the sale of the stock in 1973?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 4

You are the owner and operator of a farm and ranch supply store which serves customers in a rural area. Since the population is relatively stable, it has become customary for you to allow some of your customers to charge their purchases during the month and then pay the amount the following month. At the end of 1972 the total amount of cash received from customers was $100,000. Your records indicate that customers still owe you $3,000. The total cost of the supplies that you sold and all of your operating expenses amounted to $80,000.

Total cash received	$100,000
Total cash expenses	$ 80,000
Amount customers still owe	$ 3,000

What is your income (or loss), if any, on this retail operation for 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 5

You own a farm which you have leased to an operator for $5,000 for 1972. He is to pay you at the end of the season from his crop revenue. During the current year he could not pay the lease fee because of a poor crop due to weather conditions. He has agreed to pay you the full amount in February or March of 1973. During the year you paid $600 in taxes but did not pay interest on the martgage on the land of $3,000, due on the first of December, since you had expected to pay it out of the lease revenue you received.

Revenue due from the lease	$5,000
Taxes paid	$ 600
Interest due on mortgage	$3,000

What income (or loss), if any, did you have from the farm you leased in 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 6

You own a farm and on January 2, 1972, you purchase a new diesel tractor and equipment for $20,000. You estimate that these items will last 10 years. Your sales for 1972 amounted to $75,000 and the total cash paid out for operations amounted to $60,000.

Cost of tractor & equipment	$20,000
Life of tractor and equipment	10 years
Total 1972 sales	$75,000
Total cash expenses	$60,000

What income (or loss), if any, did you have from the farm in 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 7

On January 2, 1972, you purchase ten used wheat harvesters for $42,000, estimating that they can be used for 6 years. You plan to recover your investment by obtaining multi-year contracts from wheat growers. To put the harvesters in working condition, you spend an additional $9,000 for major repairs, estimating that this expense will not be incurred again for 3 years. At the end of 1972 your total net fees (revenue less cash operating expenses) are $25,000. You believe that you can earn this amount for each of the next 5 years.

Cost of harvesters	$42,000
Estimated life of harvesters	6 years
Cost of major repairs	$ 9,000
Estimated life of repairs	3 years
Net fees for 1972 and for each of the next 5 years	$25,000

What income (or loss), if any, did you have from this harvesting operation in 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question has asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 8

You are president of XYZ Farms, Incorporated, an agri-business corporation which was formed to grow cotton. In 1972 you raised enough cotton to gin 1,000 bales. You sold 950 of these during the year. The remaining 50 bales are stored in your warehouse, not in a government loan. The total cost of producing the 1,000 bales was $70,000 ($70 per bale). The 950 bales were sold for $104,500 ($110 per bale). You believe that you can sell the 50 bales still on hand for $5,500 ($110 per bale) plus your total 1973 production.

Units produced	1,000 bales
Units sold	950 bales
Cost of total bales produced	$ 70,000
Total sales revenue	$104,000
Cost of inventory on hand (50 bales not sold)	$ 3,500
Sales price of inventory	$ 5,500

What is your income (or loss), if any, from raising cotton in 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 9

You are the owner and operator of a large ranch on which you raise registered cattle. During 1972 your total livestock sales amounted to $50,000. Your total operating costs for feed, labor, financing and other expenses were $30,000. You have invested $150,000 of your money in this operation. You could earn $6,000 per year with this money if it was invested in corporate stocks and bonds.

Revenue from sales	$ 50,000
Operating costs	$ 30,000
Savings invested	$150,000
Possible interest that could be earned	$ 6,000

What is your income (or loss), if any, from the ranching activities carried out in 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 10

You are the owner and manager of a cattle feeding lot which you opened on January 2, 1972. During the year your sales amounted to $240,000. Your total operating costs for livestock, feed, salaries, and other items amounted to $210,000. You have invested $100,000 of your own money in this business. During the month of December of 1972 you were offered a change to sell the business for $120,000 and stay on under contract as manager of the feedlot at a salary of $14,000 per year.

Revenue from sales	$240,000
Total operating costs	$210,000
Your investment	$100,000
Offer for business	$120,000
Salary as manager, if you sell and stay on	$ 14,000

What is your income (or loss), if any, from the feed lot operation for 1972?

Under the circumstances described would you accept the offer to sell the business and stay on as manager?

If the question had asked what profit you had, what answer would you have given? Please indicate the amount.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given. Please indicate the amount.

Situation 11

As a rancher you sell calves when they are 8 months old and average 500 lbs. The average selling price has been $250 (50¢ per lb.) and the average cost to raise to this weight has been $160 (32¢ per lb.). This cost was calculated by including land usage, depreciation of mother cows, labor costs, financial costs, depreciation of buildings and equipment, feed for cows and calves, and other costs of operations. In 1972 you begin an ear implant program at a cost of $1 per animal. Average weight per animal at the end of 8 months increased to 550 lbs. When sold the everage selling price was $275 (50¢ per lb.). Cost to raise, excluding implant costs, was the same.

	Before use of hormone	After use of hormone
Weight when sold	500 lbs.	550 lbs.
Selling price (50¢ per lb.)	$250	$275
Cost to raise	$160	$160
Hormone cost per animal		$ 1

What amount of income (or loss), if any, did you realize on <u>each</u> cow due to the hormone implant program?

If the question had asked what <u>profit</u> you had, what answer would you have given? Please indicate the amount.

If the question had asked what <u>gain</u> you had, what answer would you have given? Please indicate the amount.

If the question had asked what <u>change in wealth</u> you had, what answer would you have given? Please indicate the amount.

Situation 12

In your farming operation you normally plant 200 acres of grain sorghum which produces revenue of $20,000 ($100 per acre). Your operating costs are $15,000 ($75 per acre). In 1972 you planted an additional 100 acres (300 acres total) which produced a gross revenue of $30,000 ($100 per acre) with operating costs of $21,600 ($72 per acre).

Before 1972	
Acreage planted	200 acres
Revenue ($100 per acre)	$20,000
Operating costs ($75 per acre)	$15,000
During 1972	
Acreage planted	300 acres
Revenue ($100 per acre)	$30,000
Operating costs ($72 per acre)	$21,600

What income (or loss), if any, did you earn on the additional 100 acres you farmed in 1972?

If the question had asked what profit you had, what answer would you have given? Please indicate the answer.

If the question had asked what gain you had, what answer would you have given? Please indicate the amount.

If the question had asked what change in wealth you had, what answer would you have given? Please indicate the amount.

Situation 13

You own a 1,000 acre farm on which you grow cotton. For the past several years the average yield has been one bale per acre (500 lbs. average). Gross revenue has been $120,000 ($120 per bale). In 1972 instead of using seed saved from the previous crop you purchase a new certified seed. The additional cost was $3 per acre. This year the average yield was 1 1/4 bales per acre (500 lbs. average) which produced revenue of $150,000 ($120 per bale). Operating costs, excluding the certified seed cost, was $87,500 ($70 per bale).

	Using own seed	Using new seed
Acres in production	1,000	1,000
Yield (500 lb. bales)	1,000	1,250
Selling price ($120/bale)	$120,000	$150,000
Operating costs ($70/bale)	$ 70,000	$ 87,000
Additional seed cost, 1972		$ 3,000 ($3/A)

How much of your 1972 income (or loss), if any, is due to the use of the certified seed?

If the question had asked what <u>profit</u> you had, what answer would you have given? Please indicate the amount.

If the question had asked what <u>gain</u> you had, what answer would you have given? Please indicate the amount.

If the question had asked what <u>change in wealth</u> you had, what answer would you have given? Please indicate the amount.

Situation 14

You have been raising sorghum on 200 unirrigated acres of your farm. Average yield has been 4,000 lbs. per acre, producing revenue of $16,000 ($2 per hundred or $80 per acre). Operating costs have averaged $12,000 ($60 per acre). In 1972 you install an irrigation system. Expenses incurred were $7,500 for drilling wells and $30,000 for pumps and equipment that should last you for 15 years. Your yield for 1972 increased to 5,000 lbs. per acre which sold for $20,000 ($2 per hundred or $100 per acre). Operating cost, not including the cost incurred for drilling and equipment, was $13,000 ($65 per acre).

	Unirrigated	Irrigated
Average yield	4,000 lbs/A	5,000
Revenue received	$16,000 (80/A)	$20,000 ($100/A)
Operating costs	$12,000 ($60/A)	$13,000 ($65/A)
Cost to drill wells		$ 7,500
Cost of pumps and equipment		$30,000
Expected life of pumps and equipment		15 years

How much of your 1972 income (or loss), if any, was due to the installation of the irrigation system?

If the question had asked how much <u>profit</u> you had, what answer would you have given? Please indicate the amount.

If the question had asked what <u>gain</u> you had, what answer would you have given? Please indicate the amount.

If the question had asked what <u>change in wealth</u> you had, what answer would you have given? Please indicate the amount.

APPENDIX B

Circle the number which corresponds to the statement which most nearly fits your situation. Please answer all questions. If you do not know the exact amount, it will still be very helpful and useful to me if you will make an estimate.

1. Your relationship to the agricultural entity is:

   Owner-manager 0

   Owner only 1

   Manager only 2

2. How many years have you been engaged in or associated with agriculture? (Count only the time after you became 18.)

   First year 0

   1 - 5 yrs. 1

   6 - 10 yrs 2

   11 - 15 yrs. 3

   16 - 26 yrs. 4

   More than 26 yrs 5

3. What is the size of the agricultural operation that you own and/or manage?

   A. At the present time

      No. of acres owned. . . . . _____

      No. acres leased from others. . . . . _____

   B. When you started

      No. of acres owned. . . . . _____

      No. of acres leased from others . . . . . _____

4. What percent of your time managing and/or operating this entity is spent with: (should total 100%)

Direct livestock operations . . . . . _____

Direct farming operations . . . . . _____

Other activities related to agricultural. . . . . _____

5. Do you work at another job or profession?

Yes 0

No. 1

6. In what range did your gross revenue from all agricultural sources for calendar year 1973 fall?

Under 2,500 0

2,500 - under 5,000 1

5,000 - under 10,000. 2

10,000 - under 25,000 3

25,000 - under 50,000 4

50,000 - under 100,000. 5

100,000 - under 250,000 6

250,000 - under 500,000 7

500,000 or more 8

7. What percent of your total agricultural revenue came from: Estimate, if necessary; should total 100%)

Livestock. . . . . .____

Grain crop . . . . . .____

Cotton . . . . . .____

Poultry & eggs . . . . . .____

Fruits & vegetables. . . . . .____

Land leased to other agricultural operators. . . . . .____

Government payments (Federal, state, and local) . . . . . .____

Others . . . . . .____

8. I received and used prepared financial statement in the operation of the agricultural entity:

Monthly. 0

Quarterly. 1

Semi-annually. 2

Annually 3

Used only for income tax purposes. 4

No formal statements used. 5

9. To which of the following age classes do you belong?

Under 18	0
18 - 25	1
26 - 35	2
36 - 45	3
46 - 55	4
56 - 65	5
over 65	6

10. The highest educational level attained is:

No formal schooling	0
Dropped out before completing the 8th grade	1
8th grade graduate	2
Dropped out before completing the 12th grade	3
High school graduate	4
Some college or technical school	5
Bachelor's degree	6
Some graduate work	7
Graduate degree	8

11. If you attended college as an undergraduate, what was your major field of study?_____

12. If you have done graduate work, in what area was it done?_____

13. What is your ethnic background or nationality:

Caucasian.	0
Mexican.	1
Negro.	2
Oriental	3
Indian	4
Other.	5

Specify_____

14. Occupation of father:

Agricultural - owner and/or manager.	0
Agricultural - laborer	1
Owner - agricultural related business. . . .	2
Owner - non-agricultural related business	3
Professional	4
Military	5
Salesman	6
Clerical worker.	7
Skilled laborer (non farm)	8
Unskilled laborer (non farm)	9
Other.	10

Specify_____

15. To what church do you belong:

Protestant*. 0

*If protestant, list denomination_____

Catholic 1

Jewish 2

Other. 3

Specify_____

APPENDIX C

CHARACTERISTICS OF SAMPLE

Relationship to the Entity

Entity Relationship	Number of Responses
Owner-manager	73
Owner only	11
Manager only	12
No Response	1

Years Engaged in Agricultural Activities

Level of Experience	Number of Responses
1 - 5 yrs.	5
6 - 10 yrs	12
11 - 15 yrs.	17
16 - 26 yrs.	27
More than 26 yrs	35
No Response.	1

Change in Size of Entity

Change	Number of Responses
Increased acreage.	86
Decreased acreage.	4
Same acreage	4
No Response.	4

Outside Employment

Category	Number of Responses
Yes.	17
No	79
No Response.	1

Major Agricultural Activity

Type of Activity	Number of Responses
Farming Operation	84
Ranching Operation	2
Equal Operations	4
Related Agricultural Activities	5
No Response	2

Gross Revenue for 1973

Revenue	Number of Responses
Under 2,500	1
2,500 - under 5,000	2
5,000 - under 10,000	2
10,000 - under 25,000	10
25,000 - under 50,000	27
50,000 - under 100,000	22
100,000 - under 250,000	29
250,000 - under 500,000	2
No Response	2

Major Source of Revenue

Source	Number of Responses
Cotton	75
Livestock	6
Grain Crops	2
Several Sources	12
No Response	2

Frequency of Financial Statements

Number of Times	Number of Responses
Monthly	6
Quarterly	4
Semi-annually	1
Annually	31
For Income Tax Only	40
No Formal Statements	13
No Response	2

Age of Respondent

Age Group	Number of Responses
18 - 25.	1
26 - 35.	26
36 - 45.	28
46 - 55.	24
56 - 65.	15
Over 65.	2
No Response.	1

Level of Education

Level Attained	Number of Responses
Did not complete 8th grade	2
Completed 8th grade.	3
Did not complete high school	13
High School Graduate	34
Some College or Technical School	25
Bachelor's Degree.	12
Some Graduate Work	4
Graduate Degree.	3
No Response.	1

Major of Respondents Attending College

Area of Study	Number of Responses
Agriculture.	25
Business Administration.	6
Engineering.	3
Education.	2
Sciences	1
Did not state.	7

Race

Category	Number of Responses
Caucasian.	91
Did not Specify.	4
No Response.	2

Occupation of Father

Occupation	Number of Responses
Agricultural - Owner and/or Manager. . .	88
Owner - Agricultural related Business. .	3
Owner - Other Type of Business	2
Other - Did Not Specify.	1
No Response.	3

Religious Preference

Religion	Number of Responses
Baptist.	47
Methodist.	14
Church of Christ	15
Presbyterian	2
Church of God.	2
Penticostal.	1
Protestant--Did not state.	8
Catholic	2
None	2
No Response.	4

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